

**The Sixteenth Biennial Conference of the
International Institute of Fisheries Economics & Trade**

Book of Abstracts

IIFET 2012 Tanzania: Visible Possibilities:

The Economics of Sustainable Fisheries, Aquaculture and Seafood Trade

Dar es Salaam, Tanzania

July 16-20, 2012

Organized by



**The International Institute of
Fisheries Economics & Trade**



The University of Dar es Salaam

Table of Contents

Program Details	1
Abstracts	30
Abstract Author Index	168



Program Details

00 Opening Ceremony

Date: Tuesday, July 17, 2012
Time: 9:00 AM - 10:00 AM
Location: Kibo Ballroom

01A Markets and Value Chains for Small Aquaculture Enterprises

Value Chains for Small Aquaculture Enterprises: Structures, Processes, and Interventions to Augment Producer Income and Food Security Objectives of the Session: To discuss the breadth and complexity of value chains for aquaculture products; To identify barriers and constraints to the addition of value to farm-raised products that increased producer incomes and food security; To highlight producer efforts to broaden access and participation in value chains. In the agri-food sector, a value chain network consists of different processes and activities in order to bring food products and services to the market to satisfy customer demands. A value chain in sectors with perishable products such as fish adds additional dimensions because of the limited shelf life and the importance of food quality and food safety issues. These factors make such value chains complex, especially when other factors like variability in demand and price, and environmental factors are considered. The management of agri-food value chains and networks is considered a method to increase productivity and the performance of the agriculture sector in developing countries. This is based on the presupposition that the flow of goods and services, capital, technology, ideas, and labor offers opportunities for developing nations to enhance economic growth and reduce poverty by increasing productivity and efficiency, providing access to new markets and ideas, and expanding the range of consumer choice. International development organizations are increasingly focusing attention on entrepreneurship and agricultural trade via linkages with better rewarding markets, promoting exports of agricultural products, and fostering competitiveness in the agricultural sector. Value chain analysis therefore provides a reference point for improvements in products and services, and for consequent improvements in the economic welfare of the poor by linking small household farmers and their families with the market. At present, in most developing nations, there appears to be limited distinction in the marketing of wild-caught fish and farmed fish and the two often share the same marketing chain. The value chain typically follows two forms - a short chain that is usually localized and a long chain that extends to distant markets and includes export markets. Internal domestic markets are typically characterized by simple short value chains with little value added. Limited processing or packaging separates producers from consumers. In Africa, where people use more income to purchase food than other continents, most consumers obtain most food items through short, simple, largely local value chains. With increased international trade, value chains become more complex, and longer value chains entail efficiency at each stage of the chain to minimize cost and also meet demand requirements. Linkages improve information flow and learning capacities and also help to reduce transaction costs, increase productivity in terms of value, and increase profitability. Value chain collaboration then becomes very important for smallholder producers in developing countries to ensure access to new and profitable markets. Collaboration also allows participation in network governance to enable timely responses to end-user demands for capacity development and knowledge dissemination. Market access and value chain governance are commonly recognized as the key dimensions for creating opportunities for smallholder producers in developing countries. Addressing value chain issues in international development work involves efforts toward making local producers cost-competitive and also building capacity to enable them to comply with quality requirements, ensure consistent and reliable supply, and meet quality and safety standards. Opportunities for poor smallholder enterprises include cost-efficient market intermediate activities such as product aggregation, storage, processing, and distribution. Access to market information and the nature of information flow has become a main dimension for maintaining competitiveness. With increasing access to and use of the Internet and mobile communication devices, individuals in developing countries have the opportunity to effectively participate in value chains to be competitive. Supply chains for agri-food products also being driven by delivery and procurement conditions requiring timeliness, consistency and reliability, and the development of relationships. Value chains are dynamic and vary in terms of composition, relationships, information flow, market positioning, etc. There is the need for an understanding of market dynamics and a thorough analysis of actual and potential market segments and competition. Transactions costs analysis can be used to assess barriers to market participation by resource-poor smallholders by defining characteristic of smallholders and the factors responsible for market failures. In developing countries, some markets do not exist, and where markets exist, there are high transactions costs associated with accessing those markets. With limited quantities of products, high exchange costs are associated with longer distance to the market, poor infrastructure network and poor access to assets and information. Differences in transactions costs and access to assets and services are possible factors underlying the various levels of market participation among smallholders. While value chain analysis is extremely useful, its weaknesses highlight the fact that many other important considerations are necessary to increase value for the entire chain or some of its participants. This session's focus on markets and value chains is an attempt to better understand the intricate linkages between the chain elements, performance, and value added distribution to allow a determination of optimal institutional arrangements and policy approaches to smallholder participation.

Date: Tuesday, July 17, 2012
Time: 10:30 AM - 12:30 PM
Location: Zanzibar
Chair: Hillary Egna

[Value Chain Development for Tilapia and Catfish Products: Opportunities for Female Participation in Kenya](#) (Id: 290)

Kwamena Quagraine, Purdue University

[Value Chain of Snakehead Fish in the Lower Mekong Basin of Cambodia and Vietnam](#) (Id: 385)

Robert Pomeroy, university of connecticut-avery point (United States)

Sinh Le Xuan, Cantho University (Viet Nam)

[Improving the Supply Chain of Tilapia Industry of the Philippines](#) (ID: 394)

Wilfred Jamandre, Central Luzon State University (Philippines)

Upton Hatch, North Carolina State University (United States)

Remedios Bolivar, Central Luzon State University (Philippines)

Russell Borski, North Carolina State University (United States)

[Prospects for Improving value Chain of aquaculture fish \(Tilapia and African Catfish\) in Central Uganda](#) (ID: 395)

01B Governance: Co-management, Community Management, Coops and Catch Shares, Part I

Date: Tuesday, July 17, 2012
Time: 10:30 AM - 12:30 PM
Location: Kibo 1
Moderator: Erik Lindebo

[Ethnic diversity, social capital, and the potential for co-management: a case study of Hawaii's longline fishery](#) (ID: 116)

Michele Barnes-Mauthe, University of Hawaii at Manoa (United States)
Shawn Arita, Joint Institute for Marine and Atmospheric Research (United States)
Stewart Allen, NOAA Pacific Islands Fisheries Science Center (United States)
PingSun Leung, University of Hawaii at Manoa (United States)
Steven Gray, University of Hawaii at Manoa (United States)

[A case study in successful fishery management: The Atlantic deep sea red crab fishery](#) (ID: 211)

Barbara Rountree, DOC/NMFS/NEFSC (United States)
[Evaluating Financial Success in New England Groundfish Management](#) (ID: 253)

Daniel Georgianna, SMAST, UMass Dartmouth (United States)
Emily Keiley, SMAST, UMass Dartmouth (United States)

[Community Based Fisheries Management \(CBFM\) is a Tool of Socio Economic Development Measuring Livelihoods Changes of People involve: an Experience from Bangladesh](#) (ID: 340)

A K M Firoz Khan, The WorldFish Center (Bangladesh)
Sk.Md. Mohsin, Local Government Engineering Department (LGED), (Bangladesh)

[Do All Answers Lie Within \(The Community\)? Fishing Rights And Marine Conservation](#) (ID: 381)

Maria Gasalla, University of Sao Paulo (Brazil)

01C Managing Development of Fisheries and Aquaculture Sectors Part I

Date: Tuesday, July 17, 2012
Time: 10:30 AM - 12:30 PM
Location: Kibo 3
Moderator: Dan Holland

[Reservoir Water Re-allocation and Community Welfare](#) (ID: 68)

Mohottala Gedara Kularatne, University of Kelaniya (Sri Lanka)
Sean Pascoe, CSIRO Marine and Atmospheric Research (Australia)
Clevo Wilson, QUT Business School (Australia)
Tim Robinson, QUT Business School (Australia)

[Techno-Transfer of Mud Crab Nursery in Ponds: Its Socio-Economic Impact on Small-Scale Mud Crab Producers in Northern Samar, Philippines](#) (ID: 83)

Didi Baticados, Southeast Asian Fisheries Development Center/Aquaculture Department (Philippines)
Renato Agbayani, Southeast Asian Fisheries Development Center/Aquaculture Department (Philippines)

[Poverty and Inequality in Seasonal Floodplain Areas of Bangladesh: The Role of Fish Income from Community Based Aquaculture](#) (ID: 89)

Md. Akhtaruzzaman Khan, Norwegian University of Life Sciences (Norway)
A. B. M. Mahfuzul Haque (Bangladesh)

[Social and Economic Dimensions of Seaweed Farming: A Global Review](#) (ID: 165)

Diego Valderrama, University of Florida (United States)

[Development of Aquaculture in the Gulf States](#) (ID: 166)

Bruce Shallard, Bruce Shallard and associates (New Zealand)

[Historical Development of Indonesia's Industrial Tuna Fisheries, 1900 - 2012](#) (ID: 450)

Seamus McElroy, The BOSS Company (Indonesia)

01D Bioeconomic Modeling Part I

Date: Tuesday, July 17, 2012
Time: 10:30 AM - 12:30 PM
Location: Lake Victoria
Moderator: Moussa Sangare

[Modelling capital stuffing and fleet redundancy in a limited entry fishery](#) (ID: 147)

Kelly Neill (Australia)
Aki Asano, Sophia University (Japan)
Satoshi Yamazaki, University of Tasmania (Australia)

[Modelling the economic and ecological co-viability of the Northern Prawn Fishery in Australia](#) (ID: 149)

Sophie Gourguet, CSIRO-UTAS-IFREMER-MNHN (Australia)
Olivier Thébaud, CSIRO - CMAR (Australia)
Cathy Dichmont, CSIRO - CMAR (Australia)
Roy Deng, CSIRO - CMAR (Australia)
Sean Pascoe, CSIRO Marine and Atmospheric Research (Australia)
Rich Little, CSIRO Marine and Atmospheric Research (Australia)
Sarah Jennings, University of Tasmania (Australia)
Luc Doyen, CNRS (France)
[Bioeconomic Modelling for the Evaluation of Fishery Resources Based on the Gordon-Schaefer Model](#) (ID: 175)
Taro Oishi, The University of Tokyo (Japan)
Nobuyuki Yagi, The University of Tokyo (Japan)
Masahiko Arijii (Japan)
Yutaro Sakai, University of Calgary (Canada)
[Search and Destroy: a Bioeconomic Model of Orange Roughy Fisheries in New Zealand.](#) (ID: 182)
Viktoria Kahui, University of Otago
Claire Armstrong (Norway)
[Bio-Economic Model of Eastern Baltic Cod Under the Influence of Nutrient Enrichment](#) (ID: 302)
Thanh Viet Nguyen, University of Southern Denmark (Viet Nam)

01E Markets: Value Chains Part I

Date: Tuesday, July 17, 2012
Time: 10:30 AM - 12:30 PM
Location: Lake Tanganyika
Moderator: Taiwo Mafimisebi

[Value Chain Analysis of the Egyptian aquaculture sector](#) (ID: 20)
Ahmed Nasr Allah, WorldFish Center (Egypt)
Graeme Macfadyen, Poseidon (France)
Malcolm Dickson, WorldFish Center (Egypt)
[Structural Performance of Artisanal Fish Marketing in Nigeria.](#) (ID: 34)
Lawrence Oparinde, Dept Of Agricultural & Resource Economics (Nigeria)
Oluwadare Ojo, Federal University Of Technology (Nigeria)
[The Value Chain of Farmed African Catfish in Uganda](#) (ID: 65)
Maurice Ssebisubi, Aquaculture Management Consultants (Uganda)
[Comparative Analysis of Fresh and Dried Fish Consumption in Ondo State, Nigeria](#) (ID: 122)
Taiwo Mafimisebi, The Federal Univ. of Technology (Nigeria)
[The Structure Of Wholesale And Retail Marketing Of Catfish \(Clarias Gariepinus Burchell 1822\) In Southwest, Nigeria](#) (ID: 163)
Ayanboye Abolupe Oluyemi, Oyo State College Of Agriculture.Fisheries Department (Nigeria)
Mabel Omowumi Ipinmoroti, Osun State University osun state, Osogbo (United States)
Mabel Omowumi Ipinmoroti, Osun state university osogbo (Nigeria)
Prof adewale J.G, Oyo State college of Agriculture Igboora Oyo State (Nigeria)
Oluwafemi Zaccheaus Olaniyi, Oyo State College of Agriculture Igboora Oyo State (Nigeria)
Christianah Oludayo Olaniyi, Ladoke Akintola University of Technology (Nigeria)
[Marketing, Distribution and Consumption of Sea Food in Anyigba, North Central Nigeria](#) (ID: 234)
Ogbe Friday, Kogi State University (Nigeria)
Onuche Unekwu, Kogi State University (United States)
[Organisational changes and market value of the fresh fishery products in France](#) (ID: 308)
Razafimandimby Haja, UMR AMURE (France)

01F Understanding and Modeling Fishing/Sector Behavior Part I

Date: Tuesday, July 17, 2012
Time: 10:30 AM - 12:30 PM
Location: Bagamoyo
Moderator: Stella Williams

[Unravelling the Multiple Margins of Rent Generation from Individual Transferable Quotas](#) (ID: 314)
Matthew Reimer, University of California, Davis (United States)
Joshua Abbott, Arizona State University (United States)
James Wilen, University of California, Davis (United States)
[Sharing Natural Resources And Resource Management](#) (ID: 371)
Ali Emami, Lundquist College of Business, Department of Finance, University of Oregon (United States)
Richard S. Johnston, Department of Agricultural Resource Economics, Oregon State University (United States)
Jun Yin, US Seismic Imaging, CGGVeritas (United States)
[Sector Allocation Catch Share System: Game Theoretic Approach for Sector Behavior Analysis](#) (ID: 372)
HIROTSUGU UCHIDA, University of Rhode Island (United States)
Andrew Scheld, University of Washington (United States)

[Modeling Fishing Decisions with Spatially Explicit Agent-Based Models](#) (ID: 409)

Steven Saul, University of Miami (United States)

David Die, University of Miami (United States)

02A Looking at Fish Supply Chains with a Gender Lens

Gender, as well as other cultural, class, religious and ethnic factors, affects how fish supply chains function and where value is created and captured along the supply chain. Using studies from Africa (Nigeria, Kenya, Tanzania and Uganda) and South Asia (Sri Lanka and India), researchers explore divisions of labour, including especially those due to gender, and the economic and social dimensions of fish supply chains and markets. Relationships between actors in different parts of the chain, especially between fishers and traders are also covered.

Date: Tuesday, July 17, 2012

Time: 2:00 PM - 4:00 PM

Location: Zanzibar

Chair: Hillary Egna

Chair: Meryl Williams

[Appraisal of Fresh Fish Marketing in Ondo State, Nigeria](#) (Id: 40)

Adeleke Lydia, Federal University of Technology Akure, Nigeria (Nigeria)

[Contribution of Lake Victoria Dagea fishery in East and Central African fish trade](#) (ID: 90)

Mwanahamis Salehe, Tanzania Fisheries Research Institute (Tanzania)

Paul Onyango, University of Dar es Salaam (Tanzania)

Hillary Mrosso, Tanzania Fisheries Research Institute (Tanzania)

Enock Mlaponi, Tanzania Fisheries Research Institute (Tanzania)

[Role of gender in global fishery value chains: A feminist perspective on activity, access and control profile](#) (ID: 143)

Devarahandhi De Silva, Sabaragamuwa University of Sri Lanka (Sri Lanka)

Trond Bjørndal, Center for Economics and Management of Aquatic Resources (CEMARE) (United Kingdom)

Audun Lem, United Nations Food and Agriculture Organization (Italy)

[Sun-dried Mukene \(*Rastrineobola argentea*\) value-chain analysis in Uganda](#) (ID: 240)

Margaret Masette, National Agricultural Research Organization (Food Biosciences Research centre) (Uganda)

[Invisible actors on a male dominated arena: female fish mongers' roles, strategies and needs in the fisheries sector](#) (ID: 247)

Sara Fröcklin, Stockholm University (Sweden)

Maricela de la Torre-Castro, Department of Systems Ecology (Sweden)

Lars Lindström, Department of Political Science (Sweden)

Narriman Jiddawi, Institute of Marine Science

[Role of Gender in Value Chain from Production and Marketing of Fish](#) (ID: 353)

Debabrata Lahiri, Rural Development Centre, Indian Institute of Technology, Kharagpur (India)

[Women In Fish Value Chain In Nigeria](#) (ID: 405)

Abiodun Oritsejimine Cheke, Federal Dept. of Fisheries (Nigeria)

02B: Governance: Co-management, Community Management, Coops, and Catch Shares Part II

Date: Tuesday, July 17, 2012

Time: 2:00 PM - 4:00 PM

Location: Kibo 1

Moderator: Bruce Shallard

[Analysis of Power in Fisheries Co-management: Experiences from Lake Chilwa, Malawi](#) (ID: 36)

Friday Njaya, Fisheries Department (Malawi)

[Fisheries Co-management and its benefits: The case of Small Scale Fisheries in Malawi](#) (ID: 69)

Steve Donda, Department of Fisheries (Malawi)

[Application of Economic and Social Performance Measures to the Northeast U.S. Groundfish Fishery](#) (ID: 152)

Andrew Kitts, NOAA/NMFS/NEFSC/SSB (United States)

[Recent experience with regard to introduction of Fisheries Co-management in Tanzania mainland](#) (ID: 164)

Yahya Mgawe, Fisheries Education and Training Agency (Tanzania)

[Community Participation in Fisheries management in Tanzania](#) (ID: 268)

Fatma Sobo, Fisheries Development Division (Tanzania)

Rashid Hoza, Fisheries Development Division (Tanzania)

[Community-based fisheries management: Improving fish biodiversity in inland fisheries of Bangladesh](#) (ID: 262)

Mustafa Md Golam, The WorldFish Center (Bangladesh)

[Providing for Input and Participation of Maori in New Zealand's Fisheries Management System](#) (ID: 264)

Edwin Massey, Ministry of Agriculture and Forestry (New Zealand)

02C Managing Development of Fisheries and Aquaculture sectors Part II

Date: Tuesday, July 17, 2012

Time: 2:00 PM - 4:00 PM

Location: Kibo 3

Moderator: Maribec Campos

-
- [SOCIO-ECONOMIC VALUE OF ARTESANAL FISHERIES OF THE DOMINICAN REPUBLIC: WHO WIN, WHO LOSES?](#) (ID: 66)
JEANNETTE MATEO, DOMINICAN COUNCIL FOR FISHERIES AND AQUACULTURE (Dominican Republic)
- [Will Lower Interest Rates Trap Households as Unskilled Labor in Small-scale Fisheries?](#) (ID: 172)
Marie-Catherine Riekhof, CAU-Institut für Regionalforschung (Germany)
Frederik Noack, CAU Kiel (Germany)
- [The Role of Inequality and Resource Productivity for Economic Development](#) (ID: 202)
Frederik Noack, CAU Kiel (Germany)
Marie-Catherine Riekhof, CAU-Institut für Regionalforschung (Germany)
Martin F. Quaas, Department of Economics, University of Kiel (Germany)
- [Fisheries and Aquaculture Sector: Is it just another Food Production System?](#) (ID: 221)
Arpita Sharma, Central Institute of Fisheries Education (CIFE) (India)
- [Unlocking South Africa's Inland Fisheries Potential: the Need for a Developmental Approach and Revision of Property and Access Rights](#) (ID: 361)
Mafaniso Hara, PLAAS University of Western Cape (South Africa)
Pete Britz, Rhodes University, Department of Ichthyology and Fisheries Science (South Africa)
Qurban Rouhani, Rhodes University Dept Ichthyology and Fisheries Science (South Africa)
- [La pêche maritime au Gabon : déclin ou restructuration de l'activité ?\(Sea fishing in Gabon: decline or business restructuring?\)](#) (ID: 386)
Edou Mesmin, Universite Omar Bongo (United States)
- [The potential for small-scale shellfish aquaculture in coastal East Africa](#) (ID: 412)
Hauke Kite-Powell, Woods Hole Oceanographic Institution

02D: Compliance, Enforcement, and the Lack Thereof Part I

Date: Tuesday, July 17, 2012
Time: 2:00 PM - 4:00 PM
Location: Lake Victoria
Moderator: Curtis Jolly

-
- [Inspection, Compliance & Violation: A Case of Fisheries](#) (ID: 157)
Kofi Otumawu-Apreku, School of Economics, The University of Adelaide (Australia)
- [Quota Enforcement in Resource Industries: Self-Reporting and Differentiated Inspections](#) (ID: 134)
Lars Gårn Hansen, University of Copenhagen (Denmark)
Frank Jensen, University of Copenhagen (Denmark)
Linda Nøstbakken, University of Alberta (Canada)
- [Understanding Non-Compliance Behavior with U.S. Protected Species Regulations](#) (ID: 151)
Kathryn Bisack, NMFS/NEFSC/SSB (United States)
Chhandita Das, NMFS/NEFSC/SSB (United States)
Chhandita Das, NMFS/NEFSC/SSB (United States)
Chhandita Das, NMFS/NEFSC/SSB (United States)
- [The Role of Capacity Regulations in Compliance](#) (ID: 261)
Itziar Lazkano, University of Wisconsin-Milwaukee (United States)
Linda Nøstbakken, University of Alberta (Canada)

02E Climate Change Impacts on the Economics of World Fisheries

Global marine fisheries are underperforming economically because of overfishing, pollution and habitat degradation. Added to these threats is the looming challenge of climate change. Observations, experiments and simulation models show that climate change would result in changes in primary productivity, shifts in distribution and changes in the potential yield of exploited marine species, resulting in impacts on the economics of fisheries worldwide. The panel will illustrate how projected climate changes will ultimately lead to global shifts in productivity of fish stocks and in catches, from nation to regional and global scales. We will also address the likely consequences of these changes on the economics and management of world fisheries at different scales.

Date: Tuesday, July 17, 2012
Time: 2:00 PM - 4:00 PM
Location: Lake Tanganyika
Chair: Rashid Sumaila

-
- [Climate change and the economics of fisheries in Australia](#) (ID: 419)
Ana Norman-Lopez, CSIRO (Australia)
- [The Relationship between Climate Change, Sardine Abundance and Commercial Fisheries Production in the California Current Large Marine Ecosystem](#) (ID: 420)
Ngaio Hotte (Canada)
Sam Herrick, Southwest Fisheries Science Center (United States)
Jerrold Norton, Southwest Fisheries Science Center (United States)
- [Adapting fisheries to climate change](#) (ID: 421)
Edward Allison, University of East Anglia (United Kingdom)
- [Climate change effects on the Economics and Management of world fisheries](#) (ID: 422)

02F Understanding and Modeling Fishing/Sector Behavior Part II

Date: Tuesday, July 17, 2012
Time: 2:00 PM - 4:00 PM
Location: Bagamoyo
Moderator: Mialy Andriamahefazafy

[REMUNERATION SYSTEMS AND ECONOMIC PERFORMANCE: THEORY AND VIETNAMESE SMALL-SCALE PURSE SEINE FISHERIES](#) (ID: 16)

THUY PHAM THI THANH, NHA TRANG UNIVERSITY (Vietnam)

Ola Flaaten, Norwegian college of fishery science (Norway)

Kim Anh Nguyen, Nha Trang University (Vietnam)

[Micro-economic drivers of profitability in an ITQ-managed fishery: a preliminary analysis of the Queensland Coral Reef Fin-Fish Fishery](#) (ID: 304)

Olivier Thébaud, CSIRO - CMAR (Australia)

James Innes, CSIRO Marine and Atmospheric Research (Australia)

Ana Norman-Lopez, CSIRO (Australia)

Darren Cameron, Great Barrier Reef Marine Park Authority (Australia)

Toni Cannard, CSIRO Marine and Atmospheric Research (Australia)

Sharon Tickell (Australia)

Stephanie Slade (Australia)

John Kung, Fisheries Queensland Queensland Department of Agriculture, Fisheries and Forestry (Australia)

Brigid Kerrigan, Fisheries Queensland Queensland Department of Agriculture, Fisheries and Forestry (Australia)

Rich Little, CSIRO Marine and Atmospheric Research (Australia)

[Fishing vessel affiliations: where does one end and another begin?](#) (ID: 212)

barbara rountree, DOC/NMFS/NEFSC (United States)

Andrew Kitts, NOAA/NMFS/NEFSC/SSB (United States)

Peter Christman (United States)

[WHEN, where and what to fish? On fishermen's behaviour when choosing between optional seasonal profiles.](#) (ID: 319)

Øystein Hermansen (Norway)

Arne Eide, Norwegian School of Fisheries Science (Norway)

03A Overcoming Gender Inequalities in Fish Supply Chains to Inform Policy and Action

This panel discussion draws on the wealth of information presented in Sessions 1A (Markets and Value Chains for Small Aquaculture Enterprises) and 2A (Looking at Fish Supply Chains with a Gender Lens) and challenges the panelists to present their views on how gender inequalities in fish supply chains can be overcome. A wealth of information is building to inform action to improve gender equity in supply chains, especially from studies on gender divisions of labour, economic relations and women's empowerment. In addition to research-based knowledge, innovative art-science coalitions are also being tested to stimulate change to greater equity. The output of the Session will be a synthesis of suggestions for policy making and action.

Panelists are:

Hillary Egna, Meryl Williams, Co-chairs (Opening Remarks)

Shyam S Salim, Central Marine Fisheries Research Institute (India).

Funmilola Agbebi, Ekiti State University (Nigeria)

Stella Williams, Mundus maris - Sciences and Arts for Sustainability (Belgium)

Sara Fröcklin, Stockholm University (Sweden)

Nancy Gitonga FishAfrica, Nairobi, (Kenya)

Date: Tuesday, July 17, 2012

Time: 4:30 PM - 5:30 PM

Location: Zanzibar

Chair: Hillary Egna

Chair: Meryl Williams

[Gender Mainstreaming and Women Empowerment – Reflections and Upshots from Fishing Industry of Kerala, India](#) (ID: 42)

Shyam S Salim, Central Marine Fisheries Research Institute (India)

[Gender roles, Rural household food security and Entrepreneurship among Women in selected Fishing communities in South Western Nigeria.](#) (ID: 55)

Funmilola Agbebi, Ekiti State University (Nigeria)

[New socio-economic role models for women in fisheries and aquaculture](#) (ID: 75)

Stella Williams, Mundus maris - Sciences and Arts for Sustainability (Belgium)

Cornelia Nauen, Mundus maris - Sciences and Arts for Sustainability (Belgium)

Stella Williams, Mundus maris - Sciences and Arts for Sustainability (Belgium)

03B Aquaculture/Fisheries Interactions

Date: Tuesday, July 17, 2012

Time: 4:30 PM - 5:30 PM

Location: Kibo 1
Moderator: Thórolfur Matthíasson

[MODELING OF INTERACTIONS BETWEEN AQUACULTURE AND CAPTURE FISHERIES](#) (ID: 245)
Esther Regnier, University Paris1-Sorbonne (France)
Kathline Schubert, Paris School of Economics and Université Paris 1 Panthéon-Sorbonne (France)
[Bluefin tuna fisheries and capture based culture : review and prospects over the next thirty years](#) (ID: 408)
Seamus McElroy, The BOSS Company (Indonesia)

03C Markets: Value Chains Part II

Date: Tuesday, July 17, 2012
Time: 4:30 PM - 5:30 PM
Location: Kibo 3
Moderator: Peter Britz

[An Investigation of the Open Innovation in the Fish and Seafood Export Processing Industry in Sri Lanka: external insights to boost internal R&D efforts](#) (ID: 133)
Devarahandhi De Silva, Sabaragamuwa University of Sri Lanka (Sri Lanka)
Trond Bjorndal, Center for Economics and Management of Aquatic Resources (CEMARE) (United Kingdom)
[The Value of a Word: Estimating the Implicit Prices of Popular Finfish and Shellfish Labeling Practices in the U.S.](#) (ID: 365)
Sherry Larkin, University of Florida (United States)
Glen Gold, University of Florida (United States)
[Legal regional fish trade in the Horn of Africa: experience from a FAO-IGAD project](#) (ID: 446)
Eshete Dejen (Italy)

03D: Compliance, enforcement, and the lack thereof

Date: Tuesday, July 17, 2012
Time: 4:30 PM - 5:30 PM
Location: Lake Victoria
Moderator: Babagana Abubakar

[Informality and its Linkages with IUU Fishing Activities in the Port of Progreso, Yucatan, Mexico](#) (ID: 22)
Carmen Pedroza, UNAM (Mexico)
[Illegal fishing and catch potentials among small scale fishers: Application of endogenous switching regression model](#) (ID: 60)
Wisdom Akpalu, SUNY-Farmingdale (United States)
Ametefee Normanyo (Ghana)
[Optimal Liability Rules: The Case of Renewable Resources](#) (ID: 148)
Frank Jensen, University of Copenhagen (Denmark)
Linda Nøstbakken, University of Alberta (Canada)
Lars Hansen, University of Copenhagen (Denmark)

03E Bioeconomic Modeling Part II

Date: Tuesday, July 17, 2012
Time: 4:30 PM - 5:30 PM
Location: Lake Tanganyika
Moderator: Philile Mbatha

[Analyzing Risk of Stock Collapse in a Fishery under Stochastic Growth Model](#) (ID: 30)
DIWAKAR POUDEL, NHH (Norway)
[Modeling the stochastic dynamics of the aggregate stock in collapsed fisheries: the case of the northern cod](#) (ID: 217)
JOSE M. MAROTO, COMPLUTENSE UNIVERSITY (Spain)

03F Managing Development of Fisheries and Aquaculture Sectors Part III

Date: Tuesday, July 17, 2012
Time: 4:30 PM - 5:30 PM
Location: Bagamoyo
Moderator: James Wilson

[Performance of Marine Fishing Industry In India-A Productivity Approach](#) (ID: 37)
ASWATHY N, CENTRAL MARINE FISHERIES RESEARCH INSTITUTE (India)
Ramani Narayanakumar, CENTRAL MARINE FISHERIES RESEARCH INSTITUTE (India)
Shyam S Salim, Central Marine Fisheries Research Institute (India)
SOMY KURIAKOSE, CENTRAL MARINE FISHERIES RESEARCH INSTITUTE (India)

[Social costs of keeping pension fishers in the community: The case of Japan](#) (ID: 347)

Haruko Yamashita, Faculty of Econ, Meikai University (Japan)

[Profitability analysis of abalone farming in Port Nolloth, in the Northern Cape Province, South Africa.](#) (ID: 418)

Adeleen Cloete, Northern Cape Provincial Department of Environment and Nature Conservation (South Africa)
Pall Jensson, The University of Iceland (Iceland)

04 Posters and Game Demonstration Session and Reception

Date: Tuesday, July 17, 2012

Time: 5:30 PM - 7:30 PM

Location: Kibo Ballroom

[Cooperatives as tool for Fisheries development: The case of Eriwe Fish farm Village, South West, Nigeria](#) (ID: 14)

Yemi Akegbejo-Samsons, University of Agriculture (Nigeria)

Deji Adeoye, University of Agriculture (Nigeria)

[African catfish famers' perception on climate change and contribution of catfish production to household income in Lagos state, Nigeria.](#) (ID: 26)

ADELEKE LYDIA, FEDERAL UNIVERSITY OF TECHNOLOGY AKURE, NIGERIA (Nigeria)

[ASSESSMENT OF ARTISANAL FISHERIES IN ONDO STATE, NIGERIA](#) (ID: 39)

afolabi j.a., department of agric economics & extension ,federal university of tech. akure, nigeria (Nigeria)

[DO OPEN ACCESS INSHORE FISHERIES CREATE RENT? THE CASE OF ANCHOVY FISHERIES, VIETNAM](#) (ID: 45)

THUY PHAM THI THANH, NHA TRANG UNIVERSITY (Vietnam)

[Nitrofurans in Prawns: A controversial trade relation between Bangladesh and the EU](#) (ID: 47)

S. M. NAZMUL ALAM, Curtin University (Australia)

[The impact of climate change and adaptation strategy selection under constrained conditions, the case in Ben Tre province, Viet Nam](#) (ID: 50)

TRANG LE THI HUYEN, Nha Trang University (Viet Nam)

Kim Anh Nguyen, Nha Trang University (Vietnam)

Chuong Bui Thien, Nha Trang University (Viet Nam)

Curtis Jolly, Auburn University (United States)

[OPTIMAL EXPLOITATION AND SUSTAINABLE MANAGEMENT OF IVORIAN HALIEUTIC RESOURCES: an analysis of fishing effort.](#) (ID: 59)

SANGARE MOUSSA, UNIVERSITY OF COCODY-ABIDJAN (Cote d'Ivoire)

[The Value Chain of White Leg Shrimp Exported to the U.S Market: The Case of Khanh Hoa Province, Vietnam.](#) (ID: 64)

Chuong Bui Thien, Nha Trang University (Viet Nam)

TRANG LE THI HUYEN, Nha Trang University (Viet Nam)

Curtis Jolly, Auburn University (United States)

[The GENDER roles of women in AQUACULTURE and FOOD SECURITY IN NIGERIA](#) (ID: 74)

Olufayo Mosun, Federal University of Technology (Nigeria)

[Fisheries and Poverty Reduction – Implications for Future Work Priorities](#) (ID: 77)

Santosh Kumar Mishra, S. N. D. T. Women's University (India)

[Threat to Fisheries and Aquaculture from Climate Change and Interventions Required](#) (ID: 79)

S. C. Jhansi, Gujarat Research Society for Lifelong Learning (India)

[Comparative Analysis of Fresh and Frozen Fish Marketing in Lagos State, Nigeria.](#) (ID: 86)

Albert Odion Esobhawan, Ambrose Alli University (Nigeria)

REUBEN ADEOLU ALABI, Ambrose Alli University (Nigeria)

DANIEL OSASOGIE, Ambrose Alli University (Nigeria)

Flora Akamike,, Ambrose Alli University (Nigeria)

[Women's Contribution in Aquaculture Value Chain development in Nigeria](#) (ID: 97)

Mabel Yarhere, Nigerian Institute for Oceanography and Marine Research (Nigeria)

[Frontier Research in Fisheries Economics: European Research Council and its Funding Opportunities](#) (ID: 98)

Erik Lindebo (Belgium)

[IMPACTS of research BUDGET reduction on ACOUSTIC FISH abundance estimation SURVEYS](#) (ID: 100)

Fannie Shabangu, Department of Agriculture, Forestry & Fisheries (South Africa)

[The Current State of the Clam, Galatea paradoxa Fishery at the Lower Volta River, Ghana](#) (ID: 101)

Daniel Adjei-Boateng, Kwame Nkrumah University of Science and Technology (Ghana)

[THE ROLE OF IIFET IN AQUACULTURE AND FISHERIES DEVELOPMENT FOR LIVELIHOOD ENHANCEMENT OF RURAL COMMUNITIES IN SIERRA LEONE.](#) (ID: 107)

Mawundu Sellu, Njala University (Sierra Leone)

Martin Tjipute, University of Namibia (Namibia)

[Overview and socioeconomic valuation of the traditional fish ponds \(whedos\) in Oueme delta \(Benin, West Africa\)](#) (ID: 108)

Ibrahim IMOROU TOKO, Faculty of Agronomy, University of Parakou (Benin)

[Transition of fish farming from subsistence to sustainable semi commercial activity in Uganda](#) (ID: 112)

Abudala Napuru, SON FISH FARM LTD (Uganda)

[THE USE Of WOOD SHAVINGS As An ALTERNATIVE To FUEL WOOD For SMOKING FISH..](#) (ID: 117)

Victoria Ayuba, University of Agriculture (Nigeria)

[QUALITY INDEX METHOD \(QIM\) for frozen - thawed ATLANTIC MACKEREL \(Scomber scombrus\) stored in ice - development and application in a SHELF LIFE STUDY](#) (ID: 129)

Patricia Miranda Alfama, Directorate General of Fisheries
[Economic Incentives for Wetland Biodiversity and Fisheries Conservation: The Case of Chalan Beel \(Wetland\)](#) (ID: 141)

Aminur Rahman, Independent University, Bangladesh (Bangladesh)
[A STUDY OF FISH EXPLOITATION PATTERN OF LAKE GERIYO, YOLA, ADAMAWA STATE, NIGERIA.](#) (ID: 146)

Taiye Ekundayo (Nigeria)
 OLUKAYODE SOGBESAN, Fish Genetics and Biotechnology Division, Central Institute of Freshwater Aquaculture (Nigeria)
[DEVELOPMENT of intensive small scale Farfantepenaeus notialis and Melicertus kerathurus NATIVE SHRIMPS HATCHERY and culture in CAMEROON.](#) (ID: 156)

Guillaume Gaudin, CONCEPTO AZUL-AQUASOL (Cameroon)
 Isabelle Motto, AQUASOL (Cameroon)
 Oumarou Njifondjou, ACP FISH 2 (Gabon)
 Jean Folack, Institut de Recherche Agricole pour le Développement (Cameroon)
 Randall Brummett, World Bank (United States)
 Judith Georgette Makombu, Organisation Pour l'Environnement et le Développement Durable (OPED) (Cameroon)
 Viviane Boulo, Université de Montpellier 2 (France)
 Eric Mialhe, CONCEPTO AZUL-AQUASOL (Ecuador)
[A successful LARVICULTURE of fresh water prawn MACROBRACHIUM vollenhovenii \(Decapoda, Palaemonidae\) in CAMEROON.](#) (ID: 162)

Judith Georgette Makombu, Organisation Pour l'Environnement et le Développement Durable (OPED) (Cameroon)
 Pius OBEN, University of Buea (Cameroon)
 Benedicta OBEN, University of Buea (Cameroon)
 Guillaume Gaudin, CONCEPTO AZUL-AQUASOL (Cameroon)
 Ndelle Makoge (Cameroon)
 Isabelle Motto, AQUASOL (Cameroon)
 Jonas Kemajou, OPED (Cameroon)
 Randall Brummett, World Bank (United States)
 Janet Brown, University of Stirling (United Kingdom)
 Jules Ngueguim, Institut de Recherche Agricole pour le Développement (Cameroon)
 Eric Mialhe, CONCEPTO AZUL-AQUASOL (Ecuador)
[GROWTH, DIGESTIBILITY, BLOOD PARAMETERS AND YIELD of NILE TILAPIA Oreochromis niloticus FINGERLINGS fed graded levels of FERMENTED MANGO \(Mangifera indica\) SEED MEAL based diets.](#) (ID: 177)

Samuel Obasa, Federal University of Agric., Abeokuta, Nigeria (Nigeria)
[Biological and Socioeconomic Viability of Recreational Fisheries of Two Nigerian Lakes](#) (ID: 181)

Mabel Omowumi Ipinmoroti, Osun state university osogbo (Nigeria)
 AYANBOYE ABOLUPE OLUYEMI, OYO STATE COLLEGE OF AGRICULTURE.FISHERIES DEPARTMENT (Nigeria)
[The Effect of Negative Events on Stock Returns of Fishing Enterprises: a Case Study of Norwegian Fisheries](#) (ID: 187)

Sarah Jennings, University of Tasmania (Australia)
 Vitali Alexeev, University of Tasmania (Australia)
 Bastien Le Bouhellec, AgroParisTech (France)
[Strategies for reduction of poaching in community-based holothurian aquaculture](#) (ID: 192)

Antoine Rougier, NGO Blue Ventures (Madagascar)
 Alasdair Harris, NGO Blue Ventures (Madagascar)
 Mebrahtu Ateweberhan (United Kingdom)
 Mialy Andriamahefazafy, NGO Blue Ventures (Madagascar)
[Sustainability of Community Managed Fisheries in Bangladesh](#) (ID: 195)

Paul Thompson, Flood Hazard Research Centre (United Kingdom)
 Md Golam Mustafa, WorldFish Center (Bangladesh)
[Economic Analysis of sustainable Homestead Culture of African Catfish](#) (ID: 207)

Emmanuel Ude, Ebonyi State University (United States)
[Evaluating Value Chains and Consumer Preferences in Asian and African Aquaculture to Help Overcome Underemployment and Poverty](#) (ID: 213)

Hillary Egna, AquaFish CRSP (Collaborative Research) (United States)
 Stephanie Ichien, AquaFish CRSP (United States)
[Evaluating Technology Adoption by the Small-Scale Aquaculture Operations in Developing Countries for Improved Productivity and Profitability](#) (ID: 214)

Hillary Egna, AquaFish CRSP (Collaborative Research) (United States)
 Stephanie Ichien, AquaFish CRSP (United States)
[Status of Nile perch Lates niloticus fishery in Lake Victoria](#) (ID: 227)

Monica Owili, Kenya Marine & Fisheries Research Institute (Kenya)
 Chrispine Nyamweya, Kenya Marine & Fisheries Research Institute (Kenya)
[Northern inland fishery and crayfishery will be challenged by climate change – case Lake Säkylän Pyhäjärvi \(SW Finland\)](#) (ID: 235)

Marko Jori, Pyhajarvi Institute (Finland)
 Marjo Tarvainen, Pyhajarvi Institute (Finland)
 Anne-Mari Ventelä, Pyhajarvi Institute (Finland)
[The role of Women and their rights in Fisheries and Aquaculture Development in Africa.](#) (ID: 244)

Hoki Massaquoi, Sierra Leone Standards Bureau (Sierra Leone)
[An investigation of Public Perception and Awareness of Marine Aquaculture in South African coastal communities: A pilot study in Hermanus community](#) (ID: 246)

Khumo Sanny Hermina Morake, Department of Agriculture, Forestry & Fisheries (South Africa)

[Structure and economic performance of the European Union fishing fleet](#) (ID: 252)
Jarno Virtanen, Joint Reseach Center, European Commission (Italy)
 John Anderson, Seafish (United Kingdom)
 Natacha Carvalho, JRC - European Commission (Italy)

[Economics of Cultured *Clarias gariepinus* in Earthen Ponds and Concrete Tanks in Ogun State, South West Nigeria](#) (ID: 254)
Tosan Fregene, Department of Wildlife and Fisheries Management, (Nigeria)
 Taiwo Ayansanwo, University of Ibadan (Nigeria)

[The IUU shellfish in Galicia](#) (ID: 272)
Victor Hugo Martinez, University of Santiago de Compostela

[Bioeconomic adaptive management procedures for short-lived species: A case study of Pacific saury \(*Cololabis saira*\) and Japanese common squid \(*Todarodes pacificus*\)](#) (ID: 275)
Eriko Hoshino, School of Economics & Finance, University of Tasmania (Australia)
 E.J. Milner-Gulland, Imperial College London (United Kingdom)
 Richard Hillary, CSIRO (Australia)

[Sustainable, Profitable and Synergic Fish Farming in Nigeria- The Cluster Management Approach](#) (ID: 283)
Ololade Adegoke, Sustainable Environment and Fisheries Foundation (Nigeria)

[Ecosystem approach to Fisheries as the best option for fisheries management for sustainability](#) (ID: 286)
Mbilari Badawi Msnelia, University and Research Institute (Nigeria)

[Acclimatization and Growth Rates of Pangani Tilapia \(*Oreochromis pangani*\) Different Salinities](#) (ID: 287)
Aziza Hassan (Tanzania)
 Aziza Hassan (Tanzania)
 Aviti mmochi (Tanzania)

[Quality changes in salted, and rehydrated salted Cod \(*Gadus morhua*\) products](#) (ID: 292)
David Bamwirire, National Agricultural Research Organisation-Food Biosciences Research Centre
 Kristin Thorarinsdottir, Icelandic Fisheries Laboratory-MATIS (Iceland)

[Explaining fish consumption in Sri-Lanka: the role of CONSIDERATION SET SIZE, attitude, knowledge, convenience orientation, price consciousness, and variety seeking tendency](#) (ID: 299)
Niyomi Pethiyagoda, University of Ruhuna (Sri Lanka)
 Olsen Svein Ottar, University of Tromso (Norway)

[Performance, Potential and Prospects of Fisheries Sector in Eritrea](#) (ID: 307)
Tesfom Melake A., Central Institute of Fisheries Education (India)
 Krishnan Mohan, Central Institute of Fisheries Education (India)

[Impact of Global Environmental Changes on Indian Marine Socio-ecological Systems: Need for Effective Policy Responses](#) (ID: 317)
Nune Subba Rao, Andhra University (India)

[The Status of the fisheries of Osinmo reservoir, Ejiqbo, Osun State, Nigeria](#) (ID: 325)
Olaniyi Komolafe, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria (Nigeria)

[Value Addition on Hot Smoked Lake Victoria Sardines \(*Rastrineobola argentea*\) for Human Consumption](#) (ID: 359)
Ofred Mhongole, Fisheries Development Division (Tanzania)

[STUDY of the SUBSTITUTION ELASTICITY between FISH FARMING production inputs](#) (ID: 363)
Guillaume Péron, European Institute for Marine studies (France)

[Economic dynamics of reef fisheries off Veracruz: price time series analysis](#) (ID: 391)
Patricia Arceo, Institute of Marine Sciences and Fisheries. University of Veracruz (Mexico)

[Comprehensive resource assessment and associated research for socio-economically sustainable small pelagic fish fisheries in the dynamic ecosystem along northwestern African coast of the Atlantic Ocean](#) (ID: 397)
Naoki TOJO, JICA (Morocco (includes the Western Sahara))
 Azeddine RAMZI, Institut National de Recherche Halieutique (Morocco (includes the Western Sahara))
 Tadanori Fujino, JICA/INRH (Morocco (includes the Western Sahara))
 Shunji SUGIYAMA, JICA (Japan)
 Kazushi MIYASHITA, Hokkaido University (United States)

[UNU Fisheries Training Program](#) (ID: 417)
Ögmundur Knúttsson, University of Akureyri (Iceland)

11A: Governance: Property Rights and Quota Systems Part I

Date: Wednesday, July 18, 2012
 Time: 8:30 AM - 10:00 AM
 Location: Zanzibar
 Moderator: Debabrata Lahiri

[ITQs in a rough water](#) (ID: 131)
Thorolfur Matthiasson, University of Iceland (Iceland)

[Is the Fisheries Production Function Institution-dependent? Implications for Targeting Ability in Multispecies Fisheries](#) (ID: 316)
Matthew Reimer, University of California, Davis (United States)
 Joshua Abbott, Arizona State University (United States)
 James Wilen, University of California, Davis (United States)
 Alan Haynie (United States)

[The Australian Coral Reef Fin-Fish Fishery ITQ Market](#) (ID: 333)
James Innes, CSIRO Marine and Atmospheric Research (Australia)

Olivier Thébaud, CSIRO - CMAR (Australia)
Ana Norman-Lopez, CSIRO (Australia)
[Do Individual Rights Emerge from Collective Rights Systems?](#) (ID: 367)
Mihoko Tegawa, University of Rhode Island (United States)
Chris Anderson, University of Washington (United States)
HIROTSUGU UCHIDA, University of Rhode Island (United States)

11B Understanding and Modeling Fishing/Sector Behavior Part III

Date: Wednesday, July 18, 2012
Time: 8:30 AM - 10:00 AM
Location: Kibo 1
Moderator: Dan Holland

[The Barents Sea red king crab invasion- risky business or good business?](#) (ID: 56)
Jannike Falk-Petersen, University of Tromsø (Norway)
[Comparison Between Bycatch Avoidance Programs in Two New England Fisheries](#) (ID: 104)
Daniel Georgianna, SMAST, UMass Dartmouth (United States)
Steven Cadrin, UMass Dartmouth (United States)
Greg DeCelles (United States)
Catherine O'Keefe (United States)
Kevin Stokesbury, UMass Dartmouth (United States)
[Bycatch Risk Pools for the US West Coast Groundfish Fishery](#) (ID: 180)
Daniel Holland, Northwest Fisheries Science Center (United States)
Jason Jannot, Northwest Fisheries Science Center (United States)
[Fishery Income Diversification and Risk for Fishermen and Fishing Communities of the US West Coast and Alaska](#) (ID: 310)
Stephen Kasperski, Alaska Fisheries Science Center (United States)
Daniel Holland, Northwest Fisheries Science Center (United States)

11C Socio-economic Assessment of Management Measures of the New Common Fisheries Policy Part I

SOCIOEC is an interdisciplinary, European wide project bringing together scientists from several fisheries sciences with industry partners and other key stakeholders to work in an integrated manner on solutions for future fisheries management, that can be implemented at a regional level. The central concept is to provide a mechanism for developing measures that are consistent with the overarching sustainability objectives of the EU, and that can provide consensus across all stakeholders. The first step will be to develop a coherent and consistent set of management objectives, which will address ecological, economic and social sustainability targets. The objectives should be consistent with the aims of the CFP, MSFD and other EU directives, but they should also be understandable by the wider stakeholder community and engage their support. This will then lead to the proposal of a number of potential management measures, based on existing or new approaches. The second step will be to analyze the incentives for compliance provided by these measures. In particular, we will examine fisher's responses and perceptions of these measures, based on historical analysis as well as direct consultation and interviews. This project part will also examine how the governance can be changed to facilitate self- and co-management to ensure fisher buy-in to promising management measures. In particular, the project will focus on the interpretation of overarching (i.e. EU) objectives in local and regional contexts. Finally, the project will examine the impacts of the management measures that emerge from this process, particularly in terms of their economic and social impacts. The IA analysis will be integrated by evaluating the proposed measures against the criteria of effectiveness, efficiency and coherence. Special attention will be paid in evaluating the proposed management measures' performance in terms of their ability to achieve the general and specific ecological objectives. In this special session at the IIFET conference we want to describe on one side the overall approach of the project and planned research activities and invite papers dealing especially with the methodological background of two of the main topics of the project: incentives in fisheries management measures and socio-economic impact assessment of management measures. Aim is to start a discussion on status quo and way forward in the assessment of management measures not only under the CFP as also in the United States socio-economic impact assessments for new measures are necessary.

Date: Wednesday, July 18, 2012
Time: 8:30 AM - 10:00 AM
Location: Kibo 3
Chair: Ralf Doring

[Will I Clear My Feet? Vessel Owners' Stay or Exit Dilemma in a Stock Recovery Situation](#) (ID: 23)
Hazel Curtis, Sea Fish Industry Authority (United Kingdom)
[Reforming Europe's fleet policy: A "Sea change" solution to overcapacity?](#) (ID: 99)
Erik Lindebo (Belgium)
[Integrating social objectives and indicators for Australian fisheries management](#) (ID: 191)
Sean Pascoe, CSIRO Marine and Atmospheric Research (Australia)
Kate Brooks, KAL Analysis (Australia)
Jacki Schirmer, ANU (Australia)
Lianos Triantafillos, Primary Industries and Resources SA (Australia)
Cathy Dichmont, CSIRO - CMAR (Australia)

11D The Economic Impact of Climate Change on Fisheries and Aquaculture Part I

Date: Wednesday, July 18, 2012
Time: 8:30 AM - 10:00 AM

Location: Lake Victoria
Moderator: Lydia Mosunmola

[Changes and Adaptations in Fisheries and Aquaculture in Coastal Bangladesh](#) (ID: 199)

Parvin Sultana, Flood Hazard Research Centre (Bangladesh)
Paul Thompson, Flood Hazard Research Centre (United Kingdom)
Md. Abdul Wahab, Bangladesh Agricultural University (Bangladesh)
Haroun er Rashid, Independent University Bangladesh (Bangladesh)

[Climate Change Awareness and Impacts on Aquaculture in Poor Rural Coastal Communities, Ben Tre Province, Vietnam](#) (ID: 338)

Kim Anh Nguyen, Nha Trang University (Vietnam)
Chuong Bui Thien, Nha Trang University (Viet Nam)
TRANG LE THI HUYEN, Nha Trang University (Viet Nam)
Curtis Jolly, Auburn University (United States)

[The implications of climate change in Australian seafood markets](#) (ID: 342)

Ana Norman-Lopez, CSIRO (Australia)
Sean Pascoe, CSIRO Marine and Atmospheric Research (Australia)
Olivier Thébaud, CSIRO - CMAR (Australia)

11E Too Big to Ignore: Enhancing Visibility and Possibilities in Small-Scale Fisheries

Fisheries support the livelihoods of about 560 million people, approximately 8% of the world's population, and their number is growing. Of about 34 million active fishers, more than 90% are small-scale. Yet, these fisheries have been largely marginalized, ignored or dismissed as relics of the past. In many countries, this marginalization is shown by inadequate financial, institutional, and scientific support for small-scale fisheries, and an under-representation of the concerns of people working in this sector in policy discussions.

The prevailing narrative about the dismal state of world fisheries has obscured ample evidence about the contribution of small-scale fishing communities to conservation, food security, poverty alleviation, social wellbeing and resilience, and cultural heritage. Unfortunately, the tendency toward oversimplification in fisheries policy has meant that the persistence of many small-scale fisheries has often been portrayed as part of the problem. While population pressure on resources is certainly a problem in some areas, this narrative diverts attention away from the vastly different environmental impacts of different fishing technologies and the ways in which benefits are distributed amongst those participating in a given fishery. The under-appreciation of the economic importance of small-scale fisheries in sustaining coastal livelihoods is a global phenomenon, even in places characterized by longstanding fishing traditions. Concerted efforts are required to preserve the ability and 'freedom' of small-scale fishers to provide economic and social wellbeing locally, and to contribute to global environmental sustainability.

The sessions aim to highlight their economic, social and cultural importance, the roles they play in conservation and environmental stewardship, and appropriate governance systems and mechanisms that provide action spaces for small-scale fishers to manoeuvre in the changing economic, social and political landscape within which they operate. The overall goal of the sessions is to enhance visibility and possibilities of this sector. Speakers are asked to present examples of contributions of small-scale fisheries, and discuss their potentials. The panel discussion, which is an interactive session with the audience, will focus on ways to help elevate their profile.

These sessions are organized as part of the *Too Big to Ignore: Global Partnership for Small-Scale Fisheries Research* initiative, which participants of the sessions are members of. We will be happy to expand the sessions (with additional 90 minutes time allocation) to include papers submitted directly to the conference, upon request.

Date: Wednesday, July 18, 2012
Time: 8:30 AM - 10:00 AM
Location: Lake Tanganyika
Chair: Ratana Chuenpagdee

[Fishermen, fisherwoman and climate change](#) (ID: 248)

Maricela de la Torre-Castro, Department of Systems Ecology (Sweden)
Lars Lindström, Department of Political Science (Sweden)
Sara Fröcklin, Stockholm University (Sweden)
Narriman Jiddawi, Institute of Marine Science

[TOO NUTRITIOUS TO IGNORE: SMALL FISH FROM SMALL-SCALE FISHERIES AND THEIR CONTRIBUTION TO FOOD SECURITY](#) (ID: 426)

Edward Allison (United Kingdom)

[THE CRUCIAL ROLE OF SMALL-SCALE FISHERIES IN CONSERVATION](#) (ID: 427)

Anthony Charles, Saint Mary's University (Canada)

[CELEBRATING SOUTHERN AFRICAN SMALL-SCALE FISHERIES](#) (ID: 428)

MAFANISO HARA, PLAAS, UWC (South Africa)

11F Bioeconomic Modeling Part III

Date: Wednesday, July 18, 2012
Time: 8:30 AM - 10:00 AM
Location: Bagamoyo
Moderator: Sarah Jennings

[Abstract 61: The Sustainable Management of Marine Fish Resources in Cameroon: A bioeconomic Analysis of the Trawl Fishery](#) (ID: 96)

MEKE SOUNG Pierre Nolasque, University of Douala (Cameroon)

[The economic repercussions of fisheries-induced evolution](#) (ID: 161)

Anne Maria Eikeset (Norway)

Andries Richter, CEES, University of Oslo (Norway)

Erin Dunlop, Aquatic Research and Development Section, Ontario Ministry of Natural Resources (Canada)

Ulf Dieckmann, Evolution and Ecology Program, International Institute for Applied Systems Analysis (Austria)

Nils Chr. Stenseth (Norway)

[Estimating MSY and MEY in multi-species and multi-fleet fisheries: The case of the Bay of Biscay mixed fisheries](#) (ID: 173)

Jordi Guillen, Ifremer (France)

[Optimal Management of Conflicting Species: Grey seal \(*Halichoerus grypus*\) and Atlantic salmon \(*Salmo salar*\) in the Northern Baltic Sea](#) (ID: 237)

Maija Holma, Department of Economics and Management (Finland)

Marko Lindroos (Finland)

Soile Kulmala, Finnish Environment Institute (SYKE), MTT Agrifood Research, Finland, Finnish Game and Fisheries Research Institute (Finland)

12A Governance: Property Rights and Quota Systems Part II

Date: Wednesday, July 18, 2012

Time: 10:30 AM - 12:30 PM

Location: Zanzibar

Moderator: Taro Oishi

[Coase v. Scott \(1969\)](#) (ID: 63)

Ralph Townsend, Winona State University (United States)

[Solving Congestion through ITQs: An Experimental Analysis](#) (ID: 85)

john tisdell, University of Tasmania (Australia)

[Privatizing Renewable Resources: Who gains, who loses?](#) (ID: 93)

Max T. Stoeven, Department of Economics, University of Kiel (Germany)

Martin F. Quaas, Department of Economics, University of Kiel (Germany)

[How Rights based Fisheries Management in Namibia can provide greater benefits to inland local communities](#) (ID: 216)

Hiikka O.N. Ndjaula, Marine Research Institute (Ma-Re), Department of Zoology, University of Cape Town (South Africa)

Alushe T. Hitula, 2Partnership for African Fisheries (PAF), Programme Implementation and Coordination Directorate, NEPAD Planning and Coordinating Agency (South Africa)

12B Fisheries Games and Experiments: Applications for Education, Outreach and Science

There is growing realization of the potential for games and experiments as powerful tools fisheries education, outreach and research. Fisheries economists have developed a wide variety of games and experiments for a wide variety of applications. Three examples of these games/experiments—ranging from very “low-tech” to extremely “high-tech”—will be demonstrated concurrently with the poster session and reception on Tuesday evening July 17. These demonstrations will provide a relaxed and fun opportunity to observe and participate in the actual playing of these games (while also enjoying refreshments). This special session, on the day following the demonstrations, will provide an opportunity for more detailed discussion of these three games as well as a more general discussion of fisheries games and experiments. During the first hour, the developers of the three games/experiments will describe and discuss the development and applications of their games, as well as their future plans for the games. During the second hour, the audience is invited to join in a moderated discussion of the potential for games and experiments as tools for fisheries education, outreach and research (including their applicability to policy issues in both developed and developing countries).

Date: Wednesday, July 18, 2012

Time: 10:30 AM - 12:30 PM

Location: Kibo 1

Chair: Gunnar Knapp

Chair: Jorn Schmidt

[ecoOcean - how to use a relatively simple game for stakeholder communication and dissemination](#) (ID: 447)

Jörn Schmidt, Christian-Albrechts-Universität zu Kiel, Department of Economics (Germany)

Michel Magens (Germany)

Dennis Nissen (Germany)

Erik Buisman (Netherlands)

Birgit de Vos (Netherlands)

[QUOTA: From Experimental Computer Game to Fishery Management Education Tool](#) (ID: 448)

Theodore Groves, retired from UCSD (United States)

john ledyard (United States)

[Fishing for Beads: Simple Games, Serious Insights](#) (ID: 449)

Gunnar Knapp, University of Alaska Anchorage (United States)

James Murphy, University of Alaska Anchorage (United States)

12C Socio-economic assessment of Management Measures of the new Common Fisheries Policy (CFP) ? Challenges and Methodological

Background Part II

Part 2 of this special session.

Date: Wednesday, July 18, 2012
Time: 10:30 AM - 12:30 PM
Location: Kibo 3
Chair: Ralf Doering

[Socio-economic analysis of the options for a reformed CFP](#) (ID: 416)

Angel Andres Calvo Santos, European Commission. DG Maritime Affairs and Fisheries. Structural policy and economic analysis unit. (Belgium)

[Socio-economic effects of management measures of the future CFP – Overview on a new European FP 7 project](#) (ID: 423)

Ralf Döring, vTI-Institute of Sea Fisheries (Germany)

[Confronting the implementation of marine ecosystem-based management within the European Common Fisheries Policy Reform](#) (ID: 424)

Raul Pallezo (Spain)

Richard Curtin, AZTI-Tecnalia (Spain)

[ecoOcean - games in Fisheries education, communication and science](#) (ID: 425)

Jörn Schmidt, Christian-Albrechts-Universität zu Kiel, Department of Economics (Germany)

Rudi Voss, Christian-Albrechts-Universität zu Kiel (Germany)

Dennis Nissen (Germany)

Michel Magens (Germany)

Martin F. Quaas, Department of Economics, University of Kiel (Germany)

Till Requate, University Kiel, Department of Economics (Germany)

12D The Economics of Aquaculture Production and Profitability Part I

Date: Wednesday, July 18, 2012
Time: 10:30 AM - 12:30 PM
Location: Lake Victoria
Moderator: CV Mohan

[Meta-Frontier Analysis of Intensive and Semi-Intensive Fish Farms in Ghana](#) (ID: 35)

Edward Onumah, University Of Ghana (Ghana)

[EVALUATION OF INPUT EFFICIENCY FOR CATFISH FARMS IN MEKONG RIVER DELTA, VIETNAM](#) (ID: 105)

HUY DANG HOANG XUAN, nha trang university (Viet Nam)

Jónas Hlynur Hallgrímsson, University of Iceland (Iceland)

[Bio-economic Analysis of Silver Kob, *Argyrosomus inodorus*, \(Griffiths & Heemstra\) Aquaculture in Namibia](#) (ID: 110)

Martin Tjipute, University of Namibia (Namibia)

[Analysis Of Profitability Of Fish Farming Business In Kwara And Kogi States Of Nigeria](#) (ID: 230)

Matthew Adewumi, University of Ilorin, Ilorin (Nigeria)

[ASSESSMENT OF UTILIZATION OF FISH TECHNOLOGY INFORMATION AMONG FISH FARMERS IN EPE LOCAL GOVERNMENT AREA: IMPLICATION FOR SUSTAINABLE FISH PRODUCTION IN NIGERIA.](#) (ID: 266)

Olumuyiwa Akin Olaniyi, Ladoko Akintola University of Technology (Nigeria)

Christianah Oludayo Olaniyi, Ladoko Akintola University of Technology, Ogbomosho (Nigeria)

[Economic Analysis of Fish Farming in Osun State, South-Western Nigeria](#) (ID: 274)

Bunmi Olasunkanmi, Osun State University, Osogbo, Nigeria (Nigeria)

12E Too Big to Ignore: Enhancing Visibility and Possibilities in Small-Scale Fisheries. Part II

Part 2 of this special session.

Date: Wednesday, July 18, 2012
Time: 10:30 AM - 12:30 PM
Location: Lake Tanganyika
Chair: Ratana Chuenpagdee

[CREATING ECONOMIC ACTION SPACES FOR SMALL-SCALE FISHERS TO PRACTICE THEIR LIVELIHOODS - A CASE STUDY OF THE NEW SMALL-SCALE POLICY IN SOUTH AFRICA](#) (ID: 429)

Moenieba Isaacs, University of Western Cape

[INVISIBLE POSSIBILITIES: POVERTY ALLEVIATION IN SMALL-SCALE FISHER COMMUNITIES](#) (ID: 430)

Paul Onyango, University of Dar es Salaam (Tanzania)

[ARE SMALL-SCALE FISHERIES ECONOMICALLY VIABLE?](#) (ID: 431)

Rashid Sumaila

12F Bioeconomic Modeling Part IV

Date: Wednesday, July 18, 2012
Time: 10:30 AM - 12:30 PM
Location: Bagamoyo
Moderator: Olivier Thebaud

[Searching for viable exploitation within small scale fisheries : the case of Solomon Islands](#) (ID: 114)

Pierre-yves Hardy, CNRS/National Museum of Natural History (France)

Luc Doyen, CNRS (France)

Christophe Béné, IDS University of Sussex (United Kingdom)

Anne-Maree Schwarz, WorldFish Center (Solomon Islands)

[STOCHASTIC ECOSYSTEM VIABLE YIELDS](#) (ID: 176)

Esther Regnier, University Paris1-Sorbonne (France)

Michel De Lara, L'Ecole des Ponts et Chaussée (France)

[Optimal management under fleet constraints: the case of Northeast Arctic cod](#) (ID: 206)

Andries Richter, CEES, University of Oslo (Norway)

Anne Maria Eikeset (Norway)

Daan van Soest (Netherlands)

Nils Chr. Stenseth (Norway)

13A Markets: Value Chains Part III

Date: Wednesday, July 18, 2012
Time: 2:00 PM - 4:00 PM
Location: Zanzibar
Moderator: Jimmy Young

[THE RELATIONSHIPS AMONG THE KEY STAKEHOLDERS IN THE FISHERY PRODUCT VALUE CHAIN: THE CASE OF ANCHOVY, VIETNAM](#) (ID: 43)

THUY PHAM THI THANH, NHA TRANG UNIVERSITY (Vietnam)

Kim Anh Nguyen, Nha Trang University (Vietnam)

Tram Anh Nguyen Thi, Nha Trang university (Viet Nam)

[INTERACTIONS BETWEEN CULTURED AND CAPTURED GILTHEAD SEA BREAM IN THE SPANISH MARKET.](#) (ID: 160)

Gonzalo Rodriguez, University of Santiago de Compostela (Spain)

sebastian VILLASANTE, UNIVERSIDAD SANTIAGO DE COMPOSTELA (Spain)

Roberto Bande, University of Santiago de Compostela (Spain)

[Market structure and segments for seafood: A stated preference approach](#) (ID: 241)

Thong Tien Nguyen, University of Southern Denmark (Denmark)

Hans Stubbe Solgaard, University of Southern Denmark (Denmark)

Wolfgang Haider, Simon Fraser University (Canada)

Lars Ravn-Jonsen, University of Southern Denmark (Denmark)

Eva Roth, University of Southern Denmark (Denmark)

[Local Markets, Global Chains: How is Sustainability Created in Seafood Supply Chains from Asia to Europe?](#) (ID: 297)

Ingrid Kelling, University of Stirling (United Kingdom)

James A. Young, University of Stirling (United Kingdom)

[Using Tweets to Identify Messages for Generic Advertising in the Seafood Industry](#) (ID: 309)

Aloyce Kaliba, Southern University and A&M College (United States)

Victor Mbarika, Southern University and A&M College (United States)

[Adding value to Somaliland's marine capture fisheries: results of a 2010 study](#) (ID: 411)

Seamus McElroy, The BOSS Company (Indonesia)

13B Frontiers in Economic Modeling Part I

Date: Wednesday, July 18, 2012
Time: 2:00 PM - 4:00 PM
Location: Kibo 1
Moderator: Maribec Campos

[Integrating a Spatially-Explicit Individual-Based Fishing Vessel Model with Underlying Size-Based Dynamic Fish Population Models](#) (ID: 127)

Francois Bastardie, DTU-Aqua (Denmark)

J. Rasmus Nielsen, DTU-Aqua (Denmark)

Tanja Miethe, vTi (Germany)

[Stability of International Fisheries Agreements – Implications of Non-Market Benefits and the Country of Origin](#) (ID: 225)

Soile Kulmala, Finnish Environment Institute (SYKE), MTT Agrifood Research, Finland, Finnish Game and Fisheries Research Institute (Finland)

Polina Levontin, Imperial College London (United Kingdom)

Katja Parkkila, University of Helsinki, Department of Economics and Management (Finland)
Emmi Nieminen, University of Helsinki (Finland)
Pedro Pintassilgo (Portugal)
Marita Laukkanen, Government Institute for Economic Research, Finland (Finland)
Marko Lindroos (Finland)

[Catch Share Schemes, the Theory of Cooperative Games and the Spirit of Elinor Ostrom](#) (ID: 312)

Gordon Munro, University of British Columbia (Canada)

Rashid Sumaila

Bruce Turris, Pacific Fisheries Management Inc. (Canada)

[Rational Choice of Vessel Sizes under ITQ Schemes when Fish Prices are Uncertain: an Experimental Approach](#) (ID: 378)

Keisaku Higashida, School of Economics, Kwansei Gakuin University (Japan)

Kenta Tanaka, Tohoku University (Japan)

Shunsuke Managi, Tohoku University (Japan)

13C The Fishery Performance Indicators: A New Tool for Measuring Wealth Generation from Fishery Resources

This session presents current progress on the Fisheries Performance Indicators (FPIs), a rapid assessment instrument for benchmarking and tracking wealth generation from fisheries resources. Applied once to a single fishery, the FPIs provide a snapshot of where fishery-based wealth is accumulating (e.g., with capital owners, with crew or with processors) and of levels of factors thought to affect wealth accumulation. Repeating the instrument later within the same fishery allows monitoring of changes across time, including identifying the economic effects of management changes or development project investment. Where the more interesting research opportunities lie, however, is in drawing inferences across the range of industrial and artisanal fisheries in developing and developed countries in the case study database.

Date: Wednesday, July 18, 2012

Time: 2:00 PM - 4:00 PM

Location: Kibo 3

Chair: Chris Anderson

13D: Governance: Management of Fishing Activity Part I

Date: Wednesday, July 18, 2012

Time: 2:00 PM - 4:00 PM

Location: Lake Victoria

Moderator: Hoki Massaquoi

[Modeling the economic benefits of temporary octopus fisheries closures](#) (ID: 125)

Kirsten Oleson, University Hawaii Manoa (United States)

Thomas Oliver, University Hawaii Manoa (United States)

Michele Barnes-Mauthe, University of Hawaii at Manoa (United States)

[Addressing MULTI-STAKEHOLDER CONFLICTS in the COASTAL ZONE through a SPECIAL AREA MANAGEMENT \(SAM\) process: the case of Rekawa of Southern Sri-Lanka](#) (ID: 267)

Niyomi Pethiyagoda, University of Ruhuna (Sri Lanka)

OSCAR AMARASINGHE, University of Ruhuna (Sri Lanka)

[Role of Interactive Governance in a multi-stakeholder context: the case of Palk Bay Fisheries Conflicts](#) (ID: 219)

OSCAR AMARASINGHE, University of Ruhuna (Sri Lanka)

[Cost-Effectiveness Analysis in Intertemporal Natural Resource Policy: Evaluation of Selective Fishing Gear](#) (ID: 341)

Lone Groenbaek Kronbak, University of Southern Denmark (Denmark)

Niels Vestergaard, University of Southern Denmark (Denmark)

[Assessing the Wickedness of Governability: Mobility in South Africa's Western Cape Traditional Line Fishery](#) (ID: 352)

Philip van der Krogt (Netherlands)

[Changing Aboriginal Policy in Canada, and the Effects on Scale and Capacity use in the Commercial Fisheries of Quebec](#) (ID: 370)

James R. Wilson, UQAR (Canada)

Melissa Wilson (Canada)

Bruno Urli, Université du Québec à Rimouski (Canada)

Abdallah ben Hammouda, Université du Québec à Rimouski (Canada)

13E: Well-Being and Fishery Governance

There is now a widespread realization of the need to address fisheries and marine issues through systems perspectives and holistic interdisciplinary approaches, rather than the narrower and more disciplinary analysis of the past. Much attention is being paid to developing suitable mechanisms to accomplish this, especially in small-scale fisheries. Recent research, such as in the Governing Small-scale Fisheries for Wellbeing and Resilience project, has identified the potential value of a well-being approach in understanding the complex social and economic dynamics of small-scale fisheries, and in moving toward improved fisheries management and governance. This approach broadens the analysis of fisheries, as it does in other social-ecological systems, by incorporating the three complementary elements of material, relational and subjective well-being, in order to properly consider the full range of values and objectives in fisheries. This special session will introduce and review ideas of well-being, and then focus on three key aspects: (1) the extent to which a well-being lens provides a more comprehensive approach to sustainable development in fisheries, incorporating considerations such as livelihoods, poverty and vulnerability; (2) how a well-being lens connects to a social-ecological systems perspective, and to analyses of resilience within a fisheries context; and (3) how adoption of well-being perspectives can contribute to fishery governance thinking, and whether it can inform the implementation of fisheries management instruments.

Date: Wednesday, July 18, 2012
Time: 2:00 PM - 4:00 PM
Location: Lake Tanganyika
Chair: Anthony Charles

-
- [1. A Wellbeing Perspective on Small-Scale Fisheries](#) (ID: 433)
Edward Allison, University of East Anglia (United Kingdom)
Anthony Charles, Saint Mary's University (Canada)
- [Linking Wellbeing and Resilience to Improve Fishery Governance](#) (ID: 434)
Derek Armitage, University of Waterloo (Canada)
Christophe Béné, IDS University of Sussex (United Kingdom)
Anthony Charles, Saint Mary's University (Canada)
Derek Johnson, University of Manitoba (Canada)
Edward Allison, University of East Anglia (United Kingdom)
- [3. Broadening the Scope in Fisheries Governance with a Wellbeing Lens](#) (ID: 435)
Ratana Chuenpagdee, Memorial University (Canada)
Anthony Charles, Saint Mary's University (Canada)
Derek Johnson, University of Manitoba (Canada)
- [Wellbeing in Small-Scale Fishing Communities in South Africa](#) (ID: 436)
Phille Mbatha, Environmental Evaluation Unit, University of Cape Town (South Africa)
Sarah Coulthard, Northumbria University (United Kingdom)
Janne Rohe, Environmental Evaluation Unit, University of Cape Town (South Africa)

13F Bioeconomic Modeling Part V

Date: Wednesday, July 18, 2012
Time: 2:00 PM - 4:00 PM
Location: Bagamoyo
Moderator: Yemi Akegbejo-Samsons

-
- [THE SUSTAINABLE MANAGEMENT OF MARINE FISH RESOURCES IN CAMEROON: A BIOECONOMIC ANALYSIS OF THE TRAWL FISHERY](#) (ID: 61)
MEKE SOUNG Pierre Nolasque, University of Douala (Cameroon)
- [Appreciating the value of age: An evaluation of efficiency gains from controlling gear selectivity under various scenarios](#) (ID: 94)
Florian Diekert, CEES, University of Oslo (Norway)
- [Cold water coral - fisheries interactions: Bioeconomic modelling comparing Norway & Iceland's redfish fisheries](#) (ID: 196)
Naomi Foley, Norwegian College of Fishery Science (Norway)
Claire Armstrong (Norway)

14 Keynotes and Awards

Jim Wilen, 2012 Fellow
Ola Flaaten, 2012 Distinguished Service Award Winner

Date: Wednesday, July 18, 2012
Time: 4:30 PM - 6:00 PM
Location: Kibo Ballroom

-
- [Institutional quality and catch performance of fishing nations](#) (ID: 413)
Ola Flaaten, Norwegian college of fishery science (Norway)

20A Africa Policy Day Plenary Session

Prof. Mgaya	Introduction of Program
Permanent Secretary MLFD	Welcome speech
Minister MLFD	Introduction of Key Note Speaker
TBA	Key Note Address
Prof. Sumaila	Maximization of wealth from deep sea, small-scale and aquaculture fisheries in Africa

Date: Thursday, July 19, 2012
Time: 8:30 AM - 10:00 AM
Location: Kibo Ballroom

21A Africa Policy Day Part II

Date: Thursday, July 19, 2012

Time: 10:30 AM - 12:00 PM
Location: Zanzibar
Chair: Steve Cunningham

[Dagaa fishery the unknown Wealth from Lake Victoria](#) (ID: 103)

Joseph Luomba (Tanzania)

Paul Onyango, University of Dar es Salaam (Tanzania)

[CONTRIBUTION de la PECHE MARITIME à l'économie nationale et VALEUR POTENTIELLE des RESSOURCES HALIEUTIQUES au Gabon](#) (ID: 204)

ONDO MEGNE Jean Jacques, Direction Générale de la Statistique (Gabon)

[Evaluation of the rich fishery resources in Democratic Republic of Congo and Contribution of Fisheries to the national economy.](#) (ID: 209)

TUSANGA MUKANGA, Agriculture, Fishery and Livestock Ministry (Congo, Democratic Republic of)

[Wellbeing in small-scale fishing communities in South Africa](#) (ID: 305)

Phille Mbatha, Environmental Evaluation Unit, University of Cape Town (South Africa)

Sarah Coulthard, Northumbria University (United Kingdom)

Janne Rohe, Environmental Evaluation Unit, University of Cape Town (South Africa)

[Certification and eco-labelling: opportunities for African fisheries](#) (ID: 392)

Martin Purves, Marine Stewardship Council (South Africa)

Oluyemisi Oloruntuyi, Marine Stewardship Council (United Kingdom)

[RECENT DEVELOPMENT WITH REGARD TO TRADE OF FISH AND FISHERY PRODUCTS FROM SMALL-SCALE FISHERIES IN AFRICA](#) (ID: 401)

FRIMPONG CLIFFORD EDMUND, GHANA STANDARDS AUTHORITY (Ghana)

Margaret Ottah Atikpo, Council for Scientific and Industrial Research-Food Research Institute (Ghana)

Christopher Hoareau, Seychelles Bureau of Standards (Seychelles)

Anass Karzazi, National Agency for Development of Aquaculture (Morocco (includes the Western Sahara))

Yahya Mgawe, Fisheries Education and Training Agency (Tanzania)

21B Coupled Economic-Ecological Models for Ecosystem-Based Fishery Management: Exploration of Tradeoffs Between Model Complexity and Management Needs

Ecosystem based fishery management has moved beyond rhetorical statements calling for a more holistic approach to resource management, to implementing decisions on resource use that are compatible with goals of maintaining ecosystem health and resilience. Coupled economic-ecological models are a primary tool for informing these decisions. Recognizing the importance of these models, the International Council for the Exploration of the Seas (ICES) formed a Study Group on Integration of Economics, Stock Assessment and Fisheries Management (SGIMM) to explore alternative modeling approaches that bring the multiple disciplines of economics, ecology, and stock assessment into integrated ecosystem models. This session is an extension of a series of workshops and theme sessions organized by the SGIMM, but would highlight the economic component of coupled models. Although economic and ecological systems are inherently complex, models are abstractions of these systems incorporating varying levels of complexity depending on available data and the management issues to be addressed. The objective of this special session is to assess the pros and cons of increasing model complexity to incorporate linkages between ecosystem components and processes. While more complex ecosystem models may provide greater insight into how management decisions and human actions propagate through the ecosystem and impact the value of ecosystem services, the resources and information required to develop and parameterize them is greater and these models tend to require trade-offs such as inability to quantify uncertainty or model human behavior as accurately as can be done with models of individual fisheries. The panel will discuss and compare fully integrated, highly detailed and dynamic economic-ecological models such as Atlantis to models that may be less detailed or not fully dynamic or integrated. In this special session we focus primarily on management issues that are of a longer term strategic nature such as the implications of climate change, fundamental regime change, or the role of forage species in an ecosystem.

Date: Thursday, July 19, 2012

Time: 10:30 AM - 12:30 PM

Location: Kibo 1

Chair: Eric Thunberg

Chair: Daniel Holland

[A coupled model of the Gulf of Maine lobster, herring and groundfish fisheries](#) (ID: 440)

Daniel Holland, Northwest Fisheries Science Center (United States)

[FLBEIA a Fisheries library for Bio-Economic impact assessment: A Bio-Economic Simulation Toolbox](#) (ID: 441)

Raul Pallezo (Spain)

Richard Curtin, AZTI-Tecnalia (Spain)

[Age-Structured Ecological-Economic Multi-Species Models for Baltic Sea Fisheries](#) (ID: 442)

Martin F. Quaas, Department of Economics, University of Kiel (Germany)

[Decision-support for ecosystem-based fishery management in the context of marine spatial planning: regional economic impact models, model outputs, and tradeoff measures](#) (ID: 443)

Porter Hoagland (USA)

Di Jin, Woods Hole Oceanographic Institution (United States)

[Ecopath-based simulation and optimization of management options for the Eastern Gulf of Mexico reef fish fishery](#) (ID: 444)

Sherry Larkin, University of Florida (United States)

Sergio Alvarez (United States)

Dave Chagaris (United States)

Jake Tetzlaff (United States)

Carl Walters (United States)
Mike Allen (United States)
Behzad Mahmoudi (United States)
Bill Lindberg (United States)
Bill pine (United States)
[Including human dimensions in integrated marine ecosystem models: Australian examples](#) (ID: 445)
Olivier Thébaud, CSIRO - CMAR (Australia)
Beth Fulton (Australia)
Trevor Hutton (Australia)
James Innes, CSIRO Marine and Atmospheric Research (Australia)
Rich Little, CSIRO Marine and Atmospheric Research (Australia)
Sean Pascoe, CSIRO Marine and Atmospheric Research (Australia)
Ingrid van Putten, CSIRO (Australia)

21C Bioeconomic Modeling Part VI

Date: Thursday, July 19, 2012
Time: 10:30 AM - 12:30 PM
Location: Kibo 3
Moderator: Viktoria Kahui

[Developing a Predator-Prey Model for the Hake and Blue Whiting Spanish Fisheries](#) (ID: 132)
Marcos Perez, University of Vigo (Spain)
[The Spawners' Shadow price: Joint Production of Recruitment and Growth in Age-structured Fish Populations](#) (ID: 231)
Martin F. Quaas, Department of Economics, University of Kiel (Germany)
Rudi Voss, Christian-Albrechts-Universität zu Kiel (Germany)
[Optimal Bioeconomic Multispecies Fisheries Management: A Baltic Sea Case Study](#) (ID: 232)
Emmi Nieminen, University of Helsinki (Finland)
Marko Lindroos (Finland)
Outi Heikinheimo (Finland)
[A bio-economic model for ecosystem-based management: An application to the coastal fishery in French Guiana](#) (ID: 322)
Abdoul Ahad Cissé, IFREMER (France)
Luc Doyen, CNRS (France)
Jean Christophe Péreau, GRETHA UMR CNRS 5113 (France)
Fabian Blanchard, IFREMER (France)
[Age-Structure Metrics for Precautionary Management- Can we save fish, time, and money?](#) (ID: 360)
Christopher Cusack, Applied Economics (United States)
[Advancing Fishery Management in West Africa: Design and Application of a Seafood Bioeconomic Assessment Model](#) (ID: 379)
Shannon Davis, The Research Group (United States)
Gilbert Sylvia, Oregon State University (United States)

21D Measurement and Indicators for Improved Understanding and Management Part I

Date: Thursday, July 19, 2012
Time: 10:30 AM - 12:00 PM
Location: Lake Victoria
Moderator: Ralph Townsend

[Economic Valuation of Mangroves for Assessing the Livelihood of Fisherfolk – A Case Study in India](#) (ID: 78)
Piyashi DebRoy, Central Institute of Fisheries Education (India)
[Capturing Malagasy fisher communities' non-market economic values using mixed methods](#) (ID: 126)
Kirsten Oleson, University Hawaii Manoa (United States)
Michele Barnes-Mauthe, University of Hawaii at Manoa (United States)
Luke Brander (China)
[Estimating Financial Returns to Coastal States from their Tuna Resources – A Preliminary Analysis of the Western Indian Ocean Tuna Harvesting Sector](#) (ID: 331)
Edward Kimakwa, WWF Coastal East Africa Initiative (Tanzania)
[Current and potential fish asset values worldwide](#) (ID: 384)
Rashid Sumaila

21E An International Instrument on securing sustainable Small-scale Fisheries: Implementation strategies

The 29th Session of the FAO Committee on Fisheries (COFI) held in February 2011 recommended that an international instrument on small-scale fisheries be developed. This is based on the increasing recognition of small-scale fisheries as a principal contributor to poverty alleviation and food security and the guidance provided by a number of global and regional conferences and consultative meetings exploring how to better bring together responsible fisheries and social development in coastal and inland fishing communities. The process of developing this instrument – in the form of international Guidelines – has started and at the time of IIFET 2012, several local, national, regional and global level consultative stakeholder and expert workshops will have taken place.

The SSF Guidelines will facilitate the empowerment and mobilization of stakeholders to promote change towards sustainable small-scale fisheries and hence

facilitate the realisation of the sector's potential to contribute to poverty alleviation, food and nutrition security, and economic growth. This process needs strong catalysts and follow-up to stimulate lasting and efficient change and there is a need to build bridges between different stakeholder visions, within the fisheries sector as well as outside, to ensure coherence and build political will.

Taking a forward looking approach, it therefore appears critical to start considering how these SSF Guidelines are going to be implemented. The discussions taking place during the preparation of the SSF Guidelines are expected to influence policies and actions and strong stakeholder buy-in will ensure that the instrument becomes a part of ongoing governance and development processes. However, also strategies and activities explicitly supporting the SSF Guidelines implementation will be needed. New thinking with regard to availability, access and use of information will be required together with capacity building and enabling institutional arrangements, and incentive structures:

- With the trend to decentralise and the increased focus on co-management regimes the respective roles of managers/decision-makers, researchers and communities/CSOs in information and research are changing and innovative approaches to information are needed. Academic research and basic information need to feed into policy-making. Special efforts and new avenues with regard to communication channels, language and publications may be required to make this link. Different ministries should be engaged and CSOs can act as information and knowledge brokers.
- Information is a form of power and the small-scale fisheries sector needs to be empowered to be able to access and use relevant information. There are many aspects linking capacity development and information and knowledge. The target groups for capacity development include the state, civil society and communities.
- It is important to create opportunities for exchange of views among stakeholder groups to learn from each other, develop synergies and drop barriers. Accordingly, for both implementation and monitoring of the SSF Guidelines and along with the development of capacity at all levels, appropriate institutional arrangements are required, including partnerships for policy formulation and involvement of grassroots level organisations.
- Due to poverty and vulnerability, small-scale fishing communities may lack the incentives to participate in resource management and these aspects of poverty need to be addressed first, or simultaneously. Appropriate incentive structures (institutional, legal, economic, social) are needed to enable small-scale fishing communities to sustainably manage the aquatic resources they and future generations depend on for their well-being without jeopardizing their social and economic development.

The Special Session, including a panel discussion with stakeholder representatives, will provide an opportunity to explore and discuss, inter alia, the required institutional and incentive structures, potential implementation constraints and opportunities for support and partnerships for bringing the SSF Guidelines into effective implementation.

More information on the small-scale fisheries guidelines can be found at: <http://www.fao.org/fishery/ssf/guidelines/en>

Panelists are:

Robert Pomeroy, University of Connecticut, USA
Anthony Charles, Saint Mary's University, Canada
Friday Nyaja, Department of Fisheries, Malawi
Sloans Chimatiro, NEPAD Planning and Coordinating Agency
Sebastian Matthews, ICSF

Date: Thursday, July 19, 2012
Time: 10:30 AM - 12:30 PM
Location: Lake Tanganyika
Chair: Lena Westlund

21F Environment, Natural Disasters, and Recovery Part I

Date: Thursday, July 19, 2012
Time: 10:30 AM - 12:30 PM
Location: Bagamoyo
Moderator: Bruce Shallard

[Species Composition, Catch rates and Economic Consequences of Sea turtle-fishery interactions in Artisanal fisheries in Nigeria](#) (ID: 404)

OLUDARE ADEOGUN, Nigerian Institute for Oceanography & Marine Research (Nigeria)

[Collaborative Governance Sustaining Ecosystems: A Case from Sri Lanka](#) (ID: 51)

Erwin Rathnaweera, Practical Action (Sri Lanka)

Jayantha Gunasekara (Sri Lanka)

[Socio-economic impacts of the tsunami on March 11, 2011, in Japan](#) (ID: 171)

Nobuyuki Yagi, The University of Tokyo (Japan)

[The Economics of Rebuilding Fisheries - a Norwegian Perspective](#) (ID: 335)

Guri Hjallen Eriksen, The Norwegian Ministry of Fisheries and Coastal Affairs (Norway)

Tale Halsør, The Norwegian Ministry of Fisheries and Coastal Affairs (Norway)

[Driving forces behind the exploitation of SEA URCHIN PREDATORS in the WIO](#) (ID: 357)

Sieglind Wallner, Department of Systems Ecology (Sweden)

Maricela de la Torre-Castro, Department of Systems Ecology (Sweden)

22A Africa Policy Day Part III

Date: Thursday, July 19, 2012
Time: 1:30 PM - 3:30 PM
Location: Zanzibar

[Challenges and Investment Opportunities for Large-scale Aquaculture Farmers in Nigeria](#) (ID: 21)

Deji Adeoye, University of Agriculture (Nigeria)
Yemi Akegbejo-Samsons, University of Agriculture (Nigeria)

[THE IMPACTS OF SMALL-SCALE AQUACULTURE ON INTRA-HOUSEHOLD RELATIONS AND FOOD SECURITY IN MOZAMBIQUE](#) (ID: 32)

Norma Schoenherr, Humboldt University Berlin (Germany)
Johanna Quatmann (Germany)

[AQUACULTURE AS A VEHICLE FOR SOCIO-ECONOMIC DEVELOPMENT IN NAMIBIA](#) (ID: 328)

Panduleni Elago, Ministry of Fisheries & Marine Resources (Namibia)

[PROBLEMS and PROSPECTS in Developing AQUACULTURE for LIVELIHOOD ENHANCEMENT in Gucha, Meru and Taiata Taveta in the Republic of Kenya](#) (ID: 349)

Ernest Yongo, Kenya Marine and Fisheries Research Institute (Kenya)
Harrison Charo-Karisa, Kenya Marine and Fisheries Research Institute (KMFRI) (Kenya)
Mary Opyo, Kenya Marine and Fisheries research Institute (Kenya)
Jonathan Munguti, Kenya Marine and Fisheries research Institute (Kenya)
Paul Orina, Kenya Marine and Fisheries research Institute (Kenya)

[Management and Value chain of Nile tilapia Cultured in Ponds of Small-scale farmers in Morogoro region, Tanzania](#) (ID: 403)

Sebastian Chenyambuga, Sokoine University of Agriculture (Tanzania)
Nazael Madalla, Sokoine University of Agriculture (Tanzania)
Berni Mnembuka, Sokoine University of Agriculture (Tanzania)

22B The Economics of Genetic Development in Aquaculture

A number of issues influence the economic viability of aquaculture, particularly as burgeoning environmental issues and food safety requirements increase production costs and complicate aquaculture management. One important issue that shapes developed and developing country aquaculture alike is disease management. While economic impact assessment platforms have been applied in a number of fisheries applications, an important research gap in the aquatic health literature is the lack of direct integration between the ecology of diseases, the dynamics of disease spread, and their economic impacts among different stakeholders. These issues are important given the potential feedbacks between disease control interventions and their influence on economic incentives for producers and policymakers alike, which can potentially affect the evolution of disease and the success of subsequent control efforts.

In addition, limited information exists at a policy level to inform government on the tradeoffs implicit between government and industry on various aquaculture-related decisions, although potential toolkits exist to examine these more closely. Given the numerous stakeholders implicit throughout the value chain, further elaboration on the decision tools necessary to interface with aquaculture – and appropriate entry points in those decisions – will be crucial.

In this session, we plan a series of five thematic presentations to highlight different decision-making approaches to aquaculture. Each thematic presentation will last 20 minutes, with 15 minutes of presentation and 5 minutes of clarifying questions from the audience. Part of these presentations reflect preliminary outputs from the SALMODIS project, a three-year research project funded by the Norwegian Research Council and salmon industry to improve disease control and management. The presentations contrast in scope and method between decisions taken at different scales of analysis (production site, industry, value chain, and government), providing guidance to researchers and policymakers on the variety of different decision tools available to address these challenges to global aquaculture in developed and developing country settings. A 20 minute open discussion will follow.

Date: Thursday, July 19, 2012
Time: 1:30 PM - 3:30 PM
Location: Kibo 1
Chair: Karl Rich
Chair: Yajie Liu

[Costs and benefits of interventions in aquatic animal disease management: a case study](#) (ID: 406)

Mohan Chadag, Network of Aquaculture Centres in Asia Pacific (Thailand)

[Strategies for Seizing Control of Genetic Development in Aquaculture](#) (ID: 414)

Svein Borgen, SIFO (Norway)

[An integrated epidemiological-economic model of sea lice control in aquaculture: A system dynamics approach](#) (ID: 437)

Kanar Hamza (Norway)

[The Economics of Controlling Diseases on Fish Farms.](#) (ID: 438)

Yajie Liu, SINTEF Fisheries and Aquaculture (Norway)

[Capturing decision-making tradeoffs between government and industry: a bi-level programming approach](#) (ID: 439)

Karl Rich, NUPI (Norway)

22C Frontiers in Economic Modeling Part II

Date: Thursday, July 19, 2012
Time: 1:30 PM - 3:30 PM

Location: Kibo 3
Moderator: Hazel Curtis

- [The Fishery as an Economic Base Industry after the Newfoundland Cod Moratorium](#) (ID: 24)
Noel Roy, Memorial University of Newfoundland (Canada)
- [Identifying Nash equilibrium strategies for a multi-fleet multi-national fishery under uncertainty](#) (ID: 154)
Polina Levontin, Imperial College London (United Kingdom)
Soile Kulmala, Finnish Environment Institute (SYKE), MTT Agrifood Research, Finland, Finnish Game and Fisheries Research Institute (Finland)
- [Application of a Bayesian belief model approach to evaluate the economic-environmental potentials of policies to reduce eutrophication in the Baltic Sea](#) (ID: 265)
urs steiner brandt, University of southern denmark (Denmark)
Soile Kulmala, Finnish Environment Institute (SYKE), MTT Agrifood Research, Finland, Finnish Game and Fisheries Research Institute (Finland)
- [Recovering Marine Species at Risk: The Valuation of Management Actions for Incorporation into Policy Decisions](#) (ID: 298)
Keldi Forbes, Fisheries and Oceans Canada
- [An ECOSYSTEM APPROACH to the SMALL PELAGIC fisheries: From model to role PLAYING GAME](#) (ID: 366)
Guillaume Péron, European Institute for Marine studies (France)

22D: Markets: Value Chains Part IV

Date: Thursday, July 19, 2012
Time: 1:30 PM - 3:30 PM
Location: Lake Victoria
Moderator: Carmen Pedroza

- [Coolnova Just-In-Time fresh fish](#) (ID: 229)
Torbjorn Trondsen (Norway)
- [ASSESSING GENDER ROLES in Tilapia PRODUCTION and MARKETING SUPPLY CHAIN on Lake Kariba, Zambia](#) (ID: 334)
Edward Mwiindeh Syampaku, Mulungushi University
- [Thin wholesale markets and direct marketing in renewable resource exploitation](#) (ID: 358)
Chris Kennedy, George Mason University (United States)
Stephen Scott, George Mason University (United States)

22E The Economics of Aquaculture Production and Profitability Part II

Date: Thursday, July 19, 2012
Time: 1:30 PM - 3:30 PM
Location: Lake Tanganyika
Moderator: Taiwo Mafimisebi

- [Measuring profitability in Small scale Aquaculture Enterprises in South West Nigeria](#) (ID: 15)
Yemi Akegbejo-Samsons, University of Agriculture (Nigeria)
Deji Adeoye, University of Agriculture (Nigeria)
- [EFFICIENT AQUACULTURE PRODUCTION: A PANACEA FOR ALLEVIATION OF NUTRITIONAL POVERTY IN NIGERIA](#) (ID: 31)
OLUWADARE OJO, FEDERAL UNIVERSITY OF TECHNOLOGY (Nigeria)
OLUWADARE OJO, FEDERAL UNIVERSITY OF TECHNOLOGY (Nigeria)
DAPO FAGBENRO, FEDERAL UNIVERSITY OF TECHNOLOGY (Nigeria)
- [GROWTH, DIGESTIBILITY, BLOOD PARAMETERS AND YIELD of NILE TILAPIA Oreochromis niloticus FINGERLINGS fed graded levels of FERMENTED MANGO \(Mangifera indica\) SEED MEAL based diets.](#) (ID: 178)
Samuel Obasa, Federal University of Agric., Abeokuta, Nigeria (Nigeria)
- [Profitability analysis of public-private partnerships in village based sea cucumber aquaculture](#) (ID: 193)
Antoine Rougier, NGO Blue Ventures (Madagascar)
Kirsten Oleson (United Kingdom)
Mialy Andriamahafazafy, NGO Blue Ventures (Madagascar)
Alasdair Harris, NGO Blue Ventures (Madagascar)
- [Developing Smallholder Aquaculture In Kenya Into Viable Enterprises: Case Study Of Nyaguta Fish Ponds In Kisii, Kenya.](#) (ID: 201)
John Okechi, Kenya Marine and Fisheries Research Institute (KMFRI) (Kenya)
Olivier Mikolasek, CIRAD (France)
Harrison Charo-Karisa, Kenya Marine and Fisheries Research Institute (KMFRI) (Kenya)
- [Aquaculture in Urban and peri-urban areas: Implication for Food security and Environmental consideration](#) (ID: 330)
SIYANBOLA OMITOYIN, BOWEN UNIVERSITY (Nigeria)

22F: Trade

Date: Thursday, July 19, 2012
Time: 1:30 PM - 3:30 PM

Location: Bagamoyo
Moderator: CV Mohan

[Middlemen-Good for Resource and Fishermen? An Economic Analysis of a Common Fisheries Institution in Developing Countries](#) (ID: 19)

THUY PHAM THI THANH, NHA TRANG UNIVERSITY (Vietnam)
Ola Flaaten, Norwegian college of fishery science (Norway)

[Tradeoffs in Indian seafood trade - Forex earnings vis- a- vis Domestic Availability and Affordability](#) (ID: 48)

Shyam S Salim, Central Marine Fisheries Research Institute (India)
Geetha R, Central Marine Fisheries Research Institute (United States)
ASWATHY N, CENTRAL MARINE FISHERIES RESEARCH INSTITUTE (India)
Vipinkumar V.P, Central Marine Fisheries Research Institute (India)

[Price relationships for imported abalone in the Japanese market](#) (ID: 124)

Eriko Hoshino, School of Economics & Finance, University of Tasmania (Australia)

[Poor rich-country industries: fish-processing industries becoming out-competed by low-labour-cost countries?](#) (ID: 233)

Audun Iversen, Nofima (Norway)

Bjørn-Inge Bendiksen (Norway)

[INTEGRATING MEGACITIES' SEAFOOD MARKET TRENDS IN THE ASSESSMENT OF FISHERIES ECOSYSTEMS: WHAT CAN PRICE TRENDS OF SASHIMI SPECIES TELL US ABOUT MARINE FISHERIES OF SOUTHEASTERN BRAZIL?](#) (ID: 380)

Maria Gasalla, University of Sao Paulo (Brazil)
Ruth Pincinato, University of Sao Paulo (Brazil)
Amanda Rodrigues, University of Sao Paulo (Brazil)

[GLOBALG.A.P. Aquaculture Certification: Improving Sustainability for the entire Production Chain](#) (ID: 396)

Valeska Weymann, GLOBALG.A.P. (Germany)

23A Africa Policy Day Part IV

Date: Thursday, July 19, 2012
Time: 4:00 PM - 5:30 PM
Location: Zanzibar

[Assessing Policies Promoting Poverty Alleviation and Marine Resource Sustainability in Impoverished Coastal Communities](#) (ID: 81)

Michelle Stern, Trinity College Dublin (Canada)

[Beach Seining in Mozambique – Bane or Benefit?](#) (ID: 58)

James Wilson (Mozambique)

[The Impacts of Global Climate Change in Africa: the Lake Chad and its associated activities.](#) (ID: 87)

BABAGANA ABUBAKAR, KANURI DEVELOPMENT ASSOCIATION (Nigeria)

[CLIMATE CHANGE:Implication on AQUATIC RESOURCES,FOOD SECURITY and livelihood](#) (ID: 174)

Badmus olanrewaju, Federal College of Animal and Health and Production Technology,Vom,Plateau Sate,Nigeria. (Nigeria)

[The Role of Government in Promoting Commercial Aquaculture in Africa: Examples from East Africa](#) (ID: 368)

Harrison Charo-Karisa, Kenya Marine and Fisheries Research Institute (KMFRI) (Kenya)

Maina Wilson Gichuri, Fisheries Department (Kenya)

Betty M Nyonje, Kenya Marine & Fisheries Research Institute (Kenya)

Mary Opyo, Kenya Marine and Fisheries research Institute (Kenya)

Henry Mbugua, Fisheries Department (Kenya)

Charles Ngugi, Ministry of Fisheries Development (Kenya)

Japheth Micheni Ntiba, Ministry of Fisheries Development (Kenya)

[Assessing the Poverty-Illegal Fishing Nexus in the Lake Victoria Fisheries](#) (ID: 382)

Adolphine Kateka, University of Dar es Salaam (Tanzania)

Adolf F. Mkenda, University of Dar es Salaam (Tanzania)

Razack Lokina, University of Dar es Salaam (Tanzania)

[African fisheries and climate change: A policy agenda](#) (ID: 452)

Alex Benkenstein, South African Institute of International Affairs (South Africa)

23B JIFRS/JICA Session on Responsible Fishing

This session provides opportunities for participants from developing countries to present their study outcomes, so that the participants could share common issues on responsible fisheries in various countries where similar environmental, social and economic backgrounds exist. JIFRS (Japan International Fisheries Research Society) has provided travel supports as supplementary prize of the award known as JIFRS Yamamoto Prize, for maximum two winners of paper competition among participants from developing countries to IIFET Conferences since 2004. JICA (Japan International Cooperation Agency) also joins this function this year and provides support for this session.

Date: Thursday, July 19, 2012
Time: 4:00 PM - 5:30 PM
Location: Kibo 1
Chair: JICA
Chair: JIFRS

[Reducing Post-Harvest losses of the artisanal Daqaa fishery \(Rastrineobola argentea\) in Lake Victoria Tanzania: A Cost and Benefit](#)

[Analysis](#). (ID: 44)
LILIAN IBENGWE, Ministry of Livestock and Fisheries Development (Tanzania)
Daði Már Kristófersson, University of Iceland (Iceland)
[FARMER-TO-FARMER EXTENSION approach for freshwater AQUACULTURE development in the southern BENIN](#) (ID: 128)
Arsène d'Almeida, Direction des Pêches, MAEP, Benin (Benin)
Masanori Doi, PROVAC (a technical cooperation project of JICA) (Benin)
[THE SUSTAINABLE MANAGEMENT OF THE SHRIMP TRAWL FISHERY IN TONKIN GULF, VIETNAM](#) (ID: 303)
Thanh Viet Nguyen, University of Southern Denmark (Viet Nam)
[Study in economic performance of coastal seiners in Morocco](#) (ID: 399)
Abdelkabir KAMILI, Institut National de Recherche Halieutique (United States)
Amale LAABDI, Institut National de Recherche Halieutique (INRH) (Morocco (includes the Western Sahara))
Tadanori Fujino, JICA/INRH (Morocco (includes the Western Sahara))
Naoki TOJO, JICA (Morocco (includes the Western Sahara))
Gakushi Ishimura (JAPAN)
Kazushi MIYASHITA, Hokkaido University (United States)
[Results obtained from an 8-year experiment of fisheries co-management in Senegal](#) (ID: 415)
Mamadou Thiam, Ministry of Fisheries (Senegal)
makoto IKEDA, JICA (Senegal)

23C: Where Management and Marketing Meet

Date: Thursday, July 19, 2012
Time: 4:00 PM - 5:30 PM
Location: Kibo 3
Moderator: Sherry Larkin

[A fisheries management system's importance for the demersal value chain of the Icelandic fish industry](#) (ID: 336)
Ógmundur Knútsson, University of Akureyri (Iceland)
[SEAFOOD FORESIGHT: from managing information to facilitating intelligence](#) (ID: 354)
Angus Garrett, Sea Fish Industry Authority (United Kingdom)
[FishTrax and Electronic Fishery Information Systems: The Next Revolution in Fishery Management he Management and Economics of Fishery Information Systems: A Case Study of Fish Trax](#) (ID: 376)
Gilbert Sylvia, Oregon State University (United States)

23D: Measurement and Indicators for Improved Understanding and Management Part II

Date: Thursday, July 19, 2012
Time: 4:00 PM - 5:30 PM
Location: Lake Victoria
Moderator: Andries Richter

[FACTOR PRODUCTIVITY IN ARTISANAL FISHERY PRODUCTION IN NIGERIA](#) (ID: 33)
OLUWADARE OJO, FEDERAL UNIVERSITY OF TECHNOLOGY (Nigeria)
OLUWADARE OJO, FEDERAL UNIVERSITY OF TECHNOLOGY (Nigeria)
[Measuring economic depreciation in fisheries](#) (ID: 190)
Sean Pascoe, CSIRO Marine and Atmospheric Research (Australia)
Simon Vieira, ABARES (Australia)
Olivier Thébaud, CSIRO - CMAR (Australia)
[Integrated assessment of the coastal fishery production systems in French Guiana](#) (ID: 320)
Abdoul Ahad Cissé, IFREMER (France)
Fabian Blanchard, IFREMER (France)
Olivier Guyader, IFREMER, UMR AMURE (France)
[FAO Fish Price Index](#) (ID: 410)
Audun Lem, United Nations Food and Agriculture Organization (Italy)
Sigbjørn Tveteraas, CENTRUM Católica Graduate School of Business, Pontificia Universidad Católica del Perú (Peru)
Frank Asche, University of Stavanger (Norway)
Kristin Lien, Norwegian Seafood Council (Norway)
Stefania Vannuccini, FAO (Italy)

23E: Governance: Management of Fishing Activity Part II

Date: Thursday, July 19, 2012
Time: 4:00 PM - 5:30 PM
Location: Lake Tanganyika
Moderator: Andrew Kitts

[Weak regulation of distant water fleets puts rented fishery in jeopardy; a critical analysis of fisheries partnership agreements in Madagascar](#) (ID: 189)

Mialy Andriamahefazafy, NGO Blue Ventures (Madagascar)
Alasdair Harris, NGO Blue Ventures (Madagascar)
Frederic Le Manach, Sea Around Us Project (Canada)
[Persistent Subsidies in Fishing – the Case of Fuel Tax Exemption in Norway](#) (ID: 318)
Øystein Hermansen, NOFIMA (Norway)
John R. Isaksen, Nofima (Norway)
Ola Flaaten, Norwegian college of fishery science (Norway)

23F Governance: Marine Reserves and Protected Areas Part I

Date: Thursday, July 19, 2012
Time: 4:00 PM - 5:30 PM
Location: Bagamoyo
Moderator: Tony Charles

[Can Marine Protected Areas Improve the Livelihoods of Local Communities: A Review and Analysis of the Current Literature](#) (ID: 53)
Michael Verdone, International Organization for Conservation of Nature (IUCN) (Switzerland)
[Valuing Marine Parks in a Small Island Developing State: A Travel-Cost Study in Seychelles](#) (ID: 300)
PAUL MWEBAZE (United Kingdom)
[Impacts of MPA on Coastal Communities' Resource Use Behaviour: Case of Mafia Island Marine Park, Tanzania](#) (ID: 188)
Esther Japhet MULYILA, United Graduate School of Agriculture Sciences, Kagoshima University (Japan)

31A FAO Regional Value Chains Workshop Part I

The Food and Agriculture Organization (FAO) and the Norwegian Agency for Development Cooperation (NORAD) initiated a comprehensive value-chain analysis of international fish trade in 2010, with an impact assessment of the small-scale sector in developing countries. The project also analyses the contributions of women along the value-chain. The aim was to identify ways to improve food security and employment for local populations through a better understanding of the dynamics of relevant value-chains, leading to more informed choices for policymakers. Comparisons were made between domestic, regional and international value-chains to identify how developing countries can increase the value derived from their fishery resources in local, regional and global markets.

Countries included in the FAO-NORAD value-chain project are: Bangladesh, Cambodia, Canada, Ghana, Honduras, Japan, Kenya, Maldives, Morocco, Peru, Thailand, Uganda, and Viet Nam. Iceland, Norway and Spain joined the project at a later stage, building upon previous experiences.

During the FAO workshop in Tanzania, national and international consultants will present their findings from country case studies and a panel of experts will discuss implications of the results. This session is open to all IIFET Conference participants.

Panelists/Contributors are:

ABBEY, Emmanuel, National Consultant (Ghana)
ABILA, Richard, Project Steering Committee, Kenya Marine and Fisheries Research Institute (Zambia),
ANTWI-ASARE, Theodore, National Consultant, Professor, University of Ghana (Ghana),
BELKOUCH, Abdelatif, National Consultant, Director, INFOSAMAK (Morocco),
BOUGOUSS, Nada, National Consultant, Marketing Specialist, INFOSAMAK (Morocco),
BOURAS, David, National Consultant, Professor, Lincoln University (USA),
BJORN DAL, Trond, Lead International Consultant, Director, CEMARE, University of Portsmouth (UK),
CHOMO, Victoria, Products Trade and Marketing Service, FAO (Italy),
De SILVA, Achini, International Consultant (UK/ Sri Lanka),
EL MALAGUI, Mohamed, Director, INFOPECHE (Cote D'Ivoire),
KNUTSSON, Ogmundur, National Consultant, Professor, University of Akureyri (Iceland),
LEM, Audun, Products Trade and Marketing Service, FAO (Italy),
MANYALA, Julius Otieno, National Consultant, Senior Lecturer - Fisheries, Chepkoilel University (Kenya),
MAPFUMO, Blessing, Project Steering Committee, Regional Fisheries and Aquaculture Advisor, INFOSA, (Zimbabwe),
MATHEW, Sebastian, Project Steering Committee, Programme Advisor, International Collective in Support of Fishworkers (India),
MENESES, Carolina Ipar, INFOPESCA (Uruguay),
POLANCO, José Manuel Fernandez, National Consultant, Professor, University of Cantabria (Spain)
RIOS, Javier López, National Consultant, Advisor, INFOPESCA (Uruguay),
SSEBISUBI, Maurice, National Consultant, Management of Fisheries Companies and Marketing for AMC Limited (Uganda),
TESFABRUK, Sara, Consultant, Marketing and Consumer Behavior expert (Netherlands),

Date: Friday, July 20, 2012
Time: 8:30 AM - 10:30 AM
Location: Zanzibar
Chair: Audun Lem

31B Restoring Global Fisheries to Biological and Economic Health: How to Design and Finance Better Management

The Food and Agriculture Organization of the United Nations estimates that 70% of fisheries worldwide are fully or overexploited and a joint study the organization released with the World Bank estimates that mismanaged fisheries have cost the global economy \$2 trillion over the last thirty years. The overexploitation and mismanagement of fisheries has devastating repercussions for fishermen and oceans including job loss, stock depletion, habitat damage and even on-the-job deaths. However, there are a growing number of examples worldwide where effective management has prevented these issues by aligning fishermen's economic interests with ensuring biologically robust fish stocks (e.g. catch shares). When carefully designed and strategically implemented, these programs lead to improved environmental, economic and social performance. This session, Restoring Global Fisheries to Biological and Economic Health: How to Design and Finance Better Management is a holistic panel discussion that features a wide variety of professionals in the field of fisheries from Europe, Africa, Asia and North America to share their research, real life experiences and cutting edge approaches to creating and financing an

effectively and sustainably managed fishery. Discussions will center on design models and implementation, overcoming key challenges, and financial tools to transition seamlessly to effective management systems for long-term sustainability.

Panelists and Contributors are:

Jamie Workman (**Moderator**), Environmental Defense Fund jworkman@edf.org

Kent Strauss, Environmental Defense Fund kstrauss@edf.org

Erik Lindebo, European Commission erik.lindebo@ec.europa.eu

Patrick Mehlman, RARE Conservation pmehlman@rareconservation.org

Nancy Gitonga, African Union n.gitonga@fishafrica.co.ke

Date: Friday, July 20, 2012

Time: 8:30 AM - 10:30 AM

Location: Kibo 1

Chair: Rahel Marsie Hazen

31C: Governance: Management of Fleet Capacity

Date: Friday, July 20, 2012

Time: 8:30 AM - 10:30 AM

Location: Kibo 3

Moderator: Sean Pascoe

[Who pay the cost of the reduction of the large scale purse seine vessels?](#) (ID: 70)

Takashi SHIBATA, Osaka University of Commerce (Japan)

[What Kinds of Japanese Strategies are Pareto Improving: The case of Skipjack Tuna fisheries in the Pacific Ocean](#) (ID: 71)

Keisaku Higashida, School of Economics, Kwansei Gakuin University (Japan)

[To Invest or Not – Renewal of the Norwegian Bottom Trawler Fleet](#) (ID: 278)

Øystein Hermansen, NOFIMA (Norway)

Bent Dreyer, NOFIMA (Norway)

Thomas A Larsen, Nofima (Norway)

31D The Economic Impact of Climate Change on Fisheries and Aquaculture Part I

Date: Friday, July 20, 2012

Time: 8:30 AM - 10:30 AM

Location: Lake Victoria

Moderator: Florian Diekert

[Economics of Adaptation to Climate Change of Sea Cucumber Fishers in the Philippines](#) (ID: 17)

Maria Rebecca Campos, University of the Philippines Open University (Philippines)

[The Impact of Climate Change on the Vulnerable Fisheries Resource and Its Coastal Community in Cilacap Regency-Indonesia: A Set Up for Adaptation and Mitigation Strategy](#) (ID: 121)

Indah Susilowati, Faculty of Economics-Diponegoro University (Indonesia)

Waridin Waridin, Faculty of Economics and Business. Diponegoro University (Indonesia)

Rizky Yulianisa, Faculty of Economics and Business. Diponegoro University (Indonesia)

[Possible ECONOMIC IMPACT on coastal FISH STOCK RESOURCES in BANGLADESH in the case of CLIMATE CHANGE](#) (ID: 210)

Ahasan Habib (Brunei Darussalam)

Hjh Zohrah Sulaiman (Brunei Darussalam)

[Climate Change Impacts, Vulnerability Assessment and Economic Analysis of Adaptation Strategies in Ben Tre Province, Vietnam](#) (ID: 323)

Kim Anh Nguyen, Nha Trang University (Vietnam)

Chuong Bui Thien, Nha Trang University (Viet Nam)

TRANG LE THI HUYEN, Nha Trang University (Viet Nam)

CURTIS JOLLY, Auburn University (United States)

[Climate Change and Small-Scale Fisheries: Social, Economic and Governance Interactions](#) (ID: 369)

Anthony Charles, Saint Mary's University (Canada)

31E The Economics of Aquaculture Production and Profitability Part III

Date: Friday, July 20, 2012

Time: 8:30 AM - 10:30 AM

Location: Lake Tanganyika

Moderator: Ernest Yongo

[Marine ornamental fish trade in Kerala, India: A demand-supply analysis](#) (ID: 62)

Sirajudheen, T.K., Dept. of Aquatic Biology & Fisheries (United States)

Bijukumar A, Dept. of Aquatic Biology & Fisheries (United States)

Shyam S Salim, Central Marine Fisheries Research Institute (India)

[Effects of Price Risk in Wholesale Market on the U.S. Farm-Raised Catfish](#) (ID: 95)

Giap Nguyen, Tan Tao University (Viet Nam)
Curtis Jolly, Auburn University (United States)

[Analytical Hierarchical Process and Cost Benefit Analysis for Evaluation of Alabama Catfish Profitability and Sustainability](#) (ID: 315)

Curtis Jolly, Auburn University (United States)
Carel Ligeon, Auburn University, Montgomery (United States)

Nathanael Hishamunda, FAO (Italy)

Terril Hanson, Auburn (United States)
Vincent Wright, Northern Caribbean University (United States)

[The Prospects and Opportunities for Trout Farming in Scotland](#) (ID: 326)

Abdulai Fofana, Scottish Agricultural College (United Kingdom)

[Prospects and Potential of the African Lungfish \(Protopterus spp\): Results from a Field Survey in Uganda.](#) (ID: 362)

Joseph Molnar, Auburn University (United States)

John Walakira, Auburn University (United States)
Jeffrey Terhune, Auburn University (United States)

[BLUEFIN TUNA FULL LIFE CYCLE CULTURE: REVIEW AND PROSPECTS OVER THE NEXT THIRTY YEARS](#) (ID: 451)

Seamus McElroy, The BOSS Company (Indonesia)

31F: Markets: Consumers

Date: Friday, July 20, 2012

Time: 8:30 AM - 10:30 AM

Location: Bagamoyo

Moderator: Seamus McElroy

[Consumer Preference for Farmed Tilapia in Tanzania: A Choice Experiment Analysis](#) (ID: 223)

Francis Darko, Purdue University (United States)
Kwamena Quagraine, Purdue University
Sebastian Chenyambuga, Sokoine University of Agriculture (Tanzania)

[Consumer acceptability of Mukene \(Rastrineobola argentea\) value-added products in Uganda](#) (ID: 236)

MARGARET MASETTE, National Agricultural Research Organization (Food Biosciences Research centre) (Uganda)
ELIZABETH KHAKASA, National agricultural Research Organization (Food Biosciences Research centre) (Uganda)

[Comparative Assessment of the Preference and Consumption Pattern of Cultured and Marine Fishes in Ibadan Metropolis](#) (ID: 256)

Tosan Fregene, Department of Wildlife and Fisheries Management, (Nigeria)
Adeniyi Olanusi, University of Ibadan (Nigeria)

[Valuing seafood attributes: stated choice model](#) (ID: 344)

Thong Tien Nguyen, University of Southern Denmark (Denmark)
Wolfgang Haider, Simon Fraser University (Canada)
Hans Stubbe Solgaard, University of Southern Denmark (Denmark)
Eva Roth, University of Southern Denmark (Denmark)
Lars Ravn-Jensen, University of Southern Denmark (Denmark)

[Evaluating Consumer Preferences for Value-Added Fish Products Attributes in Oman](#) (ID: 345)

MSAFIRI MBAGA, SULTAN QABOOS UNIVERSITY (Oman)

32A FAO Regional Value Chains Workshop Part II

Part 2 of this special session.

Date: Friday, July 20, 2012

Time: 11:00 AM - 12:30 PM

Location: Zanzibar

Chair: Audun Lem

32B Governance: Marine Reserves and Protected Areas Part II

Date: Friday, July 20, 2012

Time: 11:00 AM - 12:30 PM

Location: Kibo 1

Moderator: Claire Armstrong

[The Economics of MPAs Revisited](#) (ID: 153)

Siv Reithe (Norway)

Claire Armstrong (Norway)

Ola Flaaten, Norwegian college of fishery science (Norway)

[Are Marine Reserves and Harvest Control Rules Substitutes or Complements for Rebuilding Fisheries?](#) (ID: 185)

Satoshi Yamazaki, University of Tasmania (Australia)

Sarah Jennings, University of Tasmania (Australia)

Quentin Grafton, Bureau of Resources and Energy Economics (Australia)

32C A Fisheries Management Synthesis: A Facilitated Discussion to Identify the Attributes of Successful Fisheries Management Part II

Whilst we frequently look at management tools as the key to successful fisheries management, there has been little, if any, synthesis made by those who deal with the actual fishery management operations of the pros and cons of hierarchical versus decentralized management approaches.

This session will focus on the question of the role played by fisheries management infrastructure in determining the success of fishery management programs with the objective of synthesizing a list of the infrastructure attributes that are beneficial to fisheries stakeholders. Time permitting, the discussion will also look for ideas on the ways in which stakeholders can mitigate the negative consequences of existing fishery management infrastructures and work to improve them.

The synthesis will be developed by employing a facilitated discussion among panel members and the general audience (rather than a series of presentations with a limited question and answer session).

Date: Friday, July 20, 2012
Time: 11:00 AM - 12:30 PM
Location: Kibo 3
Chair: John Ward
Facilitator: Rebecca Metzner

32D Governance: Recreational and Inland Fisheries

Date: Friday, July 20, 2012
Time: 11:00 AM - 12:30 PM
Location: Lake Victoria
Moderator: Paul Mwebesa

[Estimating the Economic Impact of Alien Invasive Fishes: Recreational Angling in the Amatola Region](#) (ID: 46)
James Kinghorn, Rhodes University, Department of Economics and Economic History (South Africa)
Jen Snowball, Rhodes University, Department of Economics and Economic History (South Africa)
Pete Britz, Rhodes University, Department of Ichthyology and Fisheries Science (South Africa)
[Meta-Regression Analysis and Benefit Transfer in the Sportfishing Literature When Valuation Studies Contain Dependent Measurements](#) (ID: 49)
Arvin Vista, University of the Philippines Los Baños (Philippines)
Randall Rosenberger, Oregon State University (United States)
[The Economics of Recreational Fisheries in Namibia](#) (ID: 346)
Mike Nghipunya, Ministry of Fisheries and Marine Resources

32E Environment, Natural Disasters, and Recovery Part II

Date: Friday, July 20, 2012
Time: 11:00 AM - 12:30 PM
Location: Lake Tanganyika
Moderator: Santosh Mishra

[The Value of Environmental Impact of Fisheries on Nutrient Dynamics](#) (ID: 224)
Jarno Virtanen, Joint Research Center, European Commission (Italy)
[The Economic Consequences of Regime Shifts in Marine Ecosystems](#) (ID: 289)
Lorena Gola, Kiel University (Germany)
Martin F. Quaas, Department of Economics, University of Kiel (Germany)
[Crayfish Management in the Ljungar River - Managing with Shocks](#) (ID: 402)
Jesper Stage (Sweden)

Closing Ceremony

Plenary

Date: Friday, July 20, 2012
Time: 12:40 PM - 1:00 PM
Location:
Co-Chair: Rebecca Metzner
Co-Chair: Ralph Townsend
Co-Chair: Dan Holland

Abstracts

Abstract # 15

Session # 22E The Economics of Aquaculture Production and Profitability Part II

MEASURING PROFITABILITY IN SMALL SCALE AQUACULTURE ENTERPRISES IN SOUTH WEST NIGERIA

Dr. Yemi Akegbejo-Samsons, Prof, samsons56@yahoo.co.uk

Mr. Deji Adeoye, adeoyedeji@hotmail.com

Abstract

Aquaculture, the farming of aquatic organisms especially fish, in Nigeria is dated back to the 1940s at Onikan Experimental farm, South West Lagos and the 160ha industrial scale fish farm, Middle Belt, Panyam, Jos in 1951. Since then, great expansion has been witnessed in Nigeria's aquaculture industry; graduating from extensive practice to super-intensive systems. This is evidenced by the use of concrete and plastic tanks as flow-through and re-circulating systems in boosting fish production in a small space as compared to extensive system utilizing earthen pond facility. The advent of extruded floating feed compared to supplementary and sinking feed are all indications of Nigeria aquaculture industry expansion. Despite this advancement, the industry contributes only 20% to Nigeria local fish production. Researchers, policy makers and donors are still doubtful about the potential of aquaculture to contribute to sustainable rural livelihoods in Nigeria. This paper presents the results of the study carried out to investigate the profitability of aquaculture enterprises in South West Nigeria. 20 randomly selected fish farms were visited, and data were collected based on their production operations. The study focused on measures based on techniques which examine returns to resources used, benefit/cost ratios, welfare contribution to households and society. We use past and current records of net returns above costs and a cost of living allowance to evaluate the economic and financial sustainability of the farms in the study area. The results show that only 25% were profitably operated, while 75% were not.

Abstract # 16

Session # 02F Understanding and Modeling Fishing/Sector Behavior Part II

REMUNERATION SYSTEMS AND ECONOMIC PERFORMANCE: THEORY AND VIETNAMESE SMALL-SCALE PURSE SEINE FISHERIES

Ms. Thuy Pham Thi Thanh, PHD student, thanhthuy41dn@yahoo.com; Mr. Ola Flaaten, Professor, ola.flaaten@uit.no

Dr. Kim Anh Nguyen, sonanhcc@gmail.com

Abstract

This study analyzes the determinants of the choice of remuneration systems and examines their influence on the economic performance of fisheries. The purse seine fisheries in Khanh Hoa province, Vietnam, are used as the study case, with data collected from 162 fishing households in 2005 and 2008. The principal-agent framework was employed for the theoretical analysis and the propensity score-matching technique was employed for the empirical analysis. We demonstrate that insurance incentive-based problems are the rationale for the coexistence of share contracts and flat-wage contracts, even though share contracts bring greater economic benefit to both vessel owners and crew members. Income and residence are important factors that influence the behavior of choosing contracts. Both urban and rural crew members are found to be risk-averse. The implications for decision makers and fishermen are discussed in terms of how to adjust their behavior to maximize the efficiency gains.

Abstract # 17

Session # 31D The Economic Impact of Climate Change on Fisheries and Aquaculture Part I

ECONOMICS OF ADAPTATION TO CLIMATE CHANGE OF SEA CUCUMBER FISHERS IN THE PHILIPPINES

Dr. Maria Rebecca Campos, PhD, cmaribec@yahoo.com

Abstract

The Philippines is the second major producer and exporter of sea cucumber in the world. However, climate change has affected this industry and has decreased income for the country's economy, the commercial fishing sector as well as marginal fishermen who rely on it as their source of livelihood. Three types of sea cucumber fishing techniques are commercial fishing, harvesting sea cucumbers as by-catch and by gleaning. This paper focuses on gleaning because the fishermen have no control of the shallow coral reef flats where they catch sea cucumbers. Collection is done by small-scale or artisanal fishers, involving men, women and children. This activity is carried out during low tide in shallow intertidal reef flats. Gleaning is often classified as "informal" work acting as a safety net for the rural landless. The community of sea cucumber fishers in Sorsogon organized themselves and came up with two options, using the marine protected area approach: artificial reef or ranch model. The second is now being implemented with an IRR of 40%, BCR 1.7, NPV of PhP 670,000 and payback in more than a year over the first which has negative NPV and payback in over 50 years.

Abstract # 19

Session # 22F: Trade

MIDDLEMEN-GOOD FOR RESOURCE AND FISHERMEN? AN ECONOMIC ANALYSIS OF A COMMON FISHERIES INSTITUTION IN DEVELOPING COUNTRIES

Ms. Thuy Pham Thi Thanh, PhD Student, thanhthuy41dn@yahoo.com

Mr. Ola Flaaten, Professor, ola.flaaten@uit.no

Abstract

The debate about whether international trade actually benefits for resource and all stakeholders in the chain is still unsettled. Even the benefits of international trade were addressed in some articles, the question about which signals for policy makers intervene in the market is still being raised. This paper attempts to model how an increase of the world market price is distributed backward to all stakeholders in the fish chain with two different aspects of the market structure: the competitive market and the power market. Based on this model, three key interesting issues are concerned: the ex-vessel price, the rents of stakeholders and the fish stock. The results showed that an increased world market price leads to an increased ex-vessel price, a decreased fish stock and thereby bring more rent for both fishermen and middlemen or at least for one of the parties in the chain. Interestingly, a monopsonistic middleman is likely to keep the maximum ex-vessel price as the price at maximum sustainable yield level and thereby assure that the fish stock is not reduced below its level. The theoretical findings are demonstrated by exploiting a numerical example on the export skipjack tuna fish chain in Nha Trang city, Vietnam.

Abstract # 20

Session # 01E Markets: Value Chains Part I

VALUE CHAIN ANALYSIS OF THE EGYPTIAN AQUACULTURE SECTOR

Dr. Ahmed Nasr Allah, a.allah@worldfishcenter.org

Mr. Graeme Macfadyen, graeme@consult-poseidon.com

Dr. Malcolm Dickson, m.dickson@cgiar.org

Abstract

Egypt's aquaculture production (705,490 tonnes in 2009) is by far the largest of any African country and places it 11th in terms of global production. Despite the fact that the aquaculture sector in Egypt is now a mature one having developed over a period of more than 30 years, the economic performance of the sector is not well understood or documented. To help improve this understanding a WorldFish Centre study in September 2011 conducted a value-chain study for the sector. The study completed individual interviews and focus group discussions with fish farmers, traders/wholesalers, and retailers in four of the most important governorates in terms of aquaculture production: Kafr el Sheikh, Behera, Sharkia, and Fayoum. The study mapped the value-chain, and generated a wide range of quantitative data for each link in the value-chain on operational and financial performance (e.g. gross output values, variable and fixed costs, operational and net profit margins, value-added generation), and on employment creation (by gender, age and full-time/part-time). Qualitative information on the critical factors impacting on the performance of each sub-sector of the value-chain was also collected, and this enabled recommendations to be made about necessary actions both by those within the value-chain and by those outside of it (i.e. government), to improve value-chain performance. The study showed how value-chain analysis can be a useful tool to describe sector performance and to make evidence-based recommendations for improvements.

Abstract # 21

Session # 22A Africa Policy Day Part III

CHALLENGES AND INVESTMENT OPPORTUNITIES FOR LARGE-SCALE AQUACULTURE FARMERS IN NIGERIA

Mr. Deji Adeoye, adeoyedeji@hotmail.com
Dr. Yemi Akegbejo-Samsons, Prof, samsons56@yahoo.co.uk

Abstract

Fisheries sector plays an important role in Nigeria economy. Contribution of the sector to the nation's economy can be increased if challenges in the industry are minimized and the opportunities explored. Large scale aquaculture, an economic activity earning people a living is a very important industry encompassing fish traders, fish processors, fish farmers etc. The sector supports many Nigerians directly and indirectly. However fish importation is much more in quantity and value. 80% of aquaculture production in Nigeria is manned by small-scale farmers, except for few commercial ventures. Nigeria is blessed with numerous opportunities for large-scale aquaculture; however the challenges seem to over ride these opportunities. Constraints to production in the industry have been identified as recurrent high cost fish feed, poor water quality management, poor quality fish seed, technical know-how etc. Beyond the constraints to production are more pertinent factors responsible for un-sustainability of fish farm operation as business ventures. This paper focuses on the investment opportunities in large scale aquaculture and the current challenges that the farmers are facing in Nigeria. The paper shows that unprofitable operation of fish farms in Nigeria could be broadly attributed to two factors: poor production planning and inadequate technical know-how. The paper recommends the need to commercialize the industry through broad government fiscal efforts and sectorial re-organisation in Nigeria.

Abstract # 22

Session # 03D: Compliance, enforcement, and the lack thereof

INFORMALITY AND ITS LINKAGES WITH IUU FISHING ACTIVITIES IN THE PORT OF PROGRESO, YUCATAN, MEXICO

Ms. Carmen Pedroza, PhD, pedrozacarmen@yahoo.com

Abstract

This paper explores the economic environment that makes informal fish trading possible, the nature of these activities and how they are interconnected or might stimulate IUU fishing activities in the port of Progreso, Yucatan, Mexico. The main argument is that fish trading by middlemen has been developed within the scope of an informal sector which depends on the existence of structural and organisational factors such as: a dual economic system where the formal and informal sectors are complementary and interdependent, and an institutional environment and a socio-economic network that interconnects both sectors and supports the activity. Research for this study was carried out during 2008 and 2009 in the port of Progreso, Yucatan, Mexico. The survey strategy was a non-probability sample adapting and combining chain referral techniques because middlemen in this region are a hidden population. The size and boundaries of this population are unknown and there are strong privacy concerns among the members of this social group because it is a predominantly informal activity. Findings indicate that fish trading by middlemen is a way of absorbing labour and generating income, as is the case for several other informal activities. The main motivation for middlemen to remain underground is to maximise benefits. In order to do so, they need to build a socioeconomic network which is the centre of their trading system. This way of operating generates incentives for fishers to fish illegally because middlemen would buy their products even if they do not meet formal regulations.

Abstract # 23**Session # 11C Socio-economic Assessment of Management Measures of the New Common Fisheries Policy Part I****WILL I CLEAR MY FEET? VESSEL OWNERS' STAY OR EXIT DILEMMA IN A STOCK RECOVERY SITUATION**

Ms. Hazel Curtis, BSc MSc MBA, h_curtis@seafish.co.uk

Abstract

This paper presents findings from an investigation into the stay or exit decision of vessel owners in Scottish fisheries subject to stock recovery measures. Semi-structured in-depth interviews were conducted with 39 vessel owners during and following a vessel buy-back scheme. Empirical results show key factors affecting the decision to stay or exit, which include the owner's age, other sources of income, the existence of a successor to the business, impact on other involved family members, and expected future business performance, which in some cases was expected to be business failure. Owners did not use any formal financial methods or techniques for their decision-making. Advice sought from accountants was mostly on minimising tax liability. Owners expecting profitable operation considered how to use government grants to enable fresh investment in the fishery. For vessels with poor expected performance, owners' principle concern was "will I clear my feet?" - would there be a positive net cash position on winding up the business? If they could not get clear of debt by winding up, skippers would continue in unprofitable or low profit boats, as long as they could get a wage for their labour and repay the bank loan, because they saw no other option. This could partly explain the time lag between decline in average profits and decline in fleet capacity in a fishery, identified by other authors. Negative or low accounting profit and zero or negative return on assets may not on their own cause owners to quit.

Abstract # 24**Session # 22C Frontiers in Economic Modeling Part II****THE FISHERY AS AN ECONOMIC BASE INDUSTRY AFTER THE NEWFOUNDLAND COD MORATORIUM**

Dr. Noel Roy, nroy@mun.ca

Abstract

In a 2009 paper in Land Economics, Roy, Arnason and Schrank used a newly developed methodology based on cointegration analysis to establish and measure the role of the fishing industry as an economic base industry (and the only such base industry) for the Canadian province of Newfoundland over the period 1961-1994. Since that period, the groundfish harvesting sector has collapsed, although it has been replaced by a crustacean fishery that provides similar value added but is considerably less labor-intensive. At the same time, valuable petroleum deposits have been developed offshore which have resulted in considerable consequent economic activity, perhaps to the extent of establishing a new economic base industry. This study is based on the same methodology as in Roy, Arnason and Schrank, but will document the impact of both the major structural shifts within the fishing industry and the development of competing economic base sectors in petroleum extraction and its derivatives.

Abstract # 30**Session # 03E Bioeconomic Modeling Part II****ANALYZING RISK OF STOCK COLLAPSE IN A FISHERY UNDER STOCHASTIC GROWTH MODEL**

Mr. Diwakar Poudel, DIWAKAR.POUDEL@NHH.NO

Abstract

Acknowledging that there is stochasticity in the dynamics of a fish stock, one has a situation where the fish stock can collapse even without any fishing pressure. To derive the probability of collapse, we suggest a Monte Carlo approach because it is relatively simple model and can capture complex stock dynamics. We use an economic model with downward sloping demand for fish and stock dependent costs. Then, we calculate the optimal harvest profile as a feedback control rule. We analyze effects of different level stochasticity. We observe that the stochastic solution is more conservative compared to deterministic solution apart from a very small stock level, however, the effect from increased stochasticity is small at high stock levels. We simulate the system forward in time with the optimal solution. In simulated paths some stock collapsed, while other recovered. The paths are easily identified and we group the paths and estimate the probability of collapse for a given stock level. The precision of the estimate only depends on the number of paths. We have also looked at the time required for stock to reach stable level. The system needs more time to stabilize if the initial stock level is small and with stochasticity. Finally, the stochastic stock stabilizes on a level which is lower than the deterministic level. In this study, we demonstrate an approach to quantify stochasticity in fish stock dynamics, derive the optimal stochastic harvest profile, and demonstrate a method to assess the risk of collapse.

Abstract # 31**Session # 22E** The Economics of Aquaculture Production and Profitability Part II**EFFICIENT AQUACULTURE PRODUCTION: A PANACEA FOR ALLEVIATION OF NUTRITIONAL POVERTY IN NIGERIA**

Dr. Oluwadare Ojo, PhD, drojoso@yahoo.com
Dr. Dapo Fagbenro, Professor, dapo_fagbenro@yahoo.co.uk

Abstract

There is worsening nutritional deficiency in Nigeria due to the inability of the country's food production rate to meet food demand rate, manifesting in widespread hunger and malnutrition. Nigerians are high fish consumers and offer the largest market for fisheries products in Africa because fish is the cheapest source of animal protein for essential body functions. Fish production from capture fisheries has been on the decline, resulting in increase in poverty and nutritional deficiency and Aquaculture production remains the best option to bridge the gap between fish demand of 1.5 million tonnes and domestic production of <0.6million tonnes in the face of costly fish imports, high animal protein sources prices and malnutrition.

Abstract # 32**Session # 22A** Africa Policy Day Part III**THE IMPACTS OF SMALL-SCALE AQUACULTURE ON INTRA-HOUSEHOLD RELATIONS AND FOOD SECURITY IN MOZAMBIQUE**

Mrs. Norma Schoenherr, BA, norma.schoenherr@googlemail.com
Mrs. Johanna Quatmann LL.M, johanna@quatmann.eu

Abstract

As seafood production from fisheries is near its peak, aquaculture is likely to become the main source of seafood production. Also developing countries adapt to this development. In Mozambique for example one program of the country's National Aquaculture Authority (INAQUA) is to improve the country's supply of animal protein by spreading aquaculture to the coastal areas. However, while the contribution of aquaculture to global food supply is increasingly well studied, the socio-economic impacts of particularly small-scale aquaculture and the social and gender dimension of aquaculture are usually missed in existing research. This paper aims to fill this gap by gaining a better understanding of how the introduction of aquaculture is managed in the coastal areas of Mozambique and contributing to the understanding of its socio-economic effects on households that choose to adopt the new technology. Special emphasis is placed on disintegrating the household as unit of analysis in order to examine whether and how intra-household food security conditions and social relations are likely to change through the introduction of aquaculture. The paper presents results from an empirical literature review which was validated in a number of key informant interviews in Mozambique during a field visit in 2010, which were based on three analytical categories. These are (a) the process and management of adoption of small-scale aquaculture, (b) the potential impacts of aquaculture on food security, and (c) the potential social impacts (emphasis on gender and intergenerational impacts) of aquaculture.

Abstract # 33**Session # 23D:** Measurement and Indicators for Improved Understanding and Management Part II**FACTOR PRODUCTIVITY IN ARTISANAL FISHERY PRODUCTION IN NIGERIA**

Dr. Oluwadare Ojo, PhD, drojoso@yahoo.com

Abstract

Nigeria has very low per capita consumption of animal protein when compared to some countries of the world. To redress this, research into the investment opportunity in the fisheries subsector, reputed to be nutritionally superior to livestock in animal protein content, should be emphasized. Investment and development in the artisanal fishery subsector which is the commanding height in the domestic fish production in the country should be given top priority. The study looked at factor productivity in artisanal fishery production in Edo State of Nigeria. Data collected with aid of structured questionnaire from 275 artisanal fisher-folks selected using multistage sampling technique were analysed using descriptive statistics and stochastic frontier production function analysis. Results showed that the fisher-folks were mainly males, ageing, highly experienced, maintained large family sizes, belonged to cooperatives and had less educated. Resources in Artisanal fishery production were efficiently allocated with the overall productivity measured by the return-to-scale of 0.629 but the estimates of the value marginal product (VMP) of the resources, showed that the given optimization condition was never attained in the allocation and utilization of fishing inputs. The VMP of each of the inputs was found to be less than their unit prices. The efficiency analysis showed the existence of inefficiency effects in artisanal fishery production as the technical efficiency of the fisher-folks varied significantly with average Technical Efficiency of 0.86. Fish farmers should pay attention to factors of production with negative elasticity of production and those that negatively...

Abstract # 34**Session # 01E Markets: Value Chains Part I****STRUCTURAL PERFORMANCE OF ARTISANAL FISH MARKETING IN NIGERIA.**

Mr. Lawrence Oparinde, Bachelor of Technology, saintlawrence8@yahoo.com
Dr. Oluwadare Ojo PhD, drojoso@yahoo.com

Abstract

Fish is an important source of protein which is highly needed for human beings to experience necessary growth and development. This is the reason for the phenomenal rise in the consumption of fish in order to meet up with the body nutritional requirements. Therefore, marketing of this source of protein is inevitable as its distribution depends largely on the structure of the marketing system. This study examined the structural performance of artisanal fish marketing in Ondo State, Nigeria. Data collected from 250 artisanal fish sellers selected using multistage sampling technique were analysed using descriptive statistics, marketing and gross margin, Gini coefficient and Lorenze curve analyses. The results showed that artisanal fish marketing was profitable with a mean net return of N137.10/kg (\$0.85/kg). The estimated value of the Gini coefficient determined was 0.64, indicating the presence of inequality in the share of the artisanal fish market in the study area. It was realized that all the respondents in the study area, mentioned poor transport network, high transport cost, inadequate fund and inadequate storage facilities as major problems confronting artisanal fish market in the study area. Therefore, programmes that will improve fish marketing should be organized for fish marketers by the relevant government parastatals, extension workers, Non Governmental Organizations and the artisanal fish marketers should be sensitized on the formation of better organized fish marketing cooperative societies where they can solve some of their problems themselves.

Abstract # 35**Session # 12D The Economics of Aquaculture Production and Profitability Part I****META-FRONTIER ANALYSIS OF INTENSIVE AND SEMI-INTENSIVE FISH FARMS IN GHANA**

Dr. Edward Onumah, eonumah@ug.edu.gh

Abstract

This study considers a cross sectional data of 210 farms to analyse the technical efficiency levels of intensive and semi-intensive fish farms in Ghana using the meta-frontier approach. This technique takes into consideration farms that operate under different technologies. It estimates technology gap that measures output from the frontier production function for the individual systems relative to the potential output that is defined by the meta-frontier function. The study finally identifies the determinants of technical efficiency. The results reveal that the intensive system of fish farming exhibit increasing return to scale, whilst the semi-intensive system exhibit decreasing return to scale. The combined effect of operational and farm specific factors are identified to influence technical efficiency of both systems although individual effects of some variables are not significant. The mean technical efficiency relative to the meta-frontier is estimated to be 0.68 for the intensive system and 0.79 for the semi-intensive farms. The study concludes that the semi-intensive system of fish farming is more technically efficient than the intensive system. However, increase in the scale of production in the intensive system to take advantage of economics of scale may enhance efficiency of production.

Abstract # 36

Session # 02B: Governance: Co-management, Community Management, Coops, and Catch Shares Part II

ANALYSIS OF POWER IN FISHERIES CO-MANAGEMENT: EXPERIENCES FROM LAKE CHILWA, MALAWI

Dr. Friday Njaya, fnjaya@gmail.com

Abstract

In this article I analyse Lake Chilwa co-management arrangement in Malawi through the lenses of the concept of power. The analysis is at the local level where majority of the important actors operate. These include the fishing communities, Department of Fisheries, traditional leaders and the new local management entities created through co-management reforms called Beach Village Committees. The analysis, which is based on decentralisation and power frameworks, shows that there is unequal power distribution between these different actors, often resulting in the marginalization of the fishers themselves. While the Department of Fisheries and Beach Village Committee draw their powers from the Act of Parliament, policy and legislation, the traditional leaders have remained influential through their customary powers. They all, however, attempt to influence the outcomes of co-management reform through various indirect channels of power, often with the objective to advance their own political, economic, or institutional agendas. I observe, for instance, that although the powers of the traditional leaders vary from place to place, in most cases, they have interest in co-management, not because of the potential political empowerment of their community members or the resource management improvement that Lake Chilwa co-management is expected to provide, but because of the various personal benefits that they could derive from that reform.

Abstract # 37

Session # 03F Managing Development of Fisheries and Aquaculture Sectors Part III

PERFORMANCE OF MARINE FISHING INDUSTRY IN INDIA-A PRODUCTIVITY APPROACH

Dr. Aswathy N, aswathy.icar@gmail.com

Dr. Ramani Narayanakumar, ramani65@rediffmail.com

Dr. Shyam S Salim, PhD PGDBA ARS, shyam.icar@gmail.com

Dr. Somy Kuriakose, somycmfri@gmail.com

Abstract

Marine fisheries sector forms the source of livelihood for over seven million fisherfolk and contributes around one percent of the GDP in India. Technological advancement in harvesting and post harvest technologies had transformed the marine fisheries sector of the country from subsistence fishery to a multibillion industry. The private capital investment in the capture fisheries sector increased from Rs.41.17 billion in 2000 to Rs.154.74 billion in 2010. Marine fish production in the country reached 3.32 million tonnes with gross earnings of Rs.226 billion in 2010 at landing centres(points of first sales). The performance of the marine fishing industry was analyzed using total factor productivity growth for the period 2000 to 2010. The input and output indices were constructed using Divisia-Tornqvist indexing method. Quantities and shares of 12 resources groups consisting of elasmobranchs, clupeids, carangids, perches, pomfrets, mackerels, seerfishes, tunnies, crustaceans, cephalopods and other low value pelagics and low value demersals were used for constructing the output index. Labour and fuel used in the fishing industry were taken as the input variables. The fuel used in the fishing industry was estimated based on average fuel consumption per hour of fishing for all the fishing units. Labour employed in the marine fishing industry was estimated in terms of labour days. The average employment was 105 mn days and the average diesel consumption was 1000...

Abstract # 40

Session # 02A Looking at Fish Supply Chains with a Gender Lens

APPRAISAL OF FRESH FISH MARKETING IN ONDO STATE, NIGERIA

Mrs. Adeleke Lydia, PhD in progress, mosunmolalydia@yahoo.com

Abstract

This study carried out an appraisal of fresh fish marketing in Ondo state, Nigeria. It specifically examined the socio-economic characteristics of fresh fish marketers, determined profitability and examined market structure for fresh fish in the study area. A multi-stage sampling technique was used to select 45 fresh fish marketers and structured questionnaire administered on them. Data collected were analyzed using descriptive statistics, gross margin analysis, Gini-coefficient analysis and marketing function analysis. The study revealed that 95.6% of the respondents belong to the active segment of the population while the remaining 4.4% were aged. Analysis also showed that fresh fish market was dominated by females which accounted for 73.3% of the sellers. The profitability analysis showed that an average marketer incurred a total variable cost of N511,185.78 (\$3,195) per year but earned an average revenue of N618,875.56 (\$3,867) over the same period. This indicates that an average marketer earned N107,689.78 (\$673) as gross margin per year suggesting that fresh fish marketing is a profitable venture in the study area. A Gini-coefficient of 0.5292 obtained in this study indicates a high level of concentration in the fresh fish market. The result of the marketing function showed that the estimated coefficient of multiple determination (R²) indicates that the postulated regressors i.e. included variables in the model explained 98.7% in the variation of the regressand (i.e. sales revenue).

Abstract # 42

Session # 03A Overcoming Gender Inequalities in Fish Supply Chains to Inform Policy and Action

GENDER MAINSTREAMING AND WOMEN EMPOWERMENT - REFLECTIONS AND UPSHOTS FROM FISHING INDUSTRY OF KERALA, INDIA

Dr. Shyam S. Salim, PhD PGDBA ARS, shyam.icar@gmail.com

Abstract

Mainstreaming aims at incorporating gender concerns as an integral element in the implementation, monitoring and evaluation of policies and programmes so that benefits are shared equally and inequality isn't perpetuated. UNDP (2008) opined that investing in women competencies and empowering them to exercise their choice is the surest way to sustain economic growth and development. In India, fisheries sector provides a livelihood for women as a source of supplementing fisher household income by their engagement in pre and post-harvest activities including marketing. The fisherwomen in Kerala assume significance due to their involvement in fish related activities leading to distribution, availability and value addition. The study focused the economic, social, political and legal empowerment of fisherwomen involved in processing and marketing across four occupational groups viz. fish retailer, fish vendor, dry fish makers, and value added fish producers and was based on primary data collected from fisherwomen households. The study analyzed empowerment levels using scoring indices and composite empowerment index for fisherwomen categories were estimated. The social and economic empowerment level was high with freedom in decision making and household expenditure. Handling, transporting and storage operations exhibited highest level of discrimination's. SHG's and co-operatives were major networking institutions which augmented empowerment levels. Market intelligence and news were concerns of continuing discrimination's. The results indicated that the fisherwomen in Kerala possessed healthier composite fisherwomen empowerment index. Nevertheless appropriate institutional arrangements ensuring equal opportunities in fish marketing and processing and priority for institutional credit access will mend...

Abstract # 43**Session # 13A Markets: Value Chains Part III****THE RELATIONSHIPS AMONG THE KEY STAKEHOLDERS IN THE FISHERY PRODUCT VALUE CHAIN: THE CASE OF ANCHOVY, VIETNAM**

Ms. Thuy Pham Thi Thanh, PHD Student, thanhthuy41dn@yahoo.com

Dr. Kim Anh Nguyen, sonanhcc@gmail.com

Ms. Tram Anh Nguyen Thi, Dr., tramanhdhts@yahoo.com

Abstract

Anchovy, until now, is considered not only as a main fish product for Vietnamese consumers but also a high quality product for international market. This fish creates favorable conditions for development of Vietnamese commercial fisheries. However, the process of globalization recently makes fish products like anchovy challenge meeting the requirements of consumers for quality, food hygiene safety, traceability and friendly environment products. The aim of this study is to develop the relationship among the key stakeholders in the fishery product value chain, thereby, increase benefit for fishermen while still establish confraternity relations among them: processors, middlemen and fishermen. The anchovy product in Khanh Hoa province is used as a study case with the data collected from three main stakeholders in 2009: forty six fishermen, three middlemen and three processors. Chart and Structure-Conduct- Performance approaches are employed for the analysis. The finding shows that fishermen get fewest benefits where as middlemen get highest benefits in the value chain. Fishermen are revealed to bear all the risk of lower price and bad weather conditions while middlemen seem out of these. Cooperation is a good option to reduce the risk bearing for fishermen and might transfer, in some part, benefit from middlemen to fishermen.

Abstract # 44**Session # 23B JIFRS/JICA Session on Responsible Fishing****REDUCING POST-HARVEST LOSSES OF THE ARTISANAL DAGAA FISHERY (RASTRINEOBOLA ARGENTEA) IN LAKE VICTORIA TANZANIA: A COST AND BENEFIT ANALYSIS.**

Ms. Lilian Ibengwe, BSc,MSc, lilyibengwe@gmail.com

Mr. Daði Már Kristófersson, PhD, dmk@hi.is

Abstract

Dagaa constitutes over 38% of the total fish landings from Lake Victoria in Tanzania. The fishery supports a major artisanal fishery in the country, ranking second to the Nile perch. However, the dagaa fishery is associated with high level of post-harvest loss (physical and quality losses) approximately 59%. The objective of this study was to propose cost effective management strategy to reduce dagaa post-harvest loss in Tanzania. To meet this objective a cost and benefit analysis was done, to determine whether adopting drying racks will reduce dagaa post-harvest loss, and hold positive public value in the future. Two categories of analysis were set i.e. private (individual) and public (Government) for a pilot district (500 fishers), the analyses were divided into five parts: (1) Assessment of all possible dagaa post-harvest losses: (2) Assessment of the cost of reducing the losses: (3) Assessment of the anticipated benefits associated with reducing the losses: (4) Evaluation of costs and benefits to determine net benefit and NPV: (5) A sensitivity analysis. From the analysis it was found that, drying racks project has positive NPV therefore it is worthwhile to be implemented in Tanzania to reduce dagaa post-harvest loss. Also sensitivity analysis indicated that NPV is sensitive and is likely to be affected by changes in sales price, while changes in investment and implementation costs were found to have no impact on NPV. By using drying racks livelihood of fishers will be improved as well as increase regional trade and

Abstract # 46

Session # 32D Governance: Recreational and Inland Fisheries

ESTIMATING THE ECONOMIC IMPACT OF ALIEN INVASIVE FISHES: RECREATIONAL ANGLING IN THE AMATOLA REGION

Mr. James Kinghorn, BSc(hons), jameswkinghorn@gmail.com

Dr. Jen Snowball Professor, j.snowball@ru.ac.za

Dr. Pete Britz, Professor, p.britz@ru.ac.za

Abstract

While South Africa possesses a well developed marine fishery supported by policy, legislation and appropriate institutions, no inland fisheries policy exists and its potential has not been considered from a development perspective. The transfer of the mandate for fisheries to the Department of Agriculture, Forestry and Fisheries has opened a window of opportunity to develop policy to promote rural livelihoods based in inland fish resources. The research presented here forms part of a broader initiative by the South Africa Netherlands research Programme on Alternatives in Development, which aims to guide emerging inland fisheries policy by considering the social, economic and ecological consequences of stocking aquatic systems with alien invasive species. Specifically, this paper estimates the economic impact of alien invasive fishes in the Amatola Region, a historically marginalised area of South Africa, by considering how they have stimulated the recreational angling industry. In addition to considering this overall impact, the paper contrasts two distinct models of recreational fisheries development: a top-down corporate driven bass fishing competition and a bottom-up community initiated trout fishing lodge. The results will feed into a decision making tool, the purpose of which will be to aid in efficiently managing South Africa's inland aquatic resources for optimum socio-economic benefit.

Abstract # 48

Session # 22F: Trade

TRADEOFFS IN INDIAN SEAFOOD TRADE - FOREX EARNINGS VIS- A- VIS DOMESTIC AVAILABILITY AND AFFORDABILITY

Dr. Shyam S Salim, PhD PGDBA ARS, shyam.icar@gmail.com

Dr. Geetha R, PhD, geethaeconomist99@gmail.com

Dr. Aswathy N, aswathy.icar@gmail.com

Dr. Vipinkumar V.P, PhD, vipincmfri@gmail.com

Abstract

India's seafood export surged new heights and continued unabated amidst global recession. The exports surpassed 2.85 billion dollars with dynamic geographic and commodity diversifications. Indian economy grew consistently post liberalization with higher purchasing power and consistent demand for food products. The consumption behavior skewed towards protein food with increased fish consumption on account of being healthier and cheaper food amongst animal protein substitutes. The annual per capita fish consumption has increased from 3.1 kg in 1970s to about 11 kg in 2010. The high value fishes like shrimps, squids, seer fishes and pomfrets are massively exported resulting in extortionate domestic prices. The paradox of export immensely exists with export price being substantially lower than domestic price. Thus there exists a question of availability and affordability of high value fishes in domestic market. The trade off between export and domestic trade was investigated by consumption studies across urban consumers in Chennai, Kochi and Mumbai. The study focused on income and expenditure pattern buying behavior, constraints in fish consumption and willingness to pay for high value fishes. Contingent valuation technique and dummy dependent regression model were employed. Domestic prices were 20-25 per cent more than export price nevertheless a sizeable demand exists with high consumer surplus. The Garrett ranking constraint analysis indicated reduced availability, seasonal consumption and exorbitant price. Most domestic consumers were unaware about low export price. The study exposed significant deleterious effect of fish demand - supply mismatch in domestic market and advocates governmental interventions to ensure

Abstract # 49**Session # 32D Governance: Recreational and Inland Fisheries****META-REGRESSION ANALYSIS AND BENEFIT TRANSFER IN THE SPORTFISHING LITERATURE WHEN VALUATION STUDIES CONTAIN DEPENDENT MEASUREMENTS**

Dr. Arvin Vista, arvinvista@gmail.com
Dr. Randall Rosenberger, R.Rosenberger@oregonstate.edu

Abstract

When compiling metadata for use in a meta-analysis, many of the underlying studies report multiple estimates leading to issues of correlation or dependence. This paper examines the effects of different models and treatments for within-study correlation on meta-regression (MR) analysis and their corresponding implications on benefit transfer (BT) performance. Treatments include weighted and panel data regression models on all estimates, or reducing the metadata by selecting a best estimate or calculating an average estimate for each study with multiple dependent estimates. Data treatments and regression-based methods are applied to metadata from the sportfishing literature and contains about 140 papers that provide 833 estimates of access values for fishing in the United States and Canada. Results show that the median absolute transfer errors are lower for the model based on a single value, i.e. average- and best-set metadata than models based on the full metadata, although some loss of information is engendered through these data treatment methods.

Abstract # 51**Session # 21F Environment, Natural Disasters, and Recovery Part I****COLLABORATIVE GOVERNANCE SUSTAINING ECOSYSTEMS; A CASE FROM SRI LANKA**

Mr. Erwin Rathnaweera, erwin.crish@gmail.com
Mr. Jayantha Gunasekara, jayantha.gunasekara@practicalaction.org.lk

Abstract

Pressure on coastal and lagoon ecosystems are rapidly increasing. This is due to various factors, some of which have been the subjects of discussion in many forums. Attempts have been made to manage the pressure on ecosystems, using different approaches. They are ranging from community based management systems, state-driven management mechanisms to co-management approaches. Often, both state-driven and co-management approaches are failures in Sri Lanka. Comparatively, traditional community based systems prove to sustain, yet grappling with deteriorating ecosystems and increasing conflicts. Practical Action has been working with eight lagoons and two coastal fishery ecosystems in Sri Lanka. The work has mainly been to learn from existing approaches on ecosystem-management to further build on them to function far more effectively and efficiently. Our experiences show with the increase of population, the numbers of communities dependent on ecosystems other than fishing have significantly increased. Failure to include them in management approaches has led to deteriorating ecosystems. To compound the situation, the presence of private sector as service providers or entrepreneurs has led to severe conflicts. The fisheries project of Practical Action tried to develop a mechanism which not only involved fishers and the state, but also other communities and private sector to collaboratively govern the lagoon and coastal bodies. The results of this approach show that this model work far more effectively in terms of sustaining the health of ecosystems, thus leading to strengthened livelihoods for natural resource depended communities. This paper attempts to discuss the lessons

Abstract # 52**Session # 01D Bioeconomic Modeling Part I****OVERFISHING IN PENINSULAR MALAYSIA: A BIOECONOMIC MODELING**

Ms. Aswani Farhana Mohd Noh, aswani85@gmail.com
Dr. Gazi Md Nurul Islam, gazinurul236@gmail.com

Abstract

This paper estimates maximum sustainable yield and maximum economic yield of marine fisheries on the east and west coasts of Peninsular Malaysia using surplus production models. The data for landings and effort were obtained from Annual Fisheries Statistics for the period 1970-2010. Based on the data on fishing effort in terms of fishing days, standard fishing effort and catch per unit of standardised effort are calculated for each gear type. The results show that fish stocks are biologically overexploited. The fisheries in both east and west coasts could earn additional economic rents by reducing excessive fishing effort. Vessel limitation programmes may be a possible way of raising the yield. It appears that long term sustainable resource management strategies is needed to achieve maximum sustainable yield.

Abstract # 53**Session # 23F** Governance: Marine Reserves and Protected Areas Part I**CAN MARINE PROTECTED AREAS IMPROVE THE LIVELIHOODS OF LOCAL COMMUNITIES: A REVIEW AND ANALYSIS OF THE CURRENT LITERATURE**

Mr. Michael Verdone, M.A., michael.verdone@iucn.org

Abstract

Marine protected areas (MPAs) are commonly used as a management tool to conserve marine resources. The conservation costs of MPAs are well known and often borne largely by local communities, while the benefits received by the communities are less known and more variable. Local communities become resistant to the idea of an MPA if they believe the conservation costs outweigh the expected benefits. Governments, NGOs, and fishery managers can gain the support of local communities by highlighting the community level benefits of MPAs. The existing evidence base makes it difficult to rigorously demonstrate the benefits to local communities because there are virtually no studies on the topic. One way of addressing the issue is through a comprehensive literature review. This approach is not without its limitations. MPAs are physically, institutionally, and geographically heterogeneous, making study results context dependent. This study addresses the question outlined above and makes several contributions to the literature. First, we synthesize the results of a literature survey in a methodological framework suggested by Pagiola (2004) that is consistent with valuing the effects of conservation and identifying the extent to which local communities benefit from MPAs. Second, we summarize the current state of knowledge on the topic and identify areas in need of further research if robust conclusions are to be drawn. Specifically, future research on the topic needs to rely on appropriate methodology in order to address the question posed in this paper and the results need to be presented in a policy-ready way.

Abstract # 55**Session # 03A** Overcoming Gender Inequalities in Fish Supply Chains to Inform Policy and Action**GENDER ROLES, RURAL HOUSEHOLD FOOD SECURITY AND ENTREPRENEURSHIP AMONG WOMEN IN SELECTED FISHING COMMUNITIES IN SOUTH WESTERN NIGERIA.**

Dr. Funmilola Agbebi, Ph.D. Fisheries Economics, funmiaquaconsult@gmail.com

Abstract

Nigerian women in fishing sector remain a potent force in the economic growth of fishing communities. The basic objective of involving women in fisheries Development is to make them equal partners to men. That will enable them to participate productively and self-reliantly to improve their family's nutritional and living standards. To create and maintain food and income security in the household, the activities are directed to economic, social and communal organizational and population related aspects. However, many socio-economic factors influences their entrepreneurial skills. This study examines some objectives, such as the roles women play in planning and fisheries management, describing the socio-economic factors, affecting fishing households. Allocation of labour time, determining the effects of some simulated policies on entrepreneurship among the women in the study area. 100 respondents were interviewed in all. A participatory action research approach was employed in addition to the use of primary and secondary data. Purposive sampling method was used in order to cover various aspects of women's economic roles in the fishing communities. Special effort was made to include all economic ventures; attention was given to the scale of operation and method of fishing activities by men and women who supply the primary products. formal and informal and group discussions were carried out for the qualitative method. For the analysis, simple counts, tables of frequencies were used. With respect to estimates of income. The study also highlighted the problems encountered by the women in the study area and proffer solution.

Abstract # 56

Session # 11B Understanding and Modeling Fishing/Sector Behavior Part III

THE BARENTS SEA RED KING CRAB INVASION- RISKY BUSINESS OR GOOD BUSINESS?

Ms. Jannike Falk-Petersen, Jannike.Falk-Petersen@uit.no

Abstract

The alien invasive red king crab in the Barents Sea represents both a threat through impacts on benthic ecosystem functions, and a source of income for fishing communities in Northern Norway. Determining the risk the king crab represents is central both with respect to international obligations and to determine the socially acceptable level of king crab invasion. Uncertainties due to the inherent difficulty of predicting the impact of invasive species and the socio-economic consequences of management options make conventional risk assessment and application of the precautionary approach based purely on scientific considerations inappropriate. Q-methodology was applied in order to identify the different perspectives among key stakeholders and researchers on the risk the king crab represents and how the crab should be managed. The study identified the areas of agreement and disagreement between the different social perspectives and how these groups perceive what risk the crab represents. This information can be used as input in a broader evaluation on how the king crab should be managed in Norwegian waters.

Abstract # 58

Session # 23A Africa Policy Day Part IV

BEACH SEINING IN MOZAMBIQUE - BANE OR BENEFIT?

Mr. James Wilson, BSc, MA(Econ), jdkw@mac.com

Abstract

Manual beach seining is a widespread and popular fishing gear in Mozambique. The gear is however considered to be short range and non-selective, and may catch both protected species (turtles) as well as juvenile penaeid shrimp and fin fish. At the same time, the gear provides employment for over half of all artisanal fishermen in the country, and lands around two-thirds of the catch from the artisanal sector, supplying exclusively national markets. The paper presents the results of primary research in beach seine fishing communities, quantifying their dependence on the fishing method and outlining management options. Analysis is made of issues surrounding compliance within the fishery with closed seasons, including estimates of the costs and benefits both for the dependant communities and near shore industrial shrimp fisheries.

Abstract # 60

Session # 03D: Compliance, enforcement, and the lack thereof

ILLEGAL FISHING AND CATCH POTENTIALS AMONG SMALL SCALE FISHERS: APPLICATION OF ENDOGENOUS SWITCHING REGRESSION MODEL

Dr. Wisdom Akpalu, wisdom.akpalu@economics.gu.se
Mr. Ametefee Normanyo, MPhil in Economics, ametnorm@yahoo.com

Abstract

Fish stocks are facing increasing threat of extinction partly due to the use of illegal fishing methods. In developing coastal countries where fishing activities are the mainstay of the population along the coast, livelihoods are being directly threatened. Although a number of studies unearthing factors determining supply of violation of fishing regulations exist, literature on the relationship between intrinsic catch potentials or fishing skills and illegal fishing behavior is scarce. Using data on violation of light attraction regulation among small-scale fishers in Ghana, our results show that the risk of punishment, fishing experience, skipper's age and religious norms influence the decision to violate. Most importantly, we found that violators and non-violators have different fishing kills. Specifically, violators would have higher catches than non-violators if non-violators violate too. On the other hand, if the violators had not violated, they would have obtained lower catches than their counterparts who are not in violation. Consequently policies targeting illegal fishing must, in addition to traditional variables that influence violation decision, concentrate on improving the skills of the less efficient fishers.

Abstract # 61

Session # 13F Bioeconomic Modeling Part V

THE SUSTAINABLE MANAGEMENT OF MARINE FISH RESOURCES IN CAMEROON: A BIOECONOMIC ANALYSIS OF THE TRAWL FISHERY

Dr. Meke Soun Pierre Nolasque, PierreMeke@yahoo.com

Abstract

Cameroon is a country of Central Africa, with 402 km coastline where occur intense industrial and small scale marine, multispecies and gears fishing activities. Fishing accounts for 5.2% of GDP in the primary sector and 1.7% of GDP. The Ministry of Livestocks, Fisheries and Animal Industries is responsible of the fisheries policy and management with several other administrations, showing the limits of the open-access prevailing regime. The country imports on average 100 000t per year, leading to a deficit of nearly \$ 40 billion in the trade balance, while Illegal, unreported and unregulated (IUU) fishing combined with self suspension for shrimp since 2004 has led to the fraudulent exports and contributing to heavy losses estimated at 30 billion CFAF per year. The objective of the study is to examine some of theoretical economic concepts that are central to the sustainable management of fishery resources in the case of Cameroon marine trawl fishing industry. Using catch and effort, prices and costs data, both for the private and government, a bioeconomic analysis with Gordon-Schaefer/ Fox model is conducted to estimate the sustainable resource rent for the period between 1990-2010. Findings of the study indicate that, the fishery experienced negative rents between 1997 and 1999; 2003 and 2009. While, regression of CPUE on effort give a poor $R^2 = 0.48$ for the Schaefer model and $R^2 = 0.69$ for Fox model, showing that the catch alone doesn't explain CPUE. The main recommendation is to implement the precautionary approach

Abstract # 62

Session # 31E The Economics of Aquaculture Production and Profitability Part III

MARINE ORNAMENTAL FISH TRADE IN KERALA, INDIA: A DEMAND-SUPPLY ANALYSIS

Mr. Sirajudheen, T.K sirajaqb@gmail.com

Mr. Bijukumar A, abiju@rediffmail.com

Dr. Shyam S Salim, PhD PGDBA ARS, shyam.icar@gmail.com

Abstract

The significant revenue involved in marine aquarium trade notwithstanding, in developing countries generates gainful employment and alternate livelihood in rural sector to fishers. Despite rich biodiversity of marine ornamental fishes and ideal milieu for expansion of trade the sector remains at infancy. However, absence of primary database on marketing is a major handicap in expansion and regulation of this sector. This study focused on status of demand, supply and potentials of marine aquarium fish trade. The study covered demand and supply entities including suppliers, hobbyists and aquarium keepers. The results documents prominence of aquarium industry and portray the challenges in expanding domestic trade in Kerala. The preferred candidates in trade in Kerala include damsel fish, wrasse, butterfly fish, trigger fish and cardinal fishes. Hobbyist's awareness, interests and willingness to keep marine fishes was high despite negligible trade. The demand and purchasing power of hobbyists is undoubtedly the single most important force in determining potential and profitability of marine aquarium industry in Kerala. Maintenance and upkeep snags, technological lag, institutional support and high mortality were the major problems in the sector. The resources are currently being unexploited or discarded. The sector could provide alternative avocation for fishermen if state of art technologies for collection, handling and transport are developed integrating with conservation and sustainable development objectives. The marine aquarium trade of Kerala needs to capitalize on key strength of unexploited resources by alleviating major weaknesses of technological lag and harnessing the opportunities of tapping the huge demand for improving trade

Abstract # 63**Session # 12A Governance: Property Rights and Quota Systems Part II****COASE V. SCOTT (1969)**

Dr. Ralph Townsend, rtownsend@winona.edu

Abstract

At a 1969 conference, Coase provided rather scathing comment on a paper co-authored by Scott (Economics of Fisheries Management: A Symposium, University of British Columbia, Vancouver, 1970.) That comment is remarkable inasmuch as Scott thought that he was using a transactions cost approach based upon Coase (1960). This paper will argue that the Coase commentary reflects fundamentally different paradigms of neo-classical economists and the "new institutionalists." The gap between those two paradigms remains today and has a significant influence on the research and policy agenda for fisheries. Neo-classical fisheries economists routinely refer to ITQs as property rights and they tend to conclude that ITQs have "solved" the efficiency problems of fisheries. The new institutionalists would insist that ITQs are simply government regulation, subject to all the failings of regulatory systems. For them, the quest for solutions based on property rights, rather than regulatory rights, remains. The paper will argue that Scott was actually trying to bridge those two paradigms in 1969 and, indeed, has continued work on that bridge throughout his career. Coase's comment might be interpreted as an objection that such an ideological bridge cannot be built. That economics has for 35 years been unable to move beyond ITQs (despite some heroic contributions by Scott) suggests that Coase's comment was prescient.

Abstract # 65**Session # 01E Markets: Value Chains Part I****THE VALUE CHAIN OF FARMED AFRICAN CATFISH IN UGANDA**

Mr. Maurice Ssebisubi, mauriceisnot@gmail.com

Abstract

Catfish farming has increased over the past decade in Uganda. In order for this emerging industry to be sustainable, systematic production and marketing are essential. This paper discusses the existing catfish farming industry in Uganda and its value chains. Analysis is done to answer questions on the industry structure, value chains, value distribution and how relationships among actors have influenced profitability. It further draws from the experience of established Icelandic producers to suggest value creation changes that can improve profitability in catfish farming value chains in Uganda. The main findings indicate lack of cooperation in the domestic value chain that has led to vulnerability of farmers though the chain has potential for higher income. Cooperation and governance in the regional export value chain has improved its performance in the industry with farmers having better bargaining power and price control. The paper concludes that, due to size, cooperation among actors in the domestic value chain is a must to improve profitability while consistency in supply of quality and quantity will improve competitiveness of the regional export value chain.

Abstract # 66**Session # 02C Managing Development of Fisheries and Aquaculture sectors Part II****SOCIO-ECONOMIC VALUE OF ARTESANAL FISHERIES OF THE DOMINICAN REPUBLIC: WHO WIN, WHO LOSES?**

Ms. Jeannette Mateo, MSc, jeannettemateo@gmail.com

Abstract

The results of the social and economic analysis of imports, exports and capture fisheries goods and services in the Dominican Republic are presented. Data was gathered through review of CODOPESCA's records of fishery products traded and daily cost and earnings data recorded at landing sites by fisheries data collectors located at 7 regional administrative stations during year 2008-2011. National average production accounted for near 11,000 metric tons and US\$34,000,000 but imports mean value has been estimated in more than US\$100,000,000 per year. Most fishers are employees of fish vendors who own the boats and fishing gears and pay the fuel to fishermen who have selling compromises at a very low price. Results showed that, despite the low contribution of fisheries to the country's GDP, it represents the main source of income for hundreds of families living in the most economically depressed coastal areas of the country. A strategy is analyzed for development and implementation of community-base co-management agreements, strengthening public and private alliance for sustainable fishery development and for adding value to fisheries product through the development of alternatives ways of product presentation and marketing.

Abstract # 68

Session # 01C Managing Development of Fisheries and Aquaculture Sectors Part I

RESERVOIR WATER RE-ALLOCATION AND COMMUNITY WELFARE

Dr. Mohottala Gedara Kularatne, PhD, kule_econ@kln.ac.lk; Dr. Sean Pascoe, PhD, Sean.Pascoe@csiro.au
Dr. Clevo Wilson, PhD, clevo.wilson@qut.edu.au; Dr. Tim Robinson, PhD, Tim.Robinson@qut.edu.au

Abstract

The introduction of culture-based fisheries (CBF) in small scale irrigation systems is increasing the marginal value of water in rice farming. The amount of water that is used in Sri Lanka for rice farming could be utilised to generate more profitable non-crop economic activities such as CBF. This paper examines whether the re-allocation of water to more efficient, high return uses would increase the total economic welfare of farmer community. Primary data was collected from 460 rice farmers in the Kurunegala District and 334 fish farming groups in two districts (Anuradhapura and Kurunegala) in Sri Lanka. The estimation of the value of water used for rice farming and CBF production is derived from the marginal value product by estimating stochastic translog frontier production functions. We then derive benefit calculations on the basis of the water demand functions for rice and CBF. Reducing the inefficient usage of water in rice farming by 32% increases the volume of water which can be used for CBF production by 53%. This greater efficiency can increase farmers' total net benefits by 17% per Metres/ha of water used for reservoir-based agriculture. But in order to achieve this benefit, it is critical to ensure the water rights of the multiple users of small scale irrigation systems. This paper recommends introducing a community transferable quota, combined with co-management of water resources, to enhance the welfare of fishing and farming communities which use small scale irrigation systems.

Abstract # 69

Session # 02B: Governance: Co-management, Community Management, Coops, and Catch Shares Part II

FISHERIES CO-MANAGEMENT AND ITS BENEFITS: THE CASE OF SMALL SCALE FISHERIES IN MALAWI

Dr. Steve Donda, stevedonda@gmail.com

Abstract

Fisheries management is more of human management than fish management. This is evidenced by the many fishing regulation that are developed world-wide and imposed on the fishers who harvest the fish resources. A number of fisheries management regimes have been devised and implemented to sustainably manage the world fisheries but with varied success levels. The small scale fisheries have not been exceptional in these management regime designs. The coming in of resource user participation in fisheries management or co-management have in some cases promoted sustainable utilisation of resources and fishing communities have claimed tangible benefits in their fishing activities. However, research in Malawi has shown that successful co-management implementation has its basis in the network theory. The network theory builds its explanations from patterns of relations and interactions, and it assumes man to be a social being. The Malawi study considered the basic unit in a network as being the single human being and described as an actor. An actor can also be a group of people, a department, organisation or indeed an entire community. This paper looks at the implementation of fisheries co-management in small-scale fisheries in Malawi, the benefits the fishers gain and how the network theory helps to understand and aid the successful implementation of co-management.

Abstract # 70

Session # 31C: Governance: Management of Fleet Capacity

WHO PAY THE COST OF THE REDUCTION OF THE LARGE SCALE PURSE SEINE VESSELS?

Mr. Takashi Shibata, tshibata@daishodai.ac.jp

Abstract

Skipjack migrates from the equatorial region to the high latitude. Skipjack fishery is mainly exercised by the purse seine vessels. The stock evaluation of the skipjack is plentiful. However, in 2009, the catch of the Japanese offshore skipjack fishery declined. WCPFC Scientific Committee sixth regular session summary report mentioned that the possibility of the negative effect for the high latitude skipjack fishery caused by the high level of the catch at the equatorial region. Japan proposed the reduction of the large scale purse seine vessels at the WCPFC seventh regular session. In this paper, we construct a game-theoretical model comprised of three players (Japanese DWFN, Other countries DWFN, and Japanese offshore fishery). In this situation, if the countries reduce the fishing capacity, who pay the cost and how to burden the cost? To consider this, we take the cooperative game approach. Specifically, a characteristic function game approach is applied to describe the sharing the cost of the reduction of the capacity. We find that the cost of the reduction of the fishing capacity is mainly paid by the group that the less contributes to the reduction. It may indicate Japan should burden the reduction cost mainly in order to keep the skipjack migration to the high latitude.

Abstract # 71**Session # 31C:** Governance: Management of Fleet Capacity**WHAT KINDS OF JAPANESE STRATEGIES ARE PARETO IMPROVING: THE CASE OF SKIPJACK TUNA FISHERIES IN THE PACIFIC OCEAN**

Dr. Keisaku Higashida, keisaku@kwansei.ac.jp

Abstract

In the Pacific Ocean, the total catch of skipjack tuna has been increasing rapidly. Then, eight of Polynesian, Melanesian, and Micronesian countries (PNA countries) have concluded a cooperative management of tuna fisheries. Although those countries do not catch a large amount by themselves, the main migrating area is included in the EEZ of those countries. Therefore, they can behave as a monopolist who sells fisheries rights to fishing countries. Different from other fishing countries, Japan has a specific feature: it catches skipjack tuna both in the EEZ of PNA countries and its own EEZ by using different fishing gears. Moreover, the stock in the EEZ of Japan depends on that of PNA countries, because small groups of one-year-old skipjacks leave the EEZ of PNA countries and go to the North. We apply the Non-cooperative Game Theory to this fisheries management. If there were no "small groups", the amount of quotas sold to fishing countries would be insufficient in terms of total welfare of fishing and resource countries. However, the amount of catch may be excessive in the presence of the "small groups." Therefore, we examine the strategies for Japan to improve both Japan's welfare and total welfare, such as unilateral vessel reduction, compensation schemes to other fishing countries, and contribution to the establishment of the surveillance system. We also examine negotiation/transaction rules of fishing rights, and the area of EEZ. We demonstrate that some strategies and changes in rules can be Pareto improving for the...

Abstract # 75**Session # 03A** Overcoming Gender Inequalities in Fish Supply Chains to Inform Policy and Action**NEW SOCIO-ECONOMIC ROLE MODELS FOR WOMEN IN FISHERIES AND AQUACULTURE**

Dr. Stella Williams, Prof. PhD, star1143_2000@yahoo.co.uk

Dr. Cornelia Nauen, PhD, info@mundusmaris.org

Abstract

The global scale of aquatic ecosystem degradation raises the question on how women in fisheries and aquaculture can reverse their resulting loss of social status and income by becoming major actors in the transition towards restoration of lost productivity. Influx of external capital into once traditional fisheries e.g. in West Africa, has eroded the control of family enterprises and the role of women who were important in maintaining rules of restraint. While these rules have often taken the form of the sacred in traditional communities, they worked de facto as access limitations to the resource and thus had conservation effects. New socio-economic role models for women could be instrumental in allowing them to regain lost economic influence. Where social recognition is achieved, particularly through enforcement of modern equal opportunity legislation and especially so, when combined with enhanced access to formal education, training, asset titles and credit, women regain capabilities for enhanced social organisation and leadership. A participatory method is proposed to render women's role visible and enable development of socio-economic organisation supportive of social justice and ecosystem restoration.

Abstract # 78**Session # 21D** Measurement and Indicators for Improved Understanding and Management Part I**ECONOMIC VALUATION OF MANGROVES FOR ASSESSING THE LIVELIHOOD OF FISHERFOLK - A CASE STUDY IN INDIA**

Ms. Piyashi DebRoy, M.F.Sc., piyashi.debroy@gmail.com

Abstract

The study was carried out in a village named MGR Thittu in the vicinity of the Pichavaram mangroves in the state Tamil Nadu in India. The objectives of the study were to review the current status of mangroves in Tamil Nadu, study the fisherfolk's perceived role of mangroves on their livelihood, estimate the economic value of mangroves as a case study, and suggest policy measures needed for the conservation, protection, management and development of mangroves. The required data were collected randomly from 41 experts and 120 villagers. The most important concern for protecting the mangroves was found to be strengthening of coastline against Tsunami through mangrove plantation. The most important present use of the Pichavaram mangroves was their services through their ecological functions like protection against tsunami, floods and heavy winds; followed by contribution to fishery; and firewood collection. In calculating the Total Economic Value of the concerned mangrove area, the values were divided according to direct use values, indirect use values and willingness to pay estimates, and was added upto be Rs. 353,52,31,312. The economic valuation of the particular mangroves attributed an indicative price to the huge value of the mangrove resources, which is necessary for investing in protecting natural resources on the part of the government and other stake holders for protecting fisheries resources in the view point of sustainability.

Abstract # 81**Session # 23A Africa Policy Day Part IV****ASSESSING POLICIES PROMOTING POVERTY ALLEVIATION AND MARINE RESOURCE SUSTAINABILITY IN IMPOVERISHED COASTAL COMMUNITIES**

Ms. Michelle Stern, msmichellestern@gmail.com

Abstract

Since 1994, the South African government has attempted to include previously disadvantaged black fishers into the fishing sector to provide them with an avenue out of poverty. However, existing environmental policies restrict such fishers' access to marine resources, and many still lack access to a sufficient amount in order to achieve sustainable livelihoods. This study asks: How effective have South Africa's fishing policies been in alleviating poverty in impoverished coastal communities, and what has been the rationale for implementing such policies? It was discovered that impoverished community fishers have restricted access to marine resources because the sustainability of the fish stock is under threat, but they continue to fish due to a lack of livelihood alternatives. However, the primary contributors to the depletion are outside fishing vessels and an increasing number of poachers. Due to a lack of resources, the government faces great challenges in seeking to control the illicit trade, and the easiest trade to monitor is that of marginalized fishers. Instead of restricting their access to marine resources, marginalized fishers should be empowered to monitor the fish trade themselves in order to reduce illegal poaching, which will in turn help the fish stock return to sustainable levels. Additionally, it was observed that the diminishing marine resource stock is partly attributed to climate change, which has inhibited the living conditions for fish to survive. Therefore, greater resources must be dedicated to providing alternative livelihood strategies for coastal inhabitants in order to alleviate the pressure put on dwindling resources.

Abstract # 83**Session # 01C Managing Development of Fisheries and Aquaculture Sectors Part I****TECHNO-TRANSFER OF MUD CRAB NURSERY IN PONDS: ITS SOCIO-ECONOMIC IMPACT ON SMALL-SCALE MUD CRAB PRODUCERS IN NORTHERN SAMAR, PHILIPPINES**Ms. Didi Baticados, didib@seafdec.org.ph
Mr. Renato Agbayani, ragbayani@seafdec.org.com**Abstract**

The estuaries and coastal waters of Northern Samar are characterized by an abundance of mud crab juveniles (*Scylla serrata*). These, however, are being overexploited by mud crab collectors with backing from financiers in other islands to the disadvantage of coastal poor producers. The SEAFDEC/AQD technology transfer of mud crab nursery rearing in ponds through its season-long training under the Institutional Capacity Development on Sustainable Aquaculture (ICD-SA) undertaken in Northern Samar adds value to the juveniles and may mitigate the illegal transport of small crabs to other islands. This paper examines the effectiveness of the techno-transfer mechanisms and the socio-economic implications on 60 small-scale mud crab producers randomly selected in four study sites at Northern Samar. Results indicated that the technology demonstration is a viable enterprise for it can provide additional income of about PhP 14,318 in six months in a 200 m² pond. The majority (83%) of producer-respondents showed interest in adopting the technology. The respondents' interest on the technology are significantly ($p < 0.05$) influenced by awareness of the technology, distance of the farm, property right, source of feed, market, availability of crablets, and income for children's education. Respondents, however, opined that while the technology adoption has its advantages, it would also create problems in terms of stiff competition in acquiring seed stocks, insufficient feeds, destruction of mangroves that serves as mud crab habitat, and non-recognition of informal right upon zoning of silviculture park if allocation right is not...

Abstract # 85**Session # 12A Governance: Property Rights and Quota Systems Part II****SOLVING CONGESTION THROUGH ITQS: AN EXPERIMENTAL ANALYSIS**

Dr. John Tisdell, PhD, john.tisdell@utas.edu.au

Abstract

Fishermen often have the choice of fishing at a number of sites in their region. Introducing tradeable fishing rights has a long pedigree in economic thought as an appropriate instrument to ensure an efficient distribution of fishers between sites. This paper explored the question of coordination between two sites - one inshore and one offshore in an experimental setting. The study looked for evidence of group coordination and speculates on the drivers of group coordination. The participants in the experiments were also presented with the opportunity to sell their right to fish at the inshore site in compensation for fishing at the offshore sites. The findings of the study provide interesting insights into group coordination and how ITQs work in resolving congestion questions.

Abstract # 89**Session # 01C** Managing Development of Fisheries and Aquaculture Sectors Part I**POVERTY AND INEQUALITY IN SEASONAL FLOODPLAIN AREAS OF BANGLADESH: THE ROLE OF FISH INCOME FROM COMMUNITY BASED AQUACULTURE**

Mr. Md. Akhtaruzzaman Khan, azkhan13@yahoo.com
Mr. A. B. M. Mahfuzul Haque, mhaque71@ymail.com

Abstract

Over half of Bangladesh comprises of floodplains and most of the surrounding households depend on these floodplains for their livelihood. However, these floodplains remain unused during the monsoon season due to the lack of proper management systems. The WorldFish Center implemented an action research project through a Community Based Fish Culture (CBFC) system to assess the contribution of collective actions to aquaculture for sustainable use of floodplain resources and equitable distribution of benefits among the fisher communities. Using three years of panel data from the project as well as control sites, this study examines the impact of the Community Based Fish Culture system on income, employment, inequality and poverty. Both non-parametric (propensity score matching method) and parametric (random effect model) methods are used for impact assessment. Gini decomposition & FGT poverty method is used to estimate the effect of the CBFC system on fish income as well as total income inequality and poverty measurement respectively. Both (non-parametric and parametric) methods show that the CBFC system can significantly increase fish income without any negative impact on non-fish income and it also has a positive and significant impact on employment generation. Results reveal that fish income distributed equally after adopting this management system also has a positive impact on total household income distribution in the study area. Poverty analysis shows that the incidence (head count ratio) and depth (gap) of poverty are unambiguously lower for CBFC participant households rather than non-participants. Policy implications for sustainable management are discussed

Abstract # 90**Session # 02A** Looking at Fish Supply Chains with a Gender Lens**CONTRIBUTION OF LAKE VICTORIA DAGAA FISHERY IN EAST AND CENTRAL AFRICAN FISH TRADE**

Mr. Mwanahamis Salehe, MSc, masalehe@yahoo.com
Dr. Paul Onyango PhD, onyango_paul@yahoo.com
Mr. Hillary Mrosso, MSc, hjmrosso@yahoo.com
Mr. Enock Mlaponi, MSc, emlaponi@yahoo.com

Abstract

While the focus of Lake Victoria Nile-perch fishery is to serve the global market and tilapia is mainly for domestic market in Tanzania; Dagaa has a great potential for small scale trade in regional markets. In 2006 a survey was conducted to assess the regional fish marketing channel for the major commercial fish species in Lake Victoria. It was revealed that Dagaa accounts significantly in terms of volume traded in regional markets compared to Nile perch fish products. However, the latter fetches higher royalty. The present paper discusses the potential of Dagaa in regional fish trade, distribution system of Dagaa and other fish products in regional markets, and challenges faced by small-scale traders in regional fish trade and make recommendations on how to address the challenges.

Abstract # 93**Session # 12A** Governance: Property Rights and Quota Systems Part II**PRIVATIZING RENEWABLE RESOURCES: WHO GAINS, WHO LOSES?**

Mr. Max T. Stoeven, stoeven@economics.uni-kiel.de
Mr. Martin F. Quaas, quaas@economics.uni-kiel.de

Abstract

Using renewable resources can provide society with (i) resource rent, (ii) consumer surplus and (iii) worker surplus in resource harvesting. In a dynamic analysis we show that privatization increases the present value of consumer surplus and worker surplus if harvesting productivity does not depend on the resource stock. If it does, consumers and workers tend to lose from privatization and indeed prefer open-access if the discount rate is sufficiently high. Applying the analysis to the Northeast Arctic Cod fishery, we find that socially efficient privatization would increase the present value of resource rent by 8 billion Norwegian Krone, while the present value of consumer surplus would decrease by 3 billion Norwegian Krone. These findings may explain why rent dissipation often persists despite the availability of better management options.

Abstract # 94

Session # 13F Bioeconomic Modeling Part V

APPRECIATING THE VALUE OF AGE: AN EVALUATION OF EFFICIENCY GAINS FROM CONTROLLING GEAR SELECTIVITY UNDER VARIOUS SCENARIOS

Mr. Florian Diekert, f.k.diekert@bio.uio.no

Abstract

The central objective of fishery management is to ensure the sustainability and profitability of the resource base. The importance of the fish stock's age-structure is increasingly recognized in economics and ecology. Still, current policies predominately rely on the aggregate biomass. We carefully calibrate a detailed model on the North-East Arctic cod fishery to estimate the efficiency gains from controlling gear selectivity. Moreover, we explore the sensitivity of optimal harvesting policies with respect to different assumptions on the biological model, in particular different recruitment functions and density-dependent growth. Age-selective harvesting is central to increasing profits in all scenarios. However, the maximum achievable Net-Present-Value differs strongly for the different biological assumptions, which -- by and large -- all are equally defensible. This points to the need to more routinely assess the structural uncertainty surrounding bio-economic simulations. Our study provides an increased understanding of the determinants of age-structured harvesting, emphasizing that it is high time to move beyond traditional reference points and consider age-differentiated management tools.

Abstract # 95

Session # 31E The Economics of Aquaculture Production and Profitability Part III

EFFECTS OF PRICE RISK IN WHOLESALE MARKET ON THE U.S. FARM-RAISED CATFISH

Dr. Giap Nguyen, nguyegv@auburn.edu

Dr. Curtis Jolly, cjolly@auburn.edu

Abstract

A theoretical model links price risks at processors market to farm supply response. Price risks at wholesale market affect processors' factor demand for farm-raised catfish. The fluctuation in factor demand also influence the farm-raised catfish supply response. Price risks at wholesale market reduce processors' factor demand for farm-raised catfish, and in-turn have effects on catfish farm supply. The empirical results show evidences that price risks at wholesale market level reduces catfish farm supply. In terms of product forms, fillets have positive effects on farm supply, while whole fish have negative a relationship with farm supply. To completely understand the effects of risks at the processor level on farm supply further analyses of product diversification and its effects on processing and farm market are needed; factor demand and farm supply should be placed in a market equilibrium framework to thoroughly analyze the effects of factor demand shocks on farm-raised catfish supply response.

Abstract # 96

Session # 11F Bioeconomic Modeling Part III

ABSTRACT 61: THE SUSTAINABLE MANAGEMENT OF MARINE FISH RESOURCES IN CAMEROON: A BIOECONOMIC ANALYSIS OF THE TRAWL FISHERY

Dr. Meke Soun Pierre Nolasque, PierreMeke@yahoo.com

Abstract

This study was conducted to examine the sustainable management of the marine trawl multispecies fishery of Cameroon. For that purpose, the Schaefer model was used to estimate the maximum sustainable yield, while a bioeconomic analysis is developed to determine the resource rent and maximum economic Yield. Data necessary for the study were collected from the fishing industry and the Ministry of fisheries for the period between 1990-2010. Findings of the study indicate that the marine demersal resources are overexploited, management regime inefficient and unsustainable, since the MSY of 7563 tons and 61 vessels was experienced during the early 1990's. The MEY is achieved with a fishing effort of 38 vessels for 6500 tons, with high rents also reached during the 2000's, but with 61 vessels. The results confirm the failure of the open-access regime prevailing in the fishery since the 1970's, with illegal, unreported and unregulated (IUU) fishing combined with self suspension for shrimp exports to E.U countries, since 2004, leading to fraudulent exports and heavy losses of foreign currencies estimated at 30 billion CFAF per year. Despite the poor $R^2 = 0.33$ for Schaefer model, the regression of CPUE on effort, is consistent with the history of the fishery, the model valid and confirms the economic theory. For the management to be sustainable, the main recommendation is to implement the precautionary approach to conservation and management strategies geared toward maximization of net economic returns.

Abstract # 99

Session # 11C Socio-economic Assessment of Management Measures of the New Common Fisheries Policy Part I

REFORMING EUROPE'S FLEET POLICY: A "SEA CHANGE" SOLUTION TO OVERCAPACITY?

Dr. Erik Lindebo, erik.lindebo@ec.europa.eu

Abstract

In July 2011 the European Commission acknowledged that "Our current system is not working in favour of sustainability. Too many fleet segments live on low profits, depend on subsidies for survival. 'Business as usual' is not an option". Indeed, the reform of the policy "must not be yet another piecemeal, incremental reform but a 'Sea change' cutting to the core reasons behind the vicious circle in which Europe's fisheries have been trapped in recent decades." (Green Paper on Reform of the CFP, April 2009.) The reform package for a new policy is comprehensive and touches upon all aspects of fisheries management, and ongoing negotiations should lead a new policy being implemented in 2013. This paper focuses on the reform of fleet (access) component of the policy. The Commission has proposed a system of transferable fishing concessions, or user rights, for all large scale vessels (>12m). The concessions will be distributed by each Member State, and will grant their owner a share of the national fishing opportunity for each year. Operators will be able to lease or trade their concessions nationally, not between Member States, and will have a minimum validity of 15 years. More lenient capacity rules will apply to these vessels. In parallel, the new Maritime and Fisheries Fund 2014-2020 will discontinue the use of publicly financed vessel decommissioning, following decades of ineffectiveness. This paper examines whether a "sea change" reform can be achieved, in promoting market based solutions to solve the overcapacity.

Abstract # 104

Session # 11B Understanding and Modeling Fishing/Sector Behavior Part III

COMPARISON BETWEEN BYCATCH AVOIDANCE PROGRAMS IN TWO NEW ENGLAND FISHERIES

Dr. Daniel Georgianna, dgeorgianna@umassd.edu

Dr. Steven Cadrin, scadrin@umassd.edu

Mr. Greg DeCelles, gdecelles@umassd.edu

Ms. Catherine O'Keefe, ckeefe@umassd.edu

Dr. Kevin Stokesbury, kstokesbury@umassd.edu

Abstract

We conducted similar bycatch avoidance programs in two New England fisheries: yellowtail flounder bycatch in the sea scallop closed area fisheries and river herring bycatch in the Atlantic herring and mackerel fishery. These species have very different behavioral properties: sea scallops are sessile; yellowtail flounder are demersal with limited but unknown range. Herring and mackerel are pelagic species with wide spatial and temporal ranges; river herring are anadromous. Management actions also differed between the two fisheries. The sea scallop closed area fisheries were limited in time and space with hard quotas for each species. The herring and mackerel fishery was limited in large scale areas by hard quotas, without quotas for river herring. Fishermen were motivated to avoid river herring by strong conservation pressure. River herring are listed as a species of concern and under review for endangered species by the U.S. agencies, which designation would effectively close the Atlantic herring fishery. In the scallop fisheries, we mapped and updated densities for target and bycatch stocks through real-time monitoring and communicated hotspots with captains at sea. In the herring and mackerel fishery we identified densities through port sampling and communicated hotspots with captains at sea. We also reported environmental factors of river herring density such as depth to captains. Percent participation exceeded 75 % in each fisheries with evidence of avoidance behavior in both fisheries. Yellowtail bycatch was sharply reduced in the scallop closed area fisheries resulting with some reduction of river herring bycatch in the herring and mackerel

Abstract # 105

Session # 12D The Economics of Aquaculture Production and Profitability Part I

EVALUATION OF INPUT EFFICIENCY FOR CATFISH FARMS IN MEKONG RIVER DELTA, VIETNAM

Mr. Huy Dang Hoang Xuan, Master, danghuy_ntu@yahoo.com
Mr. Jónas Hlynur Hallgrímsson master, jhh4@hi.is

Abstract

This study has used minimizing input-oriented Constant Return to Scale (CRS) Data Envelopment Analysis (DEA) model with one output and seven input variables. The study's purpose was to analyse technical efficiency to reduce input resource cost for catfish in Mekong River Delta, Viet Nam. The report is based on 61 samples from catfish farms with gathered from farmers regarding production and usage of inputs. The minimizing input-oriented CRS DEA results indicate that there are 11 technically efficient catfish farms (18%) and 50 technically inefficient catfish farms (82%). The ratio of resource reduction of input variables varied from around 20% to nearly 60%. In future research, stochastic frontiers method should be used to compare results of DEA method and environment variables should be included, for example, location and water quality.

Abstract # 110

Session # 12D The Economics of Aquaculture Production and Profitability Part I

BIO-ECONOMIC ANALYSIS OF SILVER KOB, ARGYROSOMUS INODORUS, (GRIFFITHS & HEEMSTRA) AQUACULTURE IN NAMIBIA

Mr. Martin Tjipute, martin@hafro.is

Abstract

Namibia has certain very positive attributes for the development of the aquaculture sub-sector. In the last ten years great strides have been made in creating a cohesive, clear and efficient legal and regulatory environment for the development of aquaculture in Namibia. There is a necessity to exploit the conducive environment provided for the development of aquaculture. For marine aquaculture to be successful it needs to be founded on well-researched, and carefully planned principles that are aimed at sustainable utilization of the scarce resources. This is especially important due to the number of documented cases where aquaculture endeavors had failed and, even worse, led to negative public perceptions due to the environmental destruction. There is, thus a need for a detailed study for any aquaculture endeavor such as for the envisaged high value fin-fish species like silver kob, that will give the necessary biological and economic appraisal. The analysis formulated assumptions based on the author's preliminary and secondary data obtained on silver kob production as well as on the production of similar species. A production unit of 150 MT/year was used. The species biological requirements were evaluated and incorporated in the technical decision for the recirculating aquaculture system's choice. A production model was developed that take into account the fingerling size, growth, mortality, SGR, FCR, densities, volumes needed, feed needs and costs. To evaluate the profitability of the envisaged

Abstract # 114

Session # 12F Bioeconomic Modeling Part IV

SEARCHING FOR VIABLE EXPLOITATION WITHIN SMALL SCALE FISHERIES; THE CASE OF SOLOMON ISLANDS

Mr. Pierre-yves Hardy, pyhardy@mnhn.fr
Mr. Luc Doyen, luc.doyen@orange.fr
Mr. Christophe Béné, C.Bene@ids.ac.uk
Ms. Anne-Maree Schwarz, a.schwarz@cgiar.org

Abstract

The sustainable management of small-scale fisheries in coral reef ecosystems constitutes a difficult objective especially because these fisheries usually face several stringent pressures including demographic growth and climate changes. The implications are crucial in term of food security as fish represents the major protein source for local populations in those regions. The case of the Salomon Islands fishery presented in this paper represents a challenging example of these issues. The fishery is characterized by a high diversity of coral reef marine resources but faces an increasing local food demand due to the combined effect of demographic pressure and growing need for cash. The paper proposes a bio-economic model that accounts for multi-species and multi-fleets dynamic and integrates a calibrated Lotka-Volterra trophic dynamics. Several contrasted fishing scenarios including status quo, total closure, and viable strategies are then simulated and their results compared in relation to ecological and economical considerations. The appreciation is driven by 3 biological indicators (Simpson index, species richness and marine trophic index) and 2 economical indicators (kg of fish consumed per week and weekly earned money). Finally the simulations show the extent to which fishing outputs including subsistence supply and profitability of fishing can be viable for the next fifty years.

Abstract # 116

Session # 01B Governance: Co-management, Community Management, Coops and Catch Shares, Part I

ETHNIC DIVERSITY, SOCIAL CAPITAL, AND THE POTENTIAL FOR CO-MANAGEMENT: A CASE STUDY OF HAWAII'S LONGLINE FISHERY

Ms. Michele Barnes-Mauthe, M.S., barnesm@hawaii.edu

Mr. Shawn Arita, aritas@hawaii.edu

Mr. Stewart Allen, Stewart.Allen@noaa.gov

Mr. PingSun Leung, psleung@hawaii.edu

Mr. Steven Gray, stevenallangray@gmail.com

Abstract

Social networks and social capital have recently been identified as key features in facilitating or constraining collaborative arrangements which can enhance resource governance and adaptability in complex social-ecological systems such as fisheries. Yet, how ethnic diversity among resource users in a competitive pelagic fishery may affect social networks and social capital, and thus, influence the potential for collaboration, has not been examined. To explore this effect, we performed a social network analysis of the entire population of resource users in Hawaii's longline fishery, which is characterized by a division along ethnic lines and competition over resource use. With a response rate of >90%, we were able to map resource user's fishery related social networks and analyze the impact of ethnic diversity on the level and distribution of social capital for each ethnic group and for the fishery as whole. Results show that ethnicity significantly influences social network structure and is responsible for a homophily effect, with higher levels of bonding and bridging ties found within ethnic groups. Interestingly, we found the most evidence of linking ties in a minority ethnic group rather than the dominant ethnic group. However, our results suggest that ethnic fragmentation may be responsible for the marginalization of another minority group, which reported only one linking tie to management officials and the scientific community. This study provides the first empirical evidence of the effects of ethnic diversity on social capital in the fisheries literature, and has implications for the success of collaborative management.

Abstract # 121

Session # 31D The Economic Impact of Climate Change on Fisheries and Aquaculture Part I

THE IMPACT OF CLIMATE CHANGE ON THE VULNERABLE FISHERIES RESOURCE AND ITS COASTAL COMMUNITY IN CILACAP REGENCY-INDONESIA: A SET UP FOR ADAPTATION AND MITIGATION STRATEGY

Dr. Indah Susilowati, Ph.D., indah-susilowati@rocketmail.com

Mr. Waridin Waridin, waridin_dr@yahoo.co.id

Ms. Rizky Yulianisa, B.Sc, kiq_derosche@yahoo.com

Abstract

The fisheries resource is almost and/ or had have been over-exploited in Java Island. Cilacap lies in the southern part of Java has a reasonable stock at this moment but adversed by the climate change. Many parties have not prepared to react for the adaptation with such uncertain situation. The objective of this study is to estimate the impact of climate change in Cilacap and its community; and to formulate the adaptation and mitigation strategy under the climate change condition. Respondents of 73 marine-fishers, 43 fish-traders, and 100 fish-consumers had been surveyed. Focus Group Discussion and in-depth interview were conducted to outline the adaptation and mitigation strategy. The study found there was a decrease in catch and affected severed losses to the respondents. Fishers claimed had overspent in fuel, food & lodging, repairs & maintenance and decreased in productivity. The availability and sustainability of fish-stock became questionable. The shocked of fisheries stock affected the chain of distribution and consumption and eventually weaken the food security and the fishers' quality of live in the region. A short term prescription on adaptation strategy to cope the climate change in the study area is indeed needed. Ecosystem-based fisheries management perhaps could be proposed as one of the way-outs to manage the vulnerable fisheries in Cilacap. This scheme seems will shed a light as a promising new paradigm of fisheries management in Indonesia.

Abstract # 122

Session # 01E Markets: Value Chains Part I

COMPARATIVE ANALYSIS OF FRESH AND DRIED FISH CONSUMPTION IN ONDO STATE, NIGERIA

Dr. Taiwo Mafimisebi, temafis@yahoo.com

Abstract

One way in which the recent call for increased protein intake in Nigeria can be achieved is by incorporating more fish into household meals leading to increased consumption of various fish forms. This study examined the consumption of fresh and dried fish in 90 households selected through multi-stage sampling technique. Descriptive and inferential statistics and regression model were used to analyze the data gathered through structured questionnaire. The mean household size was 7; average age and annual income was 47 years and N471, 200.04, respectively. The amount of fresh and dried fish consumed per year was 13kg and 47kg, respectively. Thus, the amount of fresh and dried fish consumed per caput per year was 1.86kg and 6.74kg. Average annual expenditure on fresh and dried fish was N31, 835.44 and N75, 746.84. For both fresh and dried fish consumption, there was no significant relationship between quantity consumed, age of the household head and square of household heads' ages. The education variable was not significant in dried fish consumption. Income and household size were significantly related to the quantity of fresh and dried fish consumed ($P < 0.05$) while education strongly influenced quantity of fresh fish consumed. As fish is the cheapest and most widely available source of protein, more masses enlightenment programmes on the importance of fish consumption, which could be championed by both government and non-governmental organizations, is suggested.

Abstract # 124

Session # 22F: Trade

PRICE RELATIONSHIPS FOR IMPORTED ABALONE IN THE JAPANESE MARKET

Dr. Eriko Hoshino, eriko.hoshino@utas.edu.au

Abstract

The rapid increase in abalone production and importing of farmed products may pose a serious threat to wild abalone producing countries, as it could cause negative pressure on prices. This paper investigates the price relationships for imported abalone in the Japanese market and the implications for wild abalone producing countries, using a cointegration framework. The results indicate that the fresh abalone imports from 6 major countries with different production types (wild or farmed) are within the same market: that is, there is a single market for all imported fresh abalone in the Japanese market, and thus substitution from one to another to some degree. Although no evidence was found for the farmed abalone from South Korea leading the import prices, the existence of a single market suggests that a fall in prices of one product or a country due to increased production can affect the prices of all abalone from other import countries or species in the Japanese market.

Abstract # 125

Session # 13D: Governance: Management of Fishing Activity Part I

MODELING THE ECONOMIC BENEFITS OF TEMPORARY OCTOPUS FISHERIES CLOSURES

Dr. Kirsten Oleson, koleson@hawaii.edu

Dr. Thomas Oliver, tom.andrew.oliver@gmail.com

Ms. Michele Barnes-Mauthe, M.S., barnesm@hawaii.edu

Abstract

A local fisheries management model employing short-term fisheries closures for rapidly growing species is proliferating across coastal east Africa and Indian Ocean islands. Aiming to improve management and boost incomes, NGOs, international finance institutions, and government agencies are promoting the technique in artisanal fishing communities. In southwest Madagascar alone, over 130 such closures have been implemented since 2004. To-date, no study has analyzed the closures' effects on fisher incomes. This paper uses over 250,000 datapoints gathered over 8 years to investigate the economic effects of octopus fishery closures in the Velondriake Locally Managed Marine Area in southwest Madagascar. First, we examine village-scale octopus fishery-generated income before, during, and after closures. The villages saw no significant revenue decline during the closure, but do show significantly higher revenues post-opening. Second, we use a stochastic model, parameterized with landings data, to assess whether each closed site was a profitable investment on its own. Of the 37 closures, 28 were profitable and 9 were unprofitable. In 8 of the 9 unprofitable cases, stealing was recorded, and in 6 cases stealing was rampant. Third, we calculate each closure's internal rate of return (IRR), showing that the median monthly IRR in the 28 profitable closures was 67.7% (+/- 29.9% CI95). Examining gender bias in closures' costs and benefits, we found that women disproportionately stop fishing octopus during closures and men disproportionately fish during opening-day derbies. The changes are slight and women's proportion remains above 50%.

Abstract # 126

Session # 21D Measurement and Indicators for Improved Understanding and Management Part I

CAPTURING MALAGASY FISHER COMMUNITIES' NON-MARKET ECONOMIC VALUES USING MIXED METHODS

Dr. Kirsten Oleson, koleson@hawaii.edu; Ms. Michele Barnes-Mauthe, M.S., barnesm@hawaii.edu
Mr. Luke Brander, lukebrander@gmail.com

Abstract

Understanding how people value ecosystem goods and services can provide important information to managers and planners. Marine protected area valuations often focus on marketed goods and services. For many traditional fisherfolk, however, non-marketed ecosystem services are critically important inputs to their wellbeing. Using discrete choice experiments (DCEs), we quantify the values that Vezo fisherfolk of southwestern Madagascar place on three non-marketed services: (1) the likelihood that their offspring will be able to follow their parents' livelihoods as traditional fishers (bequest value); (2) increased social cooperation between villages (social capital); and (3) storm protection. The DCE was conducted in 2010 as part of a comprehensive Total Economic Valuation (TEV) of ecosystem services flowing from a community-managed marine area in southwest Madagascar. The TEV includes provisioning (fisheries, wood, shells, freshwater, medicinal plants, research, and tourism), regulating (organic waste disposal, carbon sequestration, and storm protection), and cultural ecosystem services (social capital - represented by levels of intervillage cooperation and respect and intravillage conflict about marine resource use; cultural heritage - represented as a bequest value; education; recreation; and spiritual). We present values for all ecosystem services measured in the valuation, along with interpretations of differences between groups and methods. We triangulate a number of the values using multiple methods, including market-based, ranking and rating, and Likert-scale rating. Despite their reputation in the academic literature as "living for each day", we find that bequest values constitute an important portion of the total value that local Vezo fisherfolk place on the environment.

Abstract # 127

Session # 13B Frontiers in Economic Modeling Part I

INTEGRATING A SPATIALLY-EXPLICIT INDIVIDUAL-BASED FISHING VESSEL MODEL WITH UNDERLYING SIZE-BASED DYNAMIC FISH POPULATION MODELS

Dr. Francois Bastardie, fba@aqua.dtu.dk; Dr. J. Rasmus Nielsen, rn@aqua.dtu.dk
Dr. Tanja Miethe, tanja.miethe@vti.bund.de

Abstract

We previously developed a spatially explicit individual-based model (IBM) evaluating bio-economic efficiency of fishing vessel movements between regions according to catch and targeting of different species based on the most recent and spatial high resolution fishery data (VMS and logbooks for larger vessels). The main purpose was to test the effect of alternative fishing effort allocation scenarios on fuel consumption, energy efficiency (kilo or value per litre of fuel) and profitability of the fisheries. The assumption here was constant underlying resource availability. Now, an advanced version couples the vessel model to selected size-based population models considering underlying resource dynamics in distribution and density patterns of the targeted stocks for the case of Danish and German vessels harvesting North Sea and Baltic fish stocks. The fishing process includes direct and local depletions by stock, specific to the vessel catching power being proportional to the encountered size-based population abundance on the visited ground. The impacts of potential displacement of fishing effort by vessel on the fish stocks with resulting fishing mortality and the economic consequences by fishery are evaluated by simulating 4 options altering individual choices of fishing grounds. We demonstrate that integrating the spatial vessel activity and local fish stock dynamics allow for interactions and more realistic predictions of fishermen's behaviour, revenues, and stock abundance.

Abstract # 131

Session # 11A: Governance: Property Rights and Quota Systems Part I

ITQS IN A ROUGH WATER

Dr. Thorolfur Matthiasson, totimatt@hi.is

Abstract

The Icelandic ITQ system has been under development since the early 1980s. Rights were initially grandfathered. Rights have been priced and traded and put up as collateral against loans. Quota values have thus affected the balance sheet of Icelandic fishing firms in a fundamental way. The aim of this paper is to look at the development of the balance sheet and the development of booked equity as well as try to estimate the real value of equity in Icelandic fishing firms from 2000 till 2009. This period is of considerable interest as a considerable bubble developed and burst in the Icelandic financial market during the period.

Abstract # 132

Session # 21C Bioeconomic Modeling Part VI

DEVELOPING A PREDATOR-PREY MODEL FOR THE HAKE AND BLUE WHITING SPANISH FISHERIES

Mr. Marcos Perez, marcos.perez@uvigo.es

Abstract

The aim of this work is to develop a predator-prey model for two species of commercial importance captured by the Spanish fishing fleet in the National Fishing Ground (ICES areas VIIIc and IXa). In this model, the Southern hake (*Merluccius merluccius*) represents the predator, and the blue whiting (*Micromesistius poutassou*) is the prey. Blue whiting is the hake's main prey in the study area, and it represents about 40% of the Southern hake diet. Both the predator and prey population dynamics follow the Lotka-Volterra formulation, and population dynamics are assumed as logistic. It is also assumed a linear interaction between predator and prey populations, with two interaction coefficients: α is the effect of a unit change in the prey on the percent growth rate of the predator and β is the attack rate or searching efficiency of the predator. The populations interact randomly in proportion to population density. Logistic predator-prey equations were applied to the Southern hake and blue whiting stocks, including biomass, intrinsic rates of growth, carrying capacity and capture for both species. The goal is to maximize the present value of profit, forming the current value Hamiltonian for the maximization problem. Capture costs and prices of hake and blue whiting and discount rate were introduced at this point. Landings and SSB (Spawning Stock Biomass) data from both stocks over the period 1988-2010 were used for an econometric estimation by means of the Ordinary Least Squares method, to determine the form taken by the predator-prey ...

Abstract # 133

Session # 03C Markets: Value Chains Part II

AN INVESTIGATION OF THE OPEN INNOVATION IN THE FISH AND SEAFOOD EXPORT PROCESSING INDUSTRY IN SRI LANKA: EXTERNAL INSIGHTS TO BOOST INTERNAL R&D EFFORTS

Dr. Devarahandhi De Silva, PhD, desilva.achini@yahoo.co.uk

Dr. Trond Bjørndal, Prof., Trond.Bjorndal@port.ac.uk

Abstract

This research is focused on the fish and seafood export industry of Sri Lanka, considering its importance to the country's economy. The objectives of the study are to investigate the nature of open innovation practices among fish and seafood exporters in Sri Lanka and to find out the role of open innovation on product and process development, market identification, market expansion, brand image, quality control, labelling and certification, sales promotion and advertising, and the sustainability of the resource base. The empirical study is based on the data obtained from 26 EU approved fish and seafood processing establishments. A structured questionnaire followed by interviews with CEOs, R&D heads and quality controllers were the principal data collection tools. Hansen and Birkinshaw's capability measure is used to measure the firm's level on idea generation, conversion and diffusion. Processing firms were divided into three groups; idea-rich/poor, conversion rich/poor and diffusion rich/poor. Hypothesis testing proved the positive relationship between firm performance and open innovation practices of the firms. Results reveal that firms are idea rich, conversion and diffusion moderate. Moreover, the study has identified open innovation partners, the nature of their support and the open innovation process of the fish and seafood export processors.

Abstract # 134

Session # 02D: Compliance, Enforcement, and the Lack Thereof Part I

QUOTA ENFORCEMENT IN RESOURCE INDUSTRIES: SELF-REPORTING AND DIFFERENTIATED INSPECTIONS

Dr. Lars Gårn Hansen, lgh@foi.dk; Dr. Frank Jensen, fje@foi.dk

Dr. Linda Nøstbakken, linda.nostbakken@ualberta.ca

Abstract

Quotas or permits are frequently used in the management of renewable resources and emissions. However, in many industries there is concern about the basic effectiveness of quotas due to non-compliance. We develop an enforcement model of a quota-regulated resource and focus on a situation with significant non-compliance and exogenous constraints on fines and enforcement budget. We propose a new enforcement system based on self-reporting of excess extraction and explicit differentiation of inspection rates based on compliance history. In particular, we use state-dependent enforcement to induce firms to self-report excess extraction. We show that such system increases the effectiveness of quota management by allowing the regulator to implement a wider range of aggregate extraction targets than under traditional enforcement, while ensuring an efficient allocation of aggregate extraction. In addition, inspection costs can be reduced without reductions in welfare.

Abstract # 143

Session # 02A Looking at Fish Supply Chains with a Gender Lens

ROLE OF GENDER IN GLOBAL FISHERY VALUE CHAINS: A FEMINIST PERSPECTIVE ON ACTIVITY, ACCESS AND CONTROL PROFILE

Dr. Devarahandhi De Silva, PhD, desilva.achini@yahoo.co.uk

Dr. Trond Bjorndal, Prof., Trond.Bjorndal@port.ac.uk

Dr. Audun Lem, PhD, Audun.Lem@fao.org

Abstract

Women in fishing communities play multidimensional roles. Women pervade fisheries and their roles were identified as workers in both fisheries, markets, processing plants and non-fishery, mothers who give birth to successors, as caregivers of the family, as connecting agents of social networks, as representatives of local culture, as community workers and governors. The main aim of this study is to identify and measure women's involvement in global fishery value chains and investigating their activity, access and control profiles in fishery value chains in selected destinations in Asia, Africa and Latin America. Primary data were obtained from fisheries and aquaculture operations in Thailand, Vietnam, Bangladesh, Cambodia, Sri Lanka, Ghana, Zimbabwe and Honduras. Participant observation with experienced investigators, focus group discussion and gender resources maps were the principal data collection tools. Women play non-significant roles in capture fishery production and totally depend on religion and culture while their contribution in aquaculture production is great. Female roles were centred on household activities which take them away from direct income generation and access to the capital assets. Less educated, resource poor women are concentrated in the low value end of the value chains while the high value end of the value chains is mainly handled by the resource rich males and limited number of educated, resourced owned females. Women's engagement is less in modern value chains with few nodes than the traditional complex and lengthier value chains.

Abstract # 147

Session # 01D Bioeconomic Modeling Part I

MODELLING CAPITAL STUFFING AND FLEET REDUNDANCY IN A LIMITED ENTRY FISHERY

Ms. Kelly Neill, neill@independenteconomics.com.au

Dr. Aki Asano, aki.asano@sophia.ac.jp

Dr. Satoshi Yamazaki, satoshi.yamazaki@utas.edu.au

Abstract

We introduce a modified version of the standard Gordon-Schaefer fishery model. Standard theoretical models usually treat fishing effort as an aggregate measure encompassing all different types of inputs. Consequently, these models do not enable us to examine the problem of fleet redundancy and capital stuffing separately, i.e. two ways in which the effort can be increased are not modelled in isolation. Using the modified version of the Gordon-Schaefer model, we attempt to isolate capital stuffing from fleet redundancy, and so to describe the overfishing problem in a limited entry fishery. Our model predicts no capital stuffing in a limited entry fishery, while the overfishing problem will still be present, so long as fleets under operation face no other restrictions. However, when the vessels face some other restrictions in addition to limited entry, the overfishing problem arises due to both the capital stuffing and fleet redundancy.

Abstract # 148

Session # 03D: Compliance, enforcement, and the lack thereof

OPTIMAL LIABILITY RULES: THE CASE OF RENEWABLE RESOURCES

Mr. Frank Jensen, Associate professor, fje@foi.ku.dk
Dr. Linda Nøstbakken, linda.nostbakken@ualberta.ca
Mr. Lars Hansen, Professor, lgh@foi.ku.dk

Abstract

Illegal extraction is a serious issue in many renewable resource industries, such as fisheries and forestry. This traditional approach is to model the resource firm as one cohesive unit or an individual. However, in many cases violations are not committed by an individual, but by agents acting on behalf of an owner or a firm. We ask what the optimal liability scheme is when the illegal extraction activity is carried out by employees representing a firm, rather than by an individual, when the employees can engage in avoidance activities to reduce the risk of detection when extracting illegally (Kornhauser, 1982). We develop a principal-agent model with imperfect information and analyze who should be held liable and punished: the employees, the firm/owner, or perhaps both parties? We find the optimal policy, which involves determining liability rules in conjunction with quotas and punishment levels. The renewable resource case is particularly interesting because it is the firm, and not the agent, that benefits directly from illegal operations. This is in contrast to most of the existing literature on corporate crime and liability, which assumes that only the agent benefits directly from illegal activities. We show how this affects the optimal liability rules.

Abstract # 149

Session # 01D Bioeconomic Modeling Part I

MODELLING THE ECONOMIC AND ECOLOGICAL CO-VIABILITY OF THE NORTHERN PRAWN FISHERY IN AUSTRALIA

Ms. Sophie Gourguet, PhD Student, sophie.gourguet@gmail.com
Dr. Olivier Thébaud, Olivier.Thebaud@csiro.au
Dr. Cathy Dichmont, Cathy.Dichmont@csiro.au
Dr. Roy Deng, Roy.Deng@csiro.au
Dr. Sean Pascoe, PhD, Sean.Pascoe@csiro.au
Dr. Rich Little, rich.little@csiro.au
Dr. Sarah Jennings, Sarah.Jennings@utas.edu.au
Mr. Luc Doyen, luc.doyen@orange.fr

Abstract

With the development of the ecosystem approach to fisheries (EAF), fisheries management is increasingly required to deal with multiple, often conflicting objectives. In this context, the stochastic co-viability approach has been proposed as a useful modelling framework as it allows for the combined representation of complex fisheries dynamics, uncertainty and the need to include multiple dimensions in the evaluation of sustainability. The present paper focuses on the application of this approach to the case of the Northern Prawn Fishery (NPF) in Australia. The fishery is based on several high valued prawn species each with different biology: an uncertain resource, the white banana prawn (*Penaeus merguensis*), a more predictable resource comprising two target tiger prawns (*Penaeus semisulcatus* and *P. Esculentus*) and the by-product blue endeavour prawn (*Metapenaeus endeavouri*). A bio-economic multi-species and multi-fishing strategies model is developed to examine how the fishery can operate within a set of constraints relating to spawning stock size of each prawn species, impacts on benthos and habitats, and economic profitability of the fleet.

Abstract # 151

Session # 02D: Compliance, Enforcement, and the Lack Thereof Part I

UNDERSTANDING NON-COMPLIANCE BEHAVIOR WITH U.S. PROTECTED SPECIES REGULATIONS

Dr. Kathryn Bisack, BS Mgt Science, MS Mathematics, PhD Economics, Kathryn.Bisack@noaa.gov
Dr. Chhandita Das Ph.D. Environmental and Natural Resource Economics, Chhandita.Das@noaa.gov

Abstract

Marine mammals and sea turtles are protected from commercial fishery interactions under the U.S. Marine Mammal Protection Act and Endangered Species Act. By design, enforcing area closures is generally less problematic than gear modifications from an enforcement standpoint. Consequently, non-compliance is a greater issue with gear modification regulations. The 1999-2007 National Marine Fisheries Service (NMFS) observer data show non-compliance with gear regulations as high as 65% in the South Cape area where pingers are required to protect porpoise (Palka and Orphanidaes, 2008). In our study, we attempt to identify factors that influence a fisherman's decision to comply or not comply. Using observer data we develop a model to estimate the probability of compliance as a function of past and present revenues, vessel characteristics, and a vessel's history of fishing and compliance. More complete models of compliance behavior account for factors such as social influence, moral values and the perceived legitimacy of regulations and the regulatory authority. In the absence of data on these variables, we use proxy variables in our empirical compliance model. Further, we conduct a pilot study to validate our results and expand our knowledge on the social, moral and perceived legitimacy aspect of the NMFS porpoise regulations. Specifically we interview fishermen in a focus group setting. We present these preliminary focus group findings and our empirical compliance model for vessels fishing under the 1999 and new 2007 porpoise regulations. Understanding determinants of individual fisher's compliance behavior may allow regulatory agencies

Abstract # 152

Session # 02B: Governance: Co-management, Community Management, Coops, and Catch Shares Part II

APPLICATION OF ECONOMIC AND SOCIAL PERFORMANCE MEASURES TO THE NORTHEAST U.S. GROUND FISH FISHERY

Mr. Andrew Kitts, andrew.kitts@noaa.gov

Abstract

On 1 May 2010, a new management program, Amendment 16 to the Northeast Multispecies Fishery Management Plan (FMP, was implemented for the New England groundfish fishery. The new groundfish management program contained two significant changes. The first consisted of "hard quota" annual catch limits (ACLs) for all of the 20 stocks in the groundfish complex. The second expanded the use of Sectors, a type of catch share program whereby groups of fishing vessels are each allotted a share of the total groundfish quota. Sectors received quota for nine of 13 groundfish species in the FMP and became exempt from many of the effort controls. In 2011, Kitts et al (2011) issued a series of three reports that provided indicators of social and economic performance. Existing data were used to assess financial viability and distributional outcomes. A number of approaches were used to highlight changes in fishing year 2010 with the four previous fishing years. This paper discusses these methods, the results, and lessons learned. It also presents the results of additional measures used to assess differences in economic performance between individual sectors within the 2010 fishing year.

Abstract # 153

Session # 32B Governance: Marine Reserves and Protected Areas Part II

THE ECONOMICS OF MPAS REVISITED

Dr. Siv Reithe, siv.reithe@uit.no
Dr. Claire Armstrong, claire.armstrong@uit.no
Mr. Ola Flaaten, Professor, ola.flaaten@uit.no

Abstract

Assuming a broad set of management goals, we analyze the implementation of a marine protected area (MPA) together with open access by applying a bioeconomic model that ensures unchanged growth post-MPA. Taking into account that conservation and restoration, food security, employment and social surplus are amongst the objectives that many managers include in fisheries management, we find that this broader approach to MPAs may well recommend them to a greater degree than espoused in the more common resource rent focused studies carried out to date. It is shown that for overfished stocks, an MPA may yield protection, maximize harvests and increase consumer and producer surplus, as well as providing higher employment. This is however less apparent for moderately overfished as well as highly migratory stocks.

Abstract # 154

Session # 22C Frontiers in Economic Modeling Part II

IDENTIFYING NASH EQUILIBRIUM STRATEGIES FOR A MULTI-FLEET MULTI-NATIONAL FISHERY UNDER UNCERTAINTY

Mrs. Polina Levontin, levontin@hotmail.com
Dr. Soile Kulmala, soile.kulmala@ymparisto.fi

Abstract

Designing economic incentives to achieve a desired policy outcome from a fishery could be helped by exploring it within a game-theoretic context. We use Baltic salmon fishery to show how complex interactions between national fleets, offshore and coastal fishermen, and migratory stock dynamics can be analysed with a bio-economic model set up as a game of four asymmetric players. For Baltic salmon there is a stochastic and complex bio-economic model conditioned on a state-space Bayesian stock assessment which captures uncertainty in stock dynamics. We calculate Nash equilibrium under various cost and price scenarios for each combination of a salmon population model parameters, using an MCMC chain obtained from their joint posterior distribution so that the correlations between different life-history parameters are accounted for. We use results of many simulations to explore how natural variability and economic uncertainties affect Nash equilibrium strategies.

Abstract # 157

Session # 02D: Compliance, Enforcement, and the Lack Thereof Part I

INSPECTION, COMPLIANCE & VIOLATION: A CASE OF FISHERIES

Mr. Kofi Otumawu-Apreku, kofi.otumawu-apreku@adelaide.edu.au

Abstract

The presence of illegal, unregulated and unreported (IUU) fishing activities are considered a serious threat to the sustainable use of marine resources. This paper uses a game theoretic approach to investigate the strategic interaction between fishers and management in the presence of IUU fishing. Managers choose a combination of fines, inspection probabilities and whether to classify a firm as "good" or "bad" to induce a target level of compliance from fishers who choose whether or not to comply. Importantly, this paper finds that equilibrium compliance strategies of fishers affect stock levels over time. In particular, less than perfect monitoring and enforcement lowers illegal harvesting which is beneficial for stocks. The results show that increasing the cost of engaging in illegal activities, through punishment, may be sound economic policy to discourage illegal fishing but that there should be upper bound on effective punishment.

Abstract # 160

Session # 13A Markets: Value Chains Part III

INTERACTIONS BETWEEN CULTURED AND CAPTURED GILTHEAD SEA BREAM IN THE SPANISH MARKET.

Dr. Gonzalo Rodriguez, gonzalo.rodriguez@usc.es
Mr. Sebastian Villasante, sebastian.villasante@usc.es
Dr. Roberto Bande, roberto.bande@usc.es

Abstract

Over the last few decades, while the volume of fish catches has remained stable, aquaculture has experienced a steady growth, until 46% of the total supply of edible fish in 2008, with a production of 55,1 millions tonnes (FAO, 2010). The process of expansion followed has led to an increased need for food, physical space for farming and markets where to realize the production, competing with fishing and its products in all these fields. Consequently, interactions between fishing and aquaculture have become a major issue. This paper is focused on the interactions between wild and farmed gilt-head sea bream in the Spanish market. Market integration of the two products is examined using bivariate cointegration analysis. On this regard existent economic literature suggests weak substitution between captured and farmed fishes unless they are of the same species. Nevertheless, the Spanish market analysis indicates that in this specific case the substitution effect doesn't exist. On the contrary, data suggests that is the aquaculture expansion that generates a growing segment of demand for captured fish. This has implications for fisheries management as long as the response of fishers to higher demand and prices is to increase captures.

Abstract # 161

Session # 11F Bioeconomic Modeling Part III

THE ECONOMIC REPERCUSSIONS OF FISHERIES-INDUCED EVOLUTION

Dr. Anne Maria Eikeset, a.m.eikeset@bio.uio.no

Dr. Andries Richter, a.p.richter@bio.uio.no

Dr. Erin Dunlop, Erin.Dunlop@ontario.ca

Dr. Ulf Dieckmann, dieckmann@iiasa.ac.at

Dr. Nils Chr. Stenseth, n.c.stenseth@bio.uio.no

Abstract

Human-induced changes in life-history traits have been observed for many harvested populations, with a component of those changes being attributed to an evolutionary (i.e., genetic) response. Most notably, fish stocks that experience high fishing mortality show a tendency to mature earlier and at a smaller size. Some have suggested that fisheries-induced evolution could affect the fishery's yield and therefore have economic repercussions for society. Yet, this has not been formally investigated. We use data from 1932 to 2005 to develop a bio-economic model specifically for Northeast Arctic cod that allows us to compare the economic yield in scenarios with and without evolution of key life-history traits. We also compare a "business as usual" scenario where fishing continues at its current pace, with a scenario in which harvest is controlled through an optimal control rule. Our model predicts that fisheries-induced evolution decreases economic yield if fishing mortality rates continue at their current high levels. We also find that maximum economic yield is achieved at a considerably lower fishing mortality than what the stock has historically experienced. At this lower mortality, fisheries-induced evolution is less pronounced and actually increases the spawning stock biomass and economic yield. Overall, we find that evolutionary and non-evolutionary models recommend similar harvesting rates and the overriding message is that higher economic yield can be obtained by lower harvest rates irrespective of whether evolution occurs or not.

Abstract # 163

Session # 01E Markets: Value Chains Part I

THE STRUCTURE OF WHOLESALE AND RETAIL MARKETING OF CATFISH (CLARIAS GARIEPINUS BURCHELL 1822) IN SOUTHWEST, NIGERIA

Dr. Ayanboye Abolupe Oluyemi, Bsc, Msc and PhD, ayanoluyemi@yahoo.com

Dr. Mabel Omowumi Ipinmoroti, PhD, wumisco@yahoo.com

Dr. Prof Adewale J.G, Ph.D, jgadewale@yahoo.com

Mr. Oluwafemi Zaccheaus Olaniyi, M. Sc, femi504@yahoo.com

Dr. Christianah Oludayo Olaniyi, Ph.D, dayomuyiwa@yahoo.com

Abstract

ABSTRACT The structure of farm raised catfish (*Clarias gariepinus*) and retailing were analysed in order to assess the degree of competition and understand the organization of the farm raised catfish (*Clarias gariepinus*) market in southwestern Nigeria, a major aquaculture fish producing area in Nigeria. The structure of the market was analyzed by looking into degree of market concentration, condition of entry in the market and magnitude of product differentiation. This was followed by random selection of 64 catfish wholesalers (CW) and 137 retailers (CR) from the market. Two sets of structured questionnaires were administered on wholesalers and retailers. The data were analyzed using descriptive statistics with the used of frequency distribution, percentages and Lorenze curve with the accompany Gini coefficient. Analysis of the market structure reveals fewer numbers of wholesalers who are able to influence price to their own advantage. The market is characterized by existence of barrier to entry for potential entrepreneurs due to the presence of fish seller's association who are demanding huge amount of money, and high start up and working capitals involve especially at the wholesale level. The market has distribution, with Gini coefficient of 0.66 and 0.60 at wholesale and retail levels respectively. Confirming that wholesale is more concentrated than retail market. The products sold are not completely homogenous (as size differs) there was an evidence of price discrimination. There is need to increase access to credit facilities at the wholesale level to increase entry into the market.

Abstract # 164

Session # 02B: Governance: Co-management, Community Management, Coops, and Catch Shares Part II

RECENT EXPERIENCE WITH REGARD TO INTRODUCTION OF FISHERIES CO-MANAGEMENT IN TANZANIA MAINLAND

Mr. Yahya Mgawe, MSC, ymgawe@yahoo.com

Abstract

The search for effective small-scale fisheries management regime, in Tanzania, has been an on-going process since independence in 1961. Different models were tried including centralized system of governance, use of cooperative groups and setting up of environmental committees in villages. Unfortunately, nothing much was realized and thus, over-capacity, over-fishing, illegal fishing practices and environmental degradation became prevalent. In view of this situation, the government adopted establishment of Beach Management Units in fishing villages. So far over 600 BMUs have been established in the country. The performance of many BMUs is mixed, however the lesson learned from the models developed in three districts; Rufiji, Mafia and Kilwa, provides frames of reference on requirements for successful introduction of fisheries co-management. The experience suggests that introducing fisheries co-management is a process moving through certain stages if the best results are to be achieved. First, threats or issues have to be identified followed by effective early action before focusing on group formation and dynamics. Other necessary dimensions are; education and training, resource management functions and extension service. The components have to be taken in combination rather than disjointedly. This paper outlines how the intervention works, arguing that an initial impression can cloud later perceptions. So it is important to consider the ways in which a favourable initial response can be achieved. In most of the fishing communities, dealing with livelihood issues such as facilitating introduction of micro-credit scheme could be an effective early action for conditioning fishers...

Abstract # 165

Session # 01C Managing Development of Fisheries and Aquaculture Sectors Part I

SOCIAL AND ECONOMIC DIMENSIONS OF SEAWEED FARMING: A GLOBAL REVIEW

Dr. Diego Valderrama, dvalderrama@ufl.edu

Abstract

Seaweed farming based primarily on the culture of *Kappaphycus* and *Eucheuma* species has grown significantly in the Philippines and Indonesia over the last two decades, with growth also taking place at a smaller scale in Tanzania, India and a few other developing countries. Unlike other forms of aquaculture, seaweed farming foregoes the use of feed and fertilizers and has minimum technological and capital requirements. In addition, growout cycles are short, normally lasting less than two months. Given these unique characteristics, seaweed farming has generated substantial socio-economic benefits to marginalized coastal communities in developing countries, most of which have reduced access to alternative economic activities. In some communities, seaweed farming has emerged as the most relevant livelihood strategy. This presentation summarizes the findings of a recent FAO review on the social and economic dimensions of seaweed farming in six countries in Asia (the Philippines, Indonesia, India), Africa (Tanzania), Oceania (Solomon Islands), and Latin America (Mexico). Each case study documented the evolution of the farming sector and examined the mix of public sector policies and private sector involvement leading to growth of the activity. Given the rising global demand for seaweed-derived products, seaweed farming has the potential to generate further socio-economic benefits to coastal communities in tropical regions; however, a number of challenges and constraints (which may be country-specific) will need to be addressed to fully take advantage of these opportunities.

Abstract # 166

Session # 01C Managing Development of Fisheries and Aquaculture Sectors Part I

DEVELOPMENT OF AQUACULTURE IN THE GULF STATES

Mr. Bruce Shallard, bruce.shallard@xtra.co.nz

Abstract

This paper discusses the development of aquaculture in the countries of the Gulf Cooperating Council (GCC) with particular emphasis on Oman and the United Arab Emirates (UAE). Aquaculture in the GCC countries, with some notable exceptions, has been slow to develop, with investors reluctant to invest in aquaculture projects that do not produce quick returns. There have been some substantial shrimp farm developments in Saudi Arabia and smaller scale efforts in other countries but no concerted efforts, despite good access to marine waters and an amount of research undertaken by research institutes in the region on suitable local species. The picture in 2012 is one of untapped opportunity, now being addressed seriously by Governments and the private sector. Two drivers are identified, these being firstly the desire to diversify from economic reliance on the oil and gas sector, and secondly the realisation that food security for GCC countries must be ensured with aquaculture being one of the tools to be utilised. Two examples will be used to demonstrate this. Firstly Oman where the Government has, during 2011, placed significant emphasis on aquaculture with an extensive site survey undertaken, new permitting arrangements and a drive to encourage and assist investors. This culminated in an international conference for aquaculture investors in December 2011. The second example will be the United Arab Emirates and specifically the Emirate of Abu Dhabi where the Government has encouraged aquaculture development and is implementing a suite of new policies to effectively manage development and encourage investment.

Abstract # 171

Session # 21F Environment, Natural Disasters, and Recovery Part I

SOCIO-ECONOMIC IMPACTS OF THE TSUNAMI ON MARCH 11, 2011, IN JAPAN

Dr. Nobuyuki Yagi, yagi@fs.a.u-tokyo.ac.jp

Abstract

Socio-economic impacts of the tsunami and the nuclear power plant accident are discussed in this study. A strong earthquake hit Japan on March 11, 2011. It triggered massive tsunamis and as a consequence, 28,612 fishing boats (equivalent to 15.4% of the Japanese fishing boats) were lost or destroyed and 319 fishing ports (11% of the Japan's fishing ports) were damaged. Despite such damages, no significant decrease was identified for Japanese fishery production statistics in 2011 probably due to the fact that the most of the lost boats were ones for small-scale fishery. Human capitals, however, have been seriously damaged in many coastal communities. Fishers have long established institutional frameworks to co-manage coastal fishery resources. Local Fisheries Cooperative Associations (FCAs) have played central role for such co-management. The tsunami destroyed many of such functions. In addition, serious damages were caused by Fukushima nuclear power plant of TEPCO (Tokyo Electric Power Company). The company failed to shut down the reactors after the earthquake and this has resulted in serious leakage of radioactive substances into the Japanese waters. Airborne radioactive pollutants also have fallen on the land and sea. High level of radiation was in fact detected in ocean waters near the damaged nuclear power plant. Human capitals for the coastal fishery management may have received irreparable damages in some areas and, therefore, it could cause adverse effect for the conservation of coastal fishery resources.

Abstract # 172

Session # 02C Managing Development of Fisheries and Aquaculture sectors Part II

WILL LOWER INTEREST RATES TRAP HOUSEHOLDS AS UNSKILLED LABOR IN SMALL-SCALE FISHERIES?

Ms. Marie-Catherine Riekhof, riekhof@economics.uni-kiel.de
Mr. Frederik Noack, noack@economics.uni-kiel.de

Abstract

Economic growth is accompanied with a shift of labor away from the natural resource sector. In developing countries some people have to leave fisheries as a way of making it possible for those who remain in fisheries to share in the productivity gains of the entire economy. Increased investment in education is needed to enable fishermen to leave the sector and find a better paid job. This educational investment is typically linked to income. To enhance income, loans for fishing equipment are common; either by informal credit arrangements or by micro-credits. Interest rate lowering policies increase income and could therefore aid in achieving skilled exit from fishery. However, as fishing becomes more productive through the investment, it might trap households in low income fisheries. To examine the counteracting effects of lower interest rates on education we contribute with a model that (a) captures the informal credit arrangements based on a fishery investment and (b) elucidates the effect of interest rate lowering policies on education and thus skilled exit. The model generalizes our fieldwork on Chilika Lagoon, India. The effect of a marginal decrease of the interest rate for a fishery loan on education is ambiguous. The lower rates lead to an income effect, which increases education, and a substitution effect, which decreases education, because fishing becomes more productive. The overall effect can depend on initial wealth, preferences and production possibilities. Thus, improving borrowing conditions for fishery loans can trap households and makes a case-by-case analysis necessary.

Abstract # 173

Session # 11F Bioeconomic Modeling Part III

ESTIMATING MSY AND MEY IN MULTI-SPECIES AND MULTI-FLEET FISHERIES: THE CASE OF THE BAY OF BISCAY MIXED FISHERIES

Dr. Jordi Guillen, jordi.guillen.garcia@ifremer.fr

Abstract

Most fish stocks worldwide are not optimally exploited. In fact, 63% of assessed fish stocks worldwide require rebuilding (Worm et al., 2009); while, 88% of the EU stocks assessed are being fished beyond MSY, being 30 % of these stocks outside safe biological limits (EC, 2009). This means that fish stocks are producing less in biologic and economic terms that what it could be obtained. The EU, among several countries, agreed on the Plan of Implementation of the Johannesburg World Summit on Sustainable Development to maintain or restore fish stocks to levels that can produce the MSY by 2015 (UN, 2002). Moreover, a large part of the EU fisheries are managed based on single species stock assessments. However, most species are caught together with other species by multiple fleets (multi-species and multi-fleet fisheries). In multi-species and multi-fleet fisheries, single species assessments and MSY and MEY reference points are often not valid. Thus, on this paper we analyse the calculation of MSY and MEY in multi-species and multi-fleet fisheries, applied to the Bay of Biscay fishery.

Abstract # 174

Session # 23A Africa Policy Day Part IV

CLIMATE CHANGE:IMPLICATION ON AQUATIC RESOURCES,FOOD SECURITY AND LIVELIHOOD

Mr. Badmus Olanrewaju, MSc holder Fisheries, lanre2ola@yahoo.com

Abstract

Climate changes are growing environmental concerns which are much in the scientific government and public eye at present. The potential impact on aquatic resources and food security are immense. From local to global levels, fisheries and aquaculture play important roles for food supply, food security and income generation. Some 43.5 million people work directly in the sector, with the great majority in developing countries. Adding those who work in associated processing, marketing, distribution and supply industries, and the sector supports nearly 200 million livelihoods. Aquatic foods have high nutritional quality, contributing 20 percent or more of average per capital animal protein intake for more than 1.5 billion people, mostly from developing countries. They are also the most widely traded foodstuffs and are essential components of export earnings for many poorer countries.They will also affect safety at sea and settlements, with communities living in low-lying areas at particular risk. Livelihood diversification is an established means of risk transfer and reduction in the face of shocks, but reduced options for diversification will will negatively affect livelihood outcomes.

Abstract # 175

Session # 01D Bioeconomic Modeling Part I

BIOECONOMIC MODELLING FOR THE EVALUATION OF FISHERY RESOURCES BASED ON THE GORDON-SCHAEFER MODEL

Mr. Taro Oishi, PhD, t.oishi@poem.ocn.ne.jp
Dr. Nobuyuki Yagi, yagi@fs.a.u-tokyo.ac.jp
Mr. Masahiko Arijji, Ph.D, Masahiko.Arijji@ma2.seikyoku.ne.jp
Mr. Yutaro Sakai, aa107094@mail.ecc.u-tokyo.ac.jp

Abstract

In this study, we developed a theoretical framework based on the Gordon-Schaefer model and establish bioeconometric models to estimate the quantity of fishery resources. A unique characteristic of our model is that we consider the effect of natural fluctuations of fishery resources over time. In other words, we assume not a steady-state equilibrium but a state of disequilibrium. Our model enables to estimate resource change using data set on catch and effort, and provides a basic framework to analyze resource fluctuations. The model is particularly effective for approximate status of fishery resources using social and economic data. Although data from scientific survey should be a primary source of estimating the current condition of fishery resources in any regions of the world, such surveys are costly and may not be a workable option in some developing countries. Our model has a potential to supplement information on resource status in such area where scientific data is insufficient.

Abstract # 176

Session # 12F Bioeconomic Modeling Part IV

STOCHASTIC ECOSYSTEM VIABLE YIELDS

Ms. Esther Regnier, estherregnier@hotmail.fr
Mr. Michel De Lara, delara@cermics.enpc.fr

Abstract

The World Summit on Sustainable Development (Johannesburg, 2002) encouraged the application of the ecosystem approach by 2010. However, at the same Summit, the signatory States undertook to restore and exploit their stocks at maximum sustainable yield (MSY), a concept and practice without ecosystemic dimension, since MSY is computed species by species, on the basis of a monospecific model. Furthermore, fisheries management strategies should also account for uncertainty. Acknowledging these gaps, we propose the concept of "stochastic ecosystem viable yields" (SEVY) as yields: i) build upon ecosystem dynamics; ii) compatible with biologically viable levels at all time; iii) accounting for uncertainties. To the difference of MSY, this notion is not based on equilibrium, but on viability theory and follows a worst-case approach. We provide an expression for SEVY for the anchovy-hake couple in the Peruvian upwelling ecosystem. We introduce disturbances in the two-species dynamical biomass model with harvesting. No probabilistic assumptions are made on these disturbances, but only set memberships ones.

Abstract # 178

Session # 22E The Economics of Aquaculture Production and Profitability Part II

GROWTH, DIGESTIBILITY, BLOOD PARAMETERS AND YIELD OF NILE TILAPIA OREOCHROMIS NILOTICUS FINGERLINGS FED GRADED LEVELS OF FERMENTED MANGO (MANGIFERA INDICA) SEED MEAL BASED DIETS.

Dr. Samuel Obasa, PhD, samoluobasa@yahoo.com

Abstract

This study evaluated the effect of fermented mango seed meal (FMS) as dietary carbohydrate substitute for yellow maize in the practical diet of *Oreochromis niloticus* fingerlings (4.76 ± 0.18 g). Five iso-nitrogenous (35% crude protein) and approximately iso-energetic (3400 MEKcal/kg) diets in which corn meal protein was replaced by FMS protein at 0% (Control), 25% (FMS1), 50% (FMS2), 75% (FMS3) and 100% (FMS4) levels were formulated. Diets were administered at 5% body weight for 84 days. Anti-nutritional factors of the FMS were evaluated. Alkaloid was highest (2.32%) while flavonoids were lowest (0.50%). Growth decreased significantly as FMS increased above 50% in the diet. Mean weight gain (19.55g) was highest in fish fed diet the control diet and lowest (9.58g) significantly ($p < 0.05$) in the values of the blood parameters except in pack cell volume (PCV), red blood cells (RBC) and glucose content of experimental fish. Gross profit was significantly higher (N69.74) in fish fed control diet than N45.70 in fish fed diet FMS4. There was no significant difference in the profit index and incidence of cost. Yellow maize could therefore be replaced by FMS at 50% level without affecting growth. There was no negative implication to fish health, profit index and ...

Abstract # 179

Session # 12A Governance: Property Rights and Quota Systems Part II

PROFITS AND THE NORWEGIAN IVQ-REGIME

Mr. Kristen Lund, kristelu@student.sv.uio.no

Abstract

This paper is an empirical analysis of the effects on profits from the introduction of an IVQ regime. Coastal cod fishery in Norway was practically speaking open access prior to 1990. That year declining stock levels caused the government to introduce an IVQ-regime, which has been in place ever since. Did this change the profitability in the fleet? According to standard cap-and-trade theory, the efficient fishers should buy out the marginal ones, by buying their quotas and transfer them to their own boats. By using a large dataset containing individual vessel-information on revenues, cost, assets and debt, as well as the landings of the vessel, it is possible to show whether or not this did happen. Rise in profits may be caused by different things; larger stock of cod went up may be caused by favorable environmental conditions as well as less harvest under IVQ-regime. Other government policies also changed. All these effects will have to be controlled for. Thus the goal of this paper is to single out the effect from the IVQ-regime on fishers' profits, by building a micro model of fishers' behavior, and estimating the parameters using the dataset. Binary variables for time-restrained policies will be needed to single out those effects. Early results show that the cod-fishers experienced a significant positive shift in their profit margins after 1990, something in the order of 4%. The effect for cod-fishers is stronger than for other fishers.

Abstract # 180

Session # 11B Understanding and Modeling Fishing/Sector Behavior Part III

BYCATCH RISK POOLS FOR THE US WEST COAST GROUND FISH FISHERY

Dr. Daniel Holland, dan.holland@noaa.gov

Dr. Jason Jannot, jason.jannot@noaa.gov

Abstract

Individual transferable quotas (ITQs) in multispecies fisheries create incentives for fishermen to avoid bycatch of species for which quota is scarce. However, when bycatch is highly uncertain, individual quota demand and prices may be volatile creating substantial financial risk for fishermen. The US Pacific Groundfish fishery recently introduced an ITQ system with low quotas for several overfished species with highly uncertain bycatch rates. Some fishery participants formed risk pools where bycatch quota is pooled and available to all pool members. Risk pools can reduce financial risk and transactions costs for individuals, but they also create moral hazard and adverse selection problems. We present an empirical analysis of bycatch risk that informs several issues of risk pool design including which bycatch species to include, pools size, and how to evaluate and mitigate adverse selection and moral hazard problems. The analysis suggests that risk pools can achieve substantial risk reduction and lower adverse selection and moral hazard issues by limiting the species included in risk pools, by keeping risk pools relatively small and by specifying monitorable practices that reduce expected bycatch.

Abstract # 182

Session # 01D Bioeconomic Modeling Part I

SEARCH AND DESTROY: A BIOECONOMIC MODEL OF ORANGE ROUGHY FISHERIES IN NEW ZEALAND.

Mrs. Viktoria Kahui, PhD, viktorika.kahui@otago.ac.nz

Dr. Claire Armstrong, claire.armstrong@uit.no

Abstract

This paper reviews New Zealand's orange roughy fishery management and applies a bioeconomic model to explain the seamount depletion externality by bottom trawling. The model shows that despite an upper limit on annual harvest, the potential gains in economic rent from trawling on pristine habitat, where catch rates are high, rather than on known tracks/flat bottom lead to the continued discovery and destruction of seamounts. The bioeconomic model identifies the temporal and spatial determinants of fisher behaviour, which we estimate empirically with data on orange roughy catch and effort by location between 2001 and 2010. We find that the probability of seamount discovery and the interest rate are dominant factors in determining the distribution of orange roughy harvest during the fishing year, while the effects of cost of harvest and price are negligible. A 'seamount' fee approach may address the spatial dimension of fisher behaviour more effectively than current regulation by removing the superior rents associated with pristine seamounts. In the long term, it may provide an impetus for fishers to develop and adopt selective fishing practices. Our analysis emphasises the importance of understanding underlying economic incentives that govern fisher behaviour when devising fish and habitat management.

Abstract # 185

Session # 32B Governance: Marine Reserves and Protected Areas Part II

ARE MARINE RESERVES AND HARVEST CONTROL RULES SUBSTITUTES OR COMPLEMENTS FOR REBUILDING FISHERIES?

Dr. Satoshi Yamazaki, satoshi.yamazaki@utas.edu.au

Dr. Sarah Jennings, Sarah.Jennings@utas.edu.au

Dr. Quentin Grafton, quentin.grafton@bree.gov.au

Dr. Tom Kompas, tom.kompas@edu.anu.au

Abstract

The depletion of important fish stocks and the degradation of marine ecosystems are common problems worldwide. Two approaches that have been widely used to restore depleted fish stocks are the implementation of harvest control rules and the establishment of marine reserve networks. Harvest control rules, underpinned by the monitoring and assessment of the status of target stocks, provide a scientific basis for setting catch limits. No-take marine reserves have been increasingly promoted in many countries to restore depleted fish stocks as well as to enhance the sustainability of fisheries. Extensive bodies of literature exist that examine the merits and limitations of alternative harvest control rules and the effectiveness of marine reserve establishment. To our knowledge, however, this study is the first to investigate the connection between the two management approaches for rebuilding depleted fish stocks and fisheries. In this paper, we construct a bioeconomic model to examine the effectiveness of a no-take reserve under different stock rebuilding harvest strategies. Our parameterized model shows that the fishery will perform better in terms of both the average biomass and net present value of the fishery when the no-take reserve is established under a fast stock rebuilding harvest strategy. Importantly, however, the relative gains from establishing a no-take reserve are greater, in terms of conservation and economic objectives, when the reserve is established in conjunction with a harvest strategy that rebuild the stock slowly. Our results suggest that the two approaches are both substitutes and complements in pursuit of ...

Abstract # 187

Session # 04 Posters and Game Demonstration Session and Reception

THE EFFECT OF NEGATIVE EVENTS ON STOCK RETURNS OF FISHING ENTERPRISES: A CASE STUDY OF NORWEGIAN FISHERIES

Dr. Sarah Jennings, Sarah.Jennings@utas.edu.au

Dr. Vitali Alexeev, Vitali.Alexeev@utas.edu.au

Mr. Bastien Le Bouhellec, bastien.lebouhellec@agroparistech.fr

Abstract

Interactions between various uses of marine systems, and between marine and terrestrially-based activities are quite well documented, and, in some cases, the negative impact of competing activities on the value of wild and farmed fisheries has also been evaluated. While such effects are usually reflected in a decline in the value of fishing and aquaculture enterprises, news foreshadowing such interactions may also precipitate changes in the market value of such enterprises. For instance, announcements of forthcoming changes in fisheries management (such as the creation of marine reserves) or declines in fish stocks, regardless of the actual outcome, may lead to negative effects on the value of publically traded enterprises involved in activities along the fisheries and aquaculture supply chains. Using an event study methodology, and sixteen Norwegian fishing and aquaculture firms quoted on the Oslo Stock Exchange as a case study, we capture the effect of negative announcements on the stock returns of enterprises in the sector. We do this for two events, namely the announcement of significant offshore oil and gas exploration and of the detection of fish disease. We find that the value of publicly traded fisheries and aquaculture enterprises fall just before or immediately after announcement of these events. This reinforces expectations of the damaging effects of these events on the value of Norwegian fisheries and thereby on livelihoods.

Abstract # 188

Session # 23F Governance: Marine Reserves and Protected Areas Part I

IMPACTS OF MPA ON COASTAL COMMUNITIES' RESOURCE USE BEHAVIOUR: CASE OF MAFIA ISLAND MARINE PARK, TANZANIA

Ms. Esther Japhet Mulyila, eyesmndeme@gmail.com

Abstract

Despite various studies on biological importance of Marine Protected Areas (MPA), a model used in fisheries management to minimise negative human impacts on the marine environment, less is known on how it relates with communities that depend on the utilisation of fisheries resources. Through field survey, this study has investigated impacts of Mafia Island Marine Park (MIMP) on resource use behaviour of coastal communities to ascertain impacts of MPA management model. The study survey requested the information sources about community member's dependency on fisheries resources, their attitudes and perceptions towards the marine park and the management rules. Several resource-use restrictions including fishing and coral mining are introduced by the park, though the communities depend highly on the fisheries resources. Effects of the park vary with villages. The park is acknowledged for stopping dynamite fishing. An increasing trend of fish landings following park establishment is observed. Though communities support the park, there are concerns about alternatives to livelihood sources. A highly fisheries resource-dependent community strongly supports conservation but without alternative livelihood sources verifies difficulties in complying with the management regulations. Regardless of management regulations, community's dependency on fisheries resource influences their compliance to regulations, reflecting resource use behavioural change. MIMP has influence on resource use behaviour of Mafia coastal communities. Alternatives to livelihood sources, awareness and community involvement are important factors in instigating changes in resource use behaviour. Inclusion of community's dependency on fisheries resource and its solutions is essential in planning and preparations for the...

Abstract # 189

Session # 23E: Governance: Management of Fishing Activity Part II

WEAK REGULATION OF DISTANT WATER FLEETS PUTS RENTED FISHERY IN JEOPARDY; A CRITICAL ANALYSIS OF FISHERIES PARTNERSHIP AGREEMENTS IN MADAGASCAR

Ms. Mialy Andriamahefazafy, Master in Environmental Law, mialy@blueventures.org

Mr. Alasdair Harris, al@blueventures.org

Mr. Frederic Le Manach, f.lemanach@fisheries.ubc.ca

Abstract

Madagascar is the world's fourth biggest island, and one of the world's poorest countries. Given its severe poverty, Madagascar has no large-scale domestic fleet. Consequently, it is required by the United Nations Convention on the Law of the Sea to rent these un-exploited resources to distant water fleets (DWFs) from other nations through access agreements. We present an analysis of access agreements signed between DWFs and the Republic of Madagascar valid in 2011. All agreements were appraised based on a number of criteria, including reporting requirements, fees, observers, restrictions and bycatch limits. Our findings highlight consistent severe shortcomings, in particular with regards to the contractual obligations and accountability of DWFs in reporting catches which result in signatories having no disincentive for over-exploitation and illegal fishing. Our analysis shows that of a total of seven agreements authorizing fishing by 170 vessels, only one agreement has a quota in place. Only two require mandatory inspection before a fishing campaign. One agreement is exempt from having any observers on boats and the European Union, whose fleet accounts the majority of licensed vessels (124), does not address the issue of bycatch. Our findings highlight many of the challenges faced by coastal developing nations in 'renting' their fisheries resources. Whilst it is widely recognized that such states need assistance in improving MCS capacity, our analysis suggests that technical assistance in contract development and negotiation should be a fundamental pre-requisite to establishing a fair and sustainable fisheries access agreement framework.

Abstract # 190

Session # 23D: Measurement and Indicators for Improved Understanding and Management Part II

MEASURING ECONOMIC DEPRECIATION IN FISHERIES

Dr. Sean Pascoe, PhD, Sean.Pascoe@csiro.au

Mr. Simon Vieira, Simon.vieira@daff.gov.au

Dr. Olivier Thébaud, Olivier.Thebaud@csiro.au

Abstract

Australia has a policy of achieving maximum economic yield (MEY) in Commonwealth fisheries, with many States also interested in the MEY target. Bioeconomic models are being developed for estimating MEY for several fisheries, supported by economic surveys of the fisheries. While most cost components can be derived directly from the survey information, capital values are incorporated into the models usually through the opportunity cost of capital and depreciation - both imputed values. Information on the former can be derived from capital markets. Depreciation measures, however, are often distorted by accounting practices and taxation regulations rather than actual capital consumption. In this paper, we estimate the actual rate of economic depreciation in Australian fisheries, and find it is substantially lower than values usually used in most bioeconomic analyses.

Abstract # 191

Session # 11C Socio-economic Assessment of Management Measures of the New Common Fisheries Policy Part I

INTEGRATING SOCIAL OBJECTIVES AND INDICATORS FOR AUSTRALIAN FISHERIES MANAGEMENT

Dr. Sean Pascoe, PhD, Sean.Pascoe@csiro.au

Dr. Kate Brooks, kate@kalanalysis.com.au

Dr. Jacki Schirmer, jacki.schirmer@anu.edu.au

Dr. Lianos Triantafillos, Lianos.Triantafillos@sa.gov.au

Dr. Cathy Dichmont, Cathy.Dichmont@csiro.au

Abstract

Sustainability and economic efficiency are well established and defined objectives in Australian fisheries management. Many Australian States and Territories include some reference to social considerations in their fisheries legislation, but this is poorly defined and has little direct influence on policy formulation. From the literature, many fisheries social objectives are difficult to quantify, and performance measures against these objectives have either not been clarified or are difficult to assess at broad level scales. In 2010, a project was initiated to determine a nationally applicable set of social objectives and associated indicators for Australian fisheries management. Quantitative indicators were developed, and an overall performance measure was developed using a Bayesian belief network approach. In this paper, the approach undertaken to develop, quantify and assess social objectives and the performance of management against these objectives is presented. This method allows clear social objectives to be utilised and an integrated assessment of them undertaken in line with economic and biological sustainability objectives.

Abstract # 193

Session # 22E The Economics of Aquaculture Production and Profitability Part II

PROFITABILITY ANALYSIS OF PUBLIC-PRIVATE PARTNERSHIPS IN VILLAGE BASED SEA CUCUMBER AQUACULTURE

Mr. Antoine Rougier, antoine@blueventures.org

Ms. Kirsten Oleson, kirsten@blueventures.org

Ms. Mialy Andriamahefazafy, Master in Environmental Law, mialy@blueventures.org

Mr. Alasdair Harris, al@blueventures.org

Abstract

The aquaculture of *Holothuria scabra* is under development in the southwest of Madagascar. In order to enable local communities to benefit from this new opportunity, Blue Ventures is implementing a village-based aquaculture programme, based on a public-private partnership with an international donor and a local private company. If the theoretical model, based on donor support for the initial investment, decreasing subsidises for running costs for the farmers, and a supply of juveniles at cost-price from the local partner company with exclusive rights to the buy-back of the market size individuals at a fixed rate (lower than the price of wild-caught *H. scabra* but ensuring certainty of sales), shows a potential for profitability of the village based farms, the reality is so far quite different. Despite the fact that the farmers' incomes are increasing and they are now contributing to the farms' running costs, current results do not tally with the projections of the theoretical model. This presentation will try to explain the reasons for gaps between the project's reality and the theoretical model, assessing the weaknesses of the current model, and trying to understand if they are based on technical issues, the socio-economic context or a need for an alternative economic model. This work will finally explore alternative models for village-based sea cucumber aquaculture, to refine the approaches to this potentially lucrative alternative livelihood, and to offer opportunities for future development of this activity in Madagascar and the Western Indian Ocean region.

Abstract # 196

Session # 13F Bioeconomic Modeling Part V

COLD WATER CORAL - FISHERIES INTERACTIONS: BIOECONOMIC MODELLING COMPARING NORWAY & ICELAND'S REDFISH FISHERIES

Dr. Naomi Foley, naomifoley@gmail.com

Dr. Claire Armstrong, claire.armstrong@uit.no

Abstract

This paper shows that the importance of fish habitat depends in part on the management of the fishery. Two cases of cold water coral - fisheries interactions are studied in a bioeconomic model setting: Norwegian and Icelandic redfish fisheries. The two countries have applied different types of management; Norway's management has been closer to open access, while Iceland has had a property rights system of individual transferable quotas (ITQ) in the time period studied. Using the production function approach and assuming an essential fish habitat connection, the cases are studied using time series data of catch and effort in the fisheries, while estimating for possible outer limits of cold water coral decline. In both countries there are indications of economic losses due to cold water coral decline. However, the open access nature of the Norwegian fishery seems to exacerbate these losses. The assumed loss of 30-50% of cold water coral gives an estimated marginal change in annual harvest of between 0.15% and 0.24% for the Icelandic fishery. For Norway, cold water coral decline results in a percentage marginal change in annual harvest of between 0.29% and 0.46%, twice that of the optimally managed fishery. The results of this study give indications of how habitat loss may affect fisheries. It points to the importance of management of fisheries when bringing in broader ecosystem connections. The greater losses due to habitat decline when fisheries are unmanaged raises the stakes of fisheries management.

Abstract # 199

Session # 11D The Economic Impact of Climate Change on Fisheries and Aquaculture Part I

CHANGES AND ADAPTATIONS IN FISHERIES AND AQUACULTURE IN COASTAL BANGLADESH

Dr. Parvin Sultana, parvin@agni.com
Dr. Paul Thompson, paul@agni.com
Dr. Md. Abdul Wahab, Wahabma_bau@yahoo.com
Dr. Haroun er Rashid, herashid@iub.edu.bd

Abstract

Global climate change may already be impacting the environment in coastal southwest Bangladesh. In the dry season saline water extends further inland (although shrimp farming has also affected soil salinity), two major cyclones affected the area in the past five years, and smaller channels are drying up. This paper summarises changes and adaptations being tested with communities in two contrasting areas. In areas already extensively converted to shrimp farming, such as Satkhira, the labouring and sharecropping opportunities for the landless declined. Shrimp farming may appear well adapted to salinity intrusion, but it is vulnerable to cyclones, and farmers perceive that higher temperatures and reduced winter rains affect production. Fattening of mud crabs for export has recently taken off. Piloting crab fattening with 200 extreme poor households helped more than treble incomes to about US\$0.6/person/day. Further east in Patuakhali and Barguna there is little shrimp farming and lack of freshwater in the dry season constrains fish and crop production. Several community based organisations (CBOs) have enhanced management of remaining freshwater fisheries, but are yet to forward plan for future climate changes. However, some CBOs that re-excavated dead canals to provide water to irrigate dry season crops also retained water for fish sanctuaries, enhancing fish catches and diversity. As salinity intrudes further inland the capture fisheries managed successfully by communities may change in composition, but sanctuaries appear to be robust measures, and CBOs adapt when they can learn from one another's experience.

Abstract # 201

Session # 22E The Economics of Aquaculture Production and Profitability Part II

DEVELOPING SMALLHOLDER AQUACULTURE IN KENYA INTO VIABLE ENTERPRISES: CASE STUDY OF NYAGUTA FISH PONDS IN KISII, KENYA.

Mr. John Okechi, jokechi_1263@yahoo.co.uk
Dr. Olivier Mikolasek, Olivier.mikolasek@cirad.fr
Dr. Harrison Charo-Karisa, PhD, harrison.charo@gmail.com

Abstract

Smallholder fish farming contribute to improved nutrition, incomes and livelihoods of rural communities. Despite the potential, aquaculture in most rural areas is based on extensive production systems characterized by low availability in inputs. In Nyaguta, farmers are involved in agricultural production activities, including fish farming. However, most farmers do not keep records of resources used in their ponds (inputs, and labour) and outputs. This makes it impossible to assess the profitability of the enterprises. A study was carried out with the objectives: To describe the fish farmers' practices, characterize the inputs used and determine the rearing parameters. Monosex tilapia was stocked in 300m² ponds at 3 fish/m² and fed on pellet feed at 5% body weight. Semi-quantitative and qualitative data was collected from fifteen ponds over the production cycle (February 2011 to December 2011). Partial enterprise budgeting was used to compare profitability. Sale of harvested fish, gave the revenue or total income (TI) from each pond. Variable costs (inputs, labour and other operational inputs) were calculated. Family labour costs, were calculated separately to differentiate from casual labour. Total income (TI) minus total variable costs (TVC) gave net income (NI) for each pond. From such analysis farmers would tell if their ventures are profitable or not. It also offers them an opportunity to determine areas to cut down or upscale during the production cycle to maximize on profits. It is only after farmers realise profits that they can be motivated to continue investing in fish farming and related activities.

Abstract # 202

Session # 02C Managing Development of Fisheries and Aquaculture sectors Part II

THE ROLE OF INEQUALITY AND RESOURCE PRODUCTIVITY FOR ECONOMIC DEVELOPMENT

Mr. Frederik Noack, noack@economics.uni-kiel.de
Ms. Marie-Catherine Riekhof, riekhof@economics.uni-kiel.de
Mr. Martin F. Quaas, quaas@economics.uni-kiel.de

Abstract

Based on fieldwork on the occupational choice and the incomes of fishermen at Chilika lagoon, India, we built an overlapping generations model of a small open economy with access to a renewable common pool resource to show how the share of the workforce in the resource sector, the average income and the income differences between the poor and the rich depend on the resource productivity and the initial distribution of wealth within the economy. A productive resource provides capital for investment in better income alternatives. The exit of individuals from the resource sector increases the income of the remaining resource harvesters. A large share of the workforce in the resource sector can overharvest the resource and impede the exit from the resource sector when they become too poor to afford the investment in income alternatives. Inequality can enhance economic development in poor resource dependent economies but reduce economic development in rich economies. Technological efficiency in resource harvesting has ambiguous impacts on economic development. This model provides an explanation why poor fishermen in developing countries can be trapped in the fishery while the fishermen in rich countries have more income options. In fact, the model can be applied in a wider context to show why some countries fail to undergo a structural transformation and remain poor with a large share of the population dependent on natural resources.

Abstract # 204

Session # 21A Africa Policy Day Part II

CONTRIBUTION DE LA PECHE MARITIME À L'ÉCONOMIE NATIONALE ET VALEUR POTENTIELLE DES RESSOURCES HALIEUTIQUES AU GABON

Mr. Ondo Megne Jean Jacques, jondomegne@yahoo.fr

Abstract

L'étude visait à analyser la contribution de la pêche maritime à l'économie nationale et à déterminer la valeur potentielle des ressources halieutiques du Gabon. La contribution à l'économie gabonaise a été appréciée à partir des données macroéconomiques et budgétaires. Une analyse bioéconomique a permis d'approcher la valeur potentielle des ressources au travers de la notion de rente halieutique. Pour ce fait, les données macroéconomiques, budgétaires et sur les ressources halieutiques ont été collectées sur une période de 10 ans, allant de 2001 à 2010. La pêche contribue à hauteur de 1,5% à la formation du PIB au Gabon. Le produit des accords de pêche entre le Gabon et l'Union européenne permet au secteur de la pêche, de disposer de financements appréciables en vue de la mise en œuvre de politiques sectorielles visant à la gestion durable des ressources halieutiques. A défaut d'une évaluation directe des potentiels de production au Maximum de Production Equilibrée (MSY) pour les différentes espèces et incidemment les Chiffres d'affaires au MSY considérés, la rente a cependant été estimée de manière indirecte, donnant ainsi des éléments d'appréciation des paiements effectués pour l'exploitation des ressources halieutiques, au-delà de ce qui est nécessaire pour que ces dernières remplissent leur fonction première.

The study attempts to analyse the contribution of marine fisheries to the national economy and to determine the potential value of marine resources of Gabon. The economic contribution of fisheries in Gabon has increased according to macroeconomic data. A bioeconomic analysis allowed us to estimate the potential value of resources through the concept of marine rents. For this analysis macroeconomic data on marine budgets and resources were collected over a period of 10 years, from 2001 to 2010. Fishing contributed 1.5% of PIB in Gabon. Fishing agreements between Gabon and the European Union allowed the fishing sector to appreciate financially due to the sustainable management of fisheries. Failing a direct evaluation of production potential of the Maximum Sustainable Yield for different species, incidentally considering financial data, the rent estimated through an indirect manner in this fashion also demonstrates improvement of payments made for the use of marine resources, above that which is necessary for them to fulfill their primary function.

Abstract # 206

Session # 12F Bioeconomic Modeling Part IV

OPTIMAL MANAGEMENT UNDER FLEET CONSTRAINTS: THE CASE OF NORTHEAST ARCTIC COD

Dr. Andries Richter, a.p.richter@bio.uio.no
Dr. Anne Maria Eikeset, a.m.eikeset@bio.uio.no
Dr. Daan van Soest, d.p.van.soest@vu.nl
Dr. Nils Chr. Stenseth, n.c.stenseth@bio.uio.no

Abstract

The objectives pursued by governments managing fisheries may include harvesting the fish stocks to maximize profits, to minimize the impact of harvesting on the marine ecosystem, or to secure jobs in the fishing industry. These objectives all depend on the composition of the fishing fleet as the various vessel types differ with respect to their operating costs, their environmental impacts, or how these boats provide employment opportunities on board or on shore. The Norwegian cod fishery consists of a fleet comprising coastal vessels, large longliners, and the fleet of trawlers and factory trawlers. These vessels score differently when it comes to meeting and reconciling these different objectives, and have therefore received mixed political support. In this paper, we develop an analytical model that shows the optimal TAC, biomass level, and long-run profits taking specifically into account fleet composition. This allows a regulator to adapt optimal management to the current fleet structure, but also analyze the bioeconomic consequences of a change in fleet structure (e.g. a ban on factory trawlers). We specifically take into account the occurrence of a fleet lock in, which means that the fishing fleet cannot be adjusted instantaneously, as several vessels cannot leave the fleet because of economic or political constraints. We apply the model to the case of Northeast Arctic cod, and econometrically estimate not only the cost and harvesting functions of the various vessel types, but also the parameters of the biological model as well as those of the demand function for cod.

Abstract # 209

Session # 21A Africa Policy Day Part II

EVALUATION OF THE RICH FISHERY RESOURCES IN DEMOCRATIC REPUBLIC OF CONGO AND CONTRIBUTION OF FISHERIES TO THE NATIONAL ECONOMY.

Mr. Tusanga Mukanga, Economist L2, sylvaintusanga@yahoo.fr

Abstract

This study sponsored in July 2011 by the Regional Commission for Fisheries of the Gulf of Guinea (PRC) and NEPAD aims to analyze the contribution of fisheries to the national economy of the DRC and to assess the potential wealth associated with fisheries. The data for the study of the top ten species by weight and value have been collected from the fishing boat owners and the Agriculture Ministry officers for the period from 2005 to 2010. The results of the study indicate the average production of sea fishing craft of 4285 tons / year, a resource rent average \$ 4,199,833 USD and a value of the potential rent of \$ 52,497,910 associated with US / year due to a free and unregulated. Fishing generates so much wealth, hence the need for policy makers to improve the budget to be allocated to the fishery sector and fishing place among the priority areas for sustainable management of these resources. Fishing in DRC being essentially continental (96%), these figures represent only 4% of potential wealth value of fishing resources.

Abstract # 210

Session # 31D The Economic Impact of Climate Change on Fisheries and Aquaculture Part I

POSSIBLE ECONOMIC IMPACT ON COASTAL FISH STOCK RESOURCES IN BANGLADESH IN THE CASE OF CLIMATE CHANGE

Mr. Ahasan Habib, 10h8754@ubd.edu.bn
Mrs. Hjh Zohrah Sulaiman, zohrah.sulaiman@ubd.edu.bn

Abstract

The Bay of Bengal fishery in Bangladesh is the most important and the predominant fishery in the country. Effort data from 1985-1986 to 2007-2008 is standardised to a standard year 2007-2008 (fish trawler) vessel and standardised effort has together with catch data been used to calculate the parameter values for the Gordon-Schafer surplus production model. The parameterised models are used to estimate the biological parameters, maximum sustainable yield, maximum economic yield and open access equilibrium. The analysis indicates that present level of effort in the fishery is very close to the level of maximum sustainable yield (of about four thousand tonnes), but increase in cost and population related to recent changes in fishing pattern may show this situation is unsustainable. The model results are not pointing at any severe biological overfishing. But, on the other hand, economic overfishing started several years before. The model has also been studied under nine climate scenarios where assuming each represents possible climate change consequences. Similarly the output of three reference equilibriums have been studied for each climate scenarios. The paper analyses the potential of climate effects for changing the intrinsic growth rate, carrying capacity, profitability by the Bay of Bengal fisheries.

Abstract # 211

Session # 01B Governance: Co-management, Community Management, Coops and Catch Shares, Part I

A CASE STUDY IN SUCCESSFUL FISHERY MANAGEMENT: THE ATLANTIC DEEP SEA RED CRAB FISHERY

Ms. Barbara Rountree, barbara.rountree@noaa.gov

Abstract

The Atlantic deep sea red crab (*Chaceon quinquegens*) is the target of a small, directed fishery in the Northeast US, which has been managed using total allowable annual catches (TACs) at the fleet level since 2002. Although not a catch share fishery, it shares many of the same features, behaviors, and advantages, which are summarized here. In an examination of the fishery, vessel trip reports and dealer data were analyzed to assess fleet behavior and evaluate changes in the industry. The five vessels in the fishery established a cooperative, and share profits and coordinate landings. Rather than export their landings to a single buyer in Canada, as has been the practice in the past, the industry invested in a shore side processing facility, enabling the development and marketing of products to serve a wider range of buyers. Vessel trips are coordinated and staggered so that crab catches are continuously provided to the processing facility, guaranteeing a steady supply of fresh products. In 2009, the industry obtained certification from the Marine Stewardship Council (MSC) in an effort to improve marketability and appeal to consumers. In 2010, the industry began collaboration with Slade Gorton to handle all sales and improve access to a wider range of international markets.

Abstract # 212

Session # 02F Understanding and Modeling Fishing/Sector Behavior Part II

FISHING VESSEL AFFILIATIONS: WHERE DOES ONE END AND ANOTHER BEGIN?

Ms. Barbara Rountree, barbara.rountree@noaa.gov
Mr. Andrew Kitts, andrew.kitts@noaa.gov
Mr. Peter Christman, Peter.T.Christman@williams.edu

Abstract

Identifying fishing vessel affiliations, which are groups of vessels connected by common owners or other factors such as ties to another business or contractual relationships, is important for two reasons. The first reason is that it allows for assessments of potential market power and/or equity considerations in catch share fisheries. The second reason is that it aids in the identification of large versus small businesses, which is crucial for assessing differential impacts of proposed fisheries regulations on large and small entities as required by US law under the Regulatory Flexibility Act. Until recently, it was not possible to properly ascertain vessel affiliations since vessel ownership information was limited. Beginning in 2010, completion of a vessel ownership form (listing all persons and entities with an ownership interest) is required to apply for a Northeast U.S. federal fishing permit. Collecting data on vessel ownership was the first step in understanding the intricate web of ways that vessels could be affiliated. This paper discusses the results so far and poses a number of questions and options for developing a tractable definition of a vessel affiliation.

Abstract # 216

Session # 12A Governance: Property Rights and Quota Systems Part II

HOW RIGHTS BASED FISHERIES MANAGEMENT IN NAMIBIA CAN PROVIDE GREATER BENEFITS TO INLAND LOCAL COMMUNITIES

Dr. Hilkka O.N. Ndjaula, opolili@yahoo.com

Ms. Alushe T. Hitula, AlusheH@nepad.org

Abstract

Rights-based fisheries management has been a management tool in Namibian fisheries since 1991 with the objective of improving the economic performance of the fisheries. The aim is to address the common property problem of fisheries by the creation of private property rights, limiting the quantity of exploitation of fish stocks and increase the flow of net economic gains from the resource. The absence of an artisanal fisheries sector helps to simplify monitoring of landings, and therefore almost every catch is accounted for. The limited human settlement along the coast has however limited the extent to which fisheries benefits the local communities, something that needs to be addressed. This work discusses the current initiatives for benefiting local communities and suggests possible responsive policy reforms in order to increase the benefits that can be derived from rights based fisheries management to the needy local communities.

Abstract # 217

Session # 03E Bioeconomic Modeling Part II

MODELING THE STOCHASTIC DYNAMICS OF THE AGGREGATE STOCK IN COLLAPSED FISHERIES: THE CASE OF THE NORTHERN COD

Mr. Jose M. Maroto, maroto@ccee.ucm.es

Abstract

Motivated by the evidence that many collapsed stocks have failed to recover despite fishing mortality has been reduced, or even when a moratorium is currently in effect, we develop a spline methodological approach to analyze the stochastic population dynamics of fish stocks at low stock levels. The aim of this paper is to provide a simple mathematical model which allows us to analyze stochastic population dynamics of fish stocks at low stock levels. Unlike the conventional models, the concordance between the population dynamics of decline and recovery is not assumed, with a clear focus on modeling the stochastic aggregated stock (biomass) dynamics of collapsed species. The model can be used to analyze the consequences of all possible population dynamics at low population sizes, which can be different to those estimated at high stock levels, on the risk of collapse and non-recovery, in a setting of high degree of uncertainty. Considering the northern cod stock by way of illustration, we find that the lack of recovery of the species, despite the moratorium which still remains in force, is consistent with the hypothesis of weak compensatory population dynamics at low population sizes instead of the strong compensation estimated by conventional statistical methods...

Abstract # 219

Session # 13D: Governance: Management of Fishing Activity Part I

ROLE OF INTERACTIVE GOVERNANCE IN A MULTI-STAKEHOLDER CONTEXT: THE CASE OF PALK BAY FISHERIES CONFLICTS

Mr. Oscar Amarasinghe, Professor, oamarasinghe@yahoo.com

Abstract

One of the instances of governance failures and conflicts has been the failure to recognize the fact that, there are multiple actors relevant to a particular situation, whose behavior is shaped by different laws. Plurality of laws is likely to give rise to conflicts, unless governors recognize this plurality and policy making is based on "Interactive Governance". This paper draws lessons from escalating fisheries conflicts among South Indian fishers and North Sri Lanka fishers in the Palk Bay region. Both Indian and Sri Lankan fishers were fishing in harmony in the Palk Bay area for centuries until it was divided by an International Maritime Boundary Line (IMBL) in 1974. However, civil war that erupted in Sri Lanka in 1983 and continued until 2009, allowed the Indian fishers to freely fish in the Palk Bay area. The resources on the Indian side were soon depleted due trawl gear and the Indians started to cross the IMBL. The cessation of war in 2008 saw the northern fishers of Sri Lanka commencing fishing but confronting massive invasion by Indian trawlers. The two governments have placed complete reliance on a Joint Working Group (JWG) to resolve the conflicts, which consists of government actors. However, this paper proposes the establishment of an Interactive Joint Working Platform (IJWP), consisting of all relevant government and fisher stakeholders, to effectively deal with fisheries conflicts at Palk Bay.

Abstract # 221

Session # 02C Managing Development of Fisheries and Aquaculture sectors Part II

FISHERIES AND AQUACULTURE SECTOR: IS IT JUST ANOTHER FOOD PRODUCTION SYSTEM?

Dr. Arpita Sharma, arpita_sharma@yahoo.com

Abstract

Fish is important for food security. This paper poses the question: Is fisheries and aquaculture just another food production system? It is highlighted here that fisheries and aquaculture sector is not just another food production system which is necessary for food and income but it is a system which has a number of other associated benefits. It is stressed that sector needs to be mainstreamed with broader development agenda so as to ensure widespread social and gender equity. Fisheries and aquaculture sector is presently viewed as a sector which meets food security, nutrition security and livelihood security. But sector has its role in wealth generation. Sector's importance in trade and as employment provider is also important. It increases entrepreneurship and is witnessing emergence of small and medium enterprises (SMEs) in many Asian countries. It contributes for farming of other food production systems as feed in livestock and other products. Role of fishing communities in safeguarding local cultures, indigenous technical knowledge (ITK) systems, maintaining social/cultural identity and values is very important. If sector is well managed it can lead to protection and enhancement of environment, can also lead to innovation, new technologies and can promote green technologies. With proper policies access to an equitable share of benefits of greener fisheries and aquaculture can be widespread. Sector has economic, political, institutional, social and cultural issues attached to it thus there is a need that sector be linked with wider development agenda so as to ensure wider social and gender equity.

Abstract # 223

Session # 31F: Markets: Consumers

CONSUMER PREFERENCE FOR FARMED TILAPIA IN TANZANIA: A CHOICE EXPERIMENT ANALYSIS

Mr. Francis Darko, fdarko@purdue.edu
Dr. Kwamena Quagraine, PhD, kquagrai@purdue.edu
Dr. Sebastian Chenyambuga, chenya@suanet.ac.tz

Abstract

Fish is widely consumed in Tanzania. It accounts for about 27% of all animal protein, and is a major source of other important nutrients in many households. Fish is therefore an important food ingredient and also a major contributor to food security; especially when food security is defined to encompass nutritional content of food. That notwithstanding, fish production from the nation's major sources (inland and marine) has been falling for over a decade now, and the government has put measures in place to promote domestic fish production through aquaculture. Although all aquaculture products end up in the domestic market, little is known about domestic fish consumers since many of the government interventions are production oriented. An understanding of the preferences of consumers for aquaculture products is therefore pertinent. We use choice experiment to analyze the effect of price, mode of production (farmed and wild-caught), product form (fresh, dried, smoked and fried) and product size (small, medium and large) on the preferences of consumers for tilapia, the main aquaculture product in Tanzania. We find that consumers are willing to discount farmed tilapia by 665.020 shillings, but are willing to pay 833.210 and 1799.110 shillings for medium size and large size tilapia respectively, and 1214.090 shilling for fresh tilapia. Consumers' willingness to discount farmed tilapia is mainly attributed to their being used to consuming the wild ones. We also find that consumers are heterogeneous in their preferences for all the tilapia attributes considered in the study.

Abstract # 224

Session # 32E Environment, Natural Disasters, and Recovery Part II

THE VALUE OF ENVIRONMENTAL IMPACT OF FISHERIES ON NUTRIENT DYNAMICS

Mr. Jarno Virtanen, jarno.virtanen@jrc.ec.europa.eu

Abstract

The Baltic Sea is referred as the most polluted sea in the world. The most serious problem is the eutrophication that is a consequence of nutrient loading through human based activities. Nutrient enrichment has led to growth of phytoplankton that has induced increased algal blooms and oxygen depletion in the sea bed that have resulted to changes in ecosystem balance. Conservation needs of the Baltic Sea are directed by HELCOM - the intergovernmental body on protecting Baltic Sea. The HELCOM Baltic Sea Action Plan objective is to restore the good ecological status of the Baltic marine environment by 2021. The agreement set up country-wise annual reduction targets for phosphorus and nitrogen loadings. Every member state should define their abatement measures in a cost efficient manner. The cost estimates for nutrient abatement varies significantly depending on the measures taken. Apart from abatement measures fisheries have a significant role in nutrient dynamics in the Baltic Sea. It is estimated that the phosphorus removal of fisheries accounts for 18% of anthropogenic load. With the cost estimates of different abatement measures it is possible to estimate the shadow value of the positive environmental impact of fisheries. We estimated the real social value for the Finnish trawler fleet and compare that to realised value. Accounting for the positive value of the environmental externality increases the profits of the fisheries significantly. The results show that the real social value of fisheries is considerably higher than realised.

Abstract # 225

Session # 13B Frontiers in Economic Modeling Part I

STABILITY OF INTERNATIONAL FISHERIES AGREEMENTS - IMPLICATIONS OF NON-MARKET BENEFITS AND THE COUNTRY OF ORIGIN

Dr. Soile Kulmala, soile.kulmala@ymparisto.fi
Mrs. Polina Levontin, levontin@hotmail.com
Mrs. Katja Parkkila, katja.parkkila@helsinki.fi
Ms. Emmi Nieminen, emmi.e.nieminen@helsinki.fi
Dr. Pedro Pintassilgo, ppintas@ualg.pt
Dr. Marita Laukkanen, marita.laukkanen@vatt.fi
Dr. Marko Lindroos, marko.lindroos@helsinki.fi

Abstract

Salmon is an anadromous species that during its feeding and spawning migrations is sought after catch for commercial and recreational fisheries. Further, the management of salmon fisheries is complicated by the combination of mixed and single stock fisheries. Thus, the country of origin has sovereign control over harvest of a salmon stock only at the last steps of the gauntlet. The paper addresses the stability of an international fisheries agreement where the payoff functions accounts for the commercial fishery's profits and the net benefits of recreational harvest, and where the country of origin must ensure high probability for each of the salmon stocks to achieve or maintain sustainable size. The paper applies coalition game in the partition function forms and considers three to six asymmetric players. The underlying population dynamics model accounts for 15 salmon stocks and it is used in the actual stock assessment. The economic sub-model is calibrated using commercial fisheries statistics and existing non-market valuation studies. The results indicate that considering economic aspects of recreational fisheries and role of the country of origin may have significant implications for the economically and biologically sound management.

Abstract # 229

Session # 22D: Markets: Value Chains Part IV

COOLNOVA JUST-IN-TIME FRESH FISH

Dr. Torbjorn Trondsen, torbjorn.trondsen@uit.no

Abstract

Consumers all over the world have a strong preference for fresh newly harvested fish, which is reflected in a higher market value compared to most other preserved and processed fish products. The perishability of the fresh fish and the distribution distance drive in contrary the fish value chains into preservation like freezing, salting, drying, canning etc. This paper reports findings from a research project where a new Coolnova just-in time (JIT) marketing concept has been unveiled. This concept opens a new window of opportunity for marketing fresh quality previous frozen thawed fish on daily basis just-in -time for consumption with a quality appearance like fresh fish. The fresh appearance is protected in a humid atmosphere consisting of small fog droplet which is speeding up the freezing and thawing process without any risk of dehydration or microbe degradation of the product and without any loss of drip and weight which is normal for fish frozen and thawed in traditional ways. Application of the Coolnova JIT logistic concept has the potential to revolutionize the way we are marketing fresh quality seafood, satisfying the consumer preferences for fresh fish and food welfare. The fishers' opportunities to add value of fresh caught fish may thus be increased when the fresh quality is protected in a value chain and when the barriers that today exist in the fresh seafood distribution chains are removed by the Coolnova JIT system.

Abstract # 230

Session # 12D The Economics of Aquaculture Production and Profitability Part I

ANALYSIS OF PROFITABILITY OF FISH FARMING BUSINESS IN KWARA AND KOGI STATES OF NIGERIA

Dr. Matthew Adewumi, B.Sc., M.Sc., Ph.D, matolade@yahoo.co.uk

Abstract

Nigeria is one of the largest importers of fish in the developing world, importing 60 percent of her consumption requirements. With this high level of fish imports, there still remains a significant shortfall. Major constraints to modernization of fish farming in the country include lack of knowledge on profitability of aquaculture industry. Based on empirical data collected from 31.68% (64) of the registered farmers from Kwara and Kogi states in 2011, this study examined the profitability potential of the business. The study employed descriptive statistics, net farm income and financial ratio analyses. All the respondents were educated with 11.28 years experience in fish farming. Only 15.62% of them are Cooperative members and 4% received a form of assistance from Government. Majority practiced mono culturing using an average pond size of 117.51m³, stocked with 2191 fingerlings. Variable costs constituted 53.8% of the total cost of production. Net farm income was N523, 859.64 per average pond size. The capital turnover was 2.84%. This confirms that for every naira invested into fish farming, other things being equal, there is a net return of N2.84. To increase on sustainable basis the incomes of these fish farmers, they need to organize themselves into

Abstract # 231

Session # 21C Bioeconomic Modeling Part VI

THE SPAWNERS' SHADOW PRICE: JOINT PRODUCTION OF RECRUITMENT AND GROWTH IN AGE-STRUCTURED FISH POPULATIONS

Mr. Martin F. Quaas, quaas@economics.uni-kiel.de
Dr. Rudi Voss, voss@economics.uni-kiel.de

Abstract

Fishery scientists distinguish between recruitment overfishing (i.e. suboptimally low reproduction because the spawning stock is fished down) and growth overfishing (i.e. catching fish at an inefficiently young age). We use an age-structured bio-economic model to study how important the (endogenous) recruitment is compared to the growth of individual fish under optimal management of the fishery, and how severe the problem of recruitment overfishing is at different stock sizes. We answer both questions by quantifying the spawners' shadow price, i.e. the shadow price of the spawning stock under optimal management. We find that the spawner's shadow price may even be negative in optimal steady state. This surprising result arises because recruitment and growth are joint products in age-structured fish populations. Our quantitative analysis for the Eastern Baltic cod fishery shows, however, that the problem of recruitment overfishing does cause large economic costs, as the shadow price of the spawning stock biomass has reached levels between one and two euros per kilogram in the 1990s and early 2000s, which is a large figure, compared to average landing prices for Eastern Baltic cod of about two euros per kilogram.

Abstract # 232

Session # 21C Bioeconomic Modeling Part VI

OPTIMAL BIOECONOMIC MULTISPECIES FISHERIES MANAGEMENT: A BALTIC SEA CASE STUDY

Ms. Emmi Nieminen, emmi.e.nieminen@helsinki.fi

Dr. Marko Lindroos, marko.lindroos@helsinki.fi

Dr. Outi Heikinheimo, outi.heikinheimo@rktl.fi

Abstract

Cod, herring and sprat are the most commercially exploited fish species in the Baltic Sea in the Northern Europe. However, especially cod stocks have decreased and their economic profits have been poor due to high fishing mortality and low salinity level affecting negatively the cod recruitment. Saline water pulses from the Atlantic Ocean affect the salinity level, which has been decreasing in the last decades presumably due to climate change. We develop a deterministic, discrete, multispecies bioeconomic model aiming to find the economically optimal fishing mortalities for these species under different salinity conditions. We compare the status quo fishing policy to an optimal policy under current and higher salinity conditions. We use a specific type of simple predation function, which therefore applies better for multispecies economic optimization. According to the results lower fishing mortalities would provide greater economic returns in the long run. A lower fishing mortality for cod, which allows time for individuals to grow and achieve a higher economic value and reproduction potential, would lead to a higher economic returns and better chances for the stock recovery even under current salinity conditions. Under higher salinity level the cod stocks have even better chances to recover even without a decrease in the fishing mortality. Therefore, the fishery management is even more important under conditions with low salinity, which are likely to prevail in the future due to changing climate.

Abstract # 233

Session # 22F: Trade

POOR RICH-COUNTRY INDUSTRIES: FISH-PROCESSING INDUSTRIES BECOMING OUT-COMPETED BY LOW-LABOUR-COST COUNTRIES?

Mr. Audun Iversen, audun.iversen@nofima.no

Mr. Bjørn-Inge Bendiksen, bjorn-inge.bendiksen@nofima.no

Abstract

Since frozen fish became an input for the fish-processing industry in the 1990ies, the Norwegian fish-processing industry has faced an increasing competitive pressure from producers from regions with lower labour cost, like the Baltic and the Far East. Despite various strategies for meeting this challenge, the Norwegian fish-processing industry struggles, with producers going out of business. This paper investigates the sources for competitive advantage and the strategies employed in the Norwegian fish-processing industry for surviving the pressure of globalisation. Extending the relevance of this knowledge, the paper also discuss relative advantages of fish-processors located in the Nordic countries (Iceland, Denmark and Norway), the Baltic countries and The Far East (China and Vietnam).

Abstract # 234

Session # 01E Markets: Value Chains Part I

MARKETING, DISTRIBUTION AND CONSUMPTION OF SEA FOOD IN ANYIGBA, NORTH CENTRAL NIGERIA

Dr. Ogbe Friday, Professor/B.sc, Msc, PhD, doctorogbe@yahoo.com
Mr. Onuche Unekwu, B Agric, MSc, kanstarr@yahoo.com

Abstract

The study was carried out in Anyigba, North central Nigeria to analyze the distribution, marketing and consumption of sea food. It specifically sought to describe the socio-economic characters of the fish marketers and consumers, identify the distribution channel of fish, the species of fish sold and consumers' preferences in the study area. Factors that determine the rate of fish consumption, profitability of fish marketing and those militating against marketing and distribution of sea food were also investigated. The five wholesalers available in the study area were interviewed and in addition, 20 retailers and 60 consumers were randomly selected for questionnaire administration. Descriptive statistics, the gross margin approach and regression analysis were used in analyzing the sourced data. Findings revealed that fish marketing were dominated by young women while most consumers preferred *Ethmalosa fimbriata* (bonger fish) on account of its low price. Increase in factors like amount spent on meat, price income and transportation cost reduced the level of fish consumption while increase in education, family size and age are positively related to fish consumption. Patronage of fish in the area promises to be high judging from the profitability level of the trade. Problems identified to be militating against the trade include; poor power supply, poor road network, improved power supply, adult education and increase in workers' salaries.

Abstract # 236

Session # 31F: Markets: Consumers

CONSUMER ACCEPTABILITY OF MUKENE (RASTRINEOBOLA ARGENTEA) VALUE-ADDED PRODUCTS IN UGANDA

Ms. Margaret Masette, Masters Degree, mmasette@yahoo.com
Mr. Elizabeth Khakasa, Bsc (Food technology), lizkhakasa@yahoo.com

Abstract

Traditionally, Mukene (*Rastrineobola argentea*) is always sun-dried because of its small size and large volumes caught per unit fishing effort. As such, the manner of handling has rendered it unacceptable to the majority of consumers due to poor quality which has resulted into high-post losses and relegation to animal feed production. This is against a backdrop of declining likeable fish species and national per capita fish consumption. As a strategy to reverse the trend, several products were developed out of Mukene using locally available ingredients and subjected to a market survey involving 300 consumers representing different societal groups and across gender. The results indicated that deep-fried and powdered products were more preferred than sweetened versions. The womenfolk were more discriminative than the men. The educated consumers ranked most new products lowly than semi-illiterates who assumed that products from researchers were good. There were other factors that determined product acceptability apart from gender and educational background. They included, price, market outlet, social status and geographical location among other factors. It was therefore concluded new products developed from Mukene had potential among certain categories of consumers provided they were appropriately packaged, presented and affordable. The increased supply of Mukene for human consumption will undoubtedly reduce the post-harvest losses, increase per capita consumption, food security and incomes for various actors along the value-chain. However, it was recommended that further studies should be undertaken to include different products, increase sample size and consider shelf-life.

Abstract # 237

Session # 11F Bioeconomic Modeling Part III

OPTIMAL MANAGEMENT OF CONFLICTING SPECIES: GREY SEAL (*HALICHOERUS GRYPUS*) AND ATLANTIC SALMON (*SALMO SALAR*) IN THE NORTHERN BALTIC SEA

Ms. Maija Holma, maija.holma@helsinki.fi
Dr. Marko Lindroos, marko.lindroos@helsinki.fi
Dr. Soile Kulmala, soile.kulmala@ymparisto.fi

Abstract

In the Baltic Sea, the successful conservation of grey seals has increased seal-induced damages to the Atlantic salmon fishery. The paper addresses the conflict between the conservation of the formerly endangered species and professional fishermen whose livelihood is also regulated by fisheries management. We develop a bioeconomic model that accounts for the age-structure of Atlantic salmon and grey seal populations. In order to reach a social optimum, we maximize the discounted net present value taking into account the seal-induced losses through a damage function. The socially optimal salmon stock size, salmon catch and fishing effort is studied under different management schemes aimed at mitigating the seal-salmon conflict. The results suggest that a technological subsidy would reduce the cause of the conflict without compromising sustainability of the stocks.

Abstract # 239

Session # 32E Environment, Natural Disasters, and Recovery Part II

THE OPTIMAL MANAGEMENT OF A NATURAL RESOURCE UNDER REGIME SWITCHING BEHAVIOR

Dr. Michele Baggio, michele.baggio@env.ethz.ch

Abstract

It is typical for marine ecosystems to fluctuate around some persistent trend or equilibrium. However, marine systems are occasionally exposed to transformations by means of either natural phenomena or anthropogenic interventions, which may cause sudden shifts in the state of ecosystems leading to different biological/ecological structures. This paper analyzes the optimal management of a natural resource, e.g., a fishery, where the dynamics of the resource shift between different states at random times due to the effect of external forcing such as climate. This means that the parameters describing the biological relationships are different under different states. Using a classical linear control model I investigate how the switching behavior influences the optimal exploitation of the resource. I derive the optimal conditions that are used to identify the thresholds determining the status, opening/closing, of the fishing industry. The model is applied to the Peruvian anchoveta fishery located along the north-central coast of Peru. Using a numerical analysis, I identify the optimal management policy that is constituted by four thresholds defining the stock levels at which the industry switches status under each state of the stock dynamics. Further, I show how such thresholds are influenced by the probability of a regime shift and other key parameters of the model, e.g., the maximum capacity of the fishing industry. This analysis gives important indications for the management of a natural resource with alternating dynamics, which can be used to design policies that adapt to the variability of the physical environment.

Abstract # 240

Session # 02A Looking at Fish Supply Chains with a Gender Lens

SUN-DRIED MUKENE (RASTRINEOBOLA ARGENTEA) VALUE-CHAIN ANALYSIS IN UGANDA

Ms. Margaret Masette, Masters Degree, mmasette@yahoo.com

Abstract

Marketing of Mukene (*Rastrineobola argentea*) has become a lucrative business in Uganda after decades of underutilization but its value-chain from capture to market remains unknown. Consequently, a study was undertaken at two selected landing sites located along L. Victoria and several Kampala markets. Using a structured questionnaire a total of 200 fisher-folk were interviewed to identify key-stakeholders, linkages and economic variables along the value-chain. Results indicated that boat-owners incurred the highest input per 100kg-bag of dried Mukene at a cost of UGX 60,000/= followed by regional traders and local traders at UGX 10,000/=. However, the profit margins increased from the boat-owners to the regional traders who earned 2 and 4 times the cost of input respectively. This was expected because some traders were known to offer advance payment to fishers cum processors which trapped the latter in perpetual indebtedness and compromised the final product quality. Although fishers and processors influenced Mukene quality which ultimately determined the price of the final product, they benefited least from their efforts with profit margins 10% and 12% respectively. The profit margin for the boat-owners cum traders selling Mukene for human consumption, varied between UGX 180,000 and UGX 240,000 per 100kg-bag depending on market. Similar weight of Mukene designated for animal feed earned the manufacturer between 44% to 52% profit depending on the mixing ratio with other feed ingredients. The market retailers in the local as well as Supermarkets earned substantial profit...

Abstract # 241

Session # 13A Markets: Value Chains Part III

MARKET STRUCTURE AND SEGMENTS FOR SEAFOOD: A STATED PREFERENCE APPROACH

Mr. Thong Tien Nguyen, ntthom@yahoo.com

Mr. Hans Stubbe Solgaard, Professor, hso@sam.sdu.dk

Mr. Wolfgang Haider, Professor, whaider@sfu.ca

Mr. Lars Ravn-Jonsen, Lrj@sam.sdu.dk

Mrs. Eva Roth, Assoc. Professor, er@sam.sdu.dk

Abstract

Demand structure and market segmentation for seafood have been investigated intensively. However, most the researches so far applied traditional demand analysis and descriptive segmentation approach by separated models. The traditional demand analysis assuming consumer homogeneity, behavior consistence, and using aggregate data may result biased estimation, while the segmentation based on descriptive approach has results less accessible and actionable. We the first used discrete choice model and stated preference data to simultaneously estimate the demand structure and segments for twelve seafood species in French context. The four-latent segments model have the best fit to the data and demand elasticities estimated are comparable to those in the traditional studies but provide more efficient and actionable guidance for practitioners. Consistence with previous seafood demand study we found that elasticities of high valued fish such as salmon, tuna, cod, sole, and shrimp are price elastic while low valued species like mussels, oyster, and pangasius are inelastic. Moreover, latent class model revealed that 39.5% of the sample are not price sensitive, 29.6% moderate sensitive, 20.3% sensitive, and 10.6% are very sensitive. Similarly, we investigated deeper for particular species and uncovered demand structure of each species. For instance, only 30.9% of consumers are price elastic for salmon, while 39.5% and 29.6% of the sample are inelastic and moderate elastic for this species, respectively. We also regressed the segment membership probabilities on the consumer characteristics to give better segment description and provide efficient guidance for seafood producers and marketers.

Abstract # 245

Session # 03B Aquaculture/Fisheries Interactions

MODELING OF INTERACTIONS BETWEEN AQUACULTURE AND CAPTURE FISHERIES

Ms. Esther Regnier, estherregnier@hotmail.fr
Mrs. Kathline Schubert, Katheline.Schubert@univ-paris1.fr

Abstract

To keep pace with growing demand, wild fisheries are subject to high pressure. An increasing trend in the percentage of overexploited, depleted and recovering stocks is observed since the mid-1970s. In contrast, the aquaculture sector has been the fastest growing food industry since 1970. It has become a substantial source of food and is increasingly viewed as a solution to the lack of production of capture fisheries. However, aquaculture faces an important issue: its production is reliant on reduction fisheries for the feeding of several farmed species. This concerns the farming of rather carnivorous or omnivorous species, responding to a demand from wealthiest populations. This article investigates to what extent aquaculture can alleviate pressure on wild edible fish stocks, taking into account two key components: (1) its dependence on a limited input; (2) consumer preferences. We develop a growth model encompassing the demand side and three sectors: the edible fish fishery, the reduction fish fishery and the aquaculture sector. We assume consumers preferences depend on fish species' diet and consider a distinction between the farmed and wild edible fish species. We demonstrate that consumer preferences profile plays a crucial role on the evolution of stocks and supply. Depending on this profile, we show that there may exist an optimal species type to farm, in terms of utility maximization and natural stock levels.

Abstract # 247

Session # 02A Looking at Fish Supply Chains with a Gender Lens

FISH TRADERS AS KEY ACTORS IN FISHERIES: THE FORGOTTEN DIMENSION OF GENDER

Ms. Sara Fröcklin, MSc, Philosophie licentiate, saraf@ecology.su.se
Mrs. Maricela de la Torre-Castro, maricela@ecology.su.se
Mr. Lars Lindström, lasse.lindstrom@statsvet.su.se
Dr. Narriman Jiddawi, njiddawi@ims.udsm.ac.tz

Abstract

In Zanzibar, an increasing number of women have entered fish markets acting as a link between fishers and consumers, i.e. "middleman". However, since fisheries are traditionally male dominated, women receive little recognition. Thus, gender analysis in the fisheries sector potentially can enhance management and development policies as well as environmental issues. In this study 23 women and 23 men from 12 fish markets in Zanzibar were interviewed to examine 1) women's and men's different strategies to succeed on the market, 2) how finance and social networks determine the access to different fish species, 3) knowledge about fish demand and markets, and 4) needs and challenges related to fish trade. Results show that even when women manage to penetrate typical male jobs, the execution of the activity differs greatly between the sexes. Men tend to dominate commercial channels and revenues of large valuable species such as tuna, kingfish and swordfish while women mainly have access to species of low economic value such as anchovies and small mackerels directed to local markets and consumption. The main reason for this was reported to be lack of access to economic and social resources. This, in combination with scarce knowledge about fish demand, market connections and limited mobility, exclude women from more profitable markets. The study suggests that a nuanced understanding of gender dynamics in fishing communities is needed and its relation to wider social, economic, cultural and political processes.

Abstract # 248

Session # 11E Too Big to Ignore: Enhancing Visibility and Possibilities in Small-Scale Fisheries

FISHERMEN, FISHERWOMAN AND CLIMATE CHANGE

Mrs. Maricela de la Torre-Castro, maricela@ecology.su.se
Mr. Lars Lindström, lasse.lindstrom@statsvet.su.se
Ms. Sara Fröcklin, MSc, Philosophie licentiate, saraf@ecology.su.se
Dr. Narriman Jiddawi, njiddawi@ims.udsm.ac.tz

Abstract

Research on the linkages between climate change, coastal communities and gender is scarce. In this presentation we address this from a marine resource management perspective based on ecosystem goods and services, gendered adaptive capacity and its links to transformative agency. The hypothesis is that there are gender differences in resource access, adaptive capacity and transformative agency to tackle the challenges that climate change is forcing. The presentation gives an overview of the working framework of a newly funded project from the Swedish Research Council that takes place in the WIO (mainly Tanzania and Mozambique). It is hoped that the project will bring valuable insights into the gender aspects in this context and theoretically will make an important contribution by developing a meaningful framework for the gendered analysis of the linkages between gender, marine resources and climate change. In addition it will bridge the resilience, reworking and resistance typology with current research on resilience and transformation towards breaking poverty traps.

Abstract # 253

Session # 01B Governance: Co-management, Community Management, Coops and Catch Shares, Part I

EVALUATING FINANCIAL SUCCESS IN NEW ENGLAND GROUND FISH MANAGEMENT

Dr. Daniel Georgianna, dgeorgianna@umassd.edu
Ms. Emily Keiley, ekeiley@umassd.edu

Abstract

In May 2010, the management system for New England groundfish transitioned from input controls (days at sea) to output controls (catch shares). Groundfish vessels were grouped into sectors with annual quotas for individual species, which were divided among the vessels in a sector based on catch history with trading allowed within a sector and between sectors. A sector exceeding any stock quota would be required to stop fishing in that stock area for any stock under the management plan. Using data from vessel trip reports, observer reports, landings data, fixed cost survey data, and interviews for 2009 and 2010, we estimated net fishing revenue for individual vessels by gear type and vessel size for each year. Trip costs and overhead costs were assigned by Monte Carlo simulation from observer reports and survey data. Using the same data for 2009 and 2010, we also estimated the number of vessels that broke-even (total vessel revenue equaled or surpassed all costs paid by vessel owners including crew payments and other trip costs, marketing costs, overhead costs, and payments made to cover sector costs). Preliminary results showed more vessels and a higher percentage of vessels with positive fishing revenues in 2010 than in 2009. Our analysis also showed fewer vessels but a higher percentage of vessels breaking even in 2010 than in 2009 with results not significant at the 10% test. The number of vessels active in the fishery declined by 20% between 2009 and 2010.

Abstract # 255

Session # 31C: Governance: Management of Fleet Capacity

SMALL VERSUS LARGE SCALE FISHERIES: THE EUROPEAN FISHING FLEET

Dr. Natacha Carvalho, natacha.carvalho@jrc.ec.europa.eu

Abstract

There is little doubt that overall fishing effort and capacity needs to be reduced but there is more than one way to achieve this reduction, and it is here that informed policy can make the best choices. The European Union's commercial fishing fleet, as most fisheries worldwide, is characterised by a dualism in the form of co-existence of small and large-scale operations competing for the same limited resources, fishing grounds and markets. The two sectors are different, not only in the scale of operation but also in the level of technology, employment generation and degree of capital intensity and investment. In this context, the EU's fishing fleet is defined into small and large-scale fishing operations using a method that is comparable between and across national/regional fishing fleets. The two sectors are then compared in a number of policy-relevant parameters to better understand their socioeconomic importance, issues that are fundamental for the development of future policies that are based on a more holistic and ecosystem approach to fisheries management. By taking into account the unequal impact of small and large-scale fishing on fish stocks and marine ecosystems may help fisheries management promote fleet structures that are best adapted to ensure sustainability while generating the highest net benefit from a limited natural resource.

Abstract # 256

Session # 31F: Markets: Consumers

COMPARATIVE ASSESSMENT OF THE PREFERENCE AND CONSUMPTION PATTERN OF CULTURED AND MARINE FISHES IN IBADAN METROPOLIS

Dr. Tosan Fregene, B.Sc., M. Sc. PhD Fisheries Management, M.B.A. Busi. Admin., tosanfregene@yahoo.co.uk
Mr. Adeniyi Olanusi, B. Sc. M.Sc. Fisheries Management, niyimichael2000@yahoo.com

Abstract

This study undertook a comparative assessment of the preference and consumption pattern of cultured and marine fishes in Ibadan metropolis using cross sectional data made up of 304 respondents. The study analyzed the socio-economic characteristics of the respondents made up of fresh water fish sellers, fish sellers, hotels/beer parlour, and households. Data collected was analyzed using descriptive statistics and Tobit regression model. The assessment of the desirability and preference by respondents revealed that *Clarias gariepinus*, *Chrysochthys nigrodigitatus* and *Tilapia* spp. were the most desired and preferred by fish sellers, the hotels/beer parlours and households. The consumption pattern for cultured and marine fishes reveals that *Clarias gariepinus*, sardine, mackerel, horse mackerel and croaker were sold by the marine fish sellers. The household consumed varying proportions of all fish type every week including *Clarias gariepinus*, mackerel and croaker. The results of the regression analysis ($R^2=0.65$) reveal that income, religion and index of quality had positive and significantly influenced the likelihood of consumption of cultured fish ($p<0.01$), while education, income and age were negatively related to consumption of marine fish, but household size, religion and index of quality were positively related ($p<0.01$) in Ibadan metropolis. There is need for policy to re-orientate the elderly and high income earners to increase their consumption of cultured fish in order to reduce quantity of marine fishes consumed thereby reducing the marine fishes import bills.

Abstract # 261

Session # 02D: Compliance, Enforcement, and the Lack Thereof Part I

THE ROLE OF CAPACITY REGULATIONS IN COMPLIANCE

Dr. Itziar Lazkano, lazkano@uwm.edu
Dr. Linda Nøstbakken, linda.nostbakken@ualberta.ca

Abstract

Production quotas can restore efficiency in industries characterized by production externalities, such as resource industries and industries with environmental regulations. However, with imperfect quota enforcement, firms may have incentives to build up excess capacity relative to their quotas. Firms with excess capacity may, in turn, have stronger incentives to violate quotas. We investigate the relationship between enforcement, compliance and capital levels in the short and long run. In the short run, excess capacity leads to increased illegal production but a well-functioning quota market may alleviate the problem. Furthermore, we show that the tougher the enforcement, the lower the firms' production capacity. With tradable quotas, the quota price strengthens the effect of tougher (or weaker) enforcement. At the aggregate level production quotas do not fully internalize the production externality when enforcement is imperfect. In such situations, additional management instruments are required to correct the firms' incentives to build up excess capacity, which exacerbate the non-compliance problem.

Abstract # 262

Session # 02B: Governance: Co-management, Community Management, Coops, and Catch Shares Part II

COMMUNITY-BASED FISHERIES MANAGEMENT: IMPROVING FISH BIODIVERSITY IN INLAND FISHERIES OF BANGLADESH

Dr. Mustafa Md Golam, g.mustafa@cgiar.org

Abstract

The Community Based Fisheries Management (CBFM) approach in Bangladesh aimed to promote the sustainable use of inland fisheries by empowering fisher communities to manage their resources. When comparing CBFM sites with control sites the trends in fish production, abundance and biodiversity with time were found to be significantly higher ($p<0.01$) for the former. Of the 64 project sites, 49 of them showed an upward trend in production (CPUA), 46 showed an upward trend in fish abundance (CPD) and 48 had an upward trend in biodiversity (H'). In contrast 10 of the 16 control sites showed a declining trend in production (CPUA), abundance (CPD) and biodiversity (H') with time. In 2005, significant differences ($p<0.05$) of species assemblages were found in 2 out of 5 regions for two types of habitats at CBFM and control sites. Species assemblages in floodplain habitat in the north (FPB-N) and river habitat in the east (R-E) regions of Bangladesh were richer and more abundant at CBFM sites compared to control sites. Considered together, this evidence suggests that CBFM also benefits wetlands biodiversity. It is concluded that the practices implemented under the CBFM in Bangladesh have improved, or at least sustained, fish abundance and biodiversity without significant loss compared to those at the control sites.

Abstract # 264

Session # 01B: Governance: Co-management, Community management, Cooperatives, and Catch Shares Part I

PROVIDING FOR INPUT AND PARTICIPATION OF MAORI IN NEW ZEALAND'S FISHERIES MANAGEMENT SYSTEM

Dr. Edwin Massey, PhD, edwin.massey@maf.govt.nz

Abstract

Providing for input and participation of Maori in New Zealand's fisheries management system: Lessons learned from the implementation of Iwi Fisheries Plans and Forum Fisheries Plans Since 1986, New Zealand's commercial fisheries have been managed under a rights-based Quota Management System (QMS). Soon after its implementation, Maori (New Zealand's indigenous population) challenged the system's legal status as it compromised their pre-existing and un-extinguished fishing rights confirmed by the Treaty of Waitangi. The Treaty of Waitangi Fisheries Claims Settlement Act 1992 (the Settlement) represented a full and final settlement of Maori claims to fisheries resources consistent with the QMS. The Settlement requires the Government to make better provision for Maori participation in the management and conservation of New Zealand's fisheries. In the twenty years since the Settlement, how the government has fulfilled these requirements has evolved over time. Since July 2011 management of New Zealand's fisheries has been guided by National Fisheries Plans. These plans describe the objectives the Ministry of Agriculture and Forestry (MAF) will work to in managing fisheries. Since then, Iwi Fisheries Plans (IFP) and Forum Fisheries Plans (FFP) have become the key tool for ensuring Maori have effective input and participation at the appropriate levels of fisheries management decision making. This paper assesses the contribution of IFP/FFP to New Zealand's fisheries management regime. The paper argues that in the short-term, IFP/FFP have strengthened the partnership relationship between specific iwi (individual Maori tribes) and the...

Abstract # 265

Session # 22C Frontiers in Economic Modeling Part II

APPLICATION OF A BAYESIAN BELIEF MODEL APPROACH TO EVALUATE THE ECONOMIC-ENVIRONMENTAL POTENTIALS OF POLICIES TO REDUCE EUTROPHICATION IN THE BALTIC SEA

Dr. Urs Steiner Brandt, usb@sam.sdu.dk
Dr. Soile Kulmala, soile.kulmala@ymparisto.fi

Abstract

The aim of this paper is to assess the economic consequence for society of achieving a good environmental status in the Baltic Sea. Given that policies already are in place our task is to evaluate whether the agreed upon policies that focus on Good Environmental Status (GENS), is a good idea for societies then calculating the costs and benefits of this policy and potentially indicating whether more or less regulation or changes in the design of the regulation are appropriate. In our analysis we apply Bayesian state-space modelling to evaluating policy options under uncertainty. By using the BBN (Bayesian belief networks), the focus is not to avoid / ignore the prevailing uncertainty, but to quantify it by discretizing, that is derive discrete probabilities for possible outcomes for each of the stochastic processes or other uncertainties. In order to include both the economic and environmental dimension of the problem and the attached uncertainties, on equal terms we apply a BBN approach. Given the amount of uncertainty, the analysis is done in probabilistic terms by including the prevailing inherent uncertainties into analysis evaluation using BBN. Costs of reducing emissions and other social costs will be studied as extensively as we can, by taking results of the existing studies as starting points. All benefits will be identified and the relevant ones are quantified if data or existing studies are available. Cod is taken for a closer scrutiny to exemplify possible benefits to be gained from reduction of eutrophication.

Abstract # 266

Session # 12D The Economics of Aquaculture Production and Profitability Part I

ASSESSMENT OF UTILIZATION OF FISH TECHNOLOGY INFORMATION AMONG FISH FARMERS IN EPE LOCAL GOVERNMENT AREA: IMPLICATION FOR SUSTAINABLE FISH PRODUCTION IN NIGERIA.

Dr. Olumuyiwa Akin Olaniyi, O.A / Phd, oaolaniyi@lautech.edu.ng
Dr. Christianah Oludayo Olaniyi, Aquaculture, Ph.D, oludayo.olaniyi@gmail.com

Abstract

This paper assessed the utilisation the utilization of fish technology information among fish famers in the Local Government area of Lagos State, Nigeria. A total of one hundred and four fish farmers randomly selected formed the sample size for the study. Using structured and validated interview schedule, data regarding personal characteristics of the respondents, fish technology information availability, information sources used and constraints to utilization of fish technology information were collected from the respondents. Data collected were analyzed with descriptive statistics (frequency, mean, percentages) as well as Pearson moment correlation and Chi square test. The results further showed that fish farmers association, friends and neighbour and cooperative societies were useful and credible information sources in receiving agriculture on information on fish technology information as they ranked 1st, 2nd and 3rd. The most utilized fish technology information include: construction of earthen ponds, methods of harvesting and use of appropriate mesh for fish. Correlation analysis revealed that there exist significant relationship between usefulness information source ($r = 0.492$ $P < 0.05$), years of experience in fish farming ($r = -0.244$, $P < 0.05$) and level utilization of fish technology information while Gender ($X^2=7.699$, $P < 0.05$) contact with extension agents ($X^2 = 15.273$, $P < 0.05$), number of years of schooling ($X^2 = 6.566$, $P < 0.05$) significantly influenced the level of utilisation of fish technology information. It could be concluded that availability of fish technology information through the useful information sources could enhance high level of utilisation of fish...

Abstract # 267

Session # 13D: Governance: Management of Fishing Activity Part I

ADDRESSING MULTI-STAKEHOLDER CONFLICTS IN THE COASTAL ZONE THROUGH A SPECIAL AREA MANAGEMENT (SAM) PROCESS: THE CASE OF REKAWA OF SOUTHERN SRI-LANKA

Mrs. Niyomi Pethiyagoda, BSc in Agriculture, niyomipethiyagoda@yahoo.com
Mr. Oscar Amarasinghe, Professor, oamarasinghe@yahoo.com

Abstract

It is accepted globally that management of the coastal zone should be done through an integrated process. Special Area Management (SAM) is a particular form of Integrated Coastal Zone Management (ICZM), which addresses multi-stakeholder conflicts in environmentally sensitive areas. The most important characteristic of the SAM process is that it is community based and collaborative. Yet, a proper mechanism to deal with such conflicts had to be instituted for SAM to be successful. A study was carried out to examine the relevance of SAM in Rekawa, an environmentally very sensitive coastal area in Southern Sri Lanka. A number of stakeholders, such as marine fishers, lagoon fishers, hoteliers, farmers, turtle conservationists, coral miners, etc. were identified, who generated negative externalities on each other giving rise to conflicts. By using Participatory Rural Appraisal (PRA) techniques, the issues confronted by each stakeholder group were studied along with their perceptions and suggestions for resolving such conflicts. The study attempted at finding how far SAM was able to cope with the conflicts and effectively manage the coastal zone at Rekawa. Stakeholders had placed a high reliance on SAM, but proposed the establishment of a Coordinating Committee consisting of all stakeholders, as the most appropriate tool in taking SAM forward. Yet, the study found a number of pre-requisites, for successful operation of SAM, including the provision of appropriate legal and official status to the proposed Coordinating Committee.

Abstract # 268

Session # 02B: Governance: Co-management, Community Management, Coops, and Catch Shares Part II

COMMUNITY PARTICIPATION IN FISHERIES MANAGEMENT IN TANZANIA

Mrs. Fatma Sobo, MPhil, Marine Biology and Fisheries Management, fsoboster@gmail.com
Mr. Rashid Hoza, MSc in Fisheries, rbhoza@yahoo.com

Abstract

Artisanal or Small scale inshore fisheries are one of the economic sub sectors of the economy and make valuable economic contribution to the coastal communities of Tanzania. It provides rich protein food, employment, income thus contribute to their livelihood. The fishery also contributes significantly to foreign earnings and revenue. Small-scale fisheries is by far the most important sector in coastal communities as it employs more than 177,527 full time fishers and over 4 million people who were engaged in various fisheries related activities. Consequently, the demand for fishery resources for export and local consumption (food security) is growing, leading to further pressure on finfish and high value invertebrate fish resources, with the open access nature of the fishery and subject to little management control, resulted into increasingly problems of overexploitation and overcapitalizations which calls for management measures to rescue the situation. In most fishery, the great challenge of fisheries management is to choose the best management regime and strategies to achieve the objectives of managing fishery resources. Human and financial resources must be obtained in order to manage the resources in a sustainable manner. In the absence of human resources fishing communities can be used in fisheries-dependent monitoring because reliable and accurate information is crucial as only well informed decision makers can make good decisions in managing the fishery resources. Tanzania initiate a participatory resource management approach by involving local fishing communities, a system commonly known as co-management.

Abstract # 274

Session # 12D The Economics of Aquaculture Production and Profitability Part I

ECONOMIC ANALYSIS OF FISH FARMING IN OSUN STATE, SOUTH-WESTERN NIGERIA

Dr. Bunmi Olasunkanmi, bunmi.olasunkanmi@yahoo.com

Abstract

Information on economic viability of aquaculture is crucial for investors when assessing the feasibility of an aquaculture investment. Unfortunately, such information has been scarce in Nigeria. The economic analysis of fish farming in Osun State, South-Western Nigeria was therefore carried out using data collected from seventy two randomly selected fish farms. Data were analyzed using descriptive statistics, costs and returns, as well as multiple regression analysis. The relationship between fish output and five inputs: feed, fertilizer, lime, labour and fingerlings were measured using Cobb-Douglass production model. Results suggest that a unit increase in fertilizer application contributed 46 percent increase to the profitability of the fish farms and this was significant at $p < 0.01$. Also, labour was significant at $p < 0.05$ as the results suggest that a unit increase in labour contributed 60 per cent increase to the profitability of the fish farms. The model explained 81% of the variation in total output. On the whole, fish farming was found to be profitable with a benefit-cost ratio of 1.65 and profit-cost ratio of 0.65. It is recommended that fish farmers in the study area should increase their use of feed, lime and fingerlings and decrease their use of fertilizer and labour.

Abstract # 275

Session # 04 Posters and Game Demonstration Session and Reception

BIOECONOMIC ADAPTIVE MANAGEMENT PROCEDURES FOR SHORT-LIVED SPECIES: A CASE STUDY OF PACIFIC SAURY (COLOLABIS SAIRA) AND JAPANESE COMMON SQUID (TODARODES PACIFICUS)

Dr. Eriko Hoshino, eriko.hoshino@utas.edu.au
Dr. E.J. Milner-Gulland, Professor, e.j.milner-gulland@imperial.ac.uk
Dr. Richard Hillary, Rich.Hillary@csiro.au

Abstract

Short-lived fisheries stocks are subject to large fluctuations in abundance and respond rapidly to many factors including changes in oceanographic conditions, biological interactions and fishery exploitation. Management of such species requires a flexible, adaptive framework that responds rapidly to a changing environment, although such schemes are rarely operationalized. In this article, we develop a set of bioeconomic adaptive management schemes that respond to changes in economic conditions, stock abundance and catchability, using as case studies the fisheries targeting short-lived Japanese common squid (*Todarodes pacificus*) and Pacific saury (*Cololabis saira*). We suggest that such adaptive schemes have the potential to support the successful implementation of profit maximizing (MEY-based) harvest policies for borderline profitable fisheries targeting short-lived species.

Abstract # 278

Session # 31C: Governance: Management of Fleet Capacity

TO INVEST OR NOT - RENEWAL OF THE NORWEGIAN BOTTOM TRAWLER FLEET

Mr. Øystein Hermansen, oystein.hermansen@nofma.no
Mr. Bent Dreyer, bent.dreyer@nofma.no
Mr. Thomas A Larsen, PhD, thomas.andre.larsen@nofima.no

Abstract

In order to survive and prosper fishing companies have to balance the need for continuity and change. Investment strategy is a good indicator on the direction companies are headed in terms of capacity, onboard production, and the financial risks they are willing to take. However, the success of an investment does not only depend on company decision and timing, but also how companies tackle unpredicted changes in the competitive environment. Cash flow often fluctuates as much as the quota. Accordingly, successful investment strategies in such settings are often linked to timing and capacity decisions. In this paper we propose a model that explains the investment strategy behind fishing vessel renewal. The hypothesis is that cash flow and profitability impact the decision on when to replace an old vessel with a new. The model is tested by studying the pattern of renewal of vessels in a population of Norwegian bottom trawlers in a closed fishery. Results suggest that the decision of renewal is taken when quota peaks. Due to long planning and construction time new vessels are operational under conditions very different than predicted. Declining revenues worsens the opportunity to accumulate financial strength sufficient for next renewal. Companies entering such unfavorable pattern face increased risk for poor economic performance. The model and the empirical findings have implications for better understanding of competitive advantages related to investment decisions at company level. The findings also improve our understanding of the problem of adapting capacity at fleet level to fluctuating fishing stock.

Abstract # 289

Session # 32E Environment, Natural Disasters, and Recovery Part II

THE ECONOMIC CONSEQUENCES OF REGIME SHIFTS IN MARINE ECOSYSTEMS

Mrs. Lorena Gola, lorenagola@economics.uni-kiel.de
Mr. Martin F. Quaas, quaas@economics.uni-kiel.de

Abstract

By 1992, the Canadian cod populations collapsed and a moratorium on fishing was declared, which remains in place until today. Ecologists suspect that the marine ecosystem at the Canadian east coast has shifted towards a new regime, where cod stocks remain at a low level while other species biomass levels, especially cod prey, including forage fishes, shrimp and large crustaceans remain high. Meanwhile, the economic importance of lobster, snow crab, shrimp, caplin, halibut and other fisheries increased and represent currently the most valuable fisheries in Atlantic Canada. To study the economic consequences of the regime shift, we set up a bioeconomic model considering three species (or species groups), cod, pelagics, and shellfish. Cod preys on shellfish and pelagics but is also controlled by competition and predation by pelagic species in early live stages. We study (a) the implications for efficiency, i.e. the aggregate economic benefits derived from using the ecosystem with and without a regime shift, and (b) the distributional implications of a regime shift, i.e. the distribution of benefits for different stakeholder groups from using the ecosystem with and without a regime shift. We find that, in terms of the aggregate present value of incomes, the shift the North West Atlantic ecosystem resulted only in a small net loss for the Newfoundland region, but that the net welfare loss main have been large, given the distributional effects on different groups of fishermen.

Abstract # 290**Session # 01A Markets and Value Chains for Small Aquaculture Enterprises****VALUE CHAIN DEVELOPMENT FOR TILAPIA AND CATFISH PRODUCTS: OPPORTUNITIES FOR FEMALE PARTICIPATION IN KENYA**

Dr. Kwamena Quagraine, PhD, kquagrai@purdue.edu

Abstract

Session #504 A Benefit-Cost Analysis using ratios of annual costs and benefits was calculated for fish farmers (aquaculture) and fish marketers (including distributors, processors and retailers). Forty five of the 86 respondents had a benefit cost ratio higher than 1. Further analysis investigated effects of selected variables on ratios. Relative to Eldoret, marketers in Nairobi and Kisumu were more likely to have lower margins possibly due to the size of markets, competition and customer base. Experience had a positive effect on ratios probably because of the relationship-based nature of the fish markets. Fish marketers who had been in the business longer had created a strong customer base and stronger ties with their suppliers and customers. The data showed that performing multiple business functions had a negative effect on financial viability suggesting that specialization, and/or focusing a larger portion of the business in either retailing or wholesaling was better. Although gender effect was insignificant, the regression showed that being a female had a positive effect on the business' financial viability. As part of the VCA framework, we used Porter's model for competitive analysis in conjunction with the marketing mix (Ps) and SWOT analysis, performance profiling and the factor evaluation matrix. In terms of Porter's 5 forces framework, the best value chain opportunities exist for fish marketers and the worst exist for input suppliers. Despite the high initial costs, by diversifying and also acting as hatchery and/or breeder, fish farming is viable.

Abstract # 297**Session # 13A Markets: Value Chains Part III****LOCAL MARKETS, GLOBAL CHAINS: HOW IS SUSTAINABILITY CREATED IN SEAFOOD SUPPLY CHAINS FROM ASIA TO EUROPE?**

Ms. Ingrid Kelling, ingrid.kelling@gmail.com

Dr. James A. Young, j.a.young@stir.ac.uk

Abstract

The fairness and inclusiveness of globalisation in seafood trade is coming under increased scrutiny due to economic, social and environmental impacts created as trade has expanded, often leading to imbalances among nations. The European Union is the most important world market for the consumption of seafood. Despite the construction of a single market it is far from homogenous and unsurprisingly reflects traditional tastes, cultural values and patterns of production that have evolved under complex phenomena within the marketing environment. To present a clearer perspective on its contemporary morphology, this paper uses data collected from 40 interviews with seafood value chain participants in key importing and consuming countries (Germany, France, the UK, Belgium and the Netherlands), conducted between September and December 2011. A number of suppliers of these downstream actors, based in Bangladesh and Thailand, were earlier interviewed in order to provide greater insight along the value chain. The interviews investigated how market positions, legislation, media stories, NGO pressure on companies to source from sustainable sources, certification schemes, inter alia, contributed to creating sustainability in seafood supply. Considerations of internal initiatives were also incorporated that mitigate risks in supply chains and partnerships with suppliers. The paper finds that a firm's market position remains one of the major determinants of its commitment to sustainable trade. However it is argued that in an increasingly scrutinised marketing environment firms cannot afford to rest upon past achievements and must be more proactive in promoting holistic solutions along the chain.

Abstract # 298

Session # 22C Frontiers in Economic Modeling Part II

RECOVERING MARINE SPECIES AT RISK: THE VALUATION OF MANAGEMENT ACTIONS FOR INCORPORATION INTO POLICY DECISIONS

Ms. Keldi Forbes, MSc., Keldi.Forbes@dfo-mpo.gc.ca

Abstract

Fishing in Canada is the economic, historic and cultural backbone of many coastal areas. The complex nature of policy decisions related to management actions undertaken for marine species protection results in policy makers frequently facing conflicting positions. For many management actions, a socio-economic impact assessment must be completed; this assessment estimates the impacts on the Canadian population. A challenging aspect of every assessment is the estimation of non-market values. The cost of conducting primary studies makes it unfeasible to perform one for each proposed policy action; however the exclusion of the values can lead to a non-optimal level of species protection or recovery horizon. A limited number of existing studies on the non-market values of marine species management in Canada frequently precludes the use of benefit transfer to estimate values. In order to assess a wider range of marine species protection programs while minimizing the cost of information collection, a study addressing aquatic species of all types in Canada was built based on key attributes of these species. Two additional species-specific studies addressing the management of a Pacific Rockfish species and a Lake Sturgeon population were conducted for corroboration purposes. Using binary logit and latent class models, welfare measures were calculated for management actions related to each species; additionally, the impact of species' characteristics, the protection program costs, and the demographic characteristics of the survey respondents were addressed.

Abstract # 300

Session # 23F Governance: Marine Reserves and Protected Areas Part I

VALUING MARINE PARKS IN A SMALL ISLAND DEVELOPING STATE: A TRAVEL-COST STUDY IN SEYCHELLES

Dr. Paul Mwebaze, mpaul48@hotmail.com

Abstract

A strategic issue facing many small island developing states (SIDS) such as Seychelles is the decline of natural resources, such as Marine Protected Areas (MPAs), which are important in ecological terms as well as for generating income from tourism. This paper presents an analysis of the economic value of Marine National Parks (MNPs) in Seychelles. The Travel-Cost Method (TCM) is used to establish tourists' willingness to pay (WTP) for trips to selected MNPs. The average per trip consumer surplus is approximately A\$20 for single-site visitors and A\$5 for multiple-site visitors. The total social welfare value attributable to recreational opportunities in MNPs is approximately A\$1.3-A\$2.1 million. These findings may be useful for resource management decisions for MNPs in Seychelles.

Abstract # 302

Session # 01D Bioeconomic Modeling Part I

BIO-ECONOMIC MODEL OF EASTERN BALTIC COD UNDER THE INFLUENCE OF NUTRIENT ENRICHMENT

Mr. Thanh Viet Nguyen, thanhmpa@gmail.com

Abstract

The objective of this paper is to study the economic management of Eastern Baltic cod (*Gadus morhua*) under the influence of nutrient enrichment. Average nitrogen concentration in the spawning areas during the spawning season of cod stock is chosen to be an indicator of nutrient enrichment. The optimal cod stock is defined using a dynamic bio-economic model for the cod fisheries. The results show that the current stock level is about half of the estimated optimal stock level and that the current Total Allowable Catch (TAC) is about one-fourth of the optimal yield. The results also indicate that the benefit from a reduction in nitrogen very much depends on the harvest policies. If the TAC is set equal to the optimal yield, the benefit of a nitrogen reduction from the 2009 level to the optimal nitrogen level would be about 604 million DKK over a 10-year time horizon, given a discount rate of 4% per year. However, if a recovery management plan is chosen, the benefit would only be about 49 million DKK over a 10-year time horizon.

Abstract # 303

Session # 23B JIFRS/JICA Session on Responsible Fishing

THE SUSTAINABLE MANAGEMENT OF THE SHRIMP TRAWL FISHERY IN TONKIN GULF, VIETNAM

Mr. Thanh Viet Nguyen, thanhmpa@gmail.com

Abstract

The objective of this study is to investigate the sustainability of shrimp stock in the trawl fishery in the Tonkin Gulf, Vietnam. The Verhulst-Schaefer and Gompertz-Fox surplus production models are applied to the shrimp trawl fishery, which is a small scale and multi-species. There are two shrimp spawning seasons per year in the Gulf, which implies that it is appropriate to divide the time scale into half-years in accordance with the biological period of the stock. Therefore, in this study, the surplus production models, which are usually associated to calendar year catch and effort data, are applied for a half-year time interval. The results indicated that the effort of the fishery should be reduced by roughly 12% to 44% to achieve the Maximum Sustainable Yield (MSY) and by about 46% to 61% to reach the Maximum Economic Yield (MEY). Under a 10% social discount rate, the effort should decrease by around 45% to 56% to achieve the optimal yield. The minimum mesh size and the legal length regulations may not be appropriate, while management initiatives such as an entry tax and a closed season may be preferable to achieve the MSY and MEY for the shrimp trawl fishery. The entry tax should be between about 92 and 279 USD/month/boat to achieve the MSY. With a social discount rate, the entry tax should be around 160 to 314 USD/month/boats to attain the MEY.

Abstract # 304

Session # 02F Understanding and Modeling Fishing/Sector Behavior Part II

MICRO-ECONOMIC DRIVERS OF PROFITABILITY IN AN ITQ-MANAGED FISHERY: A PRELIMINARY ANALYSIS OF THE QUEENSLAND CORAL REEF FIN-FISH FISHERY

Dr. Olivier Thébaud, Olivier.Thebaud@csiro.au
Mr. James Innes, James.Innes@csiro.au
Dr. Ana Norman-López, ana.norman@csiro.au
Mr. Darren Cameron, Darren.Cameron@gbrmpa.gov.au
Mrs. Toni Cannard, toni.cannard@csiro.au
Mrs. Sharon Tickell, sharon.tickell@csiro.au
Mrs. Stephanie Slade, Stephanie.Slade@deedi.qld.gov.au
Mr. John Kung, john.kung@daff.qld.gov.au
Mrs. Brigid Kerrigan, brigid.kerrigan@daff.qld.gov.au
Dr. Rich Little, rich.little@csiro.au

Abstract

An economic survey of the commercial operators currently active in the Great Barrier Reef Line fishery has been carried out, as part of a research project aimed at evaluating options available to manage the fishery. The paper will present the background analysis of the fishery used as a basis to develop the sampling design for this survey, as well as preliminary results from the survey. The background analysis focuses on activity patterns of the fleet based on effort and catch information, as well as patterns of quota trading. Based on this information, a fleet profile describing the micro-economic structure of fishing operations is developed. This profile, which serves as a basis for the economic survey, also provides a useful basis to understand the micro-economic drivers of profitability in the fishery, and possible impacts of external shocks on fishing operations.

Abstract # 305

Session # 21A Africa Policy Day Part II

WELLBEING IN SMALL-SCALE FISHING COMMUNITIES IN SOUTH AFRICA

Ms. Philile Mbatha, MSc in Environmental and Geographical Science, philile_mbatha@yahoo.com

Dr. Sarah Coulthard, PhD., sarah.coulthard@northumbria.ac.uk

Ms. Janne Rohe, MSc., janne.rohe@googlemail.com

Abstract

Coastal resources play a significant role in supporting the livelihoods and contributing to the wellbeing of marginalised communities in South Africa. Through an analysis of four small-scale-fishing communities in South Africa, this research sought to understand how and why benefits arising from the use of coastal resources in the fisheries sector are shared in the manner that they are; and the contribution of the fisheries sector to the wellbeing of small-scale fishing communities. Both qualitative and quantitative methods were used to collect the data. Findings reveal that despite the fact that communities have benefited from fisheries, the sector has also had negative economic and social impacts on livelihoods. In the fisheries sector, co-management arrangements have enhanced resource sustainability, but regulations have restricted the extent to which fishers can benefit economically from marine resources. In this sector, the lack of decentralization of decision-making about resource access, use and control presents a key institutional blockage for benefit sharing. Due to a lack of alternative livelihood opportunities for small-scale fishing communities, there has been increased pressure on conservation institutions to play a developmental role at the community level. Similarly, the private sector and non-governmental institutions have been increasingly providing basic services that are the traditional preserve of government. This has compromised the potential of communities to fully benefit from the economic opportunities provided by the fisheries sector. Findings of this study affirm the need for fisheries governance strategies to reflect the needs of poor fishing communities

Abstract # 308

Session # 01E Markets: Value Chains Part I

ORGANISATIONAL CHANGES AND MARKET VALUE OF THE FRESH FISHERY PRODUCTS IN FRANCE

Mr. Razafimandimby Haja, haja.razafimandimby@ifremer.fr

Abstract

This article aims to show the effects of the organizational innovations on the valuation of the fresh fishery products in France. The interviews led with the sector key players allowed at first to draw up a brief typology of the organizational innovation in the fresh fishing industry. The result shows that the organizational changes that intervened in the fishing supply chain forced the actors to adopt new ways of working, which in turn, allowed to meet the consumer expectations in quality and in freshness thanks to the implementation of just in time; in traceability due to the management of the supply chain and in terms of availability by the system of dual sourcing.

Abstract # 309

Session # 13A Markets: Value Chains Part III

USING TWEETS TO IDENTIFY MESSAGES FOR GENERIC ADVERTISING IN THE SEAFOOD INDUSTRY

Dr. Aloyce Kaliba, aloyce_kaliba@subr.edu

Dr. Victor Mbarika, victor@mbarika.com

Abstract

Twitter is a free social networking website that lets users share short messages, known as 'tweets', with their circle of friends. Tweets are text-based posts of up to 140 characters displayed on the user's profile page. The network is a popular source of text data analysis for variety of research topics. The advantage of twitter is that it is accessible using Twitter's free and open application program interfaces (APIs), which are easily accessed by different software. In this study we used word cloud and hierarchical cluster analysis to analyze more than 11,500 recent tweets (up to January 30, 2011). The objectives were twofold: identify the tweeters related to seafood and other seafood related products; and group the messages that can be used in generic advertising. Among twitter, results indicate that the seafood is highly associated to healthy body, eating healthy, healthy mind and natural foods. Generic seafood advertising messages could focus on these areas.

Abstract # 310

Session # 11B Understanding and Modeling Fishing/Sector Behavior Part III

FISHERY INCOME DIVERSIFICATION AND RISK FOR FISHERMEN AND FISHING COMMUNITIES OF THE US WEST COAST AND ALASKA

Dr. Stephen Kasperski, steve.kasperski@noaa.gov
Dr. Daniel Holland, dan.holland@noaa.gov

Abstract

Catches and prices from many fisheries exhibit high inter-annual variability leading to variability in the income derived by fishery participants and communities dependent on the fisheries. The economic risk posed by this variability might be mitigated in some cases if individuals and communities participate in several different fisheries, particularly if revenues from those fisheries are uncorrelated or vary asynchronously. However, specialization in particular fisheries might be expected to yield higher profitability, and regulatory changes such as implementation of limited access and vessel and permit buybacks have made it more difficult for individuals to continue participating in a mix of fisheries. We construct indices of gross income diversification from West Coast and Alaskan fisheries. Indices are constructed at the level of individuals and fishing ports. We evaluate the relationship between variability of individuals' income and income diversification to determine whether income diversification appears to reduce financial risk. We use stochastic frontier production functions to evaluate whether vessels that are more diversified are less efficient, indicating a trade-off between risk reduction through diversification and profitability. We also evaluate trends in income diversification and how they have been impacted by regulatory changes.

Abstract # 312

Session # 13B Frontiers in Economic Modeling Part I

CATCH SHARE SCHEMES, THE THEORY OF COOPERATIVE GAMES AND THE SPIRIT OF ELINOR OSTROM

Dr. Gordon Munro, munro@econ.ubc.ca
Dr. Rashid Sumaila, r.sumaila@fisheries.ubc.ca
Mr. Bruce Turris, Bruce_Turris@telus.net

Abstract

This paper puts forth the proposition that all catch share schemes should be analysed primarily through the lens of cooperative game theory (not the much less rich theory of clubs), which has now been developed to an advanced degree in the analysis of international fisheries management. If the fishers in a catch share scheme are playing cooperatively, the resource managers are at the same time to be seen as playing a leader-follower game with the fishers. While the proposition obviously applies to all catch share schemes, the focus of the paper will be on ITQ schemes. The basic rudiments of the required theory are to be found in a 2006 article by Lone Krønbak and Marko Lindroos, and carry with it the spirit of Elinor Ostrom. We will argue that much more needs to be done. We shall maintain that, if a given ITQ scheme constitutes a stable cooperative game, the various residual inefficiencies of ITQ schemes discussed in many articles should vanish. Needless to say, if a given ITQ scheme constitutes a stable cooperative game the distinction between it and other catch right schemes will blur. We shall also argue that, if ITQ schemes succeed as stable cooperative games, this will enable the fishers to bargain constructively with other stakeholders. Examples will be drawn, inter alia, from the evolving harvesting rights schemes off Canada's Pacific coast.

Abstract # 314

Session # 01F Understanding and Modeling Fishing/Sector Behavior Part I

UNRAVELLING THE MULTIPLE MARGINS OF RENT GENERATION FROM INDIVIDUAL TRANSFERABLE QUOTAS

Mr. Matthew Reimer, reimer@primal.ucdavis.edu

Dr. Joshua Abbott, Joshua.K.Abbott@asu.edu

Dr. James Wilen, wilen@primal.ucdavis.edu

Abstract

The notion of individual transferable quotas (ITQs) has permeated the fisheries economics literature over the last 40 years. The most long-standing prediction about ITQs has been extensively documented, namely that transferable property rights to harvest induce changes along the extensive margin via consolidation of quota among a smaller number of vessels. However, behavioral changes along the intensive margin as harvesters adjust their fishing practices in response to ITQ incentives have been relatively neglected. We use the 2005 introduction of ITQs to the Bering Sea red king crab fishery as a platform to decompose the sources of rent generation across both extensive and intensive margins. We develop a conceptual model of the crab harvesting production process that captures the principle decisions made by the skipper and crew throughout a fishing season with respect to traveling to and from fishing grounds and the process of setting and lifting traps. We also depict the decision-making environment under pre- and post-ITQ settings by modeling a limited entry and an ITQ fishery as two different symmetric games played between all participating harvesters in the fishery. Using multiple treatments in a hypothetical experimental setting, we show that the effects of introducing ITQs are potentially multi-faceted, non-monotonic, and at times contrary to prior expectations. For the crab fishery we find that the bulk of rents were generated by consolidation across the extensive margin.

Abstract # 315

Session # 31E The Economics of Aquaculture Production and Profitability Part III

ANALYTICAL HIERARCHICAL PROCESS AND COST BENEFIT ANALYSIS FOR EVALUATION OF ALABAMA CATFISH PROFITABILITY AND SUSTAINABILITY

Dr. Curtis Jolly, cjolly@auburn.edu

Dr. Carel Ligeon, Dr., cligeon@aum.edu

Dr. Nathanael Hishamunda, Ph.D., Nathanael.Hishamunda@fao.org

Dr. Terril Hanson, Ph.D., hansontr@auburn.edu

Dr. Vincent Wright, Ph.D., vwright@ncu.edu

Abstract

Catfish production has experienced a decline in the past two years, and farmers have been blaming international competition, exports, low prices and poor feed conversion ratios as the main causes. We evaluate the usefulness of the Analytic Hierarchy Process (AHP) and the Cost Benefit Analysis (CBA) as instruments for rapid evaluation of farmers' problems, the profitability and sustainability of aquaculture systems in Alabama. In April 2010, tests of the instruments were conducted among five farmers. A survey was then administered to 27 Alabama farmers and specialists involved in large-scale catfish production and marketing. Participants displayed unanimity in their responses. All IRs were less than 0.1. The variables: the 'improvement in technology' and the 'reduction of disease problems' received the highest ranks. Embedded in the response of technological innovation is the improvement in feed conversion ratio. This criterion received a rank of 75% higher than the second highest ranked criteria, which is 'increase harvest frequency.' In last place were reduction in selling cost and burglary/theft. Government influence received a low ranking, but research and extension received average scores. The participants did not rate trade highly and only accorded average importance to environmental sustainability. The CBA analysis shows that catfish farming in Alabama on a 60-acre pond is profitable in the long run, given the RRR of 8%. Based on participants' ranking of needs, if a 12% increase in technological change is attained, profitability will increase by 20%. The improvements can be obtained from increasing feed conversion efficiency

Abstract # 316

Session # 11A: Governance: Property Rights and Quota Systems Part I

IS THE FISHERIES PRODUCTION FUNCTION INSTITUTION-DEPENDENT? IMPLICATIONS FOR TARGETING ABILITY IN MULTISPECIES FISHERIES

Mr. Matthew Reimer, reimer@primal.ucdavis.edu

Dr. Joshua Abbott, Joshua.K.Abbott@asu.edu

Dr. James Wilen, wilen@primal.ucdavis.edu

Dr. Alan Haynie, alan.haynie@noaa.gov

Abstract

Multispecies fisheries add additional complexity for rights-based management implementation. Imperfectly selective fishing gear may make it difficult for fishermen to match their catch composition with the portfolio of total allowable catches chosen by management. If fishermen can perfectly target their catch, the problem of matching catches with quota allocations declines in importance. Previous ex ante examinations of targeting ability suggest that rights-based systems may face serious challenges due to weak substitution potential between species. In contrast, ex post evidence from multispecies ITQ fisheries suggests that far greater flexibility in outputs is possible than previously thought. These disparate findings suggest that the production technology revealed through empirical work may be heavily dependent on current management policies. We examine this possibility through an analysis of a fishery undergoing the transition to rights-based management: the Bering Sea/Aleutian Island groundfish fishery. We possess an unusually detailed panel dataset of vessels from before and after rationalization, obtained by onboard observers who record the deployment and retrieval location and times for each trawl, as well as the total catch, tow depth, and catch composition. Using primal multi-input, multi-output frontier methods, we estimate the elasticities of transformation between the catch of different species and compare our estimates before and after the policy change. We then control for a number of changes in the nature of fishing behavior to uncover the degree to which observed changes in substitutability are the product of incentive driven changes in these observable behaviors.

Abstract # 318

Session # 23E: Governance: Management of Fishing Activity Part II

PERSISTENT SUBSIDIES IN FISHING - THE CASE OF FUEL TAX EXEMPTION IN NORWAY

Mr. Øystein Hermansen, oystein.hermansen@nofma.no

Dr. John R. Isaksen, PhD, john.isaksen@nofima.no

Mr. Ola Flaaten, Professor, ola.flaaaten@uit.no

Abstract

This paper discusses the persistency of the current major subsidy scheme in Norwegian fisheries, in spite of the general idea that subsidies have been gradually abolished since the late 1980s. The reimbursement of the mineral oil tax to the fishing fleet is now the single largest component of fishery subsidies in Norway, stemming from " and persistent since - the early 1980's. Here we discuss persistence of this scheme against theoretical predictions on subsidies' effect on fishing behaviour. With a heterogeneous fishing fleet, with respect to oil consumption in transport and fishing operations, the effect of the subsidy is different along various fleet components. We provide the background for this subsidy and compare the impact of an annulment of this scheme on two fleet groups, based on a sensitivity analysis. In addition, a comparative analysis of rivalry fishing nations and their treatment of fuel taxes for the fleet is carried out. Finally we discuss the implications if the Government would abolish this subsidy, for the fishing fleet in general, different vessel groups and potential policy implications in the wake of such a measure.

Abstract # 319

Session # 02F Understanding and Modeling Fishing/Sector Behavior Part II

WHEN, WHERE AND WHAT TO FISH? ON FISHERMEN'S BEHAVIOUR WHEN CHOOSING BETWEEN OPTIONAL SEASONAL PROFILES.

Mr. Øystein Hermansen, oystein.hermansen@nofima.no
Mr. Arne Eide, arne.eide@uit.no

Abstract

Most fishermen are faced with several options in both long and short term planning of their activity. In this paper we study fishers short term decisions when different seasonal fishery options are available. This involves choices of spatial and temporal allocation of effort as well as use of varying fishing gears in order to obtain the planned target specie mix. In a heterogeneous fishing fleet the seasonal options may differ considerably from vessel to vessel, also depending on its home port. The paper presents a framework wherein the seasonal choices are understood on the basis of economically rational behaviour where expected marginal benefit of the different options are evaluated and the most profitable season chosen. A monthly model is developed to describe the marginal profitability of the various fishing opportunities based on Norwegian data. The impact management decisions may have on the chosen seasonal profile and the vessel profitability is then discussed on the basis of the presented seasonal model. In particular we study the impacts of different quota allocation regimes. A diverse fleet structure may be an efficient response on highly fluctuating and unpredictable fish resources, while fisheries regulations may have the effect of reducing the flexibility by which the fleet can respond to such changes.

Abstract # 320

Session # 23D: Measurement and Indicators for Improved Understanding and Management Part II

INTEGRATED ASSESSMENT OF THE COASTAL FISHERY PRODUCTION SYSTEMS IN FRENCH GUIANA

Mr. Abdoul Ahad Cissé, station.guyane@ifremer.fr
Mr. Fabian Blanchard, fabian.blanchard@ifremer.fr
Dr. Olivier Guyader, Olivier.Guyader@ifremer.fr

Abstract

As many cases of tropical small-scale fisheries, the French Guiana coastal fishery is characterized by the high fish biodiversity of its ecosystem, the weak selectivity of the fleets exploiting the resources, the heterogeneity of the vessels in term of size and fishing techniques. The traditional tools used to manage fisheries are more adapted to homogeneous fleets, targeting one species. Moreover, the necessity of an ecosystem approach is acknowledged. Hence there is a lack of operational methodology to assess heterogeneous fisheries exploiting many species and to manage it, despite their socio-economic importance especially in developing countries. The RAPFISH method (Pitcher, 2001) allows fisheries assessment according to various criteria. It relies upon ordination of scored attributes grouped in ecological, economic, social and technological sustainability fields, performed using multi-dimensional scaling (MDS) including uncertainties. The leverage of each attribute on scores is also estimated. The aim of our study is to test whether this method can be applied in this context to assess the fishery in an ecosystem approach. We considered several fishery production systems (FPS) according to type of vessels and landing points. The comparative assessment of the fishery production systems was analyzed using the RAPFISH method. Data used to score the attributes are mainly from the perennial database monitored by Ifremer since 2006 and two socio-economic surveys carried out in the field in 2009 and 2011. This study is postulated as a complementary tool to bio-economic model, for defining sustainable management of the French Guiana coastal fishery.

Abstract # 322

Session # 21C Bioeconomic Modeling Part VI

A BIO-ECONOMIC MODEL FOR ECOSYSTEM-BASED MANAGEMENT: AN APPLICATION TO THE COASTAL FISHERY IN FRENCH GUIANA

Mr. Abdoul Ahad Cissé, station.guyane@ifremer.fr

Mr. Luc Doyen, luc.doyen@orange.fr

Mr. Jean Christophe Péreau, jean-christophe.pereau@u-bordeaux4.fr

Mr. Fabian Blanchard, fabian.blanchard@ifremer.fr

Abstract

Models and quantitative methods to tackle sustainability issue are still lacking for small-scale tropical fisheries mainly because of the lack of data series and the various complexities underlying the systems. Indeed, these fisheries are characterized by the heterogeneity of the production factors, the weak selectivity of fleets and high fish biodiversity levels. The present paper offers a theoretical and empirical modeling of ecosystem-based fishery management. A multi-species and multi-fleets model integrating Lotka-Volterra trophic dynamics as well as production and profit assessments is developed. It is applied to the coastal fishery of French Guiana. This small-scale fishery constitutes a challenging example with high fish biodiversity, several non selective fleets and a potentially increasing local food demand due to demographic growth. A perennial database monitored by Ifremer is available since 2006, with production and fishing effort collected on a daily basis on the main landing points. Economic surveys have been carried out in the field for years 2008 and 2010. The dynamic model is calibrated with thirteen species and four fleets using catch and effort monthly data from 2006 to 2010. Several contrasted fishing scenarios including status quo, total closure, economic and viable strategies are then simulated, according to demand mechanisms and endogenous prices, as well as uncertainties underlying estimated biological parameters. They are compared from the viewpoints of both biodiversity preservation (specific richness and diversity indices) and socio-economic performances (profitability, employment and wage).

Abstract # 323

Session # 31D The Economic Impact of Climate Change on Fisheries and Aquaculture Part I

CLIMATE CHANGE IMPACTS, VULNERABILITY ASSESSMENT AND ECONOMIC ANALYSIS OF ADAPTATION STRATEGIES IN BEN TRE PROVINCE, VIETNAM

Dr. Kim Anh Nguyen, sonanhcc@gmail.com

Mr. Chuong Bui Thien, master, thienchuongbui@yahoo.com

Ms. Trang Le Thi Huyen, master, mattahuyentrang@yahoo.com.vn

Dr. Curtis Jolly, Jollycm@auburn.edu

Abstract

Scientific database has proven that Vietnam is one of the most affected countries due to climate change impacts on aquaculture and economies of rural communities. Ben Tre region has suffered immensely from recent salt water intrusion. Climate change generates sea level rise, increase in temperature and salt water intrusion. In 2005 losses had increased to US\$37 million. We conducted three focus group discussions (FGDs) to assist in the identification of vulnerable sectors and households and community adaptation strategies to climate change. Households were also evaluated based on the levels of vulnerability. Residents have requested the construction of a water treatment plant and a dike system. CEA is employed as the tool for evaluating the two planned adaptations: Building a freshwater-supplying factory and Building a sea dike system. Total costs include initial investment and annual operating costs. We also conducted a benefit cost analysis since the outcomes of the strategies are different. The distribution of vulnerability index showed that 31% of households are highly vulnerable to climatic risk while 56% of households are not vulnerable at all. The sea dike is three times more expensive than the freshwater plant. In addition to the higher investment, it is more costly to keep the sea dike under operation annually. The water treatment plant is more cost effective in servicing the communities with freshwater but the dike has a higher benefit cost ratio when all costs are internalized and secondary benefits to agriculture and aquaculture are considered.

Abstract # 326

Session # 31E The Economics of Aquaculture Production and Profitability Part III

THE PROSPECTS AND OPPORTUNITIES FOR TROUT FARMING IN SCOTLAND

Dr. Abdulai Fofana, Abdulai.Fofana@sac.ac.uk

Abstract

In Europe, the United Kingdom is one of the top nine producers of trout. Scotland accounts for approximately 50% of total production in the UK. This shows that the Scottish trout farming sector is important both at the local and has relevance within the larger context of pan-European trout production. In spite of its apparent potential to match production levels in the Scottish salmon industry, the Scottish trout farming sector has failed to achieve the desired expansion and has begun to suffer declining production. Using surveys for participants in the distribution chain and semi-structured interviews with stakeholders, this study examines the Scottish trout industry focusing on the barriers to expansion and increased production in order to propose future mitigating actions to facilitate the long-term sustainability, viability, and competitiveness of industry. The barriers to expansion and prospects of the trout industry were investigated using the Structure – Conduct - Performance paradigm that facilitates analysis of the distribution chain of an industry with heterogeneous players. Analysis of the structure of trout farming shows whether the degree of concentration is low or the number of firms is large enough to ensure competition in the industry. In terms of conduct, the analysis would show whether pricing structure by various actors along the marketing chain are consistent with costs. This was vital to assessing the performance of Scottish trout farming as a consequence of its structure and conduct.

Abstract # 328

Session # 22A Africa Policy Day Part III

AQUACULTURE AS A VEHICLE FOR SOCIO-ECONOMIC DEVELOPMENT IN NAMIBIA

Ms. Panduleni Elago, MSc International Fisheries Management, panduelago@gmail.com

Abstract

Throughout the world the landings of capture fisheries are declining and this is not because the fishing nations are managing their resources better but because of the non-availability of the fish species. The reduction in capture fisheries is a wakeup call for the nations to undertake Aquaculture development. Though Namibia is one of the driest countries in the world, aquaculture development is a necessity if fish is to remain part of our menu. The goal of aquaculture development in Namibia is to develop a sustainable industry aiming to promote food security and poverty reduction. Since the introduction of fish farming in 2003, the Government has been engaged in creating a conducive environment for the small and medium fish farmers. This paper focuses on the responses of small and medium farmers towards the government's effort, for promoting Aquaculture as a vehicle for Socio-Economic Development in Namibia.

Abstract # 330

Session # 22E The Economics of Aquaculture Production and Profitability Part II

AQUACULTURE IN URBAN AND PERI-URBAN AREAS: IMPLICATION FOR FOOD SECURITY AND ENVIRONMENTAL CONSIDERATION

Dr. Siyanbola Omitoyin, PhD, sbomitoyin@yahoo.com

Abstract

Change in climate, harvest stagnation in wild fisheries and overexploitation of popular fish species, combined with a growing demand for high quality protein and a need to sustain livelihood and improve food security has compelled aquaculturists to domesticate more fish species in environments which is not rural as the case used to be. The dwindling resources from the artisanal sector which provide employment for about 5.8% of the populaces and also supply more than 81.9% of the total domestic fish production is augmented by aquaculture which is the fastest growing production system in the world. Rural-Urban migration which is rapidly increasing has increased the pressure on the urban facilities. Expanding cities affect the areas surrounding the city by altering the natural resource base, converting land to new uses, changing labour patterns, challenging the environment, concentrating urban waste pollution and diminishing natural resource based livelihoods. The paper therefore looks at aquaculture in the urban and peri-urban for food security and its environmental implication. A random sampling technique was used to select 150 respondents from urban and peri-urban communities in Lagos state using structured questionnaire. Data collected include socio-economic characteristics, production, sales and climatic data. The effect of change in climate with a high percentage of people moving from the rural areas to the urban cities increasing congestion, unemployment, urban poverty and subsequently increasing food insecurity should be looked into. There is therefore the need for the Government to look into land use planning and land...

Abstract # 331**Session # 21D** Measurement and Indicators for Improved Understanding and Management Part I**ESTIMATING FINANCIAL RETURNS TO COASTAL STATES FROM THEIR TUNA RESOURCES - A PRELIMINARY ANALYSIS OF THE WESTERN INDIAN OCEAN TUNA HARVESTING SECTOR**

Mr. Edward Kimakwa, ekimakwa@wwfesarpo.org

Abstract

This paper reports on Western Indian Ocean focused efforts by WWF Coastal East Africa Initiative to estimate financial returns accruing to selected Coastal States from tuna resources targeted by the purse seine and longliner fleets under various agreements. The states studied were: Tanzania, Kenya, Mozambique, Seychelles, Mauritius, Comoros and Madagascar. The main distant water fleets investigated were the EU, Japan, Taiwan, Korea and China. The project was undertaken as part of a larger WWF programme of work aimed at improving incentives for sustainable management of the region's tuna resources and assessing the feasibility of applying rights-based management in the region. The study was also intended to improve the policy base from which Coastal States can participate in the newly proposed quota allocation system for tuna management in the larger Indian Ocean. The fishing sector and notably the tuna and tuna like species in Coastal East Africa and the Western Indian Ocean is particularly important to the economies of Seychelles (a base for EU purse seiners and with tuna processing facilities) and to a lesser extent Mauritius (a base for Asian longliners which also has tuna processing). Other states which have tuna processing are Madagascar (Antsiranana) which is also a transshipment point...

Abstract # 333**Session # 11A:** Governance: Property Rights and Quota Systems Part I**THE AUSTRALIAN CORAL REEF FIN-FISH FISHERY ITQ MARKET**Mr. James Innes, James.Innes@csiro.au
Dr. Olivier Thébaud, Olivier.Thebaud@csiro.au
Dr. Ana Norman-López, ana.norman@csiro.au**Abstract**

The Australian east coast coral reef fin-fish fishery (CRFFF) is a quota based line fishery that has been managed under ITQs since 2004. A large number of different reef species (>155) are covered by the management plan but the primary species in terms of value and volume landed are live coral trout (CT) and red throat emperor (RTE). All remaining species are classified as other species (OS) for management purposes. The operational side of the fishery is relatively heterogeneous and distinct sub-divisions exist between participants in terms of individual vessel characteristics and the species and product forms landed. The ITQ system has introduced an additional dimension for heterogeneity between fishers whilst also allowing investors not participating in the fishery to hold and trade quota. This analysis uses data on individual level quota holdings and trades to assess the CRFFF quota market and its evolution through time. Fishery level trends in ownership and trade are determined, and market participants are identified as belonging to one out of a set of five generalised typologies. The emergence of groups such as investors and lease dependent fishers is clear. In 2010-11 42% of coral trout quota was owned by participants that did not fish it and 69% of total coral trout landings were made by fishers that collectively owned only 11% of the quota. The incentives faced by the groups within the fishery differ, as do their vulnerabilities and resilience to natural or management related changes in the fishery's situation.

Abstract # 334

Session # 22D: Markets: Value Chains Part IV

ASSESSING GENDER ROLES IN TILAPIA PRODUCTION AND MARKETING SUPPLY CHAIN ON LAKE KARIBA, ZAMBIA

Mr. Edward Mwiindeh Syampaku, MSc Agric Economics, esyampaku@yahoo.com

Abstract

Tilapia fish production and marketing are major small-scale income-generating activities in Lake Kariba, Zambia. An estimated 8-12 metric tonnes of fresh Tilapia is landed and marketed daily along the lake's shore line. The production and marketing supply chain comprise production, aggregation, drying and distribution. This study assessed gender roles in the production and marketing supply chain of Tilapia on Lake Kariba. The specific objectives were to identify the dominant gender in the supply chain functions and identify institutional requirements for effective performance of marketing functions. The study analyzed data from fish producers, smokers, assemblers and aggregators and marketers. The traders were tracked at check points leading to 8 major aggregation centres, respondents involved in fish smoking were interviewed in the village while assemblers/aggregators and distributors were interviewed in major centres. Empirical result showed that production is dominated by men who constituted 90% of fish producers. Most men (96%) produced using as unregistered individuals, proprietorships and partnerships whereas most women (98%) produced through registered cooperatives. About 100% of intermediary traders were men while women were predominant (60%) aggregation and distribution activities. The study identified lack of regulatory institutions for standardizing the quality of fish especially between producers and aggregators as an issue that require urgent attention. This is owing to the fact that it is at this point that most of product deterioration takes place. The study concluded that women were more involved in distribution, drying and aggregation but had a negligible role in fish catching.

Abstract # 335

Session # 21F Environment, Natural Disasters, and Recovery Part I

THE ECONOMICS OF REBUILDING FISHERIES - A NORWEGIAN PERSPECTIVE

Ms. Guri Hjallen Eriksen, guri.eriksen@fkf.dep.no

Ms. Tale Halsør, Tale.Halsor@fkf.dep.no

Abstract

The OECD fisheries committee is finalizing a project on the economics of rebuilding fisheries. The focus of the study has been the economic and institutional aspects of the rebuilding process, and the main objectives were to identify economic, social and governance components underpinning successful rebuilding based on the experiences of OECD countries, and to develop a set of practical and evidence based principles and guidelines for designing and implementing fisheries rebuilding plans. Norway has contributed to this project with a review of the Norwegian policy on fisheries rebuilding programs, supported by case studies on the rebuilding of the Northeast Arctic cod and Norwegian Spring Spawning herring. The case of the cod fishery is an example of a successful rebuilding where many challenges are accounted for, including joint management (with Russia), segmented fleet structure (trawlers and coastal vessels), regional differences and distributional issues. The rebuilding process stressed to secure a precautionary level of fishing mortality, while at the same time restructuring the fishing fleet to secure economic viability. The outcome is a significant improvement from both a biological and economic point of view. The backdrop for fisheries management and rebuilding across the OECD-member countries is not uniform, and this has also been one of the main challenges when developing a set of principles and guidelines that could be adopted by consensus in the fisheries committee. This paper presents the overall OECD-project with a particular emphasis on the Norwegian cases and experiences.

Abstract # 336

Session # 23C: Where Management and Marketing Meet

A FISHERIES MANAGEMENT SYSTEM'S IMPORTANCE FOR THE DEMERSAL VALUE CHAIN OF THE ICELANDIC FISH INDUSTRY

Dr. Ögmundur Knútsson, PhD, ogmundur@unak.is

Abstract

The Icelandic fisheries management system has always been controversial in Iceland. In the wake of the force of the financial crisis that hit Iceland the political debate has become increasingly emotional and heated. In this debate a rational understanding of the fisheries management system's aims and efficiency has lacked. Previous studies by the authors on the demersal value chain of the Icelandic fish industry have indicated that the two of the external factors having the greatest influence on the efficiency of the value chain are the impact of the fisheries management system and the establishment of the Icelandic fish markets. The objectives of this research are to gain a better understanding of the view of the industry itself on the role that the fisheries management system plays for this value chain. The research emphasises their consensus on the importance of technical and product development as well as the importance of changes in the structure of the marketing activity for the efficiency the value chain. Comparison is also made from secondary data on other fisheries management systems. The research is mainly based on primary data from both formerly and specially conducted semi-structured and in-depth interviews with managers of a number of Icelandic fishing, fish processing and marketing companies. This research is a part of an ongoing research by the authors on the value chain structure and organisational- and productivity changes in the Icelandic fisheries sector.

Abstract # 338

Session # 11D The Economic Impact of Climate Change on Fisheries and Aquaculture Part I

CLIMATE CHANGE AWARENESS AND IMPACTS ON AQUACULTURE IN POOR RURAL COASTAL COMMUNITIES, BEN TRE PROVINCE, VIETNAM

Dr. Kim Anh Nguyen, sonanhcc@gmail.com

Mr. Chuong Bui Thien, master, thienchuongbui@yahoo.com

Ms. Trang Le Thi Huyen, master, mattahuyentrang@yahoo.com.vn

Dr. Curtis Jolly, cjolly@auburn.edu

Abstract

Vietnam has been ranked as one of the countries in the Asia with the highest vulnerabilities to climate change impacts on fisheries and aquaculture. Eight of those ten provinces are located in the Mekong River Delta including Ben Tre Province. We conducted a study to identify the impacts of climatic events on Ben Tre province poor rural coastal communities, to evaluate their awareness and coping mechanisms adapted to deal with climate change and the effects on aquaculture. Farmers were aware of changing climatic conditions and pointed out indicators of these changes: (1) Changes in production and culturing patterns, (2) Changes in housing designs, (3) Improvement in drinking water collection and procurement, (4) Pumping of fresh water in the shrimp ponds, and (5) Building of dikes to prevent salt water intrusion. "Building sand dikes" has also been used as an adaptation strategy. About 90 percent of respondents indicated that they suffered losses from salt water intrusion. Total losses generated by salt water intrusion amounted to VND 1,599,803,000, equivalent to USD 77,151. Increases in temperature and salinity thicken the exoskeleton of black tiger and white leg shrimp; hence slowing their growth and lengthening the culture period by an average of one month. Fishing declined so much so that some fisher folks were contemplating changing careers. At the community level, especially in Binh Dai District a couple of projects: building a raw freshwater reservoir and water supply system and barricades to reduce the effects of sea tides were implemented.

Abstract # 340

Session # 01B Governance: Co-management, Community Management, Coops and Catch Shares, Part I

COMMUNITY BASED FISHERIES MANAGEMENT (CBFM) IS A TOOL OF SOCIO ECONOMIC DEVELOPMENT MEASURING LIVELIHOODS CHANGES OF PEOPLE INVOLVE: AN EXPERIENCE FROM BANGLADESH

Mr. A K M Firoz Khan, f.khan@cgjar.org
Mr. Sk.Md. Mohsin, mohsin300964@yahoo.com

Abstract

The rural Bangladesh is still poverty prone, the distinction between fisher and non fisher life in rural area is prominent; this is due to limited access right of rural fisher to common properties like waterbodies. To eradicate disparities between fisher and non fisher co management of inland fisheries has been contributing positively to establishing access right to the poor fishing communities. Current paper is a modest attempt of measuring livelihoods impact of a co-management initiative of Community Based Resources Management Projects (CBRMP) in Bangladesh. The sustainable resources management of the CBFM approach has led to livelihoods change of fishing community thus contributing to socio-economic changes. The paper also describes distributional pattern of benefits, appropriateness of the institutions, attitudes and social capital created for all stakeholders within the co-management approach. Open water fisheries resources have a vital role to foster livelihoods of fishers by creating new opportunities. The critical part of the rural economic life of a year spends in fishing in the extended floodplain; a range of poor people received access to the fisheries resources thus, embraces changes in living standard. Based on experience from the study the article explores aspects of the population profile, income, occupation, landholding, assets, food security, women mobility, institutional involvement and access to finances suggests livelihoods development. The paper concluded with the appropriateness of different factors effecting socio-economic development due to co-management initiatives in the open water fisheries management in Bangladesh.

Abstract # 341

Session # 13D: Governance: Management of Fishing Activity Part I

COST-EFFECTIVENESS ANALYSIS IN INTERTEMPORAL NATURAL RESOURCE POLICY: EVALUATION OF SELECTIVE FISHING GEAR

Mrs. Lone Groenbaek Kronbak, PhD, lg@sam.sdu.dk
Mr. Niels Vestergaard, Professor, nv@sam.sdu.dk

Abstract

In most decision making involving natural resources, the achievements of the policy (e.g., better ecosystem) are rather difficult to measure in monetary units. To overcome this problem the paper develops a modified Cost-Effectiveness Analysis (CEA) to include these intangible benefits in intertemporal natural resource problems. The proposed CEA framework is applied to the case of selective gear policy in the trawl fishery in Kattegat and Skagerrak. The empirical analysis demonstrates how a policy with large negative net benefits might be justified if the intangible benefits are included. The paper demonstrates that partial implementation of the gear policy may be preferable.

Abstract # 342

Session # 11D The Economic Impact of Climate Change on Fisheries and Aquaculture Part I

THE IMPLICATIONS OF CLIMATE CHANGE IN AUSTRALIAN SEAFOOD MARKETS.

Dr. Ana Norman-López ana.norman@csiro.au
Dr. Sean Pascoe PhD, Sean.Pascoe@csiro.au
Dr. Olivier Thébaud, Olivier.Thebaud@csiro.au

Abstract

Climate change is expected to impact the productivity of wild and farmed fisheries worldwide. These impacts will vary by region and consequently affect differently the supply to markets. Market driven interactions between fisheries from different regions and between different target species means that changes in supply from one region or species will have an impact on producers in other regions supplying the market. This is because, as supply to markets change, prices will re-adjust to the point where the quantity demanded by consumers and the quantity supplied by different producers is equal. For Australia, where edible seafood exports represented over 50% of the total value of production in 2008-09; changes to export prices will have significant economic implications. This is exacerbated by the fact that the value of Australian exports is particularly sensitive to price changes as it specializes in high-value, low tonnage species, such as, rock lobster, prawns and tuna. The current analysis, investigates the inter-relationship between Australian seafood products exports and other seafood products in international markets. A relationship (substitutability) between Australian and international seafood products will highlight that climate change will not impact Australian fisheries production in isolation. Instead, climate change will also impact Australian seafood through the prices they receive as a result of changes in world supply of competing products.

Abstract # 344

Session # 31F: Markets: Consumers

VALUING SEAFOOD ATTRIBUTES: STATED CHOICE MODEL

Mr. Thong Tien Nguyen, ntthom@yahoo.com
Mr. Wolfgang Haider, Professor, whaider@sfu.ca
Mr. Hans Stubbe Solgaard, Professor, hso@sam.sdu.dk
Mrs. Eva Roth, Ass. Professor, er@sam.sdu.dk
Mr. Lars Ravn-Jonsen, Dr, Lrj@sam.sdu.dk

Abstract

This study applied brand choice model and stated preference data collected in French context by means of choice experiment to investigate value of intrinsic and extrinsic attributes of various fresh seafood species. The estimated models show that the extrinsic attributes (i.e. product forms, production method, and product origin) and intrinsic attributes (i.e. seafood species: salmon, cod, mussels, ect.) were significant determinants of consumer choice of seafood for their household consumption. Consumers assigned a significantly higher value for domestic and wild catch product. However, a deeper look into the market structure we revealed that only 39.5% of the sample is willing to pay a premium price for domestic and wild catch items in general. Salmon, cod, and saithe were evaluated relatively highest valued products while oyster, pangasius, and crab are lowest valued items. Market shares of the species in segments and entire market were predicted and appeared closely to actual market shares. The segment membership probability was estimated by the model and then regressed on demographic to give good suggestions for managers.

Abstract # 345

Session # 31F: Markets: Consumers

EVALUATING CONSUMER PREFERENCES FOR VALUE-ADDED FISH PRODUCTS ATTRIBUTES IN OMAN

Dr. Msafiri Mbagi, msafirimbaga@hotmail.com

Abstract

Fifty percent (50%) of the fish catch in Oman is estimated to be of low commercial value, which is discarded, fed to animals or marketed for very low prices. Therefore, the development and processing of fish to quality value-added fish products for local or international markets could be a profitable business opportunity for fish processing companies in Oman. In this context, the College of Agricultural and Marine Sciences started a research project for the development of Value-Added fish products in collaboration with Oman Fisheries Company (the largest fish processing company in Oman). The products developed so far include: fish fingers, fish nuggets, fish burgers, sausages and cakes. The objective of this research therefore is to evaluate the consumer preferences for these value-added products. The socio-economic and demographic characteristics of consumers are also included in the analysis. Data for this study is based on personal interviews to a random sample of 200 shoppers in Muscat. Preliminary results show that medium and large packaging forms are negatively related to preference ratings. Furthermore, cooking method and hence the value added products have a negative effect on rating. In terms of price and its effect on product rating, it was surprising that price is not significant at 5% and has a negative effect on the product rating.

Abstract # 346

Session # 32D Governance: Recreational and Inland Fisheries

THE ECONOMICS OF RECREATIONAL FISHERIES IN NAMIBIA

Mr. Mike Nghipunya, B. Economics, mnghipunya@mfmr.gov.na

Abstract

The linefish sector is one of the 10 commercial fisheries in Namibia. This sector is made up of two subsectors: commercial right holders and angling. The angling subsector is further divided into two types of fishing activities; subsistence angling which serve as a source of food supply and recreational angling which is carried out for pleasure or sport. As the custodian of fisheries resources in Namibia, the Ministry of Fisheries and Marine Resources conduct an angling survey every year to draw conclusions and recommendations to aid prudent and sustainable management of this resource. The survey also collects data on the economic value of angling in terms of government revenue through angling permit fees, contribution to food supply; expenditure on angling activities in terms of buying bait, fishing equipments, food, accommodation and entertainment. The angling survey is conducted during December because it is the month with the highest number of angling permits issued as its holiday time for most of the anglers. Unlike other commercial fisheries in Namibia, angling is not subject to a quota system but rather to a daily bag limit. The objective of this paper is to look at the economics of recreational fishery in Namibia.

Abstract # 347

Session # 03F Managing Development of Fisheries and Aquaculture Sectors Part III

SOCIAL COSTS OF KEEPING PENSION FISHERS IN THE COMMUNITY: THE CASE OF JAPAN

Dr. Haruko Yamashita, yamaharu@meikai.ac.jp

Abstract

In this paper, we estimate costs and benefit of keeping pension fishers in the community. The 34% out of 200 thousand fishers are the age over 65 years in Japan. Since the fishers over 65 are pensioner, fishery income is an additional source of livelihood. Average yearly income of coastal fishers is US\$30,000 and the maximum amount of pension that fishers can receive is US\$10,000. Benefits of continuing fishery for pension fishers are fishery income, certain food supply to themselves, associated benefits of maintaining membership of fishery cooperatives and the participation to the community. There is no loss, for their opportunity costs are zero, and they are not forced to work. Benefits to the community, on the other hand, can be identified as opportunity costs that could have been realized if they were retired; costs of day-care services provided for free for elderly and some social security payments provided for the poor. The fishery sector pays additional costs such as the maintenance costs of fishery infrastructures, hidden costs caused by stagnant fishery reform and annoying paternalism. The fishing community could have adopted more efficient fishing gears if a total population in the community was 34% less than otherwise, that in turn could have brought additional income or time to remaining young fishers. We will compare these costs and benefits to discuss if we should encourage pension fishers to retire or continue fishing.

Abstract # 349

Session # 22A Africa Policy Day Part III

PROBLEMS AND PROSPECTS IN DEVELOPING AQUACULTURE FOR LIVELIHOOD ENHANCEMENT IN GUCHA, MERU AND TAIATA TAVETA IN THE REPUBLIC OF KENYA

Mr. Ernest Yongo, MSc, ernyongo@yahoo.com
Dr. Harrison Charo-Karisa, PhD, harrison.charo@gmail.com
Ms. Mary Opyo, MSc, marybede@gmail.com
Dr. Jonathan Munguti, PhD, jonathanmunguti@hotmail.com
Mr. Paul Orina, MSc, jpaulorina@yahoo.com

Abstract

Problems and prospects in Developing Aquaculture for Livelihood enhancement in Gucha, Meru and Taiata Taveta in the Republic of Kenya Ernest Yongo. Kenya Marine and Fisheries Research Institute, Kisumu P.O. Box 1881 40100 Kisumu All correspondences to ernyongo@yahoo.com Abstract There is considerable variability in aquaculture production within the study areas of Gucha, Meru and Taita/Taveta regions. Aquaculture activities involves the production of Nile tilapia and African catfish using earthen ponds. Most ponds are individually owned (93.8%). Most of the ponds were constructed and stoked between January 2007 and July 2011, which reflects the change in strategy by the government for promoting aquaculture. Ponds size are more or less same sizes of about 300m² Most farmers culture Nile tilapia (99%). The stocking density is about 3 fish per m² for both Nile tilapia and Clarias, but for the Gold fish the density is about 10/m², mostly cultured in the Meru study region. Dominion farm was the main source of seed (13.2%). Small scale hatcheries run by individual farmers supplied 116% while 40.5% was supplied by the Fisheries Department and 30.3% got their seeds from Sagana Aquaculture Centre. Unga feed/Sigma is the source of feeds (93.4%), while 6.6% farmers made their own feeds. The profits ranged from 25 -75% over total costs While the farmers acknowledged the impotence

Abstract # 352

Session # 13D: Governance: Management of Fishing Activity Part I

ASSESSING THE WICKEDNESS OF GOVERNABILITY: MOBILITY IN SOUTH AFRICA'S WESTERN CAPE TRADITIONAL LINE FISHERY

Mr. Philip van der Krogt, philip.vanderkrogt@uva.nl

Abstract

Although it emerged in the field of design and urban planning, the term, "wicked problem", has been used to describe pervasive societal issues in a vast array of contexts and disciplines. In this paper we follow Jentoft and Chuenpagdee's (2009) lead, applying the term, in combination with the interactive governance approach, to fisheries governance with intent of examining the nature of particular challenges to the governability of a selected societal system. Using the traditional line fishery in South Africa's Western Cape as the backdrop, we investigate the ways in which one specific system feature, mobility, understood to be a niche strategy that contributes to fisher livelihoods, serves to intensify the complexity, diversity, dynamics and scale of the system-to-be-governed and, in turn, the corresponding governing system. The paper first provides an overview of the 'wicked problem' debate with respect to the interactive governance approach and governability. It then moves on to the South African case, discussing, in particular, the contemporary manifestation of the traditional line fishery system. Next, the paper hones in on one facet of the TLF's system-to-be-governed, mobility, characterizing it as a wicked problem that challenges the governability of fishery system. In the final section of this paper, we discuss the implications of understanding such issues as wicked problems, taking into account what this means for potential governing solutions and future policies.

Abstract # 353

Session # 02A Looking at Fish Supply Chains with a Gender Lens

ROLE OF GENDER IN VALUE CHAIN FROM PRODUCTION AND MARKETING OF FISH

Dr. Debabrata Lahiri, Ph.D, debabratal@yahoo.com

Abstract

In production and marketing of fish the women has a leading role as evident from their involvement in various stages. Involvement of women has in putting fish seed in pond or tank, nurturing these by providing food and adequate care. After catching, fish out of the pond or tank involvement of women has been observed in retail trade of fish in the markets. Even in processing of fish, such fish drying on sea beach women are involved. In other words, the women mainly consider fish production as household enterprise. Wherever, they have been involved in retail trade it has been to supplement the family income. The main objective of the paper has been to (a) To highlight the involvement of women in various stages starting from production, processing and marketing; (b) To estimate the change in value of fish at various stages from production to marketing; (c) To assess the reasons for involvement of women in the value chain. The study has been conducted for both inland and marine fisheries. In both the cases, the areas where women have been mainly involved in the value chain from production, processing and marketing of fish would be first assessed. The comparative advantage of involvement of women versus men would also be assessed. In both inland and marine fisheries adequate number women involved in various stages has been sampled out for detailed study by means of a schedule. It has been found that involvement of women at various stages of value chain has

Abstract # 354

Session # 23C: Where Management and Marketing Meet

SEAFOOD FORESIGHT: FROM MANAGING INFORMATION TO FACILITATING INTELLIGENCE

Mr. Angus Garrett, a_garrett@seafish.co.uk

Abstract

With growing concern over sustainable production, consumption and food security, new risks and uncertainties are emerging for the seafood industry. These arise from diverse sources and multiple levels, including supplies availability, market drivers, NGO pressures, regulation etc. In the face of this, our traditional means of establishing 'what is going on' (periodic forays into industry activity in the form of specific projects) often come up short. These may be suited to stable contexts and simple problems, but seem ill suited to the complex 'messes' that often characterise these new dynamic challenges facing the seafood industry. The recognition of wicked problems, and appreciating the world as complex dynamic systems in which local contexts are socially constructed, pose the question 'how is appropriate industry action supported where practices are complex and dynamic'? This paper explores this question by reviewing the experience of collaborative working across UK seafood, examining North East Scotland and the Humber region as particular cases experiencing issues of supplies availability. It explores the role of shared narrative as a means of capturing lessons learned and shared understanding in dynamic contexts. It considers the potential in communities of practice, as partially nested learning systems, for providing soft infrastructure enabling shared intelligence across networks. Implications for supporting organisations are highlighted. Finally, examining seafood as communities of practice provides the grounding for a seafood foresight programme of engaged research. Such a programme concerns long term frameworks to facilitate the evolution of shared understanding in key seafood systems on a systematic basis.

Abstract # 357

Session # 21F Environment, Natural Disasters, and Recovery Part I

DRIVING FORCES BEHIND THE EXPLOITATION OF SEA URCHIN PREDATORS IN THE WIO

Mrs. Sieglind Wallner, MSc, sieglind@ecology.su.se
Mrs. Maricela de la Torre-Castro, maricela@ecology.su.se

Abstract

Globally, alterations of marine food webs due to overfishing of species at high trophic levels are leading to unpredictable changes in coastal ecosystems. In parts of the Western Indian Ocean, increasing abundances of sea urchins (particularly *Triplonectes gratilla*) have been observed. Sea urchins' grazing intensity on seagrass beds is generally proportional to urchin abundance. Loss of top-down control due to overfishing of urchin predators is thought to be one factor behind overgrazing in the region. Overgrazing could lead to extensive seagrass loss and have far-reaching impacts on the coastal environment and for local communities. The focus of this interview study lies on the exploitation of sea urchin predator fish species, ecological awareness and local ecological knowledge among fishers, and the development of management strategies towards more resilient social-ecological seagrass ecosystems in Mombasa, Kenya and Uguja Island, Zanzibar. The majority of the fishermen fish on seagrass beds and corals, and mentioned urchin populations as increasing. More than 70% of Mombasa's fishermen mentioned decreasing catch trends, indicating a high fishing pressure. All 8 investigated urchin predator species are fished regularly, even hardly sellable non-target species like triggerfish. The triggerfish *Balistapus undulatus* is a sea urchin keystone predator, and its top position in the food chain makes it vulnerable to exploitation. The development of long-term management strategies is crucial for present and future livelihood sustenance for local people. A better understanding of the driving forces behind the fishing of sea urchin predators is a necessary component of

Abstract # 358

Session # 22D: Markets: Value Chains Part IV

THIN WHOLESALE MARKETS AND DIRECT MARKETING IN RENEWABLE RESOURCE EXPLOITATION

Dr. Chris Kennedy, ckenned7@gmu.edu

Abstract

Despite decades of research on the microeconomic underpinnings of common-pool resource production, there is only limited investigation of the impact of imperfect wholesale markets on fishery outcomes, and the majority of this work has focused on wholesaler market power. In recent years, as the retail demand for fresh seafood products has increased, many independent fishermen have bypassed thin or monopsonized wholesale markets by signing fixed-output contracts with consumers, most notably restaurants. We investigate the implications of this type of market structure for various management schemes, finding that individually tradable quotas are amenable to such contracts, while other mechanisms may exacerbate inefficiency. Additionally, we consider how fishing cooperatives – which are often designed to facilitate the joint marketing of fish products – might alleviate some of the inefficiencies associated with small-scale, contract-driven marketing.

Abstract # 360

Session # 21C Bioeconomic Modeling Part VI

AGE-STRUCTURE METRICS FOR PRECAUTIONARY MANAGEMENT- CAN WE SAVE FISH, TIME, AND MONEY?

Mr. Christopher Cusack, cusackc@onid.orst.edu

Abstract

Over the past 30 years, fisheries management on the west coast of the United States has undergone a rapid evolution. Starting with very limited management and stock assessment techniques, the complexity of fishery models and size and breadth of fishery data sets have gradually increased, which has coincided with increasingly intensive management measures used in the fishery. However, during the same period, the west coast fishery underwent a significant decline. As a symptom of this decline, several species of rockfish are currently designated as 'overfished', with rebuilding timelines of more than half a century. The west coast trawl fishery is a true multi-species fishery and the management protection (such as extremely low trip limits) afforded to overfished stocks has significant impacts on the economics of the trawl fleet. In order to evaluate the possible effects of these constraining species on fleet behavior and profitability, we develop a bioeconomic model of the west coast groundfish trawl fishery. We take a retrospective look, based on real data, at what could have happened in the west coast groundfish fishery if the stock of canary rockfish (*Sebastes pinniger*) had been managed to a range of harvest control rules starting from a time when canary rockfish were considered a healthy stock in the fishery. In particular, we are interested in how 'simple' catch-based age-structure metrics could be used to effectively manage the stock of canary rockfish, and the tradeoffs between these and more complex techniques.

Abstract # 361

Session # 02C Managing Development of Fisheries and Aquaculture sectors Part II

UNLOCKING SOUTH AFRICA'S INLAND FISHERIES POTENTIAL; THE NEED FOR A DEVELOPMENTAL APPROACH AND REVISION OF PROPERTY AND ACCESS RIGHTS

Dr. Mafaniso Hara, PhD, mhara@plaas.org.za

Dr. Pete Britz Professor, p.britz@ru.ac.za

Mr. Qurban Rouhani q.rouhani@ru.ac.za

Abstract

Although much the interior of South Africa is a relatively arid, the country possesses over 700 large public storage dams constructed for provision of water for domestic, industrial and irrigation purposes. These impoundments constitute over 50% of the total (1,500,000 hectares) inland water surface and have potential for the development and enhancement of a livelihoods based on inland fisheries. The existing main secondary uses of the public dams are recreational angling, tourism and water sports, but research and policy are lacking on how inland fisheries can be used to enhance rural livelihoods. In the light of the growing informal small scale subsistence and artisanal fishing on these waters, and the emergence of user conflicts on certain dams, there is a need for a review of existing inland fishery governance and access rights arrangements based on the principles of South Africa's rights based constitution and environmental legislation. While the dams do provide fish directly as food, the economy of the recreational fishing value chain is far larger, and the challenge is to create opportunity for inclusion of communities in the recreational angling and tourism value chains. Based on research conducted as part of a Water Research Commission funded project on the development and sustainable utilisation of storage dams for inland fisheries, we argue that the key to unlocking their potential for contributing to rural livelihoods is a developmental approach based on the "common pool" concept, addressing issues of equity, and revision of property and access rights regimes to

Abstract # 362

Session # 31E The Economics of Aquaculture Production and Profitability Part III

PROSPECTS AND POTENTIAL OF THE AFRICAN LUNGFISH (PROTOPTERUS SPP): RESULTS FROM A FIELD SURVEY IN UGANDA.

Dr. Joseph Molnar, molnajj@auburn.edu
Mr. John Walakira, M.S., jwalakira@auburn.edu
Dr. Jeffrey Terhune, Ph.D., terhujs@auburn.edu

Abstract

Culture of resilient species to drought and stressed water quality conditions may be a significant part of the future of African aquaculture. Air breathing fishes potentially have a role in low-management culture systems because dissolved oxygen is not a limiting factor. The African lungfish (*Protopterus spp*) is advantageous because it is an indigenous fish with good quality flesh, an air-breather and a biocontrol agent against schistosome vector snails. Little is known about indigenous practices of culture, harvest, and marketing of *Protopterus spp* from farm ponds and water bodies. This study assessed the status and potential of lungfish aquaculture in Uganda in seven districts in Kampala, Wakiso, Kumi, Busia, Soroti, Pallisa and Jinja. Semi-structured interviews were conducted with key stakeholders; fish farmers, fisher folk communities, Fisheries officers, scientists, fish traders, and consumers. Socio-economic conditions (prices, demand, and public perceptions) that shape the culture of African Lungfish were also assessed. African lungfish wild stocks in Uganda are continuously being reduced while no clear or sustainable mitigation measures/policies are being addressed to replenish the plummeted stocks. Lungfish is highly valued in major tribes of eastern of Uganda but gradually accepted in the central region. Majority of lungfish is consumed fresh but smoked products are also preferred. Its food and 'medicinal' value is gradually substituting Tilapia and Nile perch markets, among the rural and densely populated communities. Cultural (traditional and religious) beliefs are main factors that continue to deter some consumers from eating Lungfish. However, preliminary findings in this...

Abstract # 365

Session # 03C Markets: Value Chains Part II

THE VALUE OF A WORD: ESTIMATING THE IMPLICIT PRICES OF POPULAR FINFISH AND SHELLFISH LABELING PRACTICES IN THE U.S.

Dr. Sherry Larkin, PhD, slarkin@ufl.edu
Mr. Glen Gold, glengold@ufl.edu

Abstract

Using three years of weekly ACNielsen Scantrack data, this study aims to estimate the implicit prices of labeling retail finfish and shellfish in the U.S. with harvest-specific information, such as "wild," "Atlantic," "Pacific" or "imported." Recent concerns for the availability of wild-caught supplies has led to increasing interest for labeling products to reflect sustainability of the underlying stocks and associated habitats. Past stated preference research has shown that product specific attributes such as species, package size, product form, and labels reflecting location and type of harvest can affect price. Within the past decade, various labels -some backed by third-party certification programs - have been developed to convey sustainable harvesting practices in the market place. Recent studies have shown that seafood products sold with certified labels have commanded higher retail prices using revealed preference data, however, this literature is very limited. Few, if any, studies have assessed the revealed value of harvest-specific labeling that is not associated with a certified label. To help address this gap in the literature, the ACNielsen data is used to examine the value of labeling terms used at the retail level on products both with and without a "wild" label for finfish and an "imported" level for shellfish, which are the key descriptors in each data set. Implicit prices are calculated for labeling attributes, and comparisons are made by region, species, promotional activity, and seasonality. The results show that basic information on packages may hold value to consumers, exclusive of certified labels.

Abstract # 366

Session # 22C Frontiers in Economic Modeling Part II

AN ECOSYSTEM APPROACH TO THE SMALL PELAGIC FISHERIES: FROM MODEL TO ROLE PLAYING GAME

Mr. Guillaume Péron, guillaume.peron@univ-brest.fr

Abstract

This Working paper present a role-playing game applied to the exploitation of the small pelagic fisheries and the international market of fishmeal and fish oil (FMFO). In order to reveal the stakes in the management of this system, we have previously built a bio economic model, coupled to the ecological and the economic dynamics. The coupling is based on the computing of global equilibrium, on the network which interconnects the marine production systems (ecosystems, fisheries, manufacturing) and the fish product markets (FMFO) around the world. The most important problem is then to coordinate all the actors in front of their needs and under the constraints of the exploitation of a common-pool resource. The stake in the exploitation of small pelagic species goes through the implementation of sustainable, collective practices of exploitation, which allow to satisfy all the needs of the various actors. Role-playing games can be used to facilitate negotiation or as an experimental tool to investigate how people interact. The role playing game suggests here that a decision taken by one of the economic agents can have repercussions on the whole system of production, whether it is small pelagic species or offer in FMFO. Roles playing games emphasize the possible convergences between economist and ecologist point of views, or between individual decisions and collective discussions. The aim of this work is to reveal the difficulties of coordinating the various communities bound up with the exploitation and the implementation of common-pool resource management.

Abstract # 367

Session # 11A: Governance: Property Rights and Quota Systems Part I

DO INDIVIDUAL RIGHTS EMERGE FROM COLLECTIVE RIGHTS SYSTEMS?

Ms. Mihoko Tegawa mihokote@yahoo.com

Mr. Chris Anderson, cmand@uw.edu

Dr. Hirotsugu Uchida, Ph.D., uchida@uri.edu

Abstract

In 2010, the New England Groundfish fishery adopted a sector-based management plan, wherein self-identifying groups of harvesters are allocated their collective total share of the harvest of each species as a group right, that they may manage in any way they wish. This means a single fishery with a single set of overall total allowable catches can be managed by multiple management systems concurrently. We ask whether common pool or individual quota type management systems are more likely to emerge as groups gain experience with their collective rights. In a novel quasi-continuous time experimental environment with a contemporaneous price externality, harvesters can choose to affiliate with a common pool managed group, or an individual quota managed group. The common pool group engages in a fishing derby and receives lower prices, whereas the individual quota group achieves stable harvest levels throughout each season to minimize the price externality. Through successive fishing seasons, the frequency of choosing individual quota rises from about half to over 90% of subjects. This suggests that the efficiencies associated with strong individual fishing rights may emerge endogenously from the sectorization process, even without imposing them through regulation. The choice to remain in the common pool is explained by competitive success, but not risk preferences, social preferences or competitiveness

Abstract # 368

Session # 23A Africa Policy Day Part IV

THE ROLE OF GOVERNMENT IN PROMOTING COMMERCIAL AQUACULTURE IN AFRICA: EXAMPLES FROM EAST AFRICA

Dr. Harrison Charo-Karisa, PhD, harrison.charo@gmail.com

Mr. Maina Wilson Gichuri, MSc, mainagichuri@yahoo.com

Dr. Betty M Nyonje, PhD, bnyonje@hotmail.com

Ms. Mary Opyo, MSc, marybede@gmail.com

Mr. Henry Mbugua, BSc, mmkaronga@yahoo.com

Dr. Charles Ngugi, PhD, ccngugi@gmail.com

Dr. Japheth Micheni Ntiba, PhD, m.ntiba@kenya.go.ke

Abstract

Africa has traditionally depended on capture fisheries for most of its fish and fish products. However, with capture fisheries dwindling and human population increasing, alternative sources have become necessary. Although practiced for many decades, East African fish farming has been funded by donors whose main interest has been on subsistence fish farming targeting the very poor. Consequently, no structures were put in place to ensure growth of the sector thus preventing commercial aquaculture development. Most East African countries such as Rwanda, Uganda and Kenya have initiated programs for revamping aquaculture including policy changes. Kenya through the Economic Stimulus Program encouraged growth of the sector through helping communities construct stock and feed approximately 50,000 fish ponds. Extension services were revamped through provision of motorcycles and training to fisheries staff, farmers and hatchery managers. The multiplier effect led to over 100,000 ponds constructed in about two thirds of the country, the number of functional hatcheries rising from 21 in 2009 to over 135 in 2012. Similarly, the commercial feed manufactures producing extruded floating feeds rose from 1 to 8. This has resulted in increase of aquaculture fish production from 4000 (in 2009) to currently 19000 metric tonnes per annum. Efforts to popularize fish farming through the 'eat more fish campaigns' have increased fish traders customer base. Fish production levels and productivity are likely to increase across the country. It is necessary to empower fish farmer cooperatives and develop standards for inputs enabling farmed fish to access traditional and emerging markets.

Abstract # 369

Session # 31D The Economic Impact of Climate Change on Fisheries and Aquaculture Part I

CLIMATE CHANGE AND SMALL-SCALE FISHERIES: SOCIAL, ECONOMIC AND GOVERNANCE INTERACTIONS

Dr. Anthony Charles, tony.charles@smu.ca

Abstract

Climate change will have a wide range of impacts on fisheries, other human uses of marine systems, and the coastal communities that depend on the ocean for their livelihoods. This presentation focuses on small-scale fisheries, providing a review of the current state of knowledge on social and economic impacts of climate change, and an exploration of the governance and policy directions needed to meet upcoming challenges. From a social perspective, the dominant focus would seem to be on the vulnerability to climate change of marine resource users, coastal households and communities, together with their adaptive capacity both to reduce those vulnerabilities and to then cope with change as it occurs. From an economic point of view, climate change impacts imply a set of benefits and costs, with associated 'winners' and 'losers' (whether neighbouring communities or competing economic sectors), all of which is likely to be compounded by interactions with other global change processes, notably economic globalization and large-scale technological change. Finally, a governance lens leads to consideration of policy measures and decision-making in the face of climate change: given the particular realities of small-scale fisheries, what institutional arrangements are needed, what policies need changing, and who will make the decisions? Addressing such considerations may require a re-designing of governance systems to make them more robust, adaptive and participatory, and better functioning on a multi-scale basis, across the spatial and temporal scales relevant to small-scale and community-centred fisheries.

Abstract # 370

Session # 13D: Governance: Management of Fishing Activity Part I

CHANGING ABORIGINAL POLICY IN CANADA, AND THE EFFECTS ON SCALE AND CAPACITY USE IN THE COMMERCIAL FISHERIES OF QUEBEC

Mr. James R. Wilson, j.r.wilson1000@gmail.com
Mrs. Melissa Wilson, M.Sc., jwilson@cgocable.ca
Dr. Bruno Urli, bruno_urli@uqar.qc.ca
Mr. Abdallah ben Hammouda, bnhmdabdllh@yahoo.fr

Abstract

The literature on efficiency analysis has long acknowledged the important difference between program or policy effects and relative efficiency effects. A persistent problem of the fishery sector worldwide is the growth of fishing capacity beyond the capacity of the ecosystem. The adoption of incentive compatible policy to counteract these effects has been an important research agenda for fisheries economists. Canada uses an array of policies and regulatory tools aimed at fulfilling the objectives of their Fisheries Act. They have collected large data sets of the fishing activities of many vessels under these different regulatory regimes. One important policy change came in the wake of two Supreme Court decisions in Canada, which expanded the involvement of aboriginal groups in marine fisheries. We use this data and the historical evidence to examine the localized effects of Canadian aboriginal fisheries policy, especially on the performance of certain fishing fleets in Quebec. Of the different regulatory structures examined, those that resulted in the least long term over-capitalization were ITQ systems and other systems that permit more shared responsibility by the asset-holders themselves, in particular those that have been managed under joint agreements. However, in certain cases, license transfer policies to aboriginal fishers led to losses in productive efficiency compared to the norms of the industry. In other cases, license transfers resulted in no change in efficiency, because aboriginal groups simply hired back displaced white workers. We discuss the implications of these results within the context of capacity reduction programs in fisheries.

Abstract # 371

Session # 01F Understanding and Modeling Fishing/Sector Behavior Part I

SHARING NATURAL RESOURCES AND RESOURCE MANAGEMENT

Dr. Ali Emami, PhD, aemami@uoregon.edu
Dr. Richard S. Johnston, Professor, dnjohnst@msn.com
Ms. Jun Yin, PhD, joyceyinjun@hotmail.com

Abstract

The demise of ancient cultures because of the devastation of natural resources through human behavior is well-documented. It has been argued that such cultures may have survived had they "managed" their resource sectors, especially "open access" renewable natural resource sectors (fisheries) for sustainability. For today's developed - and some less-developed - societies, managing such sectors generally involves taxes, quotas, or other government or community restrictions. But some cultures avoided resource devastation even in the absence of government-imposed restrictions. Explanations for this include, for example, formation of cooperatives within small, resource-dependent, communities. An alternative to this collective action has been uncovered, recently: volunteer sharing. Sharing is often motivated by religious beliefs and other cultural demands. It generally involves the transfer- as a gift - from those who harvest/produce output from the resource sector to other community members - especially non-harvesters - for consumption. In some cases, this has led to the avoidance of resource devastation and, ultimately, perhaps, the survival of the culture. If the social scientist is unable to find generalizable cause-effect relationships how can lessons from history inform the present? Without an improved understanding of what motivates sharing behavior, could one have confidence in any test of that hypothesis? This paper discusses two arguments that have been made regarding how to view sharing in the context of resource management: (1) as an implicit environmental tax and (2) as an informal insurance. We review the current literature and provide extensions and modifications of the analyses to date.

Abstract # 372

Session # 01F Understanding and Modeling Fishing/Sector Behavior Part I

SECTOR ALLOCATION CATCH SHARE SYSTEM: GAME THEORETIC APPROACH FOR SECTOR BEHAVIOR ANALYSIS

Dr. Hirotsugu Uchida, Ph.D., uchida@uri.edu
Mr. Andrew Scheld, Andrew.M.Scheld@gmail.com

Abstract

Sector allocation catch share system is where a share of total fishing quota is allocated to a group of fishermen called sector. Whether or not to join a sector is voluntary, and as such there are sector members and non-members coexisting in the same fishery, where the latter will remain in a common pool fishery. The main question of this paper is: How will the sector behave under such circumstance? A sector may fish with the non-members, thereby intensifying the competition to drive out the non-members quickly; or it might avoid the competition altogether while non-members are fishing and wait until they are done-anecdotal evidence exists for both of these cases. What is the dynamically optimal strategy for sectors? Are there multiple optimal strategies depending on the environment it operates, and if so what are the influencing factors? This paper develops a microeconomic model of fishermen's behavior under sector allocation program based on the differential game theory, and solves for dynamic equilibrium in aim to answer above questions. The model begins by assuming the group size of a sector remains constant, but later relaxes this assumption to allow members flow in and out of the sector. The latter has a unique tradeoff, which while relative profitability between the sector members and non-members will dictate the flow of membership, the profitability itself is an inversely related function of membership size. As such, equilibrium conditions for sector membership size will also be considered.

Abstract # 376

Session # 23C: Where Management and Marketing Meet

FISHTRAX AND ELECTRONIC FISHERY INFORMATION SYSTEMS: THE NEXT REVOLUTION IN FISHERY MANAGEMENT MANAGEMENT AND ECONOMICS OF FISHERY INFORMATION SYSTEMS: A CASE STUDY OF FISH TRAX

Dr. Gilbert Sylvia, gil.sylvia@oregonstate.edu

Abstract

Two major institutional revolutions are impacting fisheries around the globe -- sustainability and property rights. The sustainability revolution ensures that fisheries and supporting ecosystems are conserved so that future generations can access healthy fishery resources. The second revolution creates institutions in the form of economic incentives and privileges that are necessary for achieving sustainability. But a third less heralded fishery revolution is gaining recognition for its role in supporting the first two revolutions - (near) real time information systems. Modern information technologies including hardware, software, and communication infrastructure are being designed and employed to collect, share, and transform real time data into near real time knowledge vital for sustaining fisheries and improving economic benefits. These electronic information systems include logbooks, fish tickets, observer and vessel monitoring systems, catch and quota reporting, research and monitoring, and market traceability. They are being employed by managers, industries, fleets, and fishermen to manage harvests and reduce bycatch and discards, increase vessel performance, track environmental conditions, improve stock assessments, coordinate fleet behavior, and increase market benefits. However, there are complex economic, institutional, technological, and management challenges in developing and designing efficient systems. This paper summarizes some of these challenges, provides alternative approaches for designing integrated information systems, and highlights their costs and benefits. A newly designed electronic fish information system named Fish Trax is used to explore the challenges and opportunities. The paper concludes by discussing the changes needed in fishery policy and management to create incentives that foster an efficient information revolution.

Abstract # 378

Session # 13B Frontiers in Economic Modeling Part I

RATIONAL CHOICE OF VESSEL SIZES UNDER ITQ SCHEMES WHEN FISH PRICES ARE UNCERTAIN: AN EXPERIMENTAL APPROACH

Dr. Keisaku Higashida, keisaku@kwansei.ac.jp
Mr. Kenta Tanaka, tanaka59.tin@gmail.com
Dr. Shunsuke Managi, managi.s@gmail.com

Abstract

Employing an experimental approach, we examine whether the uncertainty on the fish/outputs price affects the choice of vessel sizes of fishers under an ITQ scheme. Our experiment consists of two parts. In the first part, subjects answer ten questions. The purpose is to extract the risk preference of each subject. The second part consists of two stages. Subjects choose a large- or a small-scale vessel (production method) in the first stage. They do not know the fish price with certainty at this point. After this stage is finished, the fish price is announced. Then, in the second stage, they transact their fishing quotas in the quota market. We conducted 8 sessions; 12 subjects participated in each session; and the second part in each session was composed of 10 periods/rounds. We find that the average trading price of quotas converges to the theoretical equilibrium price given the numbers of both types of vessels, although the average trading prices in the first few rounds are clearly higher than the theoretical ones. We also find that the number of large-scale vessels is smaller than that in the Nash equilibrium without any uncertainty on the fish price. Moreover, it is obtained that the higher the degree of risk-aversion of a subject, the more likely it is that s/he chooses a small-scale vessel.

Abstract # 379

Session # 21C Bioeconomic Modeling Part VI

ADVANCING FISHERY MANAGEMENT IN WEST AFRICA: DESIGN AND APPLICATION OF A SEAFOOD BIOECONOMIC ASSESSMENT MODEL

Mr. Shannon Davis, shannond@trgsystems.net
Dr. Gilbert Sylvia, gil.sylvia@oregonstate.edu

Abstract

Major fishery investment has recently been implemented in West Africa as part of the World Bank's West Africa Regional Fisheries Program. To support this effort the New Partnership for Africa's Development funded development of a Seafood Bio-Economic Assessment Model. The model was initially developed for Ghana, but will accommodate other West African nations. It is "user-friendly" and accessible by a wide range of stakeholders. The model incorporates all major fishery and seafood sectors including biological resources, fishing fleets, aquaculture, seafood processing, and import and export sectors, and tracks the interaction between fish resources and industry in response to changes in policy and government investment. The model calculates costs and benefits and return on investment for major changes in management, capital, technology and infrastructure. The model has been used to evaluate management and investments strategies for Ghanaian fisheries and results suggest that Ghana would increase discounted net economic benefits by \$350 million over a 30 year horizon if management restricted canoes to existing numbers, halved the semi-industrial fleet, and eliminated the industrial fleet. This increase in wealth is associated with a reduction of individuals participating in the fishery but an increase in individuals participating in seafood processing. Results suggest the need to incorporate regional impacts to account for the effects of investing wealth within the broader regional and national economy. Workshop results with West African fishery stakeholders demonstrate the value of the model as a heuristic aid in educating managers and industry on integrated fishery management.

Abstract # 380

Session # 22F: Trade

INTEGRATING MEGACITIES' SEAFOOD MARKET TRENDS IN THE ASSESSMENT OF FISHERIES ECOSYSTEMS: WHAT CAN PRICE TRENDS OF SASHIMI SPECIES TELL US ABOUT MARINE FISHERIES OF SOUTHEASTERN BRAZIL?

Dr. Maria Gasalla, mgasalla@usp.br
Ms. Ruth Pincinato, ruth.pincinato@usp.br
Ms. Amanda Rodrigues, aricci@usp.br

Abstract

Megacities impact distant fisheries behavior by modulating seafood demand and consumption. In the last decades, Japanese food interest has grown considerably in South American cities, and the demand for raw fish foods – sashimi - categories seems to be still increasing. In Southeastern Brazil, megacities such as São Paulo show an increasing rate of consumption and demand for marine species that fit to sashimi. Integrating economic-ecological analysis of seafood trends has proved to be useful for a better understanding and assessment of fisheries in an ecosystem context. Here, we analyze time-series of market's categories that have an important role in the food chain for sashimi in São Paulo in order to clarify on their impact on regional fisheries. The behavior of seafood price and quantities of the city's wholesale market - which has been a significant supplier for Japanese restaurants - were assessed in terms of sashimi categories including tuna and cephalopods species. Data were confronted to fisheries landings trends and fishing fleet's costs of fishing. Key historical economic data explaining simple relationships along the production chain for these categories seem to reflect both pressure and availability of selected fish stocks. Market and landing behavior showed similar trends while opposite trends of market price and quantities for some categories raise concern on the ways outlying of sustainable patterns. Global markets may have an additional impact on present and future fishing pressure.

Abstract # 382

Session # 23A Africa Policy Day Part IV

ASSESSING THE POVERTY-ILLEGAL FISHING NEXUS IN THE LAKE VICTORIA FISHERIES

Ms. Adolphine Kateka, PhD, a.kateka@yahoo.co.uk
Dr. Adolf F. Mkenda, PhD, amkenda@gmail.com
Dr. Razack Lokina, PhD, razack_lokina@yahoo.co.uk

Abstract

Is there a direct link between poverty and illegal fishing in Lake Victoria? The paper argues that presenting poverty as the main driver of illegal fishing in Lake Victoria masks core underlying causes of illegal fishing. Illegal fishing practice is a significant ecological trend in Lake Victoria. It is not only threatening the long-term sustainability of the fishery but also of the fishing communities dependent on it. Illegal fishing is directly impacting the productivity of the lake through destruction of key interdependent components of the lake's ecosystem and the habitats that fish depend on for breeding. It is estimated to lead to millions of dollars' worth of lost annual economic benefits, and creates significant environmental damage. Evidences show that more than 60% of fish caught through illegal fishing are juveniles. Thus, the future capability of Lake Victoria to remain productive, hinges on the understanding of dynamics of illegal fishing that include socio-economic, institutional, and global policies, among others. First, the paper discusses the key theories that underpin the poverty-illegal fishing nexus. Second, using a meta-analytical approach the paper analyzes case studies of illegal fishing in Lake Victoria to reveal patterns and key variables. Third, these variables are tested for significance level in order to differentiate between underlying causes and proximate factors. The paper shows that poverty is a proximate cause and not the underlying factor behind illegal fishing in Lake Victoria. These findings are crucial for local and transboundary fisheries management policy interventions.

Abstract # 384

Session # 21D Measurement and Indicators for Improved Understanding and Management Part I

CURRENT AND POTENTIAL FISH ASSET VALUES WORLDWIDE

Dr. Rashid Sumaila, r.sumaila@fisheries.ubc.ca

Abstract

The World Bank has constructed wealth accounts for nearly 15 years, most recently in The Changing Wealth of Nations. The accounts include produced capital, natural capital and human and social capital. Natural capital includes agricultural land, forests, subsoil assets and protected areas, but omit a number of critical natural capital stocks, one of which is fisheries. This omission reflects the lack of readily available data for fisheries accounts at the country level for most, if not all countries in the world. In general, fisheries and aquatic resources are poorly represented in most national environmental accounting efforts. In a recent review of natural capital accounting in The Changing Wealth of Nations, only a few countries, i.e., New Zealand, Iceland and Norway, construct monetary asset accounts for fisheries on a regular basis. We attempt to fill this gap in this contribution.

Abstract # 385

Session # 01A Markets and Value Chains for Small Aquaculture Enterprises

VALUE CHAIN OF SNAKEHEAD FISH IN THE LOWER MEKONG BASIN OF CAMBODIA AND VIETNAM

Dr. Robert Pomeroy, robert.pomeroy@uconn.edu

Dr. Sinh Le Xuan, lxsinh@ctu.edu.vn

Abstract

The rapid development of snakehead aquaculture in Vietnam and Cambodia has led to economically unstable conditions. The farming systems of snakeheads have been spontaneous and mainly uses live feed that cause environmental pollution and the depletion of natural aquatic resources in freshwater. The price of commercial snakeheads is not stable because they are strongly affected by the seasonal supply of wild captured fish as well as seasonality in snakehead farming. They are primarily used for domestic consumption. There has been limited research conducted on snakeheads, especially the marketing of this group of fish species. So far, market channels as well as value chains of giant snakeheads and common snakeheads have not been studied. The current study reports on a value chain analysis covering all of the aspects of the snakehead fish industry in the Lower Mekong Basin. The results of this study are useful for management and development of the snakehead industry, as well as contributing to food security, job creation and marketing of fish products in the Lower Mekong Basin region of Cambodia and Vietnam.

Abstract # 386

Session # 02C Managing Development of Fisheries and Aquaculture sectors Part II

LA PÊCHE MARITIME AU GABON: DÉCLIN OU RESTRUCTURATION DE L'ACTIVITÉ? (SEA FISHING IN GABON: DECLINE OR BUSINESS RESTRUCTURING?)

Mr. Edou Mesmin, ebolofr@yahoo.fr

Abstract

The fishing industry business in Gabon is characterized by a structural inefficiency and the conspicuous presence of foreigners. Despite its enormous potential, this economic sector is still developing very slowly because of ineffective strategies to sustain the activity. After a thorough examination of the situation, this paper is a contribution to the analysis of the strengths of the fishing sector as well as the constraints that compromise its growth. Finally, it suggests axes of intervention likely to improve business performance in this sector. It goes without saying that such an approach requires important legal and structural reforms.

Abstract # 391

Session # 04 Posters and Game Demonstration Session and Reception

ECONOMIC DYNAMICS OF REEF FISHERIES OFF VERACRUZ: PRICE TIME SERIES ANALYSIS.

Dr. Patricia Arceo, patarceo@yahoo.com

Abstract

Traditionally, fishing in Veracruz has been small-scale and concentrated around the reef system. To enable us to observe inter and intra-annual changes of gross value of fishing grounds within the Veracruz reef system we mapped the value of different fishing areas by species, and by types of fishing gear used. The analysis is made for low and high demand seasons within each year for a twelve-year period. We performed a time series analysis of fish dock prices and used a Generalized Linear Model (GLM) to obtain price determinants. Results showed a strong temporality of demand, a decrease in reef fishing, and an increase in migratory species catches. We discuss fishery evolution and how changing demands and management regulations affect marine ecology in this particular area.

Abstract # 392

Session # 21A Africa Policy Day Part II

CERTIFICATION AND ECO-LABELLING: OPPORTUNITIES FOR AFRICAN FISHERIES

Mr. Martin Purves, MSc, martin.purves@msc.org
Dr. Oluyemisi Oloruntuyi, PhD, oluyemisi.oloruntuyi@msc.org

Abstract

Certification and eco-labelling programmes are widely recognised as a useful tool to bring about more effective management in fisheries. Evidence is also growing that real environmental benefits can result from these market based initiatives. Market benefits for certified fisheries range from better market access, price premiums for some products and access to niche markets. In some cases political and social benefits have also been reported for fishing communities after their fisheries have been certified. Compared to other parts of the world fewer fisheries in Africa have however been involved in and benefitted from certification programmes. The cost of certification, difficulty in meeting standards, lack of effective management in many fisheries and data poor environments have been given as potential barriers to access certification opportunities. There is however growing evidence that fisheries in developing countries, including small-scale fisheries, are benefitting from certification programmes such as that of the Marine Stewardship Council (MSC), the most widely recognised of these programmes for capture fisheries. This paper will explore some of the success stories from Developing World fisheries engaging in the MSC programme. It will review the status of uptake of certification in African fisheries and look at growing market opportunities that eco-labelling potentially offers for these fisheries.

Abstract # 394

Session # 01A Markets and Value Chains for Small Aquaculture Enterprises

IMPROVING THE SUPPLY CHAIN OF TILAPIA INDUSTRY OF THE PHILIPPINES

Mr. Wilfred Jamandre, wjamandre@yahoo.com
Dr. Upton Hatch, Ph.D., luhatc@gmail.com
Dr. Remedios Bolivar, Ph.D., rbolivar@mozcom.com
Dr. Russell Borski, Ph.D., russell_borski@ncsu.edu

Abstract

This study evaluated the Philippine tilapia supply chain including the roles of key actors, logistical issues, external influences, and transaction flows among market levels. It identified improvement areas and provided recommendations for the industry. Key players include hatcheries, nurseries, commercial/small-scale farmers, consumers and institutional buyers. Pampanga, Batangas and Laguna are major tilapia sources while Metro Manila, Angeles and Baguio are the major demand centers. Dagupan is the major tilapia transshipment point for Northern Luzon. Many farmers employ a "circuitous" production technique to meet markets' preferences. Direct buying and selling at central markets are the common operations of the tilapia industry. Consumers generally prefer whole live fish with size from 250 - 300 grams per fish. The requirements of institutional buyers are more varied. Filleted tilapia requires about 2-3 pieces per kg. High costs of logistics and transactions; lack of cold storage and transport vehicles; and meeting delivery requirements are the major concerns of nurseries, farmers and traders. Irregular supply of desired quality and volume of tilapia, limited capital for expansion, and predatory market practices are the main concerns of processors. Some recommendations to address the issues and concerns, are: encourage the establishment of more nurseries while intensifying technology transfer to farmers; conduct promotions for niche opportunities of tilapia; motivate small farmers to link with supply chains through an incentive mix; institutionalize an accreditation program for feed manufacturers, hatcheries, processors, etc.; and provide capital windows to improve facilities and reduce logistics and transaction costs in the entire supply chain.

Abstract # 395

Session # 01A Markets and Value Chains for Small Aquaculture Enterprises

PROSPECTS FOR IMPROVING VALUE CHAIN OF AQUACULTURE FISH (TILAPIA AND AFRICAN CATFISH) IN CENTRAL UGANDA

Dr. Theodora Hyuha, PhD, thyuha@yahoo.com
Ms. Gertrude Atukunda, gert_kunda@yahoo.com

Abstract

The paper examines the value chain of cultured fish (Tilapia and African catfish) in central Uganda with an objective of providing information on the topic. Aquaculture has been recognized as a sector to contribute to food security and poverty alleviation in the country. However, there is dearth of information on this sector. Data collected through a structured questionnaire in 2010 was designed to solicit information along the value chain from farmers to the consumer including all the key players. In addition to structured questionnaires, case studies were also undertaken. The results show that the cultured fish value chain is short. Much of the fish grown by farmers is sold at the pond site due to limited volumes produced for sale, the demand for fish is quite high and at the same time the market for large volumes of the product is underdeveloped. Little value addition is undertaken due to limited knowledge. However, two case studies of private sector initiatives on marketing farmed fish undertaken by Kajjansi Aquaculture Research and Development Centre suggest that trading in cultured fish is profitable. Smoking fish, particularly catfish in attempt to improve its taste and hence acceptability by consumers is beneficial. A survey of traders and processors dealing in captured fish cited lack of demand for cultured fish products because of the size and reliability of supply as the major constraints to carrying the products in their stalls. There is need to develop production and value chain capacities to respond to the existing high demand.

Abstract # 396

Session # 22F: Trade

GLOBALG.A.P. AQUACULTURE CERTIFICATION: IMPROVING SUSTAINABILITY FOR THE ENTIRE PRODUCTION CHAIN

Valeska Weymann, weymann@globalgap.org

Abstract

GLOBALG.A.P. * Is a not-for-profit private sector body that sets voluntary standards for the certification of production processes of aquaculture and agricultural products around the globe. * Standards are designed to assure consumers about how food is produced on the farm. * Serves as a practical manual for Good Agricultural Practice (G.A.P.) anywhere in the world. * Firmly believes in local multi-stakeholder support and adaptation: "Think Global, Act Local" principle. This goal is increasingly achieved worldwide with the establishment of National Technical Working Groups. Their role is to develop national interpretation guidelines to address identified specific local adaptation and implementation challenges. * Aquaculture Standard v4.0-1 is possible since March 2011. This new version was field tested for both tropical and cold water species in all production systems allowing certification of any aquaculture farmed origin product (hatchery based, with the consideration of passive collection of seedlings in the planktonic phase). This innovative approach is aimed to reduce complexity and cost of on-farm certification system. * Recently launched Compound Feed Manufacturing Standard V.2.1 (Dec2011) includes approaches towards sustainable sourcing of fishmeal and fish oil. * Chain of Custody Standard aims to maintain product certified status when product changes ownership through the supply chain. * Group certification is also possible through the GLOBALG.A.P. Option 2, where small holders can adhere to certification system jointly with the implementation of a Quality Management System.

Abstract # 400

Session # 21F Environment, Natural Disasters, and Recovery Part I

GREEN GROWTH AND FISHERIES GOVERNANCE – A FRAMEWORK FOR ANALYSIS

Dr. Gunnar Haraldsson, gunnar.haraldsson@oecd.org

Abstract

Recently the greening of fisheries has become a central theme among policymakers. The discussion on how improved governance structures and policies can help in achieving green growth goals is yet in its infancy. One problem is that there is a lack of a general framework in which to address those issues. In order to analyse how different governance structures and policies affect green growth in fisheries it is necessary to have a framework that enables tractable analysis that yields concrete policy advice. After discussing the main governance issues related to green growth, the paper proposes a framework for analysis based on dividing the main issues in two categories, that is growth policies and green policies. Such a framework makes it possible to highlight coherences and incoherencies in governance systems with regards to green growth in fisheries. It also provides valuable lessons for policymakers on how fisheries governance can be adapted to get fisheries on a green growth path.

Abstract # 401

Session # 21A Africa Policy Day Part II

RECENT DEVELOPMENT WITH REGARD TO TRADE OF FISH AND FISHERY PRODUCTS FROM SMALL-SCALE FISHERIES IN AFRICA

Frimpong Clifford Edmund, frimcliff@yahoo.co.uk
Margaret Ottah Atikpo, magatik@yahoo.co.uk
Mr. Christopher Hoareau, vetfiqu@seychelles.net
Anass Karzazi, anasskarzazi@gmail.com
Mr. Yahya Mgawe, Msc, ymgawe@yahoo.com

Abstract

The trade of fish and fish products in Africa is expanding significantly as a function of increased demand for fish in the region and across the world. Several factors which could be attributed to the rising trend include increasing fish consumption due to population growth, health awareness, dwindling production from major traditional fishing nations, trade liberalization policies, harmonization of trade barriers and improved global information flow system. Such factors have indeed created a favorable business environment for increased trade. Africa has a competitive advantage in fisheries business due to the fact that the region produces over 24 percent of global fish landing from inland capture fishery; it has the remaining marine areas having a relatively higher estimated potential yield than production with increase in aquaculture activities. More importantly, the cost of production could be relatively cheaper in Africa compared to a number of other places. On the other hand, marketing of fish beyond national boundaries to meet product specifications and trading requirements of target markets has proved to be a real challenge. Major issues are post-harvest losses, technological innovation, value-addition, distribution, promotion, pricing, non-tariff barriers and entrepreneurship. These are the areas that need to be addressed to enable operators along the production chain secure greater socio-economic benefits. The paper provides a critical analysis of the business environment in Africa on small-scale fish trade, potential technical intervention and strategic marketing techniques that could improve the situation in the context of international fish trade, CCFR and MDGs.

Abstract # 402

Session # 32E Environment, Natural Disasters, and Recovery Part II

CRAYFISH MANAGEMENT IN THE LJUNGAN RIVER - MANAGING WITH SHOCKS

Dr. Jesper Stage, Jesper.Stage@miun.se

Abstract

The noble crayfish fishery in the Ljungan river system in Sweden has been subjected to two major shocks; hydropower development in the 1970s, which reduced water flow throughout the system with attendant effects on the crayfish stocks, and an outbreak of crayfish plague in the 1990s which wiped out the noble crayfish in most of the river system. Differing ownership structures for the fishing rights in different parts of the river system have led to different management systems, ranging from sole private ownership through management by fishermen's associations through to effective open access fishing. We study how these different systems of management have dealt with the shocks affecting the crayfish, and how this has affected stock recovery in different parts of the river system.

Abstract # 403

Session # 22A Africa Policy Day Part III

MANAGEMENT AND VALUE CHAIN OF NILE TILAPIA CULTURED IN PONDS OF SMALL-SCALE FARMERS IN MOROGORO REGION, TANZANIA

Dr. Sebastian Chenyambuga, chenyasw@yahoo.com

Dr. Nazael Madalla, nmadalla@googlemail.com

Dr. Berno Mnembuka, bmnembuka@yahoo.com

Abstract

A study was carried out to assess production performance and value chain of Nile tilapia grown in ponds of smallholder farmers in Morogoro region, Tanzania. Information was collected through individual interviews of 30 fish farmers. The main reasons for culturing fish were provision of animal protein food for home consumption and generation of income (80.0%). Fish farming contributed 10.6% of household annual income and was ranked second to crop production (50%). The majority of the farmers were fertilizing their ponds with chicken manure (30.0%) and cattle manure (23.3%). Most farmers (73.3%) cultured pure stand of Nile tilapia and only few (26.7%) practiced polyculture of Nile tilapia and African catfish. All farmers depended on natural food as a source of feed for their fish. Moreover, the farmers were feeding maize bran (96.7%), vegetables (66.7%), and kitchen leftovers (13.3%). Men were responsible for purchasing and stocking fingerlings (60.0%), feeding (40.0%), pond maintenance (53.3%), harvesting (60.0%) and selling (43.3%). Women were mainly involved in fish processing (76.7%). The average period from stocking to harvesting was 5.75 ± 0.18 months for Nile tilapia and the mean yield was 6,946.2 kg/ha per year. About 22.2% of the harvested fish were consumed at home and the remaining (77.8%) were sold. Most farmers sold fresh fish directly to neighbours (70.0%) and consumers in the local market within the village (30.0%). A study was carried

Abstract # 404

Session # 21F Environment, Natural Disasters, and Recovery Part I

SPECIES COMPOSITION, CATCH RATES AND ECONOMIC CONSEQUENCES OF SEA TURTLE-FISHERY INTERACTIONS IN ARTISANAL FISHERIES IN NIGERIA

Dr. Oludare Adeogun, dare_adeogun@yahoo.com

Abstract

The study focuses on coastal fisheries, particularly examining sea turtle-fishery interactions and determining the species composition by gear types, catches rates, socioeconomic profiles, perception of local fishers and economic consequences to sea turtle issues in Nigeria. The geographical area was chosen due to historical significance of the coastal fisheries resources to fishing and sea turtle nesting. Five out of the seven turtle species can be found in Nigeria, namely, olive ridley (*Lepidochelys olivacea*), leatherback (*Dermochelys coriacea*), green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*) and loggerhead (*Caretta caretta*). The olive ridley is the most extensively distributed in Nigeria. Study shows that incidental captures of sea turtles in fishing gear contribute significantly to the mortality of the animals. Major threat that affect the viability of the species include egg and turtle harvesting, illegal hunting in the absence of low fish catch, loss of nesting and exposure to coastal gill nets. Perception of locals to sea turtles varied from communities to communities, however turtle meat is considered tasty but is still consumed from time to time when a turtle is caught in the net. This study reflects the extent of the artisanal turtle fishery in Nigeria and may be among the greatest current threats to non-target turtles. Hence, there is need for by catch awareness campaign of local fishers and other citizens are working to eliminate bycatch globally.

Abstract # 405

Session # 02A Looking at Fish Supply Chains with a Gender Lens

WOMEN IN FISH VALUE CHAIN IN NIGERIA.

Ms. Abiodun Oritsejeme Cheke, MSc. Agricultural Economics, abbeycheke@yahoo.com

Abstract

Women in Nigeria play a key and vital role in the Fisheries value chain in Nigeria especially when we look at their involvement in the marine, artisanal and Aquaculture Subsector of the Fisheries Sector. The women who constitute the greater percentage of the fish mongers processors represent the first segment of the fish market chain; buying fresh fish directly from the fishermen. The fish is either sold fresh by the women, or processed by smoking. In the aquaculture sector the women also play key roles in buying and processing. The women in the fisheries value chain are often grouped into Cooperatives though we have a very, very few that go solo. However, the women's activities in the value chain are characterized by low capital and technology input. Women's work in fish value chain has not been optimized linked to value chain finance in Nigeria thus they are limited to various financial services being put up by the commercial banks for the Agricultural Sector in the Country. This lack of Corporate finance has in essence debar the women from upgrading their fisheries activities and businesses in the various steps along the fisheries value chain and they have thus not been able to build sustainable and viable fish trade especially when it comes to the export of their fish and other fishery products.

Abstract # 406

Session # 22B Karl Rich and Bernt Aarset

COSTS AND BENEFITS OF INTERVENTIONS IN AQUATIC ANIMAL DISEASE MANAGEMENT: A CASE STUDY

Dr. Mohan Chadag, mohan@enaca.org

Abstract

Over 90% of global aquaculture production comes from the Asia Pacific region. International trade in live aquatic animals and the intensification of aquaculture practices over the past several years have led to emergence and spread of several aquatic animal diseases in the region. At the same time, while the direct and indirect socio-economic consequences of these disease outbreaks is enormous, accurate measures of the economic impacts remains a gap in our knowledge. For instance, a 1991 study by ADB/NACA estimated that 15 developing Asian countries lost about USD 1.36 billion due to aquatic animal diseases. At the global level, the combined estimated losses in production value due to shrimp diseases from eleven countries in Asia and Latin America from 1987 to 1994 was estimated at USD 3.01 billion. However, the losses here typically report direct production losses associated with diseases, and fail to include estimates of the indirect impact on trade and employment, treatment costs, and environmental impact. This presentation will highlight a case study of shrimp disease from India to highlight the costs and benefits of interventions in the management of aquatic animal diseases, based on the experiences of NACA, an intergovernmental organization of 18 member governments in Asia Pacific. Experiences from India from the 10 year long MPEDA/NACA technical cooperation study show that implementation of better management practices (BMPs) through cluster management (group) approach reduces disease related losses and improves economic viability of the farming system and empowers small farmers.

Abstract # 408

Session # 03B Aquaculture/Fisheries Interactions

BLUEFIN TUNA FISHERIES AND CAPTURE BASED CULTURE : REVIEW AND PROSPECTS OVER THE NEXT THIRTY YEARS

Mr. Seamus McElroy, mcelroy.seamus@gmail.com

Abstract

Bluefin tuna capture today is focused on large fish caught by longline and smaller fish caught by purse seine for on-growing for between 3 months and 3 years. There has recently been the emergence of full life cycle farming in Japan with South Korea (Pacific bluefin tuna) and Australia (southern bluefin tuna) and France, Italy, Spain and Croatia (Atlantic bluefin tuna) amongst others working towards this goal. The paper reviews the history of the fisheries for the three species (four stocks) and their prospects for sustainability under the new fisheries regime that came in during the mid- to late-2000s. A look to the future of the market for toro sashimi tuna, the main output from longline fisheries and capture based culture, with the projected increase in supplies from the wild and capture based culture, is presented. The fisheries management requirements that will allow the bluefin stocks to recover are also presented.

Abstract # 409

Session # 01F Understanding and Modeling Fishing/Sector Behavior Part I

MODELING FISHING DECISIONS WITH SPATIALLY EXPLICIT AGENT-BASED MODELS

Steven Saul, ssaul@rsmas.miami.edu
Dr. David Die, PhD, ddie@rsmas.miami.edu

Abstract

A fisher's decision making process is governed by some key questions that need to be answered for each fishing trip: whether or not to commence a fishing trip, where to go fishing and when to return to port. We studied these decisions on the basis of the results of questionnaire surveys administered to vessel captains and of logbook data for the Florida West Coast commercial reef fish fisheries. Binomial conditional logit models were fitted to the decisions of when to start and end a fishing trip and a multinomial mixed model for deciding fishing location. Decisions of fishermen are influenced by the fishing regulations, price of main target species, wind speed, price of fuel, the day of the week, and the previous year's pattern of fishing. Coefficients for these factors were used in a spatially explicit agent-based model of the multispecies reef fishery to evaluate management strategies, including the use of fishery dependent data for bio-economic assessments. Current research aims to extend this model to other species and evaluate the bio-economic impact of past and proposed spatial fishing closures in the Gulf of Mexico. Among the impacts to be evaluated are those resulting from fishing closures instituted in the aftermath of the Deep Water Horizon oil spill, and proposed closures of some areas of the Florida west-coast shelf to protect bio-diversity.

Abstract # 410

Session # 23D: Measurement and Indicators for Improved Understanding and Management Part II

FAO FISH PRICE INDEX

Dr. Audun Lem, PhD, Audun.Lem@fao.org
Dr. Sigbjörn Tveteraas, stveteras@gmail.com
Dr. Frank Asche, Frank.Asche@uis.no
Ms. Kristin Lien, kristin.lien@seafood.no
Ms. Stefania Vannuccini, stefania.vannuccini@fao.org

Abstract

The Food and Agriculture Organization (FAO) of the United Nations has for years compiled prices and indexes for all major food categories, except fisheries. This gap has now been filled, and a fish price index has been developed. The FAO fish price index (FPI) relies on trade statistics because seafood is heavily traded internationally, exposing non-traded seafood to price competition from imports and exports. Easily updated trade data can thus proxy for domestic seafood prices that are difficult to observe in many regions and costly to update with global coverage. Calculations of the extent of price competition in different countries support the plausibility of reliance on trade data. Overall, the FPI shows less volatility and fewer price spikes than other food price indices including oils, cereals, and dairy. The FPI generally reflects seafood scarcity, but it can also be separated into indices by production technology, fish species, or region. Splitting FPI into capture fisheries and aquaculture suggests increased scarcity of capture fishery resources in recent years, but also growth in aquaculture that is keeping pace with demand.

Abstract # 411

Session # 13A Markets: Value Chains Part III

ADDING VALUE TO SOMALILAND'S MARINE CAPTURE FISHERIES: RESULTS OF A 2010 STUDY

Mr. Seamus McElroy, mcelroy.seamus@gmail.com

Abstract

A study of Somaliland's marine capture fisheries and markets was conducted in October 2010. The paper presents the results of the author's assessment of the state of its marine capture fisheries and fresh fish markets and the prospects for adding value along the supply chain resulting from a 2 week field study to Somaliland in October 2010.

Abstract # 412

Session # 02C Managing Development of Fisheries and Aquaculture sectors Part II

THE POTENTIAL FOR SMALL-SCALE SHELLFISH AQUACULTURE IN COASTAL EAST AFRICA

Dr. Hauke Kite-Powell, hauke@whoi.edu

Abstract

The western Indian Ocean coastal regions are poised to develop the great potential, largely untapped to date, for increased seafood production from marine aquaculture. The scales at which aquaculture development in the region proceeds will determine how the benefits from this economic activity are distributed. Finfish and shellfish farming can be pursued at a variety of scales. Some forms of aquaculture, including tilapia farming in ponds, can be conducted effectively at the small (family) scale, while others (shrimp farming, ocean cage farming) are most efficient at larger (corporate) scales. Marine shellfish farming in particular can be very efficient at the family scale, with adequate infrastructure support. In coastal villages in Tanzania and other parts of East Africa, local species of clams and oysters can be farmed by individuals or small cooperatives in ways that are ecologically and economically sound. Shellfish farming can generate revenues of several hundred dollars/year/person at this scale, and can provide economic opportunity for women as well as men. Significant markets for additional shellfish product exist in local communities, in tourist restaurants, and in international export markets. Infrastructure requirements to support such farming include hatcheries and training in shellfish growout and business skills. We illustrate this concept with a case study from Zanzibar, Tanzania.

Abstract # 14

Session # 04 Posters and Game Demonstration Session and Reception

COOPERATIVES AS TOOL FOR FISHERIES DEVELOPMENT: THE CASE OF ERIWE FISH FARM VILLAGE, SOUTH WEST, NIGERIA

Dr. Yemi Akegbejo-Samsons, samsons56@yahoo.co.uk

Mr. Deji Adeoye, adeoyedeji@hotmail.com

Abstract

The production approaches of aquaculture and fisheries development has taken many dimensions over the decade in Nigeria. This paper presents the effectiveness of cooperative/extension methods and scientific innovations in a typical Fish farm village in South west Nigeria. The Eriwe Fish Farm Village was established more than 7 years ago and consists of more than 400 concrete tanks of some 8m x 2m x 1.5m each (16 m²), typically built in blocks of two or three with contiguous walls. The Eriwe Fish farm enclave is an interesting case of organizational innovation. This paper presents the success story of this unique enterprise. There are about 175 cooperative fish farmers in this scheme now with some having several fish production units. The fish farm village is managed by a supervisor and 2-3 technicians who keep individual records for each tank. This approach has been economically viable for the following reasons: (a) there is an excellent market for the catfish produced; (b) construction costs are very low compared to other private farms; (c) quality catfish fingerlings are readily available and (d) quality fish feeds are relatively cheap and readily available. This project has proved that the role of government in aquaculture innovation can be enhanced if non-governmental organizations are delegated to create learning spaces and entrepreneurial opportunities for active Co-operative members. The paper concludes with a cost benefit review of the farm village and suggests that many poor African countries can start a fish farm village of this...

Abstract # 26

Session # 04 Posters and Game Demonstration Session and Reception

AFRICAN CATFISH FARMERS' PERCEPTION ON CLIMATE CHANGE AND CONTRIBUTION OF CATFISH PRODUCTION TO HOUSEHOLD INCOME IN LAGOS STATE, NIGERIA.

Mrs. Adeleke Lydia, mosunmolalydia@yahoo.com

T. T. Amos

O.A. Fagbenro

Abstract

The perception of catfish farmers on climate change and its effect on the contribution of catfish production to household income in Lagos State, Nigeria were investigated using primary and secondary data as well as structured questionnaire. A multistage random sampling technique was used to select 250 African catfish farmers. Descriptive statistics, budgeting and production function analysis, Likert scale were used to analyse the data collected. About 67.0% of the total respondents belong to the active age group; between 31-50 years while 73.3% of the respondents were male while the female were 26.7%. Majority of the African catfish farmers (87.5%) were aware of climate change, over 50% of the respondents noted that the general effect of climate change in their area is fluctuation in rainfall pattern while 16.5% noted that the general effect of climate change is high temperature. Catfish farming as an enterprise is profitable with an average profit of 205,878.00 Nigeria Naira (US \$1,372.50) per producer in one cropping cycle (8-9) months this contributed about 55% to household income. The major problem confronting catfish farmers is lack of capital. It is therefore recommended that, government should support and encourage encourage agricultural banks to provide loans to catfish farming entrepreneurs at low interest rates.

Abstract # 39

Session # 04 Posters and Game Demonstration Session and Reception

ASSESSMENT OF ARTISANAL FISHERIES IN ONDO STATE, NIGERIA

Dr. Afolabi J.A, PhD, afolabija@yahoo.com

Abstract

This study carried out an assessment of artisanal fisheries in Ondo State, Nigeria. It specifically examined the socio-economic characteristics of the fisherfolks in the study area, determined profitability and examined the resource-use efficiency of artisanal fishing in the study area. A multi-stage sampling technique was used to select 120 fisherfolks in the study area and structured questionnaire administered on them. Data collected were analysed using descriptive statistics such as frequency and percentages to analyse the socio-economic characteristics of the respondents while budgetary technique was used to determine the profitability of artisanal fishing. Production function using Ordinary Least Square (OLS) was used to examine resource-use efficiency in artisanal fishing in the study area. The result showed that 73.33% of the respondents were males while 26.67% were females. The budgetary analysis revealed that an average fisherfolk incurred an average total cost of N15971.42 per month but earned an average total revenue of N24033.83 over the same period indicating a net revenue of N8062.41 suggesting that artisanal fishing is a profitable venture in study area. The result of the Production function analysis showed that the included explanatory variables explained about 75.3% in variation of the revenue of the respondents. The Return to Scale (RTS) of 0.95 obtained in this study indicated that artisanal fishing fell in stage II of the production surface.

Abstract # 45

Session # 04 Posters and Game Demonstration Session and Reception

DO OPEN ACCESS INSHORE FISHERIES CREATE RENT? THE CASE OF ANCHOVY FISHERIES, VIETNAM

Ms. Thuy Pham Thi Thanh, thanhthuy41dn@yahoo.com

Abstract

From the view point of several policy makers, open access inshore fishery is bad and needed to build up a new management plan. This study proves that the vessel owners' surplus still exist even under open access equilibrium, by looking at the level of rent being generated in the fishery. The anchovy fisheries in Khanh Hoa province, Vietnam are used as a study case with time series data collected from 220 fishing households in 2005, 2008 and 2011. The findings demonstrate that if we take account the heterogeneous vessels into the consideration, some of fishermen will benefit intra-marginal rent. In addition, open access fisheries also create considerably employment and food for poor people like fishermen.

Abstract # 47**Session # 04** Posters and Game Demonstration Session and Reception**NITROFURAN IN PRAWNS: A CONTROVERSIAL TRADE RELATION BETWEEN BANGLADESH AND THE EU**

Dr. S. M. Nazmul Alam, PhD, smnazmul@yahoo.com

Abstract

Export economy has been interrupted in shrimp/prawn, the second largest earning source of Bangladesh due to detection of Nitrofurantoin in exported prawns to the EU countries. Around 100 consignments of frozen prawn (*Macrobrachium rosenbergii*) were rejected at the EU borders between 2005 and 2009. Bangladesh exported shrimp and fish products worth US\$ 454.53 million in FY 2008-09 against US\$ 534.07 million in FY 2007-08. Shipments were dropped by 49.63% in FY 2009-10 compared to FY 2008-09. Price of frozen products fell down significantly during this period with livelihoods of peoples depending on shrimp/prawn industry were in jeopardy. Bangladesh imposed a voluntary ban on the export of freshwater prawns to the EU from May 2009 to January 2010 in order to detect the root cause of nitrofurantoin in prawns and facilitate trade relationship with EU. Two scientific studies proved that nitrofurantoin is naturally found in crustaceans and revealed that nitrofurantoin and other antibiotics are detected in the shell and head of shrimp while the EU authority tested the shrimps including the shell and meat. The new scientific insights could lead to a better image of Bangladeshi shrimps after all of the negative notion it had received due to the Rapid Alert System of the Community mainly based on a faulty protocol followed by a Brussels lab. This article provides how Bangladesh upholds its image breaking down the negative notion of presence of nitrofurantoin in prawns.

Abstract # 50**Session # 04** Posters and Game Demonstration Session and Reception**EFFECTS OF CLIMATE CHANGE AND SEA LEVEL RISE ON RURAL LIVELIHOODS: A CASE STUDY IN BEN TRE PROVINCE, VIETNAM**

Ms. Trang Le Thi Huyen, master, mattahuyentrang@yahoo.com.vn

Dr. Kim Anh Nguyen, sonanhcc@gmail.com

Mr. Chuong Bui Thien, master, thienchuongbui@yahoo.com

Dr. Curtis Jolly, cjolly@auburn.edu

Abstract

Climate change and sea level rise are one of the most challenging issues facing humanity today. As located in the lowest part of Mekong Delta exposed to the East sea, Ben Tre province is forecasted to be affected immensely from sea level rise which results in permanent land loss, salt water intrusion and coastal erosion. Furthermore, the unusual typhoon Linda in 2006 causing extreme damages was a sign indicating Ben Tre is no longer a typhoon-free land. Hence it is important to investigate impacts from climate changes and rising sea level, farmers' awareness and adaptations to mitigate damages. Three coastal districts Binh Dai, Ba Tri and Thanh Phu are believed to be affected worst. Salt water has led to productivity reduction in agriculture and shrimp farming, and shortage of freshwater. Typhoon Linda resulted in thousands of collapsed or unroofed houses. Loss of buildings, including residential houses, bridges, and roads due to sea level rise is expected to be significant. Farmers has taken these steps to mitigate the impacts from climate change: (i) Changing the crop schedule or reducing cropping; (ii) Closing holes in the walls near the roofs for ventilation; (iii) Employing containers to reserve rain water in rainy seasons; and (iv) Building underground shelters to hide from typhoons anticipated in the future. The provincial government has planned the following: (i) building a dam to prevent salt water from the sea; (ii) upgrading existing sea walls; and (iii) constructing a freshwater supplying factory.

Abstract # 57**Session # 04** Posters and Game Demonstration Session and Reception**ARTIFICIAL REEFS, ZONING, AND THE FUTURE OF FISHERIES MANAGEMENT ON THE EAST COAST OF PENINSULAR MALAYSIA**

Dr. Gazi Md Nurul Islam, gazinurul236@gmail.com
Dr. Tai Shzee Yew, sytaikoh@gmail.com
Mr. Kusairi Mohd Noh, kusairimn@gmail.com
Ms. Aswani Farhana Mohd Noh, aswani85@gmail.com

Abstract

Artificial Reefs, Zoning, and the Future of Fisheries Management on the East Coast of Peninsular Malaysia Gazi Md. Nurul Islam , Tai Shzee Yew, Kusairi Mohd Noh, Aswani Farhana Mohd Noh Institute of Agricultural and Food Policy Studies, Putra Infoport, Universiti Putra Malaysia, Serdang 43400 Selangor Malaysia. Abstract Conservation based fisheries management have limited success in preventing the problems of overfishing and degradation of marine environment. In Malaysia, artificial reefs have been deployed in the marine waters to enhance fish stocks and to secure the livelihoods of the artisanal fishers whose fishing methods are relatively less efficient than those of the large-scale commercial fisheries such as trawls. This paper examines the current status of reef based fisheries management in the east coast of Peninsular Malaysia which has been largely centrally controlled. Our findings indicate that existing fisheries rules are not supporting to a sustainable use of fisheries in the marine waters. Artisanal fishers have established exclusive rights to fish in the common property resources (CPR). They have more economic incentives to fish while benefits from conservation are narrowly conceived. The fisheries management policy should ensure economic concerns, environmental awareness, protection of marine ecosystem, and habitat conservation for sustainable marine fisheries in Malaysia.

Abstract # 59**Session # 04** Posters and Game Demonstration Session and Reception**OPTIMAL EXPLOITATION AND SUSTAINABLE MANAGEMENT OF IVORIAN HALIEUTIC RESOURCES: AN ANALYSIS OF FISHING EFFORT .**

Mr. Sangare Moussa, sangaremou@yahoo.fr

Abstract

Ivorian fishery resources are severely degraded by reason of poor state policy in the development of fisheries and aquaculture, of very degrading fishing techniques and fraudulent intensive exploitation of fish, of deforestation and its corollary erosion and industrial and agricultural pollution. This degradation, which is characterized by the decline in the stock of fish, may lead the country into ecological, economic and nutritional impasse. This rupture of environmental balance justifies our study whose purpose is to advocate a planning strategy for the use of fisheries resources. In order to determine rigorously the optimal fishing effort should be allocated to fishermen, we chose to use the economic static model of Gordon-Schaefer. It appears from this study that the current effort is higher than it should be, while the stock of the resource is well below its optimum level. It is therefore necessary to regulate fishing activities according to changes in stocks and the environment as a whole. With our results, we felt it was appropriate to recommend the following actions: * Foster aquaculture while regulating fishing activity which would generate a rapid recovery of capital fish, * Create a structure of agricultural credit to improve production systems and support the creation of employment opportunities in other economic sectors, * Improve as much as possible the quality of the aquatic environment by minimizing the effects of erosion, deforestation, pollution of all kinds, etc. * And finally, promote the effective supervision of the Ivorian coast, and the census and effective control of traditional boats.

Abstract # 64**Session # 04** Posters and Game Demonstration Session and Reception**THE VALUE CHAIN OF WHITE LEG SHRIMP EXPORTED TO THE U.S MARKET: THE CASE OF KHANH HOA PROVINCE, VIETNAM.**

Mr. Chuong Bui Thien, Masters, thienchuongbui@yahoo.com
Ms. Trang Le Thi Huyen, Masters, mattahuyentrang@yahoo.com.vn
Dr. Curtis Jolly, cjolly@auburn.edu

Abstract

Three years since 2008, white leg shrimp have exhibited fabulous growth rate and become a popular livestock along with black tiger shrimp and pangasius. This gives rise to the interest to investigate the value chain of frozen white leg shrimp exported to the U.S from Khanh Hoa Province, Vietnam. Research findings showed that before exported to the U.S, white leg shrimp undergo farming, procurement, and processing. Shrimp farming comprises of pond cleaning, seed release, and caring. As shrimp attain harvestable size, middlemen come to perform the procurement including harvesting, preserving, and transporting. At the processing plants, shrimp are transformed into final products, packed, labeled preserved and stored waiting to be exported. During farming, farmers incur costs like seed, feed, labor, and other miscellaneous expenses. At the procurement stage, addition to purchasing shrimp from farmers, middlemen add some other costs like transport, labor, ice, and other inputs to transfer shrimp to the next stage. At the processing stage, direct material, labor, overhead, and other costs are added in accordance with the accounting format. Farmers, middlemen and processors experience positive profit in the 2008-2010 period. Based on costs and earnings data, some calculations were made to reveal the distributions of revenue, cost and profit of 1 kg frozen shrimp exported to the U.S. Revenue and profits were distributed in sync with incurred costs. The research also revealed reasons why farmers depend on middlemen to sell their harvest, that is, lack of facilities, delayed payment policy and risk aversion.

Abstract # 74**Session # 04** Posters and Game Demonstration Session and Reception**THE GENDER ROLES OF WOMEN IN AQUACULTURE AND FOOD SECURITY IN NIGERIA**

Dr. Olufayo Mosun, Ph.D, moakinbulumo@yahoo.co.uk

Abstract

Women are recognized as agents of changes and development .Their involvement in aquaculture is one issue that needs to be addressed when dealing with rural communities and poverty alleviation among the rural women .T he major way to ensure that women utilize their full potentials in profitable aquaculture is to provide capacity building support which would eventually lead to poverty alleviation among them .The role of women in adopting new aquaculture technology has been restricted and often ignored because of the socio-cultural taboos against them. This paper enlightens women on the different stages of production in aquaculture that they could be involved in, as fishers for home consumption, they contribute significantly to the nutritional needs of their families. The idea is to empower the women with modern technologies in aquaculture to generate enough revenue to sustain their families and save the society from menace of fish scarcity. When women are involved in aquaculture production, it will go a long way in achieving the millennium development goals of eradicating extreme poverty,hunger and empowering women in Nigeria.

Abstract # 77**Session # 04** Posters and Game Demonstration Session and Reception**FISHERIES AND POVERTY REDUCTION – IMPLICATIONS FOR FUTURE WORK PRIORITIES**

Dr. Santosh Kumar Mishra, M. A. in Economics, Certificate in Population Studies, Diploma in HRD, Ph. D., drskmishrain@yahoo.com

Abstract

From earliest times and in practically all countries, fisheries have been of industrial and commercial importance. Fisheries and aquaculture contribute significantly to food security. Livelihoods of millions of people, across the regions of the globe depend on healthy aquatic ecosystems. Achieving the Millennium Development Goals to eliminate extreme poverty by 2015 requires a concerted and unified effort by governments and the international community. Many fishers are poor, and targeting development interventions at fishing communities can help reduce poverty. In order to increase the contribution that fisheries make to poverty reduction, management is needed that ensures sustainability of fish stocks and equitable distribution of the benefits. To achieve this, policy-makers must recognize the important contributions that fisheries make at both national and local levels. This paper aims to (a) examine how fisheries can contribute to poverty reduction, with relevant examples; and (b) consider the implications for future work priorities. The paper concludes that although much progress has been made towards understanding the contributions that fisheries can make to poverty reduction, and to achieving the Millennium Development Goals, further support is needed in the areas of: (a) strategies to maximize the benefits derived from fisheries and reduce the poverty and vulnerability of fishers; (b) establishing appropriate governance structures and strengthening fisheries institutions dealing with management, especially in their ability to manage fisheries sustainably; and (c) raising awareness of the importance and contribution of fisheries to poverty reduction.

Abstract # 79**Session # 04** Posters and Game Demonstration Session and Reception**THREAT TO FISHERIES AND AQUACULTURE FROM CLIMATE CHANGE AND INTERVENTIONS REQUIRED**

Dr. S. C. Jhansi, Diploma in Adult and Continuing Education and Ph. D., drscjhansi@yahoo.co.in

Abstract

Fisheries and aquaculture play an important but often unsung role in economies around the world, in both developed and developing countries. Fish provide essential nutrition and income to an ever-growing number of people around the world, especially where other food and employment resources are limited. Many fishers and aquaculturists are poor and ill-prepared to adapt to change, making them vulnerable to impacts on fish resources. Fisheries and aquaculture are threatened by changes in temperature freshwater ecosystems. Storms may become more frequent and extreme. Greater climate variability and uncertainty complicate the task of identifying impact pathways and areas of vulnerability, requiring research to devise and pursue coping strategies and improve the adaptability of fishers and aquaculturists. This presentation aims to give an insight into the climate change impacts on fisheries and aquaculture. It also deals with issues associated with 'extreme events' (such as cyclones and storm resulting in inland flooding) and 'worsening risk'. Finally, it looks into some of the viable measures need to be taken to bring the situation resulting from unfavorable climate change situations under control. The paper concludes that sound public policy is required for climate change adaptation in order to reduce ecosystem vulnerability, provide information for planning and stimulating adaptation, and ensure that adaptation actions do not have negative effects on other ecosystem services and the longer term viability of fisheries and aquaculture. The nature and risks of mal-adaptation also need to be better understood.

Abstract # 86

Session # 04 Posters and Game Demonstration Session and Reception

COMPARATIVE ANALYSIS OF FRESH AND FROZEN FISH MARKETING IN LAGOS STATE, NIGERIA.

Dr. Albert Odion Esobhawan, BSc, MSc, PhD, esohdionalbert@yahoo.com

Dr. Reuben Adeolu Alabi, bayobimb@yahoo.com

Dr. Daniel Osasogie, PhD, osasogiedaniel@gmail.com

Mrs. Flora Akamike, BSc, floraakamike@yahoo.com

Abstract

The study examined profitability, marketing efficiency and income distribution of fresh and frozen fish marketing business among women in Lagos State, Nigeria. Cross sectional data from a random sample of 129 respondents of fresh fish and frozen fish sellers were collected through questionnaire administration and were analyzed, using budgetary analysis and Gini coefficient. The result showed that the business was a profitable venture with a mean monthly net income of N82,964.55 (535 USD) and N74,465.71 (480USD) for the fresh and frozen fish sellers respectively. The marketing efficiency of 89% and 77% obtained for fresh and frozen fish sellers showed that fresh fish sellers were relatively more efficient. The Gini coefficient of 0.310 and 0.500 showed that there is high income inequality among the frozen fish sellers than among fresh fish sellers. The study concluded that marketing of fresh fish marketing is more profitable and more efficient than marketing of frozen fish in Lagos State. The reason implicated for higher profitability and efficiency in fresh marketing is the reduced cost of transportation of fresh fish to market. Hence, efforts to reduce the cost of transportation

Abstract # 87

Session # 23A Africa Policy Day Part IV

THE IMPACTS OF GLOBAL CLIMATE CHANGE IN AFRICA: THE LAKE CHAD AND ITS ASSOCIATED ACTIVITIES.

Mr. Babagana Abubakar, Masters, babaganabubakar2002@yahoo.com

Abstract

The "Lake Chad" is one of the world's largest and most historical Lake located in the Sahel region of Africa (lat. 12:30 N to 14:30 N and long. 13:00E to 15:30 E) which is one of the most vulnerable regions to climate change bordering North-Eastern Nigeria, North-Western Cameroon, South-Eastern Niger and South Western Chad republics. The lake was 25,000 km square in the 1940s as indicated by the historians and some geo- archaeological and historical evidences, the recent of which was the accidental discovery of an ancient Canoe dating back to over three thousand years (3000) located in about Six hundred kilometers (600) away from the present day bank of the Lake in the Nigerian Territory, in the year 1992 by a peasant farmer from the Kanuri inhabited desert areas of Damaturu-Nigeria, while digging a well in quest of water for his domestic activities as reported by Abubakar, B. (IJNA 37.2,2008), but due to the continues incessant impacts of climate change in Africa which resulted in the incessant drying of rivers especially those feeder rivers supplying over 90 % of the Lake water like the River Shari in the republic of Cameroon and the river Yobe in Nigeria has resulted those community living along the courses or banks of the feeder rivers to be blocking the rivers from supplying the water in to the Lake while trying to adapt to this climate change.

Abstract # 97

Session # 04 Posters and Game Demonstration Session and Reception

WOMEN'S CONTRIBUTION IN AQUACULTURE VALUE CHAIN DEVELOPMENT IN NIGERIA

Dr. Mabel Yarhere, PhD, mtyarhere@yahoo.com

Abstract

The current fish import deficit experienced in Nigeria has reached a level whereby the government has called on all citizens to engage in fish production through aquaculture in both homestead, cottage and industrial levels. The organised private sector, especially groups of women have taken it upon themselves to contribute their own quota to fish production. This paper gives a concise module operandi of this group of women. They engage in site selection, culture systems, design of ponds; concrete, plastic, earthen and planked tanks. This paper shows some of these designs and materials needed for replication of intended practitioners. The paper also shows the value chain processes including pond management practices, breeding and species selection. It also shows feeds type production, feeding and water quality management practices. Sorting and harvesting techniques, as practiced by the women are unique. This practices make the women to be economically independent and they are able to cater for their children. In the value chain, the women market their own fish and process them into fish products like fish cakes, burgers, crackers and fish pepersoup at recreation centres. The paper also tries to give an economic analysis of establishing some of these fish farming processes for potential fish farmers for improved livelihood in the African region, ewpecially for women's smallscale enterprise.

Abstract # 98

Session # 04 Posters and Game Demonstration Session and Reception

FRONTIER RESEARCH IN FISHERIES ECONOMICS: EUROPEAN RESEARCH COUNCIL AND ITS FUNDING OPPORTUNITIES

Dr. Erik Lindebo, erik.lindebo@ec.europa.eu

Abstract

The European Research Council (ERC) is a newly-created European funding body supporting investigator-driven frontier research across all fields of science within the 'Ideas Programme' which is part of the European Union's Seventh Research Framework Programme (FP7). The overall budget for the ERC is € 7.5 billion over 7 years (2007-2013). Its main aim is to stimulate scientific excellence by supporting and encouraging the very best, truly creative scientists, scholars and engineers to be adventurous and take risks in their research. The scientists are encouraged to go beyond established frontiers of knowledge and the boundaries of disciplines. ERC grants are awarded through open competition to projects headed by starting and established researchers, irrespective of their origins, who are working or moving to work in Europe - the sole criterion for selection is scientific excellence. They offer attractive and funding opportunities (grants worth up to 3.5 Million EUR) for individual scientists regardless of their nationality, for projects carried out at a host institution in one of the countries of the European Union or Associated Countries. The main features of ERC funding opportunities will be presented. A brief overview of ongoing projects in economics and resource and environmental economics will be given. The main intention is to encourage IIFET members and conference participants to become future applicants in the ERC funding scheme in the field of fisheries economics and related disciplines. More information at http://cordis.europa.eu/fp7/ideas/home_en.html and <http://erc.europa.eu/index>.

Abstract # 100

Session # 04 Posters and Game Demonstration Session and Reception

IMPACTS OF RESEARCH BUDGET REDUCTION ON ACOUSTIC FISH ABUNDANCE ESTIMATION SURVEYS

Mr. Fannie Shabangu, Master of Science (MSc), Fannnies@daff.gov.za

Abstract

Research costs are constantly rising world-wide, research institutes are often bound to conduct research in bad weather conditions. Fish density accurate estimation made via acoustic echo integration is problematic in bad weather conditions due to acoustic signal attenuation by waterborne air bubbles and vessel movement, which result in an underestimation of fish abundance. Correction factors have as yet not been established experimentally to account for acoustic signal attenuation in bad weather conditions. In this study, the nautical area backscattering coefficients (NASCs) of corrugated and flat sea beds were measured by three 38 kHz split beam Simrad EK60 echosounders during different weather conditions (calm, moderate, and bad). The ratios of integrated sea bed NASCs under these different weather conditions were evaluated in order to estimate correction factors for acoustic signal attenuation. Vessel roll and pitch were also used as an index of acoustic signal attenuation at a given wind speed, wave size, and vessel-encounter angle. Results show that stable sea bed NASC ratios are found during periods of low (0-10 ms⁻¹) wind speed, whereas at high wind speeds of around 30 ms⁻¹ a multiplicative correction factor of 2.3 must be applied. The results also suggest that acoustic signal attenuation is vessel specific, and that transducer mounting position and vessel hull shape influence such attenuation. Therefore, the established correction factors for surveys conducted in bad weather should improve the data quality for sustainable fisheries management.

Abstract # 101

Session # 04 Posters and Game Demonstration Session and Reception

THE CURRENT STATE OF THE CLAM, GALATEA PARADOXA FISHERY AT THE LOWER VOLTA RIVER, GHANA

Dr. Daniel Adjei-Boateng, PhD, adjeiboat@yahoo.com

Abstract

The clam, *Galatea paradoxa* has for decades been an important source of protein to the riparian communities of the lower Volta River and provides employment to about 2000 people, especially women. The fishing grounds have dwindled from 100km from the pre-dam era to a narrow stretch of 10km as result of the development of sand bars at the estuary. This study was conducted to ascertain the socio-economic importance of the clam fishery to the people of the lower Volta. The research found out that there were 251 fishing canoes and 503 fishers engaged in the clam fishery. The average daily catch per fishing canoe was 130kg of clams, with an annual harvest of 7700 tonnes worth 4,620,408 Ghana Cedis. Commercial extinction of *G. paradoxa* is imminent in the lower Volta as a result of habitat alteration and overfishing. There is the need to put in place a sustainable harvesting measure that will target medium to large size clams against the current situation where the catch is dominated by smaller clams. It is recommended that a minimum landing size of 50 mm should be imposed in consultation with the traditional authorities who have managed the fishery to date. The marketing of clams below the 50 mm shell length limit should be abolished and enforced by the traditional authorities. The farming of smaller clams, which is a traditional activity in the estuary should be encouraged so that fishers who harvest undersize clams can seed them onto their plots.

Abstract # 103

Session # 21A Africa Policy Day Part II

DAGAA FISHERY THE UNKNOWN WEALTH FROM LAKE VICTORIA

Mr. Joseph Luomba, luomba@yahoo.com

Dr. Paul Onyango PhD, onyango_paul@yahoo.com

Abstract

Dagaa fishery the unknown wealth from Lake Victoria The paper discusses the contribution of dagaa (*Rastreneobola argentea*) fishery to the Tanzanian economy. The paper has used data from two studies conducted and also reviews documents from Fisheries Division and other institutions. Results indicate that dagaa fishery has generated high income which have not been recorded, provided employment and brought in substantial foreign exchange. This fishery has also contributed to the improvement of livelihood among the dependant community. However, the fishery is still faced with the challenges of inadequate technologies for processing and value addition, poor local markets for fish and little exploitation among others. In conclusion, dagaa is an important resource among the fisheries of Lake Victoria. Improved handling and processing and promotion of economic value are likely to increase benefits to the riparian communities as well as aid in sustaining the already depleted Nile perch fishery.

Abstract # 106

Session # 04 Posters and Game Demonstration Session and Reception

THE EFFECT OF HOOK AND LINE ON CATCH RATE AND SIZE OF THE NILE PERCH, FISHERY IN THE NAPOLEON GULF, LAKE VICTORIA, UGANDA

Mr. Bassa Samuel, Msc. Env. ,Bsc. Fis&Aqu., Dip. Biol, sambasa37@yahoo.co.uk

Dr. Makanga Boniface, PhD, Msc, Bsc., bmakanga@zoology.mak.ac.ug

Abstract

Hook and line is a major fishery in Lake Victoria basin and mainly targeting the Nile perch; and yet this species is on the decline. Its biomass dropped from 542,736 to 369,498 tones from 2006 to 2008 respectively. The effort of hook and line increased from 254,453 to 2,783,428 i.e. 2000 to 2008 in Ugandan waters alone. A study on the effect on the sizes of the Hook and line on the catch rate and size of the Nile perch in the Napoleon Gulf was undertaken in July 2009 in order to come with management of the fish stocks. A new system of "spot on" had to be used for information collection from the fishermen and those used sizes 7, 8,9,10,11 and 12. A total of 873 Nile perch samples were collected. The hook sizes had a significant effect on both the size composition (ANCOVA $F_{5,873}=3.847$; $P<0.05$) and mean weight ($F_{5,873}=4.599$; $P<0.05$) of the Nile perch. Investigations indicated hook size 7 was the only one that harvested fish above the slot size of 50 cm total length. Both a law and regulatory measures are needed to put in place on the minimum hook sizes to be used in harvesting the Nile perch fishery in the region. In addition aquaculture should be encouraged to farm fish for bait to avoid depleting the wilds stock already in danger of extinction thus conservation.

Abstract # 107

Session # 04 Posters and Game Demonstration Session and Reception

THE ROLE OF IIFET IN AQUACULTURE AND FISHERIES DEVELOPMENT FOR LIVELIHOOD ENHANCEMENT OF RURAL COMMUNITIES IN SIERRA LEONE.

Mr. Mawundu Sellu, B.Sc Zoology, M.Sc Marine Ecology, smawundu@yahoo.com
Mr. Martin Tjipute, martin@hafro.is

Abstract

Sierra Leone is blessed with suitable freshwater resources where freshwater and brackishwater fish species can be cultured. Its shoreline is approximately 560km long with an estimated 4, 837.8km² of wetlands and some 500,000ha of mangrove swamps that fringe the coastline. However, not much of these available natural resources has been put to judicious use. The fisheries sector contributes about 9.4% to the GDP in Sierra Leone. The Inland Freshwater Fisheries and Aquaculture Sector is small and poorly developed. The improvement in fish protein intake and revenue generation for all Sierra Leoneans through enhancement of fisheries productivity hold a lot of potential for upgrading the country to higher levels on the human development index. The rationale behind aquaculture development is to make available good quality fresh fish that will provide affordable fish protein to the poor and fast growing rural population. The role of IIFET among others is the development of strategies for aquaculture expansion and intensification, application of proven technologies to enhance fisheries production, harness potential of available raw materials for sustainable feed production, expand the adoption of integrated small-scale aquaculture as a means of increasing rural productivity and food security and exploit the potential of aquaculture production to contribute to food security programs.

Abstract # 108

Session # 04 Posters and Game Demonstration Session and Reception

OVERVIEW AND SOCIOECONOMIC VALUATION OF THE TRADITIONAL FISH PONDS (WHEDOS) IN OUEME DELTA (BENIN, WEST AFRICA)

Mr. Ibrahim Imorou Toko, Dr, iimorou_toko@hotmail.com

Abstract

Oueme is the most important river (700 km) in Benin (West Africa) that forms a broad fertile delta (2,000 km²) in the coastal zone. In this delta, the fishermen usually catch fish in the traditional fish ponds (whedos) which were constructed since medieval times in the floodplains of rivers and lakes to trap the wild fish. This practice improved with the passing years in the Oueme delta (OD) where one counts more than 1,000 whedos covering in some zones as much as 13% of the total area of the floodplain. The role of this traditional fishing technique in providing a wide range of economic and social benefits for the fishermen and local communities is increasingly recognized by the local fishing authorities. The present study summarizes what is currently known on the management and socioeconomics values of these whedos in OD. It arises that more than 80% of the professional fishermen in the investigated villages have whedos varying between 1 and 15 with an average of 5 to 9 per household. Moreover, fishing in the whedos can yield from 306 to 870 € ha⁻¹. This activity, although seasonal, represents approximately 27% of the gross annual incomes per household in the OD. Overall, the present study shows their contribution to the improvement of the income and livelihood conditions of the fishermen in OD, and consequently the losses which its mismanagement could generate for the local government. Therefore, it constitutes a basis for future policies and management programmes concerning these whedos.

Abstract # 112

Session # 04 Posters and Game Demonstration Session and Reception

TRANSITION OF FISH FARMING FROM SUBSISTENCE TO SUSTAINABLE SEMI COMMERCIAL ACTIVITY IN UGANDA

Mr. Abudala Napuru, abudala.napuru@gmail.com

Abstract

Fish farming in Uganda has not been taken to semi commercial levels by small scale famers due to many challenges. They range from lack of fish seed, quality fish feeds, lack of market, poor infrastructure, unavailability of trained and experienced staff, poor extension methods and poor project planning and implementation. Many interventions have been done to rectify the situation but the gap still exists. You have to look at what farmers have, where they are in terms of development, what they can afford, their understanding level, their culture, their environment which will enable you to understand their needs. Dictating to farmers is wrong, instead you have to involve them through their experience, understanding level as they grab new ideas which will determine how they will adapt and develop them within their local setting. Paying particular attention to detail will develop industry by ensuring that intended goals are achieved. Sustainable development and transition of the industry will need appropriate technology which the farmers can afford economically. Sharing of information in a group is also a great pillar in building sustainable institution as they can improve their operations, brings bargaining power in product marketing as well as sharing costs. Thanks to the intervention of CIRAD project in Eastern Uganda in the year June 2010 to June 2011 entitled, "Research In action Partnership" which unveiled the way to follow to bring profitability in the aquaculture sector.

Abstract # 117

Session # 04 Posters and Game Demonstration Session and Reception

THE USE OF WOOD SHAVINGS AS AN ALTERNATIVE TO FUEL WOOD FOR SMOKING FISH..

Dr. Victoria Ayuba, PhD, vayuba2001@yahoo.comay

Abstract

The study was conducted to investigate the use of wood shavings as an alternative to fuel wood for smoking fish. Thirty one kilogrammes of life *Clarias gariepinus* were bought from Lafia main market and brought to the fisheries unit Lafia Campus of the Nasarawa State University keffi. The fish were killed gutted and thoroughly rinsed with municipal tap water. The fish were divided into six equal portions (5.0kg) and three portions each smoked for 36 hours at temperature range of 90oC-120oC using fuel wood and wood shavings. Organoleptic and proximate analyses were carried out on the smoked fish. Statistical analysis indicated no significant difference in Hedonic scores for appearance, flavour, texture and taste among the smoked samples. Proximate analysis of smoked samples showed a higher moisture content ($4.25 \pm 0.13\%$) and slightly lower crude protein content ($54.38 \pm 1.38\%$) in fuel wood dried fish compared to that of wood shavings. The Gross Profit Margin Analysis indicated that wood shavings had the lower production cost (N 2955.00) but higher profit of N 945 compared to that of fuel wood smoked (N 3215.00) with a profit of N 685.00. From the result

Abstract # 128

Session # 23B JIFRS/JICA Session on Responsible Fishing

FARMER-TO-FARMER EXTENSION APPROACH FOR FRESHWATER AQUACULTURE DEVELOPMENT IN THE SOUTHERN BENIN

Dr. Arsène d'Almeida almeida_arsene@yahoo.fr

Dr. Masanori Doi, doifish@intemjapan.co.jp

Abstract

Farmer-to-farmer extension approach was introduced for small-scale freshwater aquaculture development in the seven provinces of the southern Benin in the course of a technical cooperation project of Japan. Firstly, some relatively active and capable fish farmers were selected and trained together with extension officers of the government to be "core farmers" who accomplish seed production ability as well as improved aquaculture techniques of tilapia and African catfish. Secondly thus trained core farmers were encouraged to hold 3-4 days training program at their own facilities for ordinary farmers who applied for the training. Until May 2012 or 2 years after start of the project, a total of 16 core farmers were fostered and 963 ordinary farmers were trained in this approach. Among those, 270 new fish farmers including 134 box culture operators started operation and 219 existing fish farmers re-started improved aquaculture by using seed and feed produced or provided by core farmers. Those ordinary farmers are expected to be regular customers of core farmer. This would be an incentive of core farmers to participate in this program. The farmer-to-farmer extension approach, which is not dependent on the public training facilities, was confirmed effective to expand aquaculture activities, and to support a profit-oriented network of farmers.

Abstract # 129

Session # 04 Posters and Game Demonstration Session and Reception

QUALITY INDEX METHOD (QIM) FOR FROZEN - THAWED ATLANTIC MACKEREL (SCOMBER SCOMBRUS) STORED IN ICE - DEVELOPMENT AND APPLICATION IN A SHELF LIFE STUDY

Mrs. Patricia Miranda Alfama, palfama@hotmail.com

Abstract

The sensory methods are the most accurate and widely used to evaluate fish freshness and the Quality Index Method (QIM) is an objective, rapid and reliable sensory method. The aim of the present study was to develop and evaluate a QIM scheme for frozen-thawed Atlantic mackerel (*Scomber scombrus*) stored in ice. After thawing, the mackerel was stored at 0°C on ice up to nine days. The QIM scheme and a vocabulary for generic descriptive analysis (DA) were developed during a pre-observation and panel training. During storage, changes of raw whole fish and cooked fillets were observed and analysed using the QIM scheme developed and DA, respectively. Moreover, the amount of histamine, total viable counts (TVC) and counts of H₂S-producing bacteria were estimated. As a result of this study, a QIM scheme to evaluate freshness of frozen-thawed Atlantic mackerel storage in ice is proposed. A significant linear relationship between Quality Index (QI) and the storage time on ice was obtained. The maximum storage time on ice was four-six days according to DA of cooked fillets, mainly due to rancidity. The storage time could be estimated with an accuracy of ± 2.3 days using the QIM scheme. The TVC and H₂S-producing bacteria increase during the storage time (nine days), but their values were low. The histamine content was below of 5 ppm during the nine days of storage.

Abstract # 130

Session # 04 Posters and Game Demonstration Session and Reception

MARINE PROTECTED AREAS AND THE MANAGEMENT OF SMALL SCALE FISHERIES IN MALAYSIA

Dr. Gazi Md Nurul Islam, gazinurul236@gmail.com

Abstract

Marine Protected Areas (MPAs) have been widely advocated as conservation and fishery management tools worldwide. Fishing activities are completely restricted to certain areas called "no-take" MPAs but it may enhance fisheries outside its boundary via spillover. However, the benefits of MPAs on fisheries are not clearly understood yet. In Malaysia, the government have established several MPAs and promoted ecotourism services. These MPAs have become the most attractive sites for fishers and tourists. However, excess fishing is carried out outside the MPAs that hinder sustainability of marine resources. This paper presents the effects of the MPAs on small scale fisheries in Perhentian Marine Park fishing village in the east coast of Peninsular Malaysia. Data was collected through interview with fishers, tourist workers, traders, local representatives, scientists and other community members. Our findings indicate that MPA generated income for the local economy through ecotourism activities but excess fishing operation outside the MPA areas pose threat to the marine resources. However, lack of information on MPA benefits, unclear access rights to fishing, inadequate monitoring and surveillance and poor institutional arrangement are the main constraints for success of MPAs in Malaysia.

Abstract # 141

Session # 04 Posters and Game Demonstration Session and Reception

ECONOMIC INCENTIVES FOR WETLAND BIODIVERSITY AND FISHERIES CONSERVATION: THE CASE OF CHALAN BEEL (WETLAND)

Dr. Aminur Rahman, rahman.aminur206@gmail.com

Abstract

Economic Incentives for Wetland Biodiversity and Fisheries Conservation: The Case of Chalan Beel Aminur Rahman School of Business Independent University, Bangladesh Chalan Beel, a wetland situated in the North Western Bangladesh is a very potential wetland with immense biodiversity and fisheries value. Its management problem has engulfed with suggestions ranging from private leasing, joint administration by public representation and government and community based approaches. However, nothing sustainable so far emerged concerning bio diversity and mother fishery conservations. In the midst of this uncertainty an approach based on economic incentives can be a way out to conserve biodiversity. Incentives are placed to influence people's behavior by making objects more desirable for conservation rather than degrade and deplete it. Economic activities many ways harm biodiversity as it may sometime sounds economically profitable from individual point of view and existence of different failures leading to externalities. Since economic incentives for biodiversity and fisheries conservation can take various forms, the appropriate incentives depend on a wide range of factors, including social, political and economic. Any form of management needs augmentation of clear understanding of right economic signals so that efficient level of resources is utilized. Since the issue is a complex one different incentive have been analysed with their relevant costs and benefits conducting surveys among the stakeholders where the options based on market based ones have better chance to conserve rare fishery species and bio diversities rather than using Command and Control ones. For resource valuation Benefit Transfer Method has been used.

Abstract # 146

Session # 04 Posters and Game Demonstration Session and Reception

A STUDY OF FISH EXPLOITATION PATTERN OF LAKE GERIYO, YOLA, ADAMAWA STATE, NIGERIA.

Mr. Taiye Ekundayo, taiyemichael@gmail.com
Dr. Olukayode Sogbesan, sokayfish@gmail.com

Abstract

An investigation was carried out on Lake Geriyo in the month of April to know the pattern of fish exploitation. The fish species sampled were mainly by using canoes as they were landed at the landing site of the lake. A total of fourteen (14) species of thirteen (13) families were discovered during the period. The total numbers of species were 1140 species and the corresponding total weights were 198 kg. The number of each species was determined by counting and the species were grouped into families. The weight of different species was also determined using the weighing balance. The number of fishermen during the period was 79 and the total numbers of canoes were 54. In the course of the study, it was discovered that the nets used by the fishermen were mostly unregulated mesh sized less than 2 inches. Most of the fish caught were undersized ranging from 0.06kg to 0.78kg. This is an evidence of overfishing. Therefore a proper management measure has to be put in place at the lake by the authority concerned. The total weight and total number of fish species encountered shows that there is fish stock depletion of the lake. The exploitation pattern at the lake Geriyo is seasonal.

Abstract # 156

Session # 04 Posters and Game Demonstration Session and Reception

DEVELOPMENT OF INTENSIVE SMALL SCALE FARFANTEPENAEUS NOTIALIS AND MELICERTUS KERATHURUS NATIVE SHRIMPS HATCHERY AND CULTURE IN CAMEROON.

Mr. Guillaume Gaudin, gguillaume89@hotmail.fr
Ms. Isabelle Motto, mottoallohisa@yahoo.fr
Dr. Oumarou Njifondjou, o.njifonjou@acpfish2-eu.org
Dr. Jean Folack, jeannotfolack@yahoo.fr
Dr. Randall Brummett, rbrummett@worldbank.org
Ms. Judith Georgette, Makombu jmakombu@yahoo.fr
Dr. Viviane Boulo, viviane.boulo@ifremer.fr
Dr. Eric Mialhe, ericmialhe@yahoo.fr

Abstract

Intensive small scale farming unit of the marine shrimps *Farfantepenaeus notialis* and *Melicertus kerathurus* has been developed in Cameroon as a strategy for family aquaculture. The project started in 2008 at Kribi as an initiative from a Bakoko traditional Chief (Salomon Madiba) who organized AQUASOL Company with the scientific and technical support from Concepto Azul. This social project aimed to be also an environmental friendly model of shrimp aquaculture with native species. Wild broodstock was collected and kept under controlled conditions in experimental hatchery. Fertilization and hatching rates were high for the two shrimp species, greater than 90% and 80% respectively. Survival at PL20 stage was higher at 29° C (45 to 60%) than at 26° C (10 to 18%). The highest growth rate was observed at 25 ppt with an average weight about 0.25g for PL60 fed with a commercial feed and about 0.23g for PL60 fed with an artisanal feed based on fish processing wastes (viscera). The *F. notialis* animals have been successfully grown up to broodstock size (25g) and will be used as F1 broodstock. The next step of the project corresponds to the establishment of pilot unit for a one ton per year production that would be profitable at a family scale.

Abstract # 162

Session # 04 Posters and Game Demonstration Session and Reception

A SUCCESSFUL LARVICULTURE OF FRESH WATER PRAWN MACROBRACHIUM VOLLENHOVENII (DECAPODA, PALAEMONIDAE) IN CAMEROON.

Ms. Judith Georgette Makombu, jmakombu@yahoo.fr
Dr. Pius Oben, mbuobenp@yahoo.co.uk
Dr. Benedicta Oben, PhD, obenben2001@yahoo.co.uk
Mr. Guillaume Gaudin, gguillaume89@hotmail.fr
Mr. Ndelle Makoge, makoge20002000@yahoo.co.uk
Ms. Isabelle Motto, mottoallohisa@yahoo.fr
Mr. Jonas Kemajou, oped_cam@yahoo.fr
Dr. Randall Brummett, rbrummett@worldbank.org
Dr. Janet Brown, jan.brown@dsl.pipex.com
Mr. Jules Ngueguim, njules_roman@hotmail.com
Dr. Eric Mialhe, ericmialhe@yahoo.fr

Abstract

The Africa River prawn *Macrobrachium vollenhovenii* is the largest of the local Palaemonidae prawns and an important target species for fisheries and aquaculture. A preliminary study on larviculture of this species was carried out at the IRAD-AQUASOL hatchery in Kribi, Cameroon. Berried female *M. vollenhovenii* were obtained from the Lobe River in the Southern Region, a typical Lower Guinea rainforest stream. Two females were acclimatised and transferred to hatchery containers at 7‰ salinity and a temperature of 26.5° C. After hatching, salinity was gradually increased to 16‰ during 24h and larvae were harvested, counted and transferred immediately to one of four containers of 80 L in a recirculating system at a density of 40/L. The progeny of each female being reared separately. Larvae were fed with newly hatched *artemia* nauplii three times per day. The first postlarvae were obtained after 41 - 43 days of culture and total metamorphosis to postlarvae took between 26 - 35 days. The survival rate was 15%. This result is the first recorded success in larviculture of *M. vollenhovenii* in central Africa and will contribute to the further expansion and development of *M. vollenhovenii* culture.

Abstract # 177

Session # 04 Posters and Game Demonstration Session and Reception

GROWTH, DIGESTIBILITY, BLOOD PARAMETERS AND YIELD OF NILE TILAPIA OREOCHROMIS NILOTICUS FINGERLINGS FED GRADED LEVELS OF FERMENTED MANGO (MANGIFERA INDICA) SEED MEAL BASED DIETS.

Dr. Samuel Obasa, PhD, samoluobasa@yahoo.com

Abstract

This study evaluated the effect of fermented mango seed meal (FMS) as dietary carbohydrate substitute for yellow maize in the practical diet of *Oreochromis niloticus* fingerlings (4.76 ±0.18g). Five iso-nitrogenous (35% crude protein) and approximately iso-energetic (3400 MEKcal/kg) diets in which corn meal protein was replaced by FMS protein at 0% (Control), 25% (FMS1), 50% (FMS2), 75% (FMS3) and 100% (FMS4) levels were formulated. Diets were administered at 5% body weight for 84days. Anti-nutritional factors of the FMS were evaluated. Alkaloid was highest (2.32%) while flavonoids were lowest (0.50%). Growth decreased significantly as FMS increased above 50% in the diet. Mean weight gain (19.55g) was highest in fish fed diet the control diet and lowest (9.58g) significantly (p<0.05) in the values of the blood parameters except in pack cell volume (PCV), red blood cells (RBC) and glucose content of experimental fish. Gross profit was significantly higher (N69.74) in fish fed control diet than N45.70 in fish fed diet FMS4. There was no significant difference in the profit index and incidence of cost. Yellow maize could therefore be replaced by FMS at 50% level without affecting growth. There was no negative implication to fish health, profit index and...

Abstract # 181

Session # 04 Posters and Game Demonstration Session and Reception

BIOLOGICAL AND SOCIOECONOMIC VIABILITY OF RECREATIONAL FISHERIES OF TWO NIGERIAN LAKES

Dr. Mabel Omowumi Ipinmoroti, wumsco@yahoo.com

Dr. Ayanboye Abolupe Oluyemi, Bsc, Msc and PhD, ayanoluyemi@yahoo.com

Abstract

Many developed nations have accessed the diverse benefits of recreational fisheries this is not yet so in developing countries, this study explored the viability of recreational fisheries in Asejire and Oyan lakes within the forest belt of Nigerian. Biological resources were sampled for 12 months. Two sectional questionnaire forms designed separately were administered to users (152 fisherfolks and 202 residents of immediate communities of the lakes) and expected visitors (275 residents of major cities near the lakes). Data were analysed using descriptive statistics, t-test and analysis of variance (ANOVA) on SPSS 17 for windows. On Lake Asejire Game species accounted for 30.57% and 31.05% at Oyan. Species include *Chrysichthys nigrodigitatus*, *Hepsetus odoe*, *Hydrocinus* spp, *Lates niloticus*, *Clarias gariepinus*. Season was significant on weight (p<0.05). Education was significant to willingness to tolerate recreationists (p<0.05), age and fishing experience had significant influence on rendering of assistance to recreationists (p<0.05). Economic and infrastructural development were reasons for desiring recreational fisheries. Willingness to visit was high, activities desired were boat cruising (40%), fishing (23%), swimming 23% and sight-seeing (19%). 88.9% showed willingness to pay above NGN500 for entrance, sex was significant on amount to pay while education was significant on time of visit. The relative abundance of game species is equivalent to the required 1:3 ratio recommended for carnivore/forage ratio in angling ponds. This, the positive disposition of resource users and the willingness to pay are strong indications of success.

Abstract # 192

Session # 04 Posters and Game Demonstration Session and Reception

STRATEGIES FOR REDUCTION OF POACHING IN COMMUNITY-BASED HOLOTHURIAN AQUACULTURE

Mr. Antoine Rougier, antoine@blueventures.org

Mr. Alasdair Harris, al@blueventures.org

Mr. Mebrahtu Ateweberhan, mateweberhan@wcs.org

Ms. Mialy Andriamahefazafy, Master in Environmental Law, mialy@blueventures.org

Abstract

The aquaculture of *Holothuria scabra* has been identified as a highly potential alternative livelihood for the coastal communities of Southwest Madagascar. Despite the fact that the projects' results continue to improve, poaching in the pens remains a major threat to the future sustainability of the sector. With well-established market prices and trade routes, the risk of theft is particularly high, and the success of such a project is dependent of the mitigation of this threat. In light of this Blue Ventures and its partners have developed several mechanisms to limit the risks of poaching. Through the promotion of a security guard system with the necessary tools, the design of legal tools based on local conventions within the Velondriake LMMA where the project is being implemented, and engaging the national authorities, theft management has been improved. Better results for farmers, and several cases in which thieves have been identified and persecuted can testify to the efficacy of better poaching management. However within a context of weak governance, high levels of corruption, and increasing illegal collection of holothurians, sea cucumber aquaculture continues to present challenges, especially when compared to other mariculture projects such as red seaweed farming, other potential coastal communities alternative livelihood. This presentation tackles this case study, provides tools for those interested in developing sea cucumber aquaculture, and raises awareness about the potential risks of poaching for the further development of the sector.

Abstract # 194

Session # 04 Posters and Game Demonstration Session and Reception

DETERMINANTS OF GROSS MARGIN OF FISH MARKETERS IN ADAMAWA STATE.

Mr. Onyia Lucky Uche, uchelucky2005@yahoo.com

Abstract

The study was to examine the determinants of gross margin of fish marketers in Adamawa State, Nigeria. Primary data was examined through a survey of 230 fish marketers in seven Local Areas in Adamawa State. However, 180 responses were finally analysed. The gross margin (profitability) of each marketer with related variables were analysed and subjected to multiple regression analysis. The result indicated that the linear model gave the best fit with an R² of 67% . The year of experience(X₅), quantity of fish smoked(X₆) and the selling price(X₇) were found to significantly determine the gross margin of the marketers. The study therefore recommended better pricing policy to be adopted for the marketers to realise better gross margin in future.

Abstract # 195

Session # 04 Posters and Game Demonstration Session and Reception

SUSTAINABILITY OF COMMUNITY MANAGED FISHERIES IN BANGLADESH

Dr. Paul Thompson paul@agni.com
Dr. Md Golam Mustafa, g.mustafa@cgxchange.org

Abstract

Floodplain capture fisheries were for generations the main source of animal protein in Bangladesh. Conversion of wetlands, administrative constraints and over fishing resulted in their decline. Since 1995 several projects addressed: access rights of poor fishing communities, fishery productivity, and ecosystem restoration. These potentially divergent priorities were successfully addressed by community based co-management in several hundred waterbodies. This study assesses how far fisheries and institutions have sustained after USAID project support (1998-2007) ended in three major wetlands. Here wetland habitat was restored and 16 community based organisations (CBOs) set aside fish sanctuaries, observe closed seasons, and banned destructive fishing practices. By 2005-6 fish catches per hectare in these three systems had increased by between 88% and four times compared with the 1999-2000 baseline. Although the number of species caught varied between years, on average over 80 species were caught per year and species diversity indices increased. In 2010-11 in the largest of these systems (Hail Haor) catches had further increased to 126% above the baseline, but had dropped somewhat to 85% above the baseline in another site, and to 150% above the baseline in the third. Here pollution from textile factory effluent had adverse impacts. CBOs have sustained, and institutional assessments in 2011 compared with 2007 indicated 14 out of 16 strengthened their governance and management, although financial management on average weakened. CBOs continue to achieve compliance with their rules, but need external support to overcome pressures from industry and land use change.

Abstract # 207

Session # 04 Posters and Game Demonstration Session and Reception

ECONOMIC ANALYSIS OF SUSTAINABLE HOMESTEAD CULTURE OF AFRICAN CATFISH

Dr. Emmanuel Ude, PhD, emm_ude@yahoo.co.uk

Abstract

ABSTRACT A research was conducted to evaluate the economics of attaining food securing through growing African catfish, *Clarias gariepinus* sustainably in small culture chambers. A total number of 360 fingerlings of mean weight 8.10g were stocked in four (4) plastic tanks of 350 litre capacity each, stocked at 80 fish per tank, fed ad libitum and reared for 24 weeks. A total of 105kg of feed was consumed by the fish. Cost of total input was N71, 300.00 (US\$460.00). An average of 180 kg of fish was produced and sold at N126, 000.00 (US\$840.00). A profit of N54, 700.00 (US\$365.00) was realized. It was therefore concluded that the techniques of production adopted in this work could be maximized to attain food security in low income deficit countries of Africa where majority of rural dwellers are poor and under-nourished. The system is also recommended for individuals with limited space who may be interested in earning additional income and enhancing quality protein production and intake.

Abstract # 213

Session # 04 Posters and Game Demonstration Session and Reception

EVALUATING VALUE CHAINS AND CONSUMER PREFERENCES IN ASIAN AND AFRICAN AQUACULTURE TO HELP OVERCOME UNDEREMPLOYMENT AND POVERTY

Dr. Hillary Egna, PhD, hillary.egna@oregonstate.edu
Ms. Stephanie Ichien, stephanie.ichien@oregonstate.edu

Abstract

In aquaculture and fisheries, the value chain consists of all the various processes and activities involved in bringing fish, shellfish, and aquatic plants to market. In some regions it can be an indicator of the economic welfare of poor communities involved in small-scale operations. In order to maximize smallholder participation and benefit in developing countries, it is critical to understand the complexities and intricate linkages of markets and value chains. This provides the foundation for proper value chain management and is a way to increase productivity by improving efficiency, opening access to new markets and value-added products, and tracking consumer preferences. Researchers in the Aquaculture & Fisheries Collaborative Research Support Program (AquaFish CRSP) in Africa and Asia have been working on this topic, helping to provide market access to small-scale fish producers, to improve local economies, and to create more opportunities for women. AquaFish CRSP, headquartered at Oregon State University, brings together resources from US and Host Country institutions to promote sustainable solutions in aquaculture and fisheries. This effort is accomplished through integrated, multidisciplinary partnerships, focusing on poverty alleviation in target countries through the improvement of local and sustainable fish production. Within a large research portfolio, the work reported here on value chains is a key component of the AquaFish CRSP mission.

Abstract # 214

Session # 04 Posters and Game Demonstration Session and Reception

EVALUATING TECHNOLOGY ADOPTION BY THE SMALL-SCALE AQUACULTURE OPERATIONS IN DEVELOPING COUNTRIES FOR IMPROVED PRODUCTIVITY AND PROFITABILITY

Dr. Hillary Egna, PhD, hillary.egna@oregonstate.edu
Ms. Stephanie Ichien, stephanie.ichien@oregonstate.edu

Abstract

The Aquaculture & Fisheries Collaborative Research Support Program (AquaFish CRSP) fosters the development of technological innovations in aquaculture and fisheries to provide direct results for increased production and decreased environmental impacts in host countries. Ensuring the availability and accessibility of successful technologies through inventive dissemination techniques is a high priority for AquaFish CRSP researchers. In order to provide the greatest impact, focused efforts on increased adoption rates is key to success. Some of the technologies that AquaFish CRSP researchers have developed and disseminated to target communities include: * Rice-fish culture, * Cage within cage designs, * Pond fertilization protocols, * Internet-based tilapia podcasts, * Methyl testosterone (MT): weaning for the all male tilapia fry production industry off MT, * Alternative feeding regimes and feed formulations, * Cage-cum-pond culture With involvement from 21 host countries and 21 US universities, AquaFish CRSP researchers have successfully fostered the adoption of these technologies in communities around the world and have also enabled the transfer of technology between countries. (i.e. technologies transferred from China to Mali and tilapia and clarias reproduction techniques from Kenya to Mali).

Abstract # 227

Session # 04 Posters and Game Demonstration Session and Reception

STATUS OF NILE PERCH LATES NILOTICUS FISHERY IN LAKE VICTORIA

Ms. Monica Owili, owili@yahoo.co.uk
Mr. Chrispine Nyamweya S., sanychris@yahoo.com

Abstract

Lake Victoria, with 635km² of surface area, is the largest tropical lake and supports Africa's largest fishery. The Lake's waters are divided among three countries (Kenya, Uganda and Tanzania). Estimates indicate that riparian states earn US\$500-US\$550 million annually from fish catches from the lake. Fish biomass monitoring using acoustics and catch assessment surveys have been conducted in Lake Victoria under the LVRP (1999-2002) and IFMP (2005-2006) projects. Information from recent fishery dependent and independent methods suggests the biomass of the most important commercial fish species of Lake Victoria; the Nile perch is stabilizing (LVFO Stock Assessment RWG, 2009, CAS and Hydro-acoustic reports). Estimated biomass of Nile perch from the recent seven surveys since August 2007 has remained fairly comparable. The lowest was recorded in August 2008, just below 0.25 m t while the rest are all around 0.35 m t. Comparing the most recent surveys (2009-2011) to the surveys conducted from August 2005 to February 2007, there has been a 50% drop in biomass. The observed catch rates for the main craft gear combination targeting Nile perch species are apparently lower in the later surveys (2010-2011) than they were nine years ago. The most important gears in the Nile perch fishery are gillnets and long lines. Estimates from catch assessment survey indicate that the average annual catch in 2007 was 234,000 t, a decline from 287,000 t in 2005. A further decline to 198,624 ...

Abstract # 235

Session # 04 Posters and Game Demonstration Session and Reception

NORTHERN INLAND FISHERY AND CRAYFISHERY WILL BE CHALLENGED BY CLIMATE CHANGE - CASE LAKE SÄKYLÄN PYHÄJÄRVI (SW FINLAND)

Mr. Marko Jori, marko.jori@pji.fi
Dr. Marjo Tarvainen, marjo.tarvainen@pji.fi
Dr. Anne-Mari Ventelä, anne-mari.ventela@pji.fi

Abstract

Säkylän Pyhäjärvi (SW Finland, North Europe) is large (155 km²) and shallow lake (5.5 m), which has vital commercial fishery, with 20 fishermen. The most important commercial catch species are vendace (*Coregonus albula*) and perch (*Perca fluviatilis*). The total value of the fish catch is approximately 2 million euros annually. The lake has strong artificially introduced population of signal crayfish. The economical value of the crayfish catch is in many years higher than the total value of the fish catch. The majority of the vendace and perch catches are taken in winter, using seine-netting from below the ice. In addition to this commercial fishery, Pyhäjärvi restoration project has subsidized the harvest of commercially unwanted fish species (roach, ruffe, smelt) since 1995, aiming to improve water quality. The lake is normally ice-covered for 141 days in average. Ice-out has shifted to an earlier date, and the duration of ice-cover is decreasing, quite dramatically so in the 2000s. As the commercial fishery in Pyhäjärvi is mainly based on winter seining through the ice, it is even currently seriously challenged by climatic variation. Signal crayfish abundance may also be affected by changing climate. The ecological role of signal crayfish in this lake is not known, but it will be clarified in current project 'SATAKUNTA' Innovation and research network in changing climate - case crayfish'. Also different ecological climate change scenarios of the fish stock will be valued economically.

Abstract # 244

Session # 04 Posters and Game Demonstration Session and Reception

THE ROLE OF WOMEN AND THEIR RIGHTS IN FISHERIES AND AQUACULTURE DEVELOPMENT IN AFRICA.

Ms. Hoki Massaquoi, BSc.Hons in Environmental Science(Chemistry Option) and MSc. in Environmental Management and Quality Control,
hokmass@yahoo.com

Abstract

The role of Women and their rights in Fisheries and Aquaculture Development in Africa. Generally speaking, the word "Gender" refers to the socially constructed roles and status of women and men, girls and boys, behaviors, activities, and attributes that a given society considers appropriate for men and women. Thus, In 2008, it was estimated that 200 million people directly or indirectly were dependent on fisheries. The fisheries sector has long been considered a male domain - a sense of adventure and risk valued by men. Women's involvement in fisheries is more significant than often assumed or emphasized in Africa. According to estimates (BNP) women comprise 47% of the labour force in small-scale capture fisheries-related activities- pre- and post-harvesting work. Women are engaged in small-scale local fisheries, gleaning for shellfish, net repairs, fish processing and local marketing. Also, women are more actively engaged in inland fishing such as fishing ponds, lakes, streams and rivers. In Africa, very few women have the opportunity to upgrade their activities through training and improved technology which is the most important roles of women in the fish processing Industry. Also, Aquaculture is the fastest growing segment of the global agricultural or food production industry, and women are playing a leading role, especially in developing countries like Africa(example, Johanna from Namibia). So, 'What are women doing to cut down on poverty by half in 2015 in terms of Fisheries and Aquaculture development in Africa'. If nothing, this is the time for action.

Abstract # 246

Session # 04 Posters and Game Demonstration Session and Reception

AN INVESTIGATION OF PUBLIC PERCEPTION AND AWARENESS OF MARINE AQUACULTURE IN SOUTH AFRICAN COASTAL COMMUNITIES: A PILOT STUDY IN HERMANUS COMMUNITY

Ms. Khumo Sanny Hermina Morake, khumomorake@yahoo.com

Abstract

In order to ensure a sustainable aquaculture development basic elements needs to be taken into consideration, i.e. environmental, social and economic aspects. Most of the research focuses on the environmental aspects and very little of the social and economic aspects. There is no doubt that when dealing with sector development, socio-economic elements cannot be excluded as they are a core of most developmental initiatives. This is acknowledged by Garaway et.al (2006) in indicating that there is a need to increase interdisciplinary research and social sciences in aquaculture development. Bunting (2008) as public acceptability and perception as some of the elements that could have impact on sector development. These factors may have impact on developmental policies; therefore it is important for policy makers to be aware of them. This pilot study focus on how public perceive environmental and socio-economic impacts of marine aquaculture. A survey using questionnaire was conducted where interested and affected stakeholders were interviewed. Participants perception together with their knowledge has been presented and recommendations on implementation of the full survey are made. Note: A report on the study will be finalized by the 20th February 2012.

Abstract # 252

Session # 04 Posters and Game Demonstration Session and Reception

STRUCTURE AND ECONOMIC PERFORMANCE OF THE EUROPEAN UNION FISHING FLEET

Mr. Jarno Virtanen, jarno.virtanen@jrc.ec.europa.eu
Mr. John Anderson, john_Anderson@seafish.co.uk
Dr. Natacha Carvalho, natacha.carvalho@jrc.ec.europa.eu

Abstract

The total weight and corresponding value of fish landed by the EU fishing fleet in 2009 was 4.4 million tons and €6.4 billion respectively. The fleet generated €3.13 billion of Gross Value added (GVA) and €1.35 billion of Operating cash flow (OCF). Despite improved GVA and OCF, the EU fleet as a whole moved into a loss making position once capital costs had been accounted for. These are the results from the 2011 Annual Economic Report (AER) on the European Union (EU) fishing fleet. The report provides a comprehensive overview of the latest information available on the structure and economic performance of EU Member States fishing fleets. We will present the key figures of EU fishing fleet related to 2009.

Abstract # 254

Session # 04 Posters and Game Demonstration Session and Reception

ECONOMICS OF CULTURED CLARIAS GARIEPINUS IN EARTHEN PONDS AND CONCRETE TANKS IN OGUN STATE, SOUTH WEST NIGERIA

Dr. Tosan Fregene, B.SC., M. Sc.. Ph. D Fisheries Management, M.B.A. Busi. Admin., tosanfregene@yahoo.co.uk
Ms. Taiwo Ayansanwo B. Sc. M.Sc. Fisheries Manangement, taiwo_ayansanwo@yahoo.com

Abstract

Recent trends reveal that fish rearing has become popular in Ogun State with the influx of new entrants into fish farming due to increasing demand for fish and fish products as well as an increase in awareness of relevant technologies. The need to study yield and revenue of fish cultured in dug-out fish ponds and fish tanks has become crucial for food security and sustainability of fish enclosures for fish production. The study was aimed at identify factors influencing the yield and revenue of *Clarias gariepinus* in two different fish enclosures (dugout and fish tanks). A three stage sampling technique was used to select 240 fish farmers located in the four Agricultural Development Programme (ADP) zones in Ogun State, Nigeria. Primary data collected through the questionnaire were analyzed by means of descriptive and multiple regressions statistics. Result show that 47.1% and 39.6% fish farmers adopted fish tanks and dug-out fish ponds respectively, while 13.3% adopted both on their farms. Regression result reveal that agricultural lime and fish enclosure sizes are both significant ($P < 0.01$) for the yield of *C. gariepinus* at harvest. Only cost of construction was significant as a factor for revenue in dugout fish ponds, while cost of construction ($p < 0.1$) and labour ($p < 0.05$) for fish tanks. Costs of agricultural lime was significant at ($p < 0.05$) for revenue from rearing of *C. gariepinus* in dugouts and fish tanks. Though fish tank is more expensive to construct than dug...

Abstract # 272

Session # 04 Posters and Game Demonstration Session and Reception

THE IUU SHELLFISH IN GALICIA.

Mr. Victor Hugo Martinez, victorhugo.martinez@rai.usc.es

Abstract

The main objective of this paper is to diagnose the current state of IUU shellfish in Galicia (NW Spain), so we identify the prevalence, distribution and concentration of IUU shellfish in Galician territory, as well as the main causal elements of this illegal activity. We also sound out the perception of the shellfish's communities about IUU shellfish problem. On the other hand, the galician's case allows us to: i) make a rare case of study on small scale fishing communities in a developed country. ii) To go into the galician's institutional environment from the study of Cofrarias (specific governing bodies, ruled by formal and informal rules) and their influence on the community and about the illegal activity. To achieve the goals presented, we : i) Designed a map of illegal shellfish activities in Galicia, making an intense review of all Coast Guard and police operations against illegal shellfish in recent years. The map shows a different spatial concentration and distribution of illegal shellfish in Galicia, pointing out the relevance of the phenomenon and the differences between the galician's fishing communities iii) Applied an inquiry to the key players, of the shellfish communities, to know the perception of this players about IUU shellfish. The inquiry tried to cover all relevant issues of IUU topic (causes or incentives for illegal fishing, community's commitment and compliance, legitimacy standards, control measures ...) From reached outcomes we present a general framework of IUU shellfish in Galicia and our conclusions.

Abstract # 283

Session # 04 Posters and Game Demonstration Session and Reception

SUSTAINABLE, PROFITABLE AND SYNERGIC FISH FARMING IN NIGERIA- THE CLUSTER MANAGEMENT APPROACH

Mrs. Ololade Adegoke, M.Sc. M.B.A, ololade8@live.com

Abstract

Despite massive global development efforts, chronic poverty and inadequate food security still remain harsh realities for millions of Africans. In Africa, fisheries and aquaculture have become major sources of livelihood while also playing very important roles in local and national economies. Aquaculture is dominated by small-scale producers who are facing new opportunities and challenges as the market for aquaculture products continues to expand through globalization and market liberalization in developing countries which has affected small-scale aquaculture farmers who, contrary to the larger producers, struggle to deal with increased market risks. Cluster management by which small groups of farmers can collectively implement certain production standards is however proving successful. The need to improve management practices while bringing together different segments of the industry becomes imperative. A coherent interplay of fostering partnerships and synergies (cluster fish farmers: government, and cluster farmers:bankers) aiming to provide improved access to finance, resources and better technical assistance and monitoring is proving effective in Nigeria and this can ensure the continual sustainability of the industry as a whole while establishing good governance, knowledge generation and dissemination. These functioning, sustainable and profitable pilot clusters of fish farmers, using aquaculture better management practices, appropriate technologies, can also serve as models for the expansion of the programme to suitable states country wide, being also matched up with government extension workers and agriculture bankers in the cluster areas. This can raise their productivity levels, efficiencies, increase in wealth and food security.

Abstract # 286

Session # 04 Posters and Game Demonstration Session and Reception

ECOSYSTEM APPROACH TO FISHERIES AS THE BEST OPTION FOR FISHERIES MANAGEMENT FOR SUSTAINABILITY

Mr. Mbilari Badawi Msnelia, M. Sc, Ph. D in view, badawimbilari@yahoo.com

N.O. Bankole

H. Mohammed

Abstract

Ecosystem approach to Fisheries 'main purpose is to plan, develop and manage Fisheries in a manner that addresses the multiple needs and desires of societies without jeopardizing the options for future generations to benefit from the full range of goods and services provided by marine and inland water ecosystem. Considerable progress was made in the 1980s and 1990s as efforts were made to regulate fisheries to ensure sustainable use. At the time, the focus was almost exclusively on a single species approach. The ideal situation is the nature conservation that is to retain the integrity of nature by considering the biological, social and economic aspects of any water bodies. And the only workable way is to make the ecosystem to fisheries operational for sustainability is to translate the relevant policy goals into operational objectives and actions. The main steps in the process of implementation is to consider the high level policy goals (social, economic and environmental), next is to identify broad objectives relevant to the fishery or area in question. Then break these objectives down into smaller priority issues and sub-issues that can be addressed by management measures. Set operational objectives and develop indicators and reference points. Then develop decision rules on...

Abstract # 287

Session # 04 Posters and Game Demonstration Session and Reception

ACCLIMATIZATION AND GROWTH RATES OF PANGANI TILAPIA (OREOCHROMIS PANGANI) DIFFERENT SALINITIES

Ms. Aziza Hassan, Bsc. Aquaculture/ Msc Marine Sciencies, hassazza@yahoo.com

Dr. Aviti Mmochi, mmochi2003@yahoo.com

Abstract

Coastal communities depend on fisheries activities as their main source of income. With the fast rising coastal population and technological advancement, pressure on the wild marine resources is increasing in turn leading to overexploitation. Tanzania has developed a number of marine parks, reserves and conservation areas. Accordingly many people are looking at aquaculture as a possible livelihood alternative that will provide the affected coastal communities with an alternative source of income. Some species of tilapia are known to survive and grow in estuarine and marine environment. Some of the species are known to have the highest growth rates at certain salinity ranges. The aim of this study is to determine the survival and growth of *Oreochromis pangani* in four different salinities. Study area: Pangani town which is geographically located at latitude 5° 24'S 36"E and longitude 38° 58'S 47"E, was used as the study site. It is about 37 km from Tanga town on the Pangani River mouth that flows from the slopes of Mounts Kilimanjaro and Meru. It is mainly a fishing town with a lot of coconut trees, and fast growing tourism. Experimental Design: Pangani specie were collected from Pangani River and acclimatized for several days by raising salinity of 2o/oo/day. The fingerlings were raised at 0, 15, 25 and 35 o/oo in 13m concrete ponds.

Abstract # 292

Session # 04 Posters and Game Demonstration Session and Reception

QUALITY CHANGES IN SALTED, AND REHYDRATED SALTED COD (GADUS MORHUA) PRODUCTS

Mr. David Bamwirire, MSc, bamdav2008@gmail.com

Ms. Kristin Thorarinsdottir A, kristin.a.thorarinsdottir@matís.is

Abstract

The purpose of this study was to investigate the quality changes that occur during various salting methods. It was done through evaluating the effects of salting methods on selected variables used as indicators of quality in salted, rehydrated and dried salted cod (*Gadus morhua*). Generally salting and drying significantly decreased the yield in all methods, affecting mainly kenching and brining. Rehydration, however, enhanced the yields in all with kenching attaining the highest. The kenched products had significantly lower water activity compared to those brined and salt-injected. The salt concentrations dropped in rehydrated products (4.6-6.2%) as they attained high water activity (0.95-0.97). There was a general increase in the protein concentration up to a maximum in all the salting methods during the first four days followed by slight reductions in the later stages of drying. Results also showed a very low activity of the proteolytic enzymes (trypsin and chymotrypsin) in all products suggesting that salting effectively controls the activity of these enzymes. In general though the overall differences between the methods were minimal, indications were that the yields in the modern salting methods were higher than the traditional methods of kenching and brining.

Abstract # 299

Session # 04 Posters and Game Demonstration Session and Reception

EXPLAINING FISH CONSUMPTION IN SRI-LANKA: THE ROLE OF CONSIDERATION SET SIZE, ATTITUDE, KNOWLEDGE, CONVENIENCE ORIENTATION, PRICE CONSCIOUSNESS, AND VARIETY SEEKING TENDENCY

Mrs. Niyomi Pethiyagoda, BSc in Agriculture, niyomipethiyagoda@yahoo.com
Dr. Svein Ottar Olsen, svein.o.olsen@uit.no

Abstract

This study focus on how and why consumers vary, know and consider different kind of alternatives of fish in their diet. Consideration set size of fish is considered to be affected by consumer attitude, convenience orientation, knowledge, variety seeking tendency and price consciousness in Sri-Lankan context. Thus, it was to investigate how these variables affect the formation of consideration set size. The questionnaire survey was carried out in Galle district in Sri-Lanka with 250 respondents. The confirmatory factor analysis and structural equation modeling in Amos 16.0 were used as statistical analysis tool. It was found that significant positive relationship between consideration set size and fish consumption frequency. Further, this study has found significant positive relationships between knowledge and consideration set size, between variety seeking tendency, variety seeking related to food and between convenience orientation and consideration set size. Surprisingly, attitude has an insignificant effect on both consideration set size and the consumption frequency of food. The study found that that belief of sensory aspects, health and convenience were significant predictors of attitude toward fish. Further, price consciousness related to food has a negative significant impact on consideration set size. Food marketers should advocate that consumers consider many kind of fish species to increase their consumption of fish. Set size increases through the consumer knowledge variable. Thus, manufacturer can educate the consumers with new spices and meals to increase their consideration set size.

Abstract # 307

Session # 04 Posters and Game Demonstration Session and Reception

PERFORMANCE, POTENTIAL AND PROSPECTS OF FISHERIES SECTOR IN ERITREA

Mr. Tesfom Melake A., M.F.Sc Currently pursuing, tesmel4@gmail.com
Dr. Krishnan Mohan PhD in Agricultural Economics, mkrishnan@cife.edu.in

Abstract

Fish is important from the point of view of food and nutritional security, especially in developing countries. Most of the countries having the sea gates and those having lakes are using different methods and techniques to exploit their fisheries sector to achieve their food security. Eritrea as one of the countries that has sea gate, also aims at using its fisheries resource to tackle the question of food security. It has a coastline that is more than 1100 Km long. The Red Sea is one of the underexploited potential fisheries resources in Eritrea. It is stated that Eritrea has the potential of maximum sustainable yield of 80,000 metric tons. But so far, research shows, the Eritrean fisheries sector is producing only 13% of this potential. So the Eritrean fishery is not yet optimally exploited. Therefore, it is an underutilized resource of the country. It does not yet contribute much towards food security of the country. This paper will examine performance, potential and prospects of Eritrean fisheries and looks at the main physical constrains in fish production such as the crafts and gear used in fishing. The paper also looks into the relationship of these factors to total fish landed in the country and the necessary steps that has to be taken to enhance fisheries production in the country.

Abstract # 317

Session # 04 Posters and Game Demonstration Session and Reception

IMPACT OF GLOBAL ENVIRONMENTAL CHANGES ON INDIAN MARINE SOCIO-ECOLOGICAL SYSTEMS: NEED FOR EFFECTIVE POLICY RESPONSES

Dr. Nune Subba Rao, Ph. D, s_nune_99@yahoo.com

Abstract

This paper aims to examine the multidimensional aspects of overfishing, fishery conflicts and environmental changes and their impacts on both coastal fishery resources and on the livelihoods of fishermen in India. It also reviews and highlights the government policy initiatives and their effective implementation in this regard. Coastal ecosystems sustain human life in many ways. They provide a variety of livelihood opportunities and marine fishing constitutes the major subsistence activity. Due to the influence of globalisation, of late, these systems are being intensively exploited by modern industrial enterprises. Managing coastal fisheries poses various challenges because of declining biomass of the nearshore fisheries resources, increasing fishing effort by the artisanal and industrial fisheries leading to overexploitation and conflicts between the groups. Thus, the operations of modern mechanized vessels in the nearshore, violating the provisions of regulations relating to fishing zones are found to affect the interests of the traditional fishermen adversely necessitating more effective implementation of these regulations. Besides, environmental change poses a great and new challenge to our marine fishery development prospects and the livelihood of the people depends on it. The damage caused to fishing habitats due to overfishing with destructive implements coupled with the environmental change is enormous challenging their very existence. On the other hand, the government fisheries policy measures may still encourage investment that lead to increasing fishing mortality and habitat destruction, even though the resource is already fully exploited. Similarly, banks may encourage investments even though government policy measures are reducing fishing opportunities to fishermen.

Abstract # 325

Session # 04 Posters and Game Demonstration Session and Reception

THE STATUS OF THE FISHERIES OF OSINMO RESERVOIR, EJIGBO, OSUN STATE, NIGERIA

Dr. Olaniyi Komolafe, komolafe@oauife.edu.ng

Abstract

The Status of the fisheries of Osinmo reservoir, Ejigbo, Osun State, Nigeria In Nigeria, most water-bodies lack proper management of its fisheries resources because of lack of data. In Osun State, three reservoirs were created in 2005. This study examined the status and management of the fisheries in one of the reservoirs. Fish sampling started in December 2006 and lasted till November 2009. A total of 3996 fishes were caught by gill-net and trap fishing gears. Eight fish families comprising fourteen species of fish were identified. *Heterotis niloticus* which was not caught in all other reservoirs in the same axis was observed. The Cichlidae constituted 62.5% of the population. All the fish species thrived well in the habitat with a mean condition factor between 0.612 ± 0.047 and 1.849 ± 0.129 . The sex ratio of the fish species indicated a growing population. The values of water quality parameters showed a slight variation between the rainy and dry seasons and were within the values for most lakes and streams of the world. A gradual increase in mean length and mean weight (Duncan, p

Abstract # 359

Session # 04 Posters and Game Demonstration Session and Reception

VALUE ADDITION ON HOT SMOKED LAKE VICTORIA SARDINES (RASTRINEOBOLA ARGENTEA) FOR HUMAN CONSUMPTION

Mr. Ofred Mhongole, ojmmhongole@yahoo.co.uk

Abstract

Various traditional methods are employed to preserve and or process *Rastrineobola argentea* locally known as dagaa (sardines) an indigenous fish specie of Lake Victoria. The widely used known customarily dagaa preservation methods include sun-drying, smoking, salting and either combination of them. The advantages of smoking dagaa are manifold. Fish smoking prolong shelf life, enhances flavour and increases acceptability and its utilization. Customarily traditional dagaa processing techniques used by fishers for example sun drying dagaa is done direct on the unhygienic sand, rocks and or grasses which significantly contribute to poor dagaa products. Awareness of the shortcomings of traditional ovens had stimulated development work on new and improved smoking ovens such as Chorkor oven and Nyegezi models ovens for various reasons. In the light of lessons learned from the constraints and disadvantages associated with the earlier smoking techniques, an improved dagaa smoking oven, the modified Altona for hot smoking was introduced. However, smoked dagaa products have not yet been promoted in the country wide as well for the region and overseas markets. This may be contributed by the middlemen traders for sun dried dagaa who are not willing to opt to trade on smoked dagaa at domestic or regional markets. Because of the high quality of smoked dagaa, they do not compromise the hygienic environment for storage or display for sale. If smoked dagaa are hygienically handled found to extend shelf life up to more than a year when stored at ambient room temperature free from and insects.

Abstract # 363

Session # 04 Posters and Game Demonstration Session and Reception

STUDY OF THE SUBSTITUTION ELASTICITY BETWEEN FISH FARMING PRODUCTION INPUTS

Mr. Guillaume Péron, guillaume.peron@univ-brest.fr

Abstract

The global demand in the sea food is constantly evolving. To answer this demand, the fish farming know a strong growth of them productions. The specific characteristic of the fish farming (FF) productions results from the origin of its raw materials: (1) the agricultural farms supplying soya meals; (2) the exploitation of the halieutic resources supplying fishmeal and fish oil. Almost 80 % of the FF cost productions result from the food and are variable. The FF production can be schematized by the production of an output under duress of use of two inputs: the agricultural inputs and the halieutic inputs. One of the important aspects of FF lies in the substitution between both inputs. The growing use of the agricultural inputs allowed on one hand to supply FF raw materials demand, and on the other hand, the absorption of the increase of the costs created by the price of the halieutic inputs. The aim of this study is to model the substitution of inputs and to determine which production function answers the various constraints of production. Indeed, it seems that the input substitution cannot be made without constraint on the quality of the productions. The characteristic of the FF production function thus has to integrate the evolution of the inputs distribution into the process of production. For this working, we use the Constant Elasticity Substitution production functions to show all the characteristics of the FF. The limits of the inputs substitution in the process of production will be presented.

Abstract # 381

Session # 01B Governance: Co-management, Community Management, Coops and Catch Shares, Part I

DO ALL ANSWERS LIE WITHIN (THE COMMUNITY)? FISHING RIGHTS AND MARINE CONSERVATION

Dr. Maria Gasalla, mgasalla@usp.br

Abstract

The role of small-scale fisheries in developing countries has been widely discussed in the fisheries and "commons" literature. However, in the conservationist debate, even small-scale fishing has often been seen as a potential evil that indeed threatens ecosystem health and should be broadly and rapidly eliminated. Besides the global commitments to increase the protection of world's marine and coastal regions, several international fora have focused on the issue of how to conciliate fisheries with conservation, with both human and ecological dimensions taken into account in more contemporary governance systems (i.e. ecosystem approach to fisheries, or even fisher's self-governance). This paper draws attention to some examples from Brazil in order to consider alternatives towards community-based processes in fisheries governance and in the political economy of marine resource use. Promising pathways of potentially participative initiatives for small-scale fisheries illustrate the opportunities and challenges of current options where power imbalance between players often undermines socially-inclusive marine conservation.

Abstract # 397**Session # 04** Posters and Game Demonstration Session and Reception**COMPREHENSIVE RESOURCE ASSESSMENT AND ASSOCIATED RESEARCH FOR SOCIO-ECONOMICALLY SUSTAINABLE SMALL PELAGIC FISH FISHERIES IN THE DYNAMIC ECOSYSTEM ALONG NORTHWESTERN AFRICAN COAST OF THE ATLANTIC OCEAN**

Dr. Naoki Tojo, bering.raven@gmail.com; Mr. Azeddine Ramzi, az_ramzi@yahoo.fr
Mr. Tadanori Fujino, fnori159@hotmail.com; Mr. Shunji Sugiyama, Sugiyama.Shunji@jica.go.jp
Dr. Kazushi Miyashita, miyashi@fish.hokudai.ac.jp

Abstract

The Northwestern African coast of the Atlantic Ocean is the one of the most productive coastal areas in the worlds' oceans. Small pelagic fishes, sustaining more than 80% of the Moroccan fisheries, highly depend on the productivity of the Canary Current and enhanced coastal upwelling by seasonal winds. On the other hand, the unique spatio-temporal dynamics of the environment in the area drives the uncertainty of these fishing targets with high dependency upon the surrounding. Since July 2010, "Capacity development of fisheries resource monitoring for sustainable management of small pelagic resources" has been progressing by Institut National de Recherche Halieutique (INRH), Morocco and Japan International Cooperation Agency (JICA). In this project, scientifically collected data using reinforced acoustic technology will be analyzed with the supplemental information affecting the small pelagic resources, such as fisheries parameters and regional/global environmental indices. Socio-economic consequences are expected to be taken into consideration in the assessment and associated analysis process. Experiments to seek practical indices based on the ecology of target fishes have been conducted based on the consensus in the data and information sharing among scientific sectors. Through the classic cycles of scientific researches, project members aimed to attain the objectives while improving the capacity of the resource monitoring and assessment. From a "comprehensive-approach" perspective, dynamics of stocks and the socio-economic consequences are being incorporated for the Moroccan and regional sustainable resource allocation. In this presentation, project activities will be presented with the part of results using spatio-temporal modeling

Abstract # 398**Session # 04** Posters and Game Demonstration Session and Reception**REFINING ACOUSTIC SURVEY PARAMETERS FOR SUSTAINABLE RESOURCE ASSESSMENT OF SMALL PELAGIC SPECIES IN THE NORTHWESTERN AFRICAN COAST OF THE ATLANTIC OCEAN**

Mr. Tadanori Fujino, fnori159@hotmail.com
Dr. Naoki Tojo, bering.raven@gmail.com
Dr. Kazushi Miyashita, miyashi@fish.hokudai.ac.jp

Abstract

Off the Northwestern African coast, small pelagic fish fisheries play an important role in providing opportunities including employment and financial return for locals. Five species groups are targeted in the fisheries: sardine, anchovy, mackerel, horse mackerel and sardinella. These fishes are highly variable in distribution and abundance, and it causes variability in the potential cost and benefit for the fishers. These potential effects have been discussed through the pilot analyses in a cooperative project between Institut National de Recherche Halieutique, Morocco and Japan International Cooperation Agency, "Capacity development of fisheries resource monitoring for sustainable management of small pelagic resources". Regarding the assessment of abundance using acoustic survey data, also used in the pilot analysis, acoustic reflection per one fish (Target Strength, TS) is a necessary parameter. The TS differs by each species groups, however TS of the herring (*Clupea harengus*) have been applied to the small pelagic species groups in Morocco. This can be a potential source of error in the present resource assessment and associated analyses. To apply the correct TS by each species groups, we conducted TS measurement for sardine (*Sardina philchardus*) and round sardinella (*Sardinella aurita*). Results show the measured TS level of them to be much larger than previously referred values; application of the past TS value may cause 3~4 times overestimation of the actual stocks. TS value may be different for other species groups as well. Further efforts to refine the TS value for each species groups will be made within the remaining years

Abstract # 399

Session # 23B JIFRS/JICA Session on Responsible Fishing

STUDY IN ECONOMIC PERFORMANCE OF COASTAL SEINERS IN MOROCCO

Mr. Abdelkadir Kamili, kamili_s@yahoo.fr
Mrs. Amale Laabdi, labamale@yahoo.fr
Mr. Tadanori Fujino, fnori159@hotmail.com
Dr. Naoki Tojo, bering.raven@gmail.com
Gakushi Ishimura, gakugaku@sgp.hokudai.ac.jp
Dr. Kazushi Miyashita, miyashi@fish.hokudai.ac.jp

Abstract

Small pelagic fisheries have great economical importance in Morocco. In 2010, it accounted for approximately 80% of the total landings of the fishes which corresponds to around 1.9 billion DH. Also, Small pelagic fishery contributes significantly to employment, trade, transportation and the processing industry. Thus, sustainable development of this fishing sector is aimed as part of national policy (strategy Halieutis launched by the Moroccan government in 2010). To develop an effective policy and to evaluate the impact of the current measures taken by this strategy, socio-economic survey and analysis are the important actions that should be taken. Since July 2010, a capacity development project for fisheries resource monitoring of small pelagic resources has been launched by Institut National de Recherche Halieutique (INRH) of Morocco and Japan International Cooperation Agency (JICA). As a part of this project, we focus on the coastal seiners in one of the major ports in Morocco, Agadir port, where 17% of the coastal seiners are registered. Coastal seiners represent 62% of the vessels fishing small pelagic fishes and 96% of their landings. We analyze and diagnose the purse seiners as an economic system of creating wealth for the benefit of the different stakeholders. In order to analyze the economic performances of Moroccan coastal seiners, we examine the main economic indicators by boat (employment, fishing effort, productivity, operating costs, value added, etc.). We expect that this study will clarify the structure and composition of costs and the allocation of the added value.

Abstract # 413

Session # 14 Keynotes and Awards

INSTITUTIONAL QUALITY AND CATCH PERFORMANCE OF FISHING NATIONS

Mr. Ola Flaaten, Professor, ola.flaaten@uit.no

Abstract

The relationship between annual growth in the catches of fishing nations and the quality of the institutions of those nations is analyzed. Catch volumes are used as a proxy for development, since economic performance indicators based on a common set of definitions do not exist. 49 major fishing nations were selected for this study, including 22 OECD countries and several developing countries. Three general good governance indices, for government-efficiency (World Bank), corruption (Transparency International) and competitiveness (World Economic Forum) and one fishery specific FAO Code of Conduct compliance index were used. The correlation between fisheries' performance and the indices proved to be spurious, but OECD members achieved a statistically significant negative growth in catches between 1987 and 2007. The countries are divided into five groups, including 'Winners' and 'Losers', with reference to catch growth rates over two decades. Most of the OECD countries fell into the category 'Losers', whereas 'Winners' includes many developing countries with lower quality institutions. Some countries had experienced an amazing growth in catches, while others had experienced a decline. The future prospects for both categories are discussed.

Abstract # 414

Session # 22B Karl Rich and Bernt Aarset

STRATEGIES FOR SEIZING CONTROL OF GENETIC DEVELOPMENT IN AQUACULTURE

Svein Borgen, svein.borgen@sifo.no

Abstract

Studies of food value chains tend to take raw commodities such as farmed fish as their point of entry. The value creation of primary producers is typically analyzed through mapping their relative position forwards to food processors, and/or backwards to their input suppliers. Value chain analysis clarifies how the value of a raw commodity is gradually transformed. But so far, less focus has been set on the role that genetic development plays for the value chain. We think that the processes, structures and ramifications of genetic development ("pre-commodities") should be brought more explicitly and systematically into the analysis at company, value chain and institutional level. This calls for in-depth studies of strategies and mechanisms for resource control, not only "from commodity to consumer", but also "from pre-commodity to commodity". Of particular interest here are mechanisms that are consequential for the distribution of power between breeders and farmers as well as the subsequent stages and partners within aquacultural value chains. This article explores the approaches by which breeders can retain control of their investments in breeding. Three categories of control instruments are discussed; i.e. biological, legal-regulatory and market-strategic. Data are drawn from in-depth interviews with core personnel within Norwegian aquaculture (industrial organizations, breeding companies etc). In addition, we draw on experiences from comparable analyses from other husbandries.

Abstract # 415

Session # 23B JIFRS/JICA Session on Responsible Fishing

RESULTS OBTAINED FROM AN 8-YEAR EXPERIMENT OF FISHERIES CO-MANAGEMENT IN SENEGAL

Mamadou Thiam, papathiam1970@yahoo.fr

Mr. Makoto Ikeda, ikedamak@hotmail.com

Abstract

In Senegal, fisheries management has long been tried and positive results have been achieved only in fishing villages where the community has taken the initiatives. However, it is necessary for the administration and a research organization to play certain roles in fisheries management for such management to be effective. From this point of view, and with the technical cooperation provided by JICA, fisheries co-management activities have been conducted along the coast of the country and important results obtained. These are: (1) scaling up of fisheries co-management from the single village to the regional level (11 villages); (2) increasing of the target resources by including *Octopus vulgaris*, *Cymbium pepo*, *C. cymbium*, *Sepia officinalis*, *Epinephelus aeneus*, *Cynoglossus senegalensis*, etc.; (3) involving fishing enterprises which willingly bring financial supports to fishermen's activities; (4) collaborating with the World Bank and USAID in the field of fisheries co-management; and (5) attracting the neighboring countries such as Cape Verde, Ivory Coast, The Gambia, Guinea, Guinea Bissau and Mauritania, so as to extend the Senegalese experiences in West Africa. The difficulties lying ahead are: (1) the fisheries resources are still not rehabilitated; (2) the government policy on fisheries co-management has not yet been formalized; and (3) the involvement of consumers in fisheries management has not begun.

Abstract # 416

Session # 12C Socio-economic assessment of Management Measures of the new Common Fisheries Policy (CFP) - Challenges and Methodological Background Part II

SOCIO-ECONOMIC ANALYSIS OF THE OPTIONS FOR A REFORMED CFP

Angel Andres Calvo Santos, angel-andres.calvo-santos@ec.europa.eu

Abstract

On the basis of proposals made by the European Commission, a reformed Common Fisheries Policy (CFP) for the European Union is foreseen to enter into force during 2013. The European Commission proposal for the CFP reform was supported by an impact assessment analysing the economic, social, and environmental impacts of a series of policy options. All options aimed at achieving environmental sustainability as a precondition for overall sustainability. The paper will present the methodology for the analysis in this impact assessment, the content of the different options, as well as the impacts of the options identified for the CFP. The paper will also show how the impact assessment process has fed into the policy making process of the future of both the Common Fisheries Policy and the European Maritime and Fisheries Fund.

Abstract # 417

Session # 04 Posters and Game Demonstration Session and Reception

UNU FISHERIES TRAINING PROGRAM

Dr. Ögmundur Knútsson, PhD, ogmundur@unak.is

Abstract

A description of the UN University's Fisheries Training Programme.

Abstract # 418

Session # 21A Africa Policy Day Part II

PROFITABILITY ANALYSIS OF ABALONE FARMING IN PORT NOLLOTH, IN THE NORTHERN CAPE PROVINCE, SOUTH AFRICA.

Adeleen Cloete, adeleenmarine@live.co.za

Mr. Pall Jensson, Professor, pall@hi.is

Abstract

The abalone industry in South Africa is known as one of the largest producing farmed abalone in the world. Most of the farms are located in the Western Cape Province. The growth of abalone aquaculture is expected to continue, however, access to suitable coastal land and the dependence to a large degree on wild harvest of seaweed for feed purposes may restrict further development around main spatial nodes of abalone farming. This led to government proposing the development of the Namaqualand Mariculture Park (NMP) in the Northern Cape province of South Africa. The NMP concept involves the development of complementary marine aquaculture activities sharing common infrastructure. The NMP could support a diverse number of mariculture operations but the current project evaluated the feasibility of abalone farming as the first aquaculture venture to be established in the NMP. The main result from the profitability model, The Net Present Value (NPV) for the two cash flow series was negative R 37 million and negative R 30 million respectively. Sensitivity analysis indicated that the abalone farm is most sensitive to variations in the sales price and the quantity of abalone sold. This is important as revenue earned must cover the cost incurred by production. The production strategy of the current study, selling abalone in dried product form, requires larger animals than usually grown on the majority of abalone farms; thus a longer production period. High production costs have been cited as one of the main reasons for poor economic performance of abalone aquaculture.

Abstract # 419

Session # 02E Climate Change Impacts on the Economics of World Fisheries

CLIMATE CHANGE AND THE ECONOMICS OF FISHERIES IN AUSTRALIA

Dr. Ana Norman-López, ana.norman@csiro.au

Abstract

Climate change is generally agreed to be one of the biggest challenges facing the world today, and Australia is no exception. Marine fisheries productivity and distribution is predicted to change with ocean warming. Here, I will examine the economic consequences of climate change on the Australian fishing industry. I will discuss how the costs and benefits derived from fishing by the industry is likely to be affected by climate. In addition, I will discuss how the industry may adapt to these changes. For this contribution, I will apply both market analysis and economic modelling of fisheries.

Abstract # 420

Session # 02E Climate Change Impacts on the Economics of World Fisheries

THE RELATIONSHIP BETWEEN CLIMATE CHANGE, SARDINE ABUNDANCE AND COMMERCIAL FISHERIES PRODUCTION IN THE CALIFORNIA CURRENT LARGE MARINE ECOSYSTEM

Ms. Ngaio Hotte, n.hotte@fisheries.ubc.ca
Dr. Sam Herrick, Sam.Herrick@noaa.gov
Mr. Jerrold Norton, Jerrold.G.Norton@noaa.gov

Abstract

Pacific sardine (*Sardinops sagax*) in the California Current Ecosystem (CCE) has exhibited extreme sensitivity in its abundance and distribution in the face of decadal-scale climate regime changes. Warm regimes enhance the abundance of Pacific sardine and expand its distribution. Cold regimes lessen the abundance and restrict the distribution. For instance, between the late 1940s and 1970s, a cold regime shift in the California current system, combined with overfishing by excess fishing effort, resulted in the collapse of Pacific sardine resource. As abundance decreased, the spatial availability for commercial fisheries shifted from a wide range - Canada (British Columbia), U.S. (Washington, Oregon, California) and Mexico (Baja California), to the limited Southern region - Southern California and Mexico. The collapse of the sardine resource not only affected their fisheries, but also fisheries for higher trophic level species of commercial, recreational and ecological importance. Based on observations over the last century we investigate the linkages between climate variability, the sardine resource and commercial fisheries production within the CCE. We use these findings to herald the impacts of global climate change on commercial fisheries production within the CCE.

Abstract # 421

Session # 02E Climate Change Impacts on the Economics of World Fisheries

ADAPTING FISHERIES TO CLIMATE CHANGE

Dr. Edward Allison, e.allison@cgiar.org

Abstract

Adaptation is a multi-scale and multi-sector dynamic process. Economic analyses of adaptation costs and opportunities are at present limited in the fisheries and aquaculture sector, and are usually focused on one or two of the many pathways of potential impact, and are applied at either very aggregated scales (nation-state) or very locally (community-based adaptation). Also, they typically address aggregate-level costs to the sector's profitability and don't identify who will pay for adaptation and how costs and benefits will be distributed. We present examples of preliminary studies from Aquaculture in Vietnam and Coral-reef based fisheries in the Solomon Islands that illustrate attempts to address adaptation at multiple scales and to impacts from multiple pathways. Many adaptation options are 'no regrets', such as protecting marine habitats, reducing excessive harvesting rates and promoting alternative or complementary livelihood options. Some climate adaptation options also increase the sector's capacity to withstand other shocks and adverse trends affecting the sector, such as fuel price rises or natural disasters. These 'no regrets' and 'win-win' synergies need to be considered when evaluating the cost of adapting to climate change, which may not therefore be as great as often proposed.

Abstract # 422

Session # 02E Climate Change Impacts on the Economics of World Fisheries

CLIMATE CHANGE EFFECTS ON THE ECONOMICS AND MANAGEMENT OF WORLD FISHERIES

Dr. Rashid Sumaila, r.sumaila@fisheries.ubc.ca

Abstract

Climate and marine ecosystem research informs us that marine fish resources would come under increasing stress over the course of the 21st century as global climate change, ocean acidification and de-oxygenation combine with other stresses on the ocean, including heavy fishing pressure and marine pollution, to change the primary productivity of fish populations, shifts in distribution of their biomass and changes in the potential yield of exploited marine species. Given these predicted changes and the fact that (i) marine fish resources are already challenging to manage because of their common property nature; and (ii) they provide the world large market benefits (animal protein, jobs and profits) and non-market benefits (e.g., existence and bequest values), both the economics and management of marine fisheries are bound to be affected as warming increases into the future. The objective of this chapter is to explore the likely effects on both the economics and management of marine fisheries into the future.

Abstract # 423

Session # 12C Socio-economic assessment of Management Measures of the new Common Fisheries Policy (CFP) - Challenges and Methodological Background Part II

SOCIO-ECONOMIC EFFECTS OF MANAGEMENT MEASURES OF THE FUTURE CFP – OVERVIEW ON A NEW EUROPEAN FP 7 PROJECT

Mr. Ralf Döring, PhD, ralf.doering@vti.bund.de

Abstract

The talk will give an overview on the new EU FP 7 project 'SOCIOEC' which started in March 2012 and the ideas for this special session (see session description).

Abstract # 424

Session # 12C Socio-economic assessment of Management Measures of the new Common Fisheries Policy (CFP) - Challenges and Methodological Background Part II

CONFRONTING THE IMPLEMENTATION OF MARINE ECOSYSTEM-BASED MANAGEMENT WITHIN THE EUROPEAN COMMON FISHERIES POLICY REFORM

Mr. Raul Pallezo, rpallezo@azti.es

Mr. Richard Curtin, rcurtin@azti.es

Abstract

In this work we confront, by reviewing the literature, the definition of ecosystem-based management provided in the proposal for reform of the European Common Fisheries Policy (CFP) with the specific measures foreseen in it. These are: the sustainability objectives, the maximum sustainable yield target, the discard ban, transferable fishing concessions and regionalization. By analyzing the proposal of reform of the CFP by means of the ecosystem-based management framework, we conclude that there is a lack of social instruments to deal with the social sustainability objective while economic and ecological sustainability can be simultaneously achieved with the specific measures considered in the proposal. We also conclude that individually analysed, the specific measures could further the ecosystem based management implementation, although not all the observed or analysed consequences of the implementation of these measures move in this direction. In that sense we conclude that the success of the ecosystem based management depends much more on the specific implementation as well as on the accompanying incentives (structural funds).

Abstract # 425**Session # 12C** Socio-economic assessment of Management Measures of the new Common Fisheries Policy (CFP) - Challenges and Methodological Background Part II**ECOCEAN - GAMES IN FISHERIES EDUCATION, COMMUNICATION AND SCIENCE**

Jörn Schmidt, jschmidt@economics.uni-kiel.de
Dr. Rudi Voss, voss@economics.uni-kiel.de
Mr. Dennis Nissen, post@dennisnissen.de
Mr. Michel Magens, m@micelmagens.de
Mr. Martin F. Quaas, quaas@economics.uni-kiel.de
Mr. Till Requate, requate@economics.uni-kiel.de

Abstract

There is growing realization of the potential for games and experiments as powerful tools for education, outreach and research in many fields of science. Particularly in fisheries management we face a growing demand for stakeholder involvement, which requires new ways in reaching informed decision making. Games and experiments can be used for (i) teaching economic and ecological principles to pupils, students and the general public, (ii) outreach and communication with stakeholders in participatory assessment or management environments, and (iii) collecting scientific data in controlled research experiments. We developed a conceptual approach and realised the fisheries simulation game ecoOcean. This tool has so far primarily been used for dissemination purposes. The great success of the current version of the game is a strong motivation to proceed on these lines. The game shall be further developed to include a higher complexity and enable the simulation of management measures, i.e. the stakeholder can play through management measures. The paper shall rise awareness of the strengths of this new approach to stakeholder involvement. We will describe past and current approaches and draw a vision on future use of games in education, communication and science, using the conceptual approach we have taken with ecoOcean.

Abstract # 426**Session # 11E** Too Big to Ignore: Enhancing Visibility and Possibilities in Small-Scale Fisheries**TOO NUTRITIOUS TO IGNORE: SMALL FISH FROM SMALL-SCALE FISHERIES AND THEIR CONTRIBUTION TO FOOD SECURITY**

Mr. Edward Allison, E.Allison@uea.ac.uk

Abstract

Fish contribute to food security through multiple pathways. First, they contribute to dietary quality and human health by providing minerals, vitamins, essential fatty acids and protein to fish consumers. Fish also contribute to food security through the income they provide to fishing households and to those in ancilliary occupations, which enables food purchases and healthcare expenditure. Revenues generated from licenses and access agreements, taxes and non-consumptive uses (e.g. dive tourism) support economic growth, which, in turn, supports poverty reduction and food security. National fisheries policies and regional and global governance trends increasingly emphasise the indirect macro-economic pathways linking fisheries to food security. This risks under-valuing the nutritional role of fish, particularly the low-cost nutrient-dense small fish often caught in small-scale fisheries. I argue that, in developing countries, a food-security orientation in fisheries policies is required on ethical grounds. This, in turn, requires a critical examination of how different fishery policies may affect the nutrition security of currently food-insecure groups with traditionally high reliance on fish to maintain a healthy, nutritious diet. These groups include the landless rural poor in floodplain areas, the coastal urban poor, citizens of small island developing states and some marginalized indigenous groups in developed countries.

Abstract # 427

Session # 11E Too Big to Ignore: Enhancing Visibility and Possibilities in Small-Scale Fisheries

THE CRUCIAL ROLE OF SMALL-SCALE FISHERIES IN CONSERVATION

Dr. Anthony Charles, tony.charles@smu.ca

Abstract

Small-scale fisheries are no exceptions to the requirements of staying within the biological bounds of sustainability, by purposively limiting fish harvests, and of maintaining productivity of oceans and freshwater systems, by protecting ecosystem health and habitat quality. However, while these fisheries, like all others, have the potential to pose conservation problems, they are also crucial to the solution. This is especially the case since those engaged in small-scale fisheries typically have most at stake in the stewardship of their fishing spaces, contribute important local knowledge to fishery governance, and are on the front lines in facing the implications of non-fishery impacts on the world's aquatic systems, such as land-based pollution, industrial development and the like. This paper examines the role of small-scale fisheries in local-level community-based conservation, describing several conservation success stories that are having positive impacts locally while also representing models that are being adopted elsewhere. While these conservation initiatives often operate "under the radar", perhaps little known to international agencies and national governments, they are collectively at least as effective as more large-scale efforts. This presentation draws lessons from these experiences that are relevant to governments, the fishing sector, coastal communities and beyond. A key message is that concrete support within fishery governance for the conservation role of small-scale fisheries can help multiply the conservation successes many times.

Abstract # 428

Session # 11E Too Big to Ignore: Enhancing Visibility and Possibilities in Small-Scale Fisheries

CELEBRATING SOUTHERN AFRICAN SMALL-SCALE FISHERIES

Mafaniso Hara, mhara@plaas.org.za

Abstract

In Africa at least 10 million people depend in fisheries. 90% of fish from the continent is landed by small-scale fishers. The value of landed catch from the continent is estimated at \$2.7 billion annually. In southern Africa, the main fishery resources range from inland lake and river systems to marine systems. Over 95% of catch from these systems is landed by small-scale fishers. This review celebrates the value and benefits deriving from Southern African fisheries such as employment, income, food security, cultural, etc., among others. What should also be notable is the welfare function that fisheries play in most fishing communities, thereby contributing to community resilience and stability, despite the low priority accorded to the sector by most governments in the region. By demonstrating the value of the sector, it is envisaged that governments and donors would begin to see the sector in better light and give it due consideration in future policies and development planning.

Abstract # 429

Session # 12E Too Big to Ignore: Enhancing Visibility and Possibilities in Small-Scale Fisheries. Part II

CREATING ECONOMIC ACTION SPACES FOR SMALL-SCALE FISHERS TO PRACTICE THEIR LIVELIHOODS - A CASE STUDY OF THE NEW SMALL-SCALE POLICY IN SOUTH AFRICA

Dr. Moenieba Isaacs, misaacs@uwc.ac.za

Abstract

The new small scale fisheries policy has created an action space for marginalised small scale fishers practice their livelihoods and create economic opportunities for their families and communities. The political action space created to formulate a new small scale policy will now be translated to economic action space. This paper will describe the process of how political action space translates into economic action space at local community level. The key questions that will be answer are: What governance processes and structures are involved in creating economic opportunities for marginalised small scale fishers? What are the constraints for the small scale fishers? What are their conflicts with other rights holders in the community? .How are fishers organised and how do they understand the governance processes involved implementing the new small-scale fisheries policy. The methodology of this paper is based on desktop review of recent work in small-scale fisheries in South Africa, active involvement in the small-scale policy formulation and community consultation process, and a short survey conducted in fishing community on governance of small-scale fisheries policy conducted in December 2011. Findings suggest that marginalised fishers are not organised and represented by community organisations and many existing right holders are reorganising to capture the economic opportunities. Lack of infrastructure and markets are some of the constraints marginalised fishers are experiencing which leaves the space wide open for outsiders to benefit.

Abstract # 430

Session # 12E Too Big to Ignore: Enhancing Visibility and Possibilities in Small-Scale Fisheries. Part II

INVISIBLE POSSIBILITIES: POVERTY ALLEVIATION IN SMALL-SCALE FISHER COMMUNITIES

Dr. Paul Onyango, PhD, onyango_paul@yahoo.com

Abstract

Poverty is currently among the challenging global problems that requires sound alleviation strategies. The challenge relates to how poverty presents itself as highly varied in both context and content. Quite often, conventional approaches to the study of poverty and its alleviation have focused on what communities are deprived of or lack. This is a state in which poor communities face unacceptable hardship given their inability to access what they are supposed to get. That which they are supposed to get is to a large extent visibly absent in their communities. We refer to these absences in this paper as the visible absences. There is however another side that we seldom hear of about the poor, the invisible presences. These are what the poor communities have but are not obviously visible. The invisible presences appear to be the lifeline of the poor communities where all activities and behaviour are pegged. They appear to be the basis upon which poor communities generate meaning for life, ground, establish and operate their institutions and power system. They appear to be what poor communities use to create and utilize what political ecologists refer to as ocean space. This paper examines what these invisible presences are and how they are used in poor small-scale fisher communities of Lake Victoria Tanzania.

Abstract # 431

Session # 12E Too Big to Ignore: Enhancing Visibility and Possibilities in Small-Scale Fisheries. Part II

ARE SMALL-SCALE FISHERIES ECONOMICALLY VIABLE?

Dr. Rashid Sumaila, r.sumaila@fisheries.ubc.ca

Abstract

The contributions of small-scale fisheries to income and employment are well recognized but not sufficiently understood. It is difficult to gauge, for instance, whether this sector is economically viable, especially in the context of large-scale economic, social, political, and ecological change processes. These knowledge deficits create an environment of uncertainty for policy interventions and responses to change, which consequently run the risk of increasing the vulnerability of small-scale fisheries. This paper explores how viable small-scale fisheries are and what options exist for improving their contributions and resilience.

Abstract # 433

Session # 13E: Well-Being and Fishery Governance

1. A WELLBEING PERSPECTIVE ON SMALL-SCALE FISHERIES

Dr. Edward Allison, e.allison@cgiar.org
Dr. Anthony Charles, tony.charles@smu.ca

Abstract

Since the ground-breaking 'Voices of the Poor' study by Narayan et al (1997) for the World Bank, development analysts and policy-makers have been aware of the need to include people's subjective experiences of poverty in analyses intended to inform poverty reduction policies. This awareness has evolved into the concept of wellbeing which provides an analytical model, with an associated set of indicators, to assess material, relational and subjective aspects of poverty. This presentation introduces and reviews the outcomes of a just-completed CGIAR-Canada Linkage Fund project on "Governing Small-scale Fisheries for Poverty Reduction" which sought to incorporate wellbeing concepts into assessments of poverty in small-scale fisheries in developing countries. We focused on three issues. First, we explored how a wellbeing lens strengthens the conceptualization of the 'social' in integrated analytical frameworks such as social-ecological resilience or ecosystem based fisheries management. Second, we examined the extent to which a well-being lens brought to the fore neglected issues of importance in participatory management of fisheries, such as identity and occupational cultures, job satisfaction, youth aspirations and community cohesion. Third, we ask whether adoption of well-being perspectives can influence the quality of governance. We argue that a well-being lens can provide a broader, more multi-dimensional perspective that is much needed to properly assess the relative value of management options, each with its specific benefits and costs in a given fishery.

Abstract # 434

Session # 13E: Well-Being and Fishery Governance

LINKING WELLBEING AND RESILIENCE TO IMPROVE FISHERY GOVERNANCE

Dr. Derek Armitage, derek.armitage@uwaterloo.ca
Mr. Christophe Béné, C.Bene@ids.ac.uk
Dr. Anthony Charles, tony.charles@smu.ca
Dr. Derek Johnson, Derek.Johnson@ad.umanitoba.ca
Dr. Edward Allison, e.allison@cgiar.org

Abstract

Transdisciplinary approaches and innovative combinations of social and ecological theory are required to deal with complexity and change in fisheries and other human-ecological systems. This paper examines the interplay and complementarities that emerge by linking resilience and social wellbeing approaches to better understand and govern fisheries. After first discussing the nature of resilience and of wellbeing, and the limitations of applying each concept individually, the paper explores the interplay of resilience and wellbeing in fostering a social-ecological perspective that promises more appropriate management and policy actions. Five key points of interplay are examined: (1) the limitations of simplistic optimization thinking; (2) the role of human agency and values; (3) understandings of scale; (4) insights on "controlling variables"; and (5) perspectives on thresholds and boundaries. This analysis leads to a series of insights for enhancing transdisciplinary research and fishery governance.

Abstract # 435

Session # 13E: Well-Being and Fishery Governance

3. BROADENING THE SCOPE IN FISHERIES GOVERNANCE WITH A WELLBEING LENS

Dr. Ratana Chuenpagdee, ratanac@mun.ca
Dr. Anthony Charles, tony.charles@smu.ca
Dr. Derek Johnson, Derek.Johnson@ad.umanitoba.ca

Abstract

Decades of social science research has shown that fisheries, particularly small-scale, are integral to community wellbeing. They contribute to food security, men's, women's, and children's livelihoods, health, community identity, and social cohesion. These contributions need to be well-defined and contextualized, as well as differentiated between fishing sectors, for better fisheries governance. By applying a broad, multi-dimensional perspective of wellbeing to evaluating the overall societal importance of fisheries, we can inform fisheries management decisions, especially with respect to choices and trade-offs that need to be made in implementing fisheries instruments. The paper offers a simple evaluation scheme to assess fisheries management options using a set of attributes informed by wellbeing literature such as material wealth, job satisfaction, social relational success, principled governance, and ecological sustainability.

Abstract # 436

Session # 13E: Well-Being and Fishery Governance

WELLBEING IN SMALL-SCALE FISHING COMMUNITIES IN SOUTH AFRICA

Ms. Philile Mbatha, MSc in Environmental and Geographical Science, philile_mbatha@yahoo.com
Dr. Sarah Coulthard PhD., sarah.coulthard@northumbria.ac.uk
Ms. Janne Rohe, MSc., janne.rohe@googlemail.com

Abstract

Coastal resources play a significant role in supporting the livelihoods and contributing to the wellbeing of marginalised communities in South Africa. Through an analysis of four small-scale-fishing communities in South Africa, this research sought to understand how and why benefits arising from the use of coastal resources in the fisheries sector are shared in the manner that they are; and the contribution of the fisheries sector to the wellbeing of small-scale fishing communities. Both qualitative and quantitative methods were used to collect the data. Findings reveal that despite the fact that communities have benefited from fisheries, the sector has also had negative economic and social impacts on livelihoods. In the fisheries sector, co-management arrangements have enhanced resource sustainability, but regulations have restricted the extent to which fishers can benefit economically from marine resources. In this sector, the lack of decentralization of decision-making about resource access, use and control presents a key institutional blockage for benefit sharing. Due to a lack of alternative livelihood opportunities for small-scale fishing communities, there has been increased pressure on conservation institutions to play a developmental role at the community level. Similarly, the private sector and non-governmental institutions have been increasingly providing basic services that are the traditional preserve of government. This has compromised the potential of communities to fully benefit from the economic opportunities provided by the fisheries sector. Findings of this study affirm the need for fisheries governance strategies to reflect the needs of poor fishing communities.

Abstract # 437

Session # 22B Karl Rich and Bernt Aarset

AN INTEGRATED EPIDEMIOLOGICAL-ECONOMIC MODEL OF SEA LICE CONTROL IN AQUACULTURE: A SYSTEM DYNAMICS APPROACH

Kanar Hamza, kdizyee@gmail.com

Abstract

Different methodologies have been used in modeling the epidemiology and economics of aquaculture diseases, including input-output models, benefit-cost analysis, linear programming, simple spreadsheet-based models, compartment models based on differential equations, and spatial models. Despite the advantages that these models provide, there is a need to develop a more integrated approach to the epidemiology and economics of disease that better represents and captures existing feedback mechanisms, interventions to control aquatic disease, and the economic consequences of these interventions on economic incentives to control aquatic disease and producer behavior. System dynamics modeling approaches have utility in this context. While they have been used in modeling animal (livestock) health economics, their application in fisheries has been limited to questions of stock management. In this paper, we apply system dynamics modeling in aquaculture health economics in the context of sea lice control. Separate models of sea lice and salmon growth evolution were designed and integrated to capture the feedbacks between them and examine the impact of different control scenarios on the system. The preliminary results of the model showed that small scale treatments (i.e. at the cage/pen level) do not remedy the oscillatory behavior found in lice population dynamics in that cage/pen, suggesting the need to consider other treatment modalities.

Abstract # 438

Session # 22B Karl Rich and Bernt Aarset

THE ECONOMICS OF CONTROLLING DISEASES ON FISH FARMS.

Yajie Liu, yajie.liu@sintef.no

Abstract

Disease is a primary threat to the continued growth in salmon aquaculture due to its extensive effects on the sector. Aquaculture farms suffer the most direct and immediate economic losses through reduction in growth, low feed efficiency and market prices, increasing mortality rates, and expenditures on prevention and treatment measures. Prevention and control strategies and management practices are at the core in eliminating or minimizing the disease, while cost-effective disease control strategies at the level of the fish farm are needed to enhance productivity and profitability. This paper aims to develop a bioeconomic model to determine the optimal set of disease control strategies for sea lice at a farm level. The optimal strategies that minimize total disease costs including direct production losses and control costs and maximize overall profit depend on the integration between economics and epidemiology of disease. A production function will be first constructed to incorporate the effects on production at a farm level, followed by the development of a dynamic profit optimization model to take into account several prevention and treatment strategies. The model will be applied to case studies in Norway.

Abstract # 439

Session # 22B Karl Rich and Bernt Aarset

CAPTURING DECISION-MAKING TRADEOFFS BETWEEN GOVERNMENT AND INDUSTRY: A BI-LEVEL PROGRAMMING APPROACH

Dr. Karl Rich, Ph.D., kr@nupi.no

Abstract

Disease control decisions at a sector level often reflect different types of goals and incentives between various stakeholders. While government may pursue policy objectives to eliminate disease at any cost, for example, the success of such initiatives relies on the capability and desire of industry to adopt such measures as part of their own decision-making calculus. These tradeoffs complicate the uptake of different interventions, yet ignoring them may lead to sub-optimal choices. One way of addressing these tradeoffs is through the use of bi-level programming models, in which the decision making choices of industry are couched directly within the objective function of government. Such approaches have had limited application in the fisheries literature, and have not been applied in the context of aquaculture health. In this presentation, a bi-level programming approach for sea lice control is presented, with preliminary results to be given based on a simplified, proof-of-concept model.

Abstract # 440**Session # 21B Coupled Economic-Ecological Models for Ecosystem-Based Fishery Management: Exploration of Tradeoffs Between Model Complexity and Management Needs****A COUPLED MODEL OF THE GULF OF MAINE LOBSTER, HERRING AND GROUND FISH FISHERIES**

Dr. Daniel Holland, dan.holland@noaa.gov

Abstract

The productivity and resilience of fisheries are subject to a multitude of dynamic and interrelated influences that arise from complex coupling of fish populations with the natural and human systems of which they are a part. With few exceptions, fisheries are managed independently, ignoring important natural and human linkages among them. The biological productivity, sustainability and consequently human benefits of ostensibly separate fisheries may be substantially increased if these linkages are better understood and if this understanding can be applied to management. The American lobster, Atlantic herring and Northeast multispecies groundfish fisheries in the Gulf of Maine are subject to an array of natural and human linkages, but these linkages have not been systematically studied. We use a range of bioeconomic models of varying complexity and realism to explore the implications that the linkages amongst these fisheries have for joint management. Our approach to studying and modeling the coupled system of fisheries is to build up from the knowledge base and models that are a legacy of the single-species approach to fisheries management that has prevailed to date, rather than attempt to construct original complex ecosystem models. While ecosystem models that attempt to characterize and quantify the overall food web in the ecosystem are useful in developing a qualitative understanding of the overall ecosystem, they are limited by major gaps in information and computational constraints. A fruitful middle ground is to build multi-fishery models incorporating single-species models that are connected by the important natural and human linkages...

Abstract # 441**Session # 21B Coupled Economic-Ecological Models for Ecosystem-Based Fishery Management: Exploration of Tradeoffs Between Model Complexity and Management Needs****FLBEIA A FISHERIES LIBRARY FOR BIO-ECONOMIC IMPACT ASSESSMENT: A BIO-ECONOMIC SIMULATION TOOLBOX**

Mr. Raul Pallezo, rpallezo@azti.es

Mr. Richard Curtin, rcurtin@azti.es

Abstract

FLBEIA (FL Bio-Economic Impact Assessment) is an R package build on top of FLR libraries. It provides a flexible and generic tool to conduct Bio-Economic Impact Assessments of harvest control rule based management strategies. As usual in a Management Strategy Evaluation (MSE) framework, the package is divided in two main blocks, the Operating Model (OM) and the management procedure model (MPM). In turn these two blocks are divided in 3 components. The OM is formed by the biological, the fleet and the covariables components and the MPM by the observation, the assessment and the advice components. The model is multistock, multifleet and seasonal and uncertainty is introduced by means of Montecarlo simulation. The algorithm has been coded in a modular way to ease the checking and the flexibility of the model. The library provides functions that describe the dynamics of the different model components, under certain assumptions, and the user chooses which of the functions are used in each case specific model implementation. Furthermore, if in a specific case, for some of the components, the functions provided within FLBEIA do not fulfill the requirements, the user can code the functions that adequately describe the dynamics of those components and use the existing ones for the others. As the user can construct its own model, selecting existing submodels and constructing new ones, we define it as a toolbox more than as a model. The package is being used in several case studies with very different peculiarities, from mixed fisheries...

Abstract # 442

Session # 21B Coupled Economic-Ecological Models for Ecosystem-Based Fishery Management: Exploration of Tradeoffs Between Model Complexity and Management Needs

AGE-STRUCTURED ECOLOGICAL-ECONOMIC MULTI-SPECIES MODELS FOR BALTIC SEA FISHERIES

Mr. Martin F. Quaas, quaas@economics.uni-kiel.de

Abstract

Biologists have criticized traditional biomass models in fishery economics for being oversimplified. Biological stock assessment models are more sophisticated with regard to biological content, but rarely account for economic objectives. Recently, age-structured models of fish stocks have increasingly been used in fisheries economics, but applications have so far mainly been limited to single-species settings. Here, a multi-species age-structured optimization model will be presented for the Baltic that comprises the three economically most important stocks, cod, herring, and sprat, and the effects of predator-prey relationships between these stocks. The optimization model not only studies economically efficient management (using the Kaldor-Hicks criterion), but also studies distributional effects by studying Pareto-efficient allocations in the absence of compensation payments between fleets. It is shown that the distributional effects of economically efficient management can be large, and that, on the other hand, addressing distributional issues, or ecosystem considerations, can be very costly.

Abstract # 443

Session # 21B Coupled Economic-Ecological Models for Ecosystem-Based Fishery Management: Exploration of Tradeoffs Between Model Complexity and Management Needs

DECISION-SUPPORT FOR ECOSYSTEM-BASED FISHERY MANAGEMENT IN THE CONTEXT OF MARINE SPATIAL PLANNING: REGIONAL ECONOMIC IMPACT MODELS, MODEL OUTPUTS, AND TRADEOFF MEASURES

Porter Hoagland, phoagland@whoi.edu
Dr. Di Jin, djin@whoi.edu

Abstract

The implementation of ecosystem-based fisheries management (EBFM) requires the development of new analytic tools to integrate environmental, ecological, and socio-economic data from various sources; to capture explicit interactions among ecosystem components; and to simulate and evaluate the effects of alternative management options. We are developing a computable general equilibrium (CGE) framework that models coastal and marine resource sectors linked to the output of a marine food web model. The framework can be used to examine the interactions among different components of a coastal economy and alternative realizations of the structure of a marine food web (Jin et al. forthcoming). We illustrate our framework with two examples from New England fisheries: (1) a basic model with five industry sectors, including agriculture, manufacturing, commercial fishing, seafood processing, and other (an aggregate of all other industries); and (2) an expanded nine-sector model, including four non-fishing sectors and five fishing sectors characterized by gear type: lobster (pot), trawl, scallop (dredge), gillnet, and other. The integrated framework can be used to develop "what-if" type policy simulations for many important issues faced by coastal and ocean managers (e.g., marine spatial planning and climate change impact assessments). Through comparative analyses, we show how economic and distributional tradeoffs among alternative policy options can be assessed by examining changes in metrics of interest to marine resource managers, including a measure of economic surplus.

Abstract # 444**Session # 21B Coupled Economic-Ecological Models for Ecosystem-Based Fishery Management: Exploration of Tradeoffs Between Model Complexity and Management Needs****ECOPATH-BASED SIMULATION AND OPTIMIZATION OF MANAGEMENT OPTIONS FOR THE EASTERN GULF OF MEXICO REEF FISH FISHERY**

Dr. Sherry Larkin, PhD, slarkin@ufl.edu; Mr. Sergio Alvarez, sergioal@ufl.edu
Mr. Dave Chagaris, Dave.Chagaris@MyFWC.com; Mr. Jake Tetzlaff, jctetz@ufl.edu
Dr. Carl Walters, c.walters@fisheries.ubc.ca; Dr. Mike Allen, msal@ufl.edu
Dr. Behzad Mahmoudi, Behzad.Mahmoudi@MyFWC.com; Dr. Bill Lindberg, wjl@ufl.edu
Dr. Bill Pine, billpine@ufl.edu

Abstract

Ecological and economic tradeoffs of proposed management actions were assessed using the Ecopath with Ecosim (EwE) and Ecospace software. The model has 70 biomass pools (e.g., detritus, primary producers, invertebrates, fish, dolphins, sea birds), including multiple age-classes of key species. After mass-balancing, the model was driven using observed fishing mortality from 13 fleets (4 recreational, 9 commercial) and foraging behavior was adjusted to fit the model to historic abundance and catch trends. The mixed trophic impacts routine identified the most influential groups (i.e., recreational private boats, small mobile epifauna and sardines-herring). Simulations extended the status quo 20 years and examined the impact of: 1) rebuilding gag grouper, 2) reducing longline effort, 3) increasing baitfish harvests and 4) alternative closed areas. Results highlighted changes in biomass through both competition and predation within the food web. Next, fishing effort was optimized to maximize a weighted four-criterion objective function (profit, jobs, stock size, ecosystem structure). Tradeoff frontiers between profits and reef fish biomass arose. Results indicated the status quo of overfished gag grouper is sub-optimal but policies being considered should move the system closer to the frontier. Sensitivity analysis on the recreational and commercial prices revealed a stable frontier. Lastly, Ecospace predicted spillover effects from marine protected areas (MPAs) that benefit key species and fleets, however, negative effects of lost fishing grounds and subsequent concentration of effort occurred. Results indicated that MPAs would need to be relatively large in order to be effective at preventing overfishing.

Abstract # 445**Session # 21B Coupled Economic-Ecological Models for Ecosystem-Based Fishery Management: Exploration of Tradeoffs Between Model Complexity and Management Needs****INCLUDING HUMAN DIMENSIONS IN INTEGRATED MARINE ECOSYSTEM MODELS: AUSTRALIAN EXAMPLES**

Dr. Olivier Thébaud, Olivier.Thebaud@csiro.au; Mrs. Beth Fulton, beth.fulton@csiro.au
Mr. Trevor Hutton, trevor.hutton@csiro.au; Mr. James Innes, James.Innes@csiro.au
Dr. Rich Little, rich.little@csiro.au; Dr. Sean Pascoe, PhD, Sean.Pascoe@csiro.au
Dr. Ingrid van Putten, ingrid.vanputten@csiro.au

Abstract

With international efforts to develop ecosystem-based management of ocean uses, there has been a growing call for the development of integrated assessment tools, including the design of models which can be used to identify possible futures and evaluate alternative management strategies. Along with this, there is increasing recognition that such models should include explicit representations of human behaviour and its drivers, as this is key to understanding the potential responses to economic, ecological and regulatory changes. The presentation will use examples from Australia to illustrate the diversity of approaches and domains of application in which such modelling can be developed, and discuss some of the key issues which need to be considered in developing these models. Examples will include whole-of-system models, such as Atlantis in the Australian South-East Fishery and multiple use applications of the In Vitro platform in North-Western Australia, as well as the highly spatial multi-species and multi-fleet Effects of Line Fishing Simulator in the Great Barrier Reef and Ningaloo Reef (Western Australia).

Abstract # 446

Session # 03C Markets: Value Chains Part II

LEGAL REGIONAL FISH TRADE IN THE HORN OF AFRICA: EXPERIENCE FROM A FAO-IGAD PROJECT

Mr. Eshete Dejen, eshete.dejen@fao.org

Abstract

The contribution of fish and fisheries products in the economy of Horn of Africa countries is substantial to food security, livelihoods, employment and foreign currency earnings. However, production is mostly characterised by artisanal fishermen who rely on local and cross border trading conducted through informal and unofficial market channels and tends to be underestimated in terms of its contribution and importance to the local and regional economies. There is high potential for increasing incomes from fish and fish products if value chain operators capacity is developed. The FAO-Subregional Office for Eastern Africa (SFE) in partnership with the Intergovernmental Authority for Development (IGAD) is carrying out a project on capacity building to promote formal fish trade in the Horn of Africa. This paper provides an overview on the target beneficiaries, activities, outcomes/outputs and anticipated impact. Moreover, achievements to date and preliminary findings from Ethiopia and Uganda will be presented.

Abstract # 447

Session # 12 B Fisheries Games and Experiments: Applications for Education, Outreach and Science

ECOCEAN - HOW TO USE A RELATIVELY SIMPLE GAME FOR STAKEHOLDER COMMUNICATION AND DISSEMINATION

Jörn Schmidt, jschmidt@economics.uni-kiel.de

Mr. Michel Magens, m@michelmagens.de

Mr. Dennis Nissen, post@dennisnissen.de

Mr. Erik Buisman, Erik.Buisman@wur.nl

Ms. Birgit de Vos, Birgit.devos@wur.nl

Abstract

One of the major tasks within the SOCIOEC project is the investigation of the incentive structure and associated behavioral responses of fishers related to specific management measures. To analyze the incentives several methods will be used, including a novel approach using the game ecoOcean. EcoOcean is a graphical interface presenting a cellular based projection of an ocean with fish stocks, where up to four players/users (representing different stakeholders) can navigate their vessels and trawls. With simple modifications of the game mechanics, we will investigate the effect of, among others, changes in price, different gear technology or changes in total allowable catch on the behavior of stakeholders and students as a control group. The set up of a focused group like situation will allow the researchers to observe behaviour in a different context than a one-to-one interview. We plan to use this game table additionally to simulate management measures fishers propose for the future and to simulate results. This presentation will show the basic game design and exemplifies an experiment on changes in fuel prices.

Abstract # 448

Session # 12 B Fisheries Games and Experiments: Applications for Education, Outreach and Science

QUOTA: FROM EXPERIMENTAL COMPUTER GAME TO FISHERY MANAGEMENT EDUCATION TOOL

Theodore Groves, tgroves@ucsd.edu

John Ledyard, jledyard@caltech.edu

Abstract

Quota, a computer-based simulation game, originated as an experimental game for testing alternative multi-resource management regimes or systems. Highly flexible, it allows specification for a standard common-property, open-access fishery with user-specified bio-economic fishery growth model and multiple sized producers with individual harvest and cost functions. In addition to demonstrating overfishing under open-access, various forms of Property Rights Systems can be implemented, including the setting of an overall Total Allowable Catch (TAC) and further allocation of the TAC to individual producers -- Individual Quota Rights (IQR) -- that may be based on historical catch during initial periods of Open Access fishing or equal shares or shares determined by bargaining amongst the players (producers). Subsequent trading of IQRs is also implemented using a highly developed computerized trading game. Recent use of the game have been as an educational tool in university classes on resource economics and in the field at meetings of Regional Fishing Management Organizations that govern the major tuna fisheries around the world. We discuss the development of the game, its various uses to date, and plans for its future development.

Abstract # 449**Session # 12 B Fisheries Games and Experiments: Applications for Education, Outreach and Science****FISHING FOR BEADS: SIMPLE GAMES, SERIOUS INSIGHTS**

Dr. Gunnar Knapp, Gunnar.Knapp@uaa.alaska.edu

Dr. James Murphy, JMurphy@cbpp.uaa.alaska.edu

Abstract

We have developed simple and fun “fishing games” which can be played easily and quickly with cheap supplies-and which demonstrate important economic characteristics of fisheries. Players “fish” by scooping beads from a common bowl into individual cups placed near the bowl. The beads are the fish stock; the scoops are the fishing gear, and the cups are the player’s delivery ports. Players pay a rental cost for their gear (scoop), which depends upon the scoop size they choose. They are paid a price for their fish, which depends upon the distance of the cup from the bowl. If not allowed to communicate, most players compete aggressively to maximize their harvests from the limited total stock of beads by scooping as fast as they can. We describe three games which compellingly illustrate three important mechanisms by which rent dissipation may occur in competitive fisheries. The “gear-choice game” illustrates cost-driven rent dissipation as players choose larger, higher-cost scoops rather than the smallest and lowest-cost scoops. The “port-choice game” illustrates value-driven rent dissipation as players deliver beads to a closer but lower-priced cup. The “multi-period game”-in which the volume left un-harvested each period determines the extent to which the bead stock is replenished for the next period-illustrates resource-driven rent dissipation as players overharvest in earlier periods. In all of these games, replacing competitive fishing with individual quotas immediately and dramatically changes player behavior and increases rents. We have found...

Abstract # 450**Session # 01C: Managing Development of Fisheries and Aquaculture sectors Part I****HISTORICAL DEVELOPMENT OF INDONESIA’S INDUSTRIAL TUNA FISHERIES, 1900 - 2012**

Mr. Seamus McElroy, mcelroy.seamus@gmail.com

Abstract

Indonesia in 2012 will catch above 0.5 million tonnes of tuna and a further 0.4 million tonnes of tuna-like species. This represents 11% of the total world tuna catch and makes Indonesia the largest catching nation, a position previously held by Japan. Indonesia plays a major role in the world tuna market due primarily to catches from within its own large expanse of tropical seas. The origins of the industrialization of the Indonesia tuna fleet can be traced to the distant water fleets of first Japan, between 1905 to 1985, and more recently Taiwan from 1985 to 2005. Today, however, most tuna fishing and processing companies are Indonesian owned and predominantly manned by Indonesian management and crew. A few longline companies retain their Japanese and Taiwanese ties. Taking fish from Indonesian waters is restricted to Indonesian citizens. The government has played a major role in the development of this industry, Indonesia’s second most important fish industry after shrimp. Some would argue that the involvement of four of Indonesia’s six State-owned fishing companies in the tuna business stifled the development of the private sector in this industry. The paper traces the historical development of the Indonesian tuna industry over the past century highlighting the role played by Japanese, Taiwanese, Philippine, European and domestic, mostly Indonesian Chinese, companies and of the government in promoting this large and diverse fishing and processing industry, particularly important to the economic development of eastern Indonesia.

Abstract # 451

Session # 31E: The Economics of Aquaculture Production and Profitability Part III

BLUEFIN TUNA FULL LIFE CYCLE CULTURE: REVIEW AND PROSPECTS OVER THE NEXT THIRTY YEARS

Mr. Seamus McElroy, mcelroy.seamus@gmail.com

Abstract

Full life cycle culture of bluefin tuna has so far been achieved only for Pacific bluefin tuna by the Japanese at Kinki University in 2002 with the first fish going on sale in Japan in 2004. More recently Japan's Okinawa fisheries laboratories have also achieved the same success, with the Koreans also being close. Elsewhere, there has been considerable progress on full life cycle farming by one company in Australia (southern bluefin tuna) and by research institutes and companies also in the Mediterranean, specifically France, Italy, Spain and Croatia (Atlantic bluefin tuna). Given the difficulty with bluefin culture, attempts have also been directed at bigeye, yellowfin and albacore in recent years, particularly yellowfin. The full life cycle culture industry for bluefin tuna has grown rapidly in Japan with a surprisingly wide range of investors now involved. The Japanese Government is committed to support R&D in this luxury food industry to 2020. The paper charts progress to date. It then presents a 30 year growth scenario for the development of this industry based upon the development of the Atlantic salmon farming industry. Similarities and differences between the two species (one poikilothermic, the other a thermoregulator) are highlighted, which allows for the development of a faster growing true tuna species or hybrid to be developed in the future. Information on the costs of the production system of capture based and full life cycle culture are presented for comparison.

Abstract # 452

Session # 23A Africa Policy Day IV

AFRICAN FISHERIES AND CLIMATE CHANGE: A POLICY AGENDA

Alex Benkenstein, alex.benkenstein@saiia.org.za

Abstract

Climate change is set to have far-reaching ecological and economic consequences for the African continent and globally. Developing countries are particularly vulnerable to climate change, not only as a consequence of resource and technology constraints to adapt to climate change, but also due to a greater reliance on the productive capacity of land and natural systems. Fisheries play a critical role in contributing to food security in many African states, as well as in supporting livelihoods through economic activity in the capture, processing and trade of fish products. Although agriculture has received significant attention in the climate change discourse, particularly related to adaptation and food security in Africa, there has been insufficient focus given to the critical role of fisheries as an economic activity and source of nutrition in many African states. African countries are among the most vulnerable to climate change impacts on fisheries. It is important for fisheries dependent African states to ensure that the issue of climate change impacts on marine and freshwater systems and fisheries communities are integrated into their national adaptation plans. Fisheries should also be given due recognition in regional and continental policymaking on African adaptation to climate change. Adaptation efforts on the continent should recognise that ecological systems that are weakened by habitat destruction, overfishing and illegal fishing will be less resilient in the face of climate change. Dealing with these pressing governance challenges, together with the emerging climate-related threats, forms a crucial part of the continent's response.

Abstract Author Index

A

Abbott	94, 95
Abubakar	130
Adegoke	145
Adeogun	121
Adeoye	30, 32, 124
Adewale J.G	60
Adewumi	77
Adjei-Boateng	132
Afolabi J.A	125
Agbayani	47
Agbebi	41
Akamike	130
Akegbejo-Samsons	30, 32, 124
Akpalu	42
Alabi	130
Alam	126
Alexeev	66
Alfama	135
Allah	31
Allen	52, 164
Allison	154, 156, 159
Alvarez	164
Amarasinghe	74, 86
Amos	125, 147
Anderson	110, 143
Andriamahefazafy	67, 69, 139
Arceo	117
Ariji	64
Arita	52
Armitage	159
Armstrong	58, 65, 69
Asano	56
Asche	123
Aswathy	36, 39
Ateweberhan	139
Atikpo	120
Atukunda	118
Ayansanwo	144
Ayuba	134

B

Baggio	80
Bamwirire	146
Bande	59
Bankole	145
Barnes-Mauthe	52, 53, 54
Bastardie	54
Baticados	47
Bendiksen	78
Béné	51, 159
Benkenstein	167
Bijukumar A	43
Bisack	58
Bjorndal	55, 56
Blanchard	96, 97
Bolivar	118
Boniface	132

Borgen	152
Borski	118
Boulo	137
Brander	54
Britz	39, 108
Brooks	68
Brown	137
Brummett	137
Bui Thien, Chuong	97, 101, 126, 128
Buisman	165

C

Cadrin	50
Calvo Santos	152
Cameron	91
Campos	30
Cannard	91
Carvalho	83, 143
Chadag	122
Chagaris	164
Charles	111, 157, 159, 160
Charo-Karisa	70, 105, 111
Cheke	122
Chenyambuga	75, 121
Christman	73
Chuenpagdee	105, 160
Cissé	96, 97
Cloete	153
Coulthard	92, 160
Curtin	155, 162
Curtis	33
Cusack	108

D

d'Almeida	135
Dang Hoang Xuan, Huy	51
Darko	75
Das	58
Davis	114
de la Torre-Castro	82, 83, 107
De Lara	64
De Silva	55, 56
de Vos	165
DebRoy	46
DeCelles	50
Dejen	165
Dichmont	57, 68
Dickson	31
Die	123
Dieckmann	60
Diekert	49
Doi	135
Donda	45
Döring	155
Doyen	51, 57, 97
Dreyer	88
Dunlop	60

E	
Edmund.....	120
Egna	141
Eide	96
Eikeset	60, 72
Ekundayo	136
Elago	98
Emami.....	112
er Rashid.....	70
Eriksen	100
Esobhawan.....	130
F	
Fagbenro.....	34, 125
Falk-Petersen	42
Flaaten.....	30, 31, 58, 95, 151
Fofana.....	98
Folack	137
Foley.....	69
Forbes.....	90
Fregene.....	84, 144
Friday.....	36, 79
Fröcklin	82, 83
Fujino.....	150, 151
Fulton.....	164
G	
Garrett.....	39, 106
Gasalla.....	115, 149
Gaudin	137
Geetha	39
Georgianna.....	50, 83
Gola	88
Golam	84
Gold	105, 109
Gourguet	57
Grafton.....	66
Gray.....	52
Groves	165
Guillen.....	63
Gunasekara	40
Guyader	96
H	
H. Mohammed	145
Habib	73
Haider	81, 103
Haja	92
Hallgrímsson.....	51
Halsør	100
Hammouda	112
Hamza	161
Hansen	55, 57
Hanson	94
Haque	48
Hara.....	108, 157
Haraldsson	119
Hardy	51
Harris.....	67, 69, 139
Hassan.....	146
Hatch	118
Haynie	95
Heikinheimo	78
Hermansen	88, 95, 96
Herrick.....	154
Higashida.....	46, 114
Hillary	48, 87
Hishamunda	94
Hitula.....	74
Hoagland	163
Hoareau.....	120
Holland	65, 93, 162
Holma.....	80
Hoshino	53, 87
Hotte	154
Hoza	87
Hutton	164
Hyuha.....	118
I	
Ibengwe.....	38
Ichien	141
Ikeda	152
Innes	91, 99, 164
Ipinmoroti.....	60, 138
Isaacs.....	157
Isaksen.....	95
Iversen	78
J	
Jamandre.....	118
Jannot	65
Jennings	57, 66
Jensen.....	55, 57
Jensson	153
Jhansi.....	129
Jiddawi	82, 83
Jin	163
Johnson.....	159, 160
Johnston.....	112
Jolly	49, 94, 97, 101, 126, 128
Jori.....	142
K	
Kahui.....	65
Kaliba	92
Kamili	151
Karzazi	120
Kasperski.....	93
Kateka	115
Keiley	83
Kelling	89
Kemajou	9, 137
Kennedy	107
Kerrigan.....	91
Khakasa	79
Khan	48, 102
Kimakwa	99
Kinghorn	39
Kitts.....	58, 73
Knapp.....	166

Knútsson	101, 153
Komolafe	148
Kompas	66
Kristófersson	38
Kronbak	102
Kularatne	45
Kulmala	59, 76, 80, 85
Kung	91
Kuriakose	36

L

Laabdi	151
Lahiri	106
Larkin	109, 164
Larsen	88
Laukkanen	76
Lazkano	84
Le Bouhellec	66
Le Manach	67
Le Thi Huyen, Trang	97, 101, 126, 128
Le Xuan, Sinh	116
Ledyard	165
Lem	56, 123
Leung	52
Levontin	59, 76
Lien	123
Ligeon	94
Lindberg	164
Lindebo	50, 131
Lindroos	76, 78, 80, 93
Lindström	82, 83
Little	57, 91, 164
Liu	161
Lokina	115
Lund	65
Luomba	132
Lydia	37, 125

M

Macfadyen	31
Madalla	121
Mafimisebi	53
Magens	156, 165
Mahmoudi	164
Makoge	137
Makombu	137
Managi	114
Maroto	74
Martinez	144
Masette	79, 81
Massaquoi	143
Massey	85
Mateo	44
Matthiasson	54
Mbaga	104
Mbarika	92
Mbatha	92, 160
Mbugua	111
McElroy	123, 124, 166, 167
Melake	147
Mesmin	116

Mgawe	61, 120
Mhongole	149
Mialhe	137
Miethe	54
Mikolasek	70
Milner-Gulland	87
Mishra	129
Miyashita	150, 151
Mkenda	115
Mlaponi	48
Mmochi	146
Mnembuka	121
Mohan	122, 147
Mohd Noh	40, 127
Mohsin	102
Molnar	109
Morake	143
Mosun	128
Motto	137
Moussa	127
Mrosso	48
Msnelia	145
Mukanga	72
Mulyila	67
Munguti	105
Munro	93
Murphy	166
Mustafa	84, 140
Mwebaze	90

N

Napuru	134
Narayanakumar	36
Nauen	46
Ndjaula	74
Neill	56
Nghipunya	104
Ngueguim	137
Ngugi	111
Nguyen	
Giap	49
Kim Anh	30, 38, 97, 101, 126
Nguyen Thi, Tram Anh	38
Nielsen	54
Nieminen	76, 78
Nissen	156, 165
Njaya	36
Njifondjou	137
Noack	63, 71
Norman-López	91, 99, 103, 153
Normanyo	42
Norton	154
Nøstbakken	55, 57, 84
Ntiba	111
Nurul Islam	40, 127, 135
Nyamweya	142
Nyonje	111

O

Obasa	64, 138
Oben, Benedicta	137

Oben, Pius.....	137	Reithe.....	58
Oishi	64	Requate.....	156
Ojo.....	34, 35	Rich	122, 152, 161
Okechi.....	70	Richter.....	60, 72
O'Keefe	50	Riekhof	63, 71
Olaniyi		Robinson	45
Christianah Oludayo.....	60, 86	Rodrigues	115
Olumuyiwa Akin	86	Rodriguez.....	59
Oluwafemi Zaccheaus	60	Rohe	92, 160
Olanrewaju	63	Rosenberger	40
Olanusi.....	84	Roth	81, 103
Olasunkanmi.....	87	Rougier.....	69, 139
Oleson	53, 54, 69	Rouhani.....	108
Oliver	53	Rountree.....	73
Oloruntuyi.....	117	Roy	33, 57
Olsen	147		
Oluyemi	60, 138	S	
Omitoyin.....	98	Sakai.....	64
Ondo Megne	71	Salehe.....	48
Onumah	35	Salim.....	36, 37, 39, 43
Onyango	48, 132, 158	Samuel.....	64, 132
Oparinde	35	Saul	123
Opyo.....	105, 111	Scheld.....	113
Orina.....	105	Schirmer	68
Osasogie.....	130	Schmidt	156, 165
Otumawu-Apreku	59	Schoenherr	34
Owili.....	142	Schubert.....	82
		Schwarz.....	51
P		Sellu.....	133
Parkkila	76	Shabangu	131
Pascoe.....	45, 57, 68, 103, 164	Shallard	62
Pedroza.....	32	Sharma.....	75
Péreau	97	Shibata	45
Perez	55	Sirajudheen.....	43
Péron	110, 149	Slade.....	73, 91
Pethiyagoda.....	86, 147	Snowball.....	39
Pham Thi Thanh.....	30, 31	Sobo	87
Thuy.....	125	Sogbesan	136
Pham Thi Thanh, Thuy.....	38	Solgaard	81, 103
Pierre Nolasque	43, 49	Ssebisubi.....	44
Pincinato	115	Stage	120
Pine	164	Steiner Brandt	85
Pintassilgo.....	76	Stenseth	60, 72
Pomeroy.....	116	Stern	47
Poudel.....	33	Stoeven	48
Powell	124	Stokesbury.....	50
Prellezo	155, 162	Sulaiman	73
Purves.....	117	Sultana	70
		Sumaila	93, 116, 155, 158
Q		Susilowati	52
Quaas	48, 71, 77, 88, 156, 163	Syampaku.....	100
Quagraine.....	75, 89	Sylvia	113, 114
Quatmann	34		
		T	
R		Tanaka	114
Rahman	136	Tarvainen.....	142
Rao.....	148	Tegawa	110
Rathnaweera	40	Terhune	109
Ravn-Jonsen	81, 103	Tetzlaff	164
Regnier	64, 82	Thébaud	57, 68, 91, 99, 103, 164
Reimer	94, 95	Thiam.....	152

Thompson	70, 140	Vieira	68
Thorarinsdottir A.....	146	Viet Nguyen, Thanh	90, 91
Tickell	91	Villasante	59
Tien Nguyen		Vipinkumar	39
Thong	81, 103	Virtanen	76, 143
Tisdell	47	Vista	40
Tjipute	51, 133	Voss	77, 156
Tojo	150, 151		
Toko	133	W	
Townsend	44	Wahab	70
Triantafillos	68	Walakira	109
Trondsen	77	Wallner	107
Turris	93	Walters	164
Tveteraas	123	Waridin	52
		Weymann	119
U		Wilen	94, 95
Uche	139	Williams	46
Uchida.....	110, 113	Wilson	42, 45, 111, 112
Ude.....	140	Wright.....	94
Unekwu	79		
Uri	112	Y	
		Yagi	62, 64
V		Yamashita.....	104
Valderrama	61	Yamazaki.....	56, 66
van der Krogt	105	Yarhere	130
van Putten	164	Yew	127
van Soest	72	Yin	112
Vannuccini.....	123	Yongo.....	105
Ventelä.....	142	Young.....	89
Verdone	41	Yulianisa	52
Vestergaard	102		