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At Sea Data Collection and Use of Trip-level Economic Data in Pacific Islands Commercial Fisheries

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Presentation Outline

- Cost data collection before the “at sea” data collection programs established
- Program implementations and protocol of the “At Sea” data collection
- Database management
- Data uses



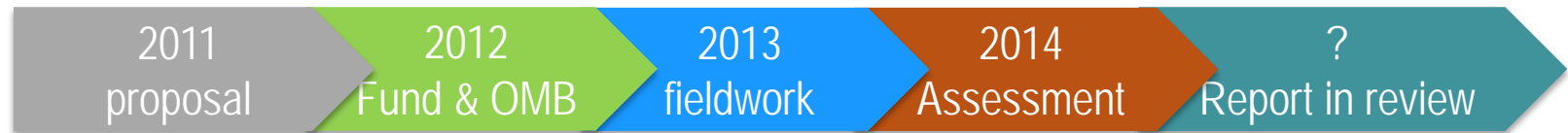
Before “At Sea” Data Collection

- Periodical or *ad hoc* cost-earnings surveys
 - ✓ Five years or longer in between
 - ✓ Often outdated when the data is available



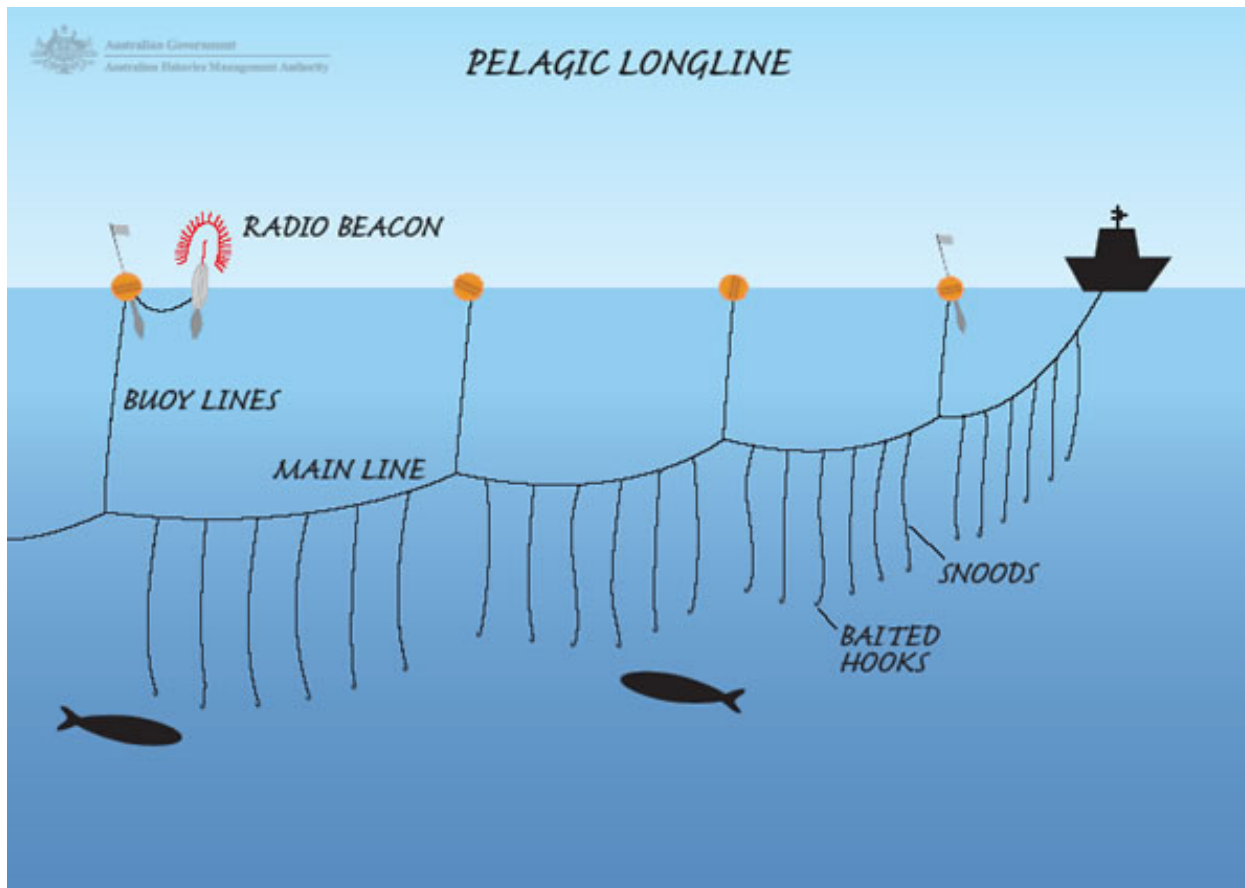
Drawbacks of Periodical Cost-earnings Surveys

- Long planning time
 - ✓ Example of 2012 data for HI longline



- 2011 proposal for funding
- 2012 funded & OMB paperwork reduction act
- 2013 fieldwork (6-10 months)
- 2014 Assessment and report preparing
- 2016 Draft report in center review

“At Sea” (real time) Data Collection implementation and protocol



Established “At Sea” Economic Data Programs in the Pacific Islands

Fishery	Program Started	Add-on Vehicle
1. Hawaii longline fishery	2004	PIRO observer program
2. American Samoa longline	2006	PIRO observer program
3. Territory - CNMI small boat	2009	WPacFIN creel survey
4. Territory - American Samoa small boat	2009	WPacFIN creel survey
5. Territory - Guam small boat	2011	WPacFIN creel survey

“At Sea” Data Collection Program

-- the example of the first program

- The will
 - ✓ Requirements for economic analysis in NEPA, RFA, EO12866 to understand how regulatory programs affect net benefits to society and profitability of fishing forms
- The example
 - ✓ 1995 trip cost data collection at sea at Northeast Fisheries Science Center
- The funding support from HQs
 - ✓ The first telephone call from HQs in 2004

"At Sea" Data Collection Program

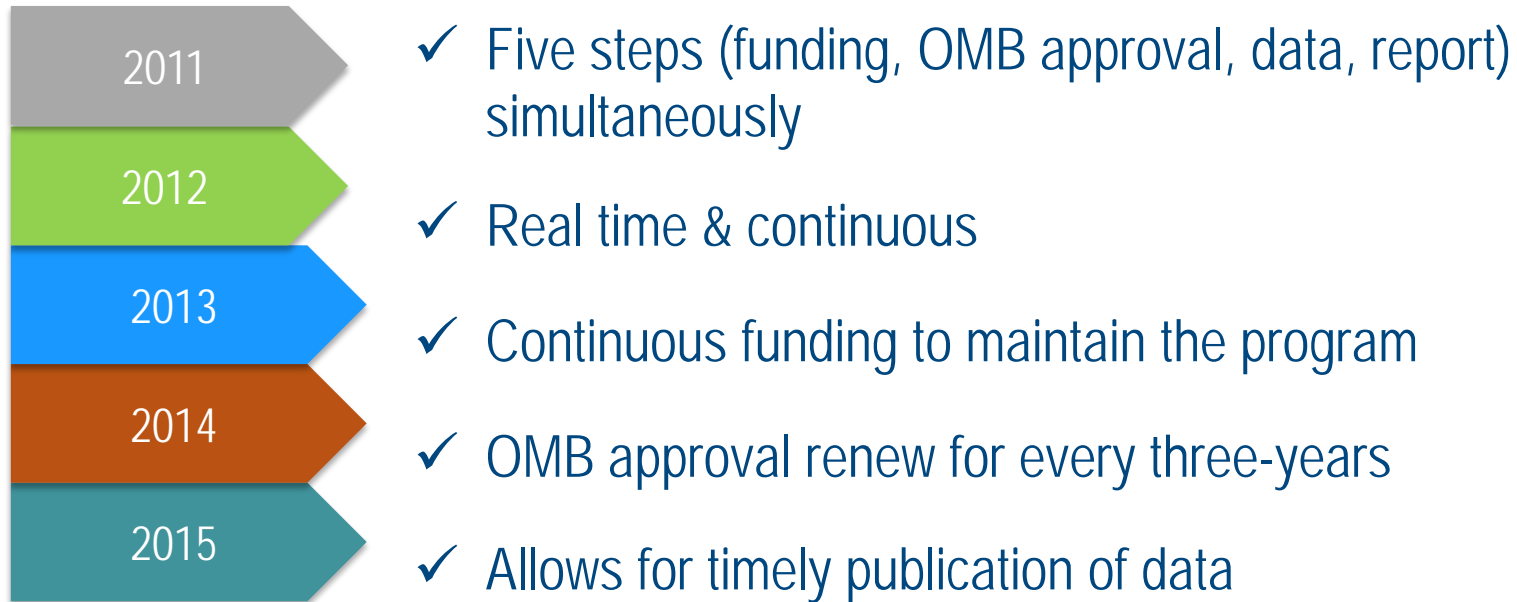
-- the example of the first program

- The obstacles
 - ✓ Fishermen logbook OR observer program
 - ✓ Logbook - Need to approval from the council
- Observer program
 - ✓ The program was established to observe protected species interactions
 - ✓ Managed by the Regional Office
 - ✓ Economic data are viewed as personal business data (vs. observable scientific data)
- Implemented in 2004
 - ✓ The initial response from the fishermen
 - ✓ Prefer a volunteer program
 - ✓ 30% response rate in beginning, 60% currently



Advantages of At Sea Data Collection

- Effective from planning to producing data and report



- Data are in concurrent bases, not “after the fact”
- Allow cost data to be integrated with other observed data

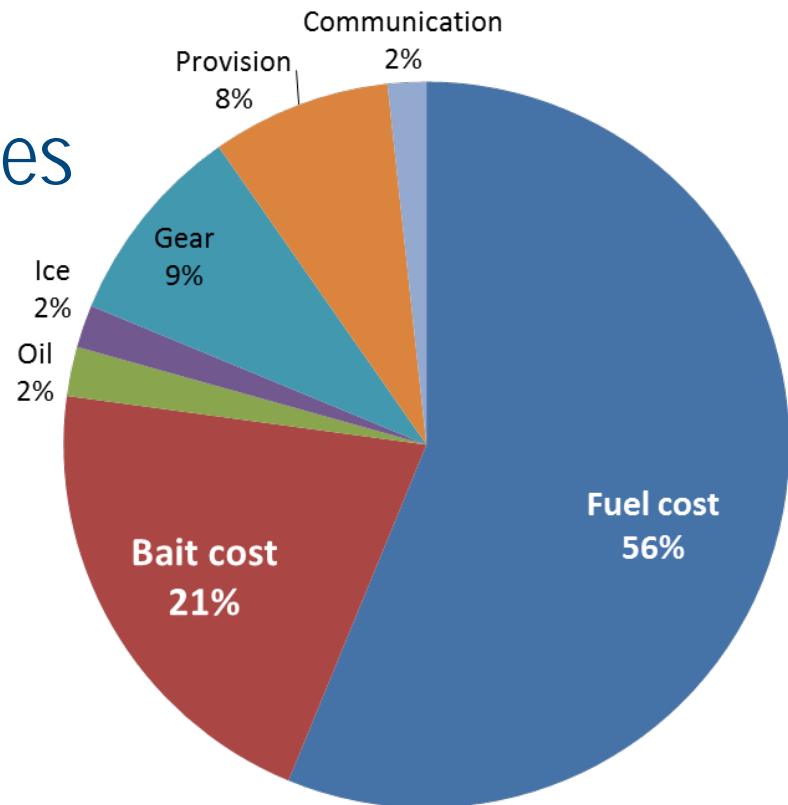
Database Management

- ACCESS database
- Data entry design
 - ✓ Interface system
 - ✓ QAQC (min & max)
 - ✓ Admin role
 - Adjust the min & max
 - Save the data that are out of range
 - Access and edit the main database

The screenshot shows a web-based data entry form titled "NEW TRIP EXPENDITURE FORM". At the top, a message reads "Hello Minling.Pan. You have Admin access." Below this are three buttons: "New" (highlighted with a blue box and an orange arrow), "Transmit to Main Database" (with an orange arrow), and "Admin" (with a green arrow). The form itself is divided into sections. The first section, "1.Trip Information", contains fields for "Trip Number" (with a calendar icon), "Code", "Trip Type", "Vessel Name", "Vessel List" (a dropdown menu with a blue arrow pointing down), "Date of Departure", and "Date of Return". Below this is a row of tabs: "2.Fuel", "3.Engine Oil", "4.Bait", "5.Ice", "Other Costs", "Crew", and "13.Status". The "2.Fuel" tab is active, showing fields for "Price Per Gallon", "Gallons Used", and "Total Cost of Fuel". A "Preview Data" button is located at the bottom right of the form.

Database Management

- Missing data and unknown information at sea
 - ✓ Trips with only “fuel and bait”, knowing 77% of the total
 - ✓ Estimated the other 23% (non observable and non-known by hired captains)
- Linked with other databases
 - ✓ Catch & price for revenue data
- Auto-reporting system
 - ✓ Pre-designed query



The Uses of the Data Collected



The Uses of the Data

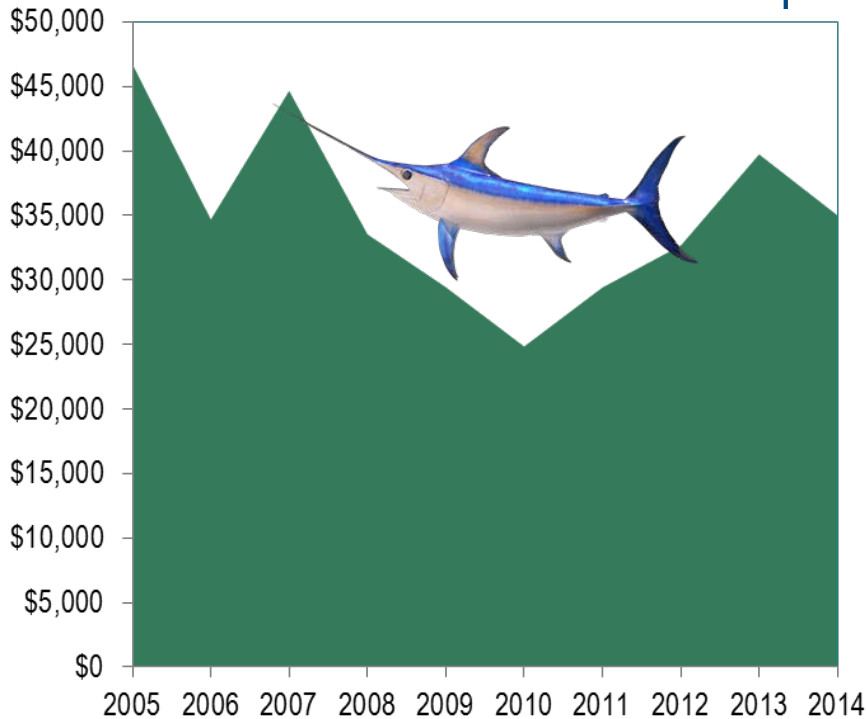
1. Fisheries development assessment

- Early economics studies focused on productions
 - ✓ 1978 The first economic feasibility study on the lobster fishery was conducted (Adams, 1978).
 - ✓ 1979 “the economic benefits of potential expansion of Hawaii’s fishing industry” were estimated in terms of landings, value, and employment.

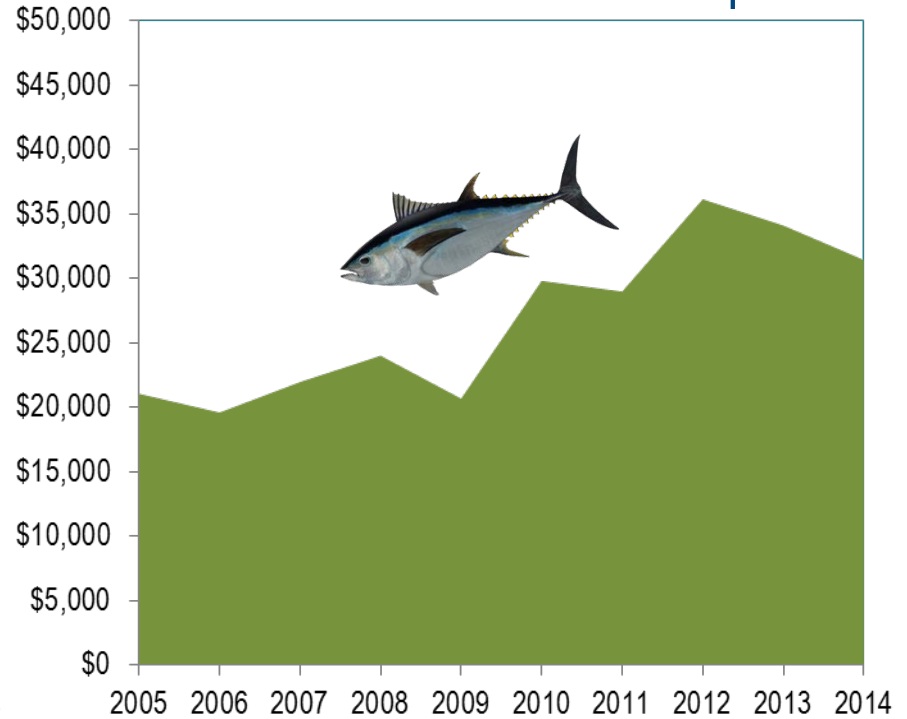
The Uses of the Data

2. As economic performance indicators

Net Revenue of Swordfish trips



Net Revenue of Tuna trips

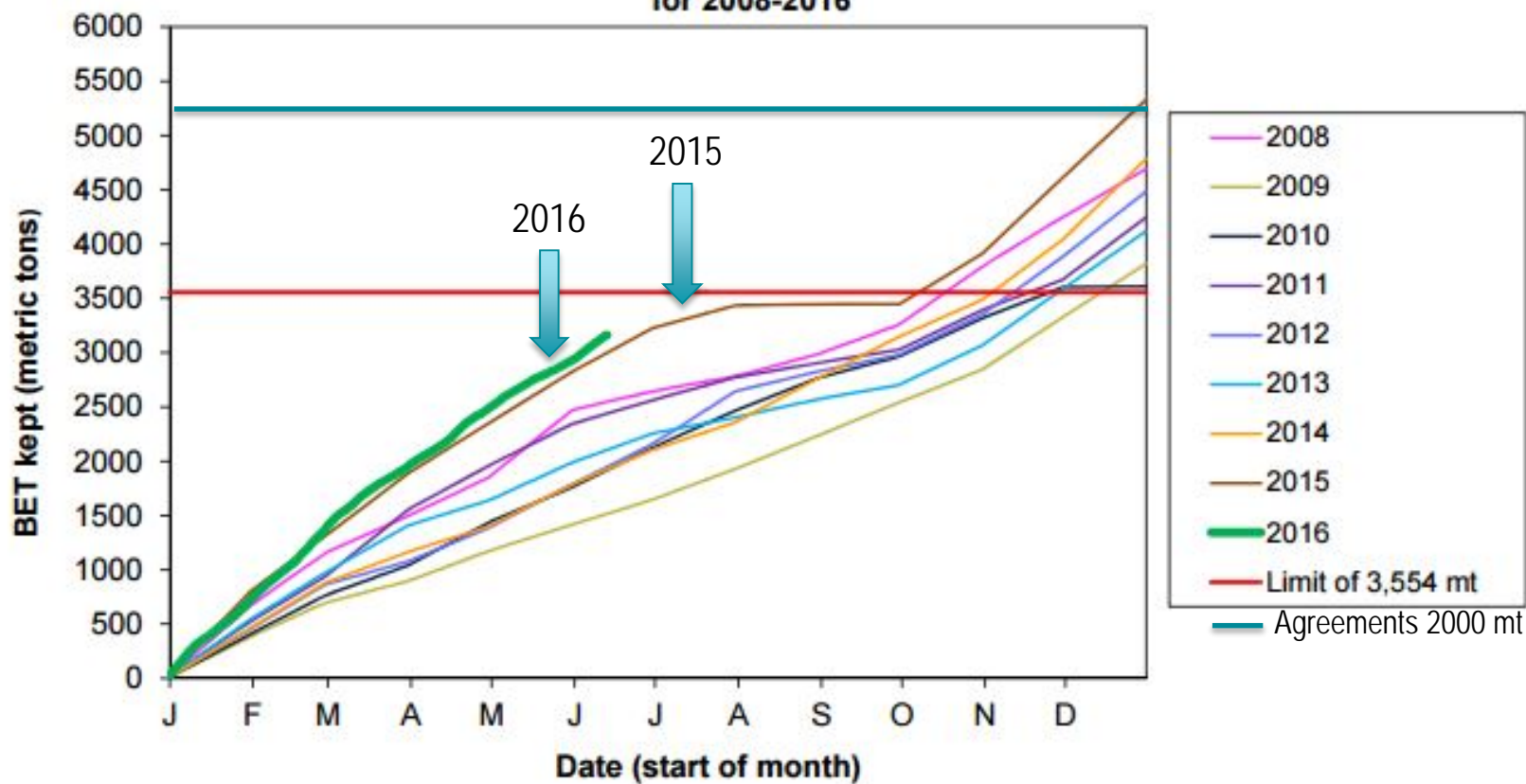


- ✓ In early years like 2005, swordfish fishing is more profitable. Now Tuna fishing is getting more and more profitable, compared to swordfish fishing
- ✓ Bigeye tuna under quotas, so the fishing opportunity is limited.

The Uses of the Data

2. Economic performance indicators

Figure 1. Cumulative Hawaii longline BET catch (kept) in the WCPFC Area for 2008-2016



Data source: Chris Boggs. 2016.06.28. Advice on U.S. Longline Bigeye Tuna Catch in Relation to Limits in Effect for 2016.

The Uses of the Data

3. to answer urgent calls



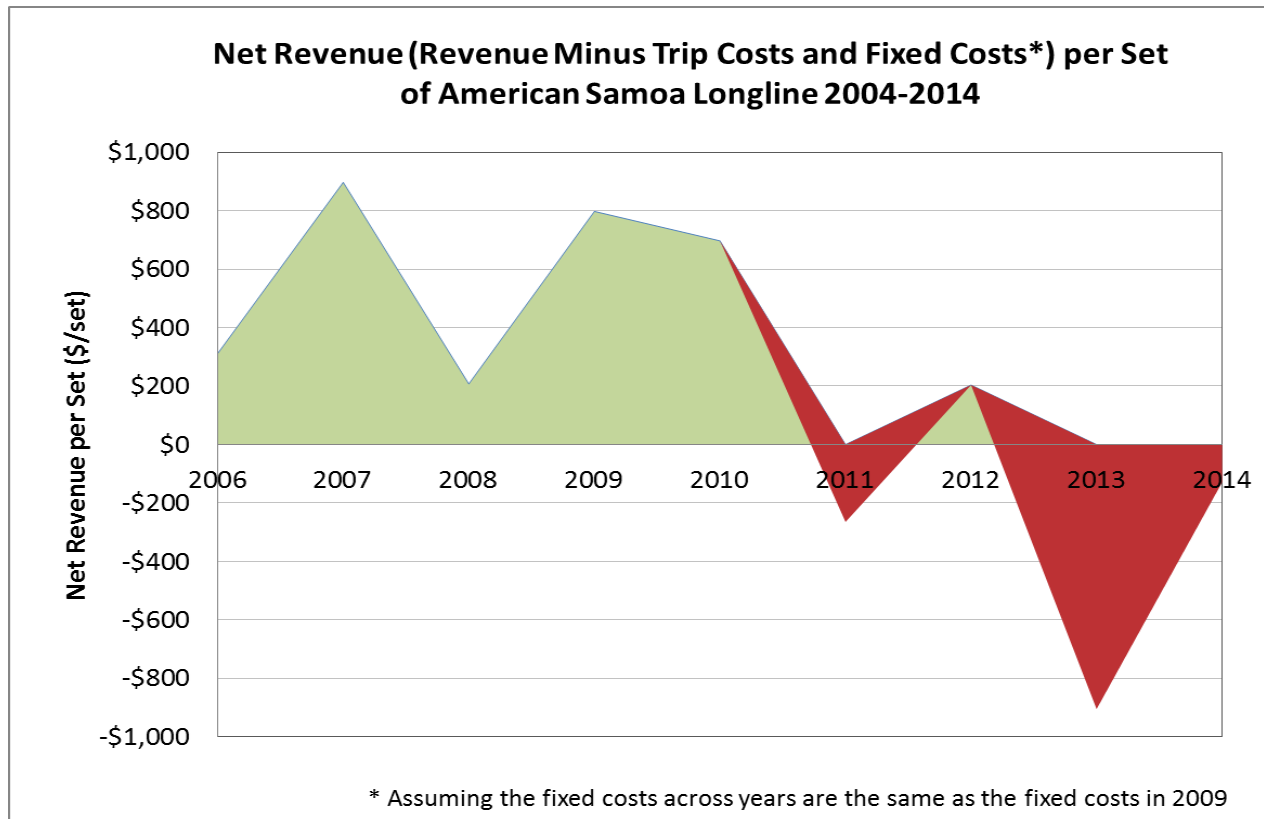
Longline fleet to tie up boats, post FOR SALE signs

Wed, 12/18/2013 - 9:37am | Category: [Local News](#) [Show in Skybox](#)

By Samoa News staff



Economic Performance Status -- American Samoa Longline

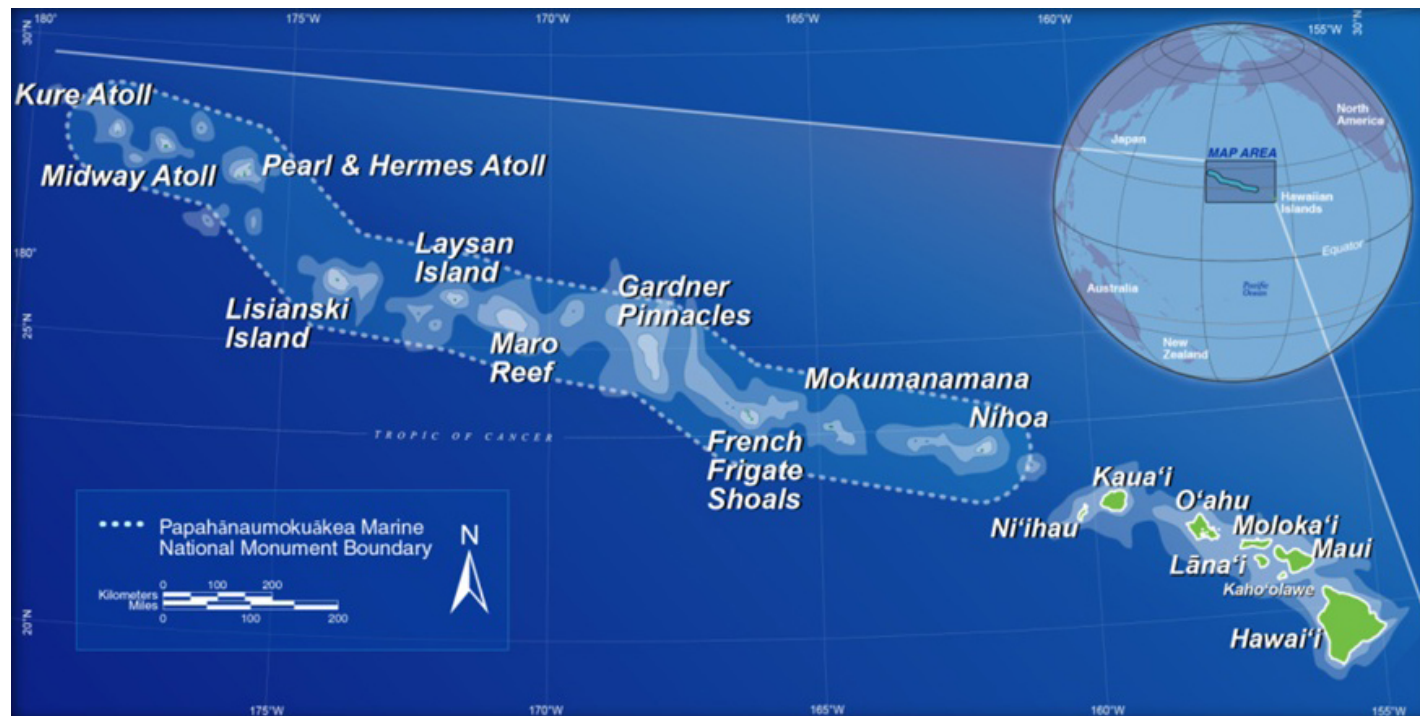


- ✓ Data show the poor economic performance of the fishery
- ✓ Data were from the "at sea" data collection program (plus fixed cost)
- ✓ Council took actions (such as request for tax relief, area exemption...)

The Uses of the Data

4. Compensation for a Fishery Closure

- Papahānaumokuākea Marine National Monument
- NWHI Bottomfish fishery was closed



The Uses of the Data

4. Compensation for a Fishery Closure

- \$6.4 millions in relief of the closure
- How to disburse \$6.4 millions?
- NPV of 30 years net income to boat owners
 - ✓ NPV of profit of owners based on 2006 Cost-earnings study

$$NPV = \sum_{t=0}^n \frac{(\text{Benefits} - \text{Costs})_t}{(1 + r)^t}$$

where:

r = discount rate

t = year

n = analytic horizon (in years)



Feds Disburse \$6.4 Million in 'Relief' to NWHI Bottomfish, Lobster Fishers

posted in: Fisheries, Marine, May 2010 | 9

When Congress passed and President George Bush approved the 2008 Consolidated Appropriations Act, no one seemed to notice that language appropriating \$6.7 million in compensation to the Northwestern Hawaiian Islands commercial bottomfish and lobster fishers didn't really jibe with reality.

Under the act, the National Marine Fisheries Service was given \$6,697,000 to compensate bottomfish and lobster fishermen who "will be displaced[emphasis added] by the 2011 fishery closure" prescribed by the June 15, 2006, presidential proclamation establishing the Papahānaumokuākea Marine National Monument. This language flew in the face of the fact that, since 2000, lobster fishermen have not been allowed to fish in the NWHI. Even so, NMFS recently decided they were entitled to \$4.3 million of the total appropriated.

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The Uses of the Data

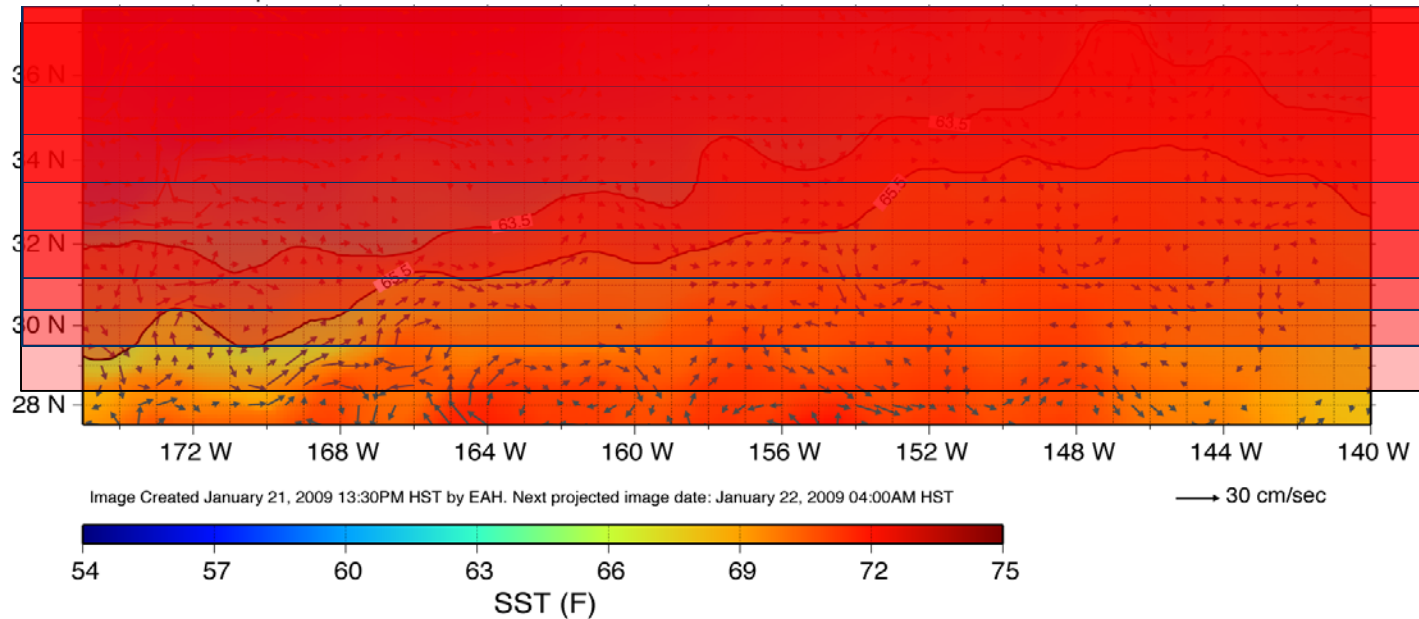
5. Regulatory Impacts Analysis

EXPERIMENTAL PRODUCT

avoid fishing between solid black 63.5°F and 65.5°F lines
to reduce turtle interactions

Sea Surface Temperature: 18Jan2009-20Jan2009

Ocean Currents: 08Jan2009-14Jan2009



PACIFIC ISLANDS FISHERIES SCIENCE CENTER
ECOSYSTEMS AND OCEANOGRAPHY DIVISION
2570 Dole Street, Honolulu, HI 96822

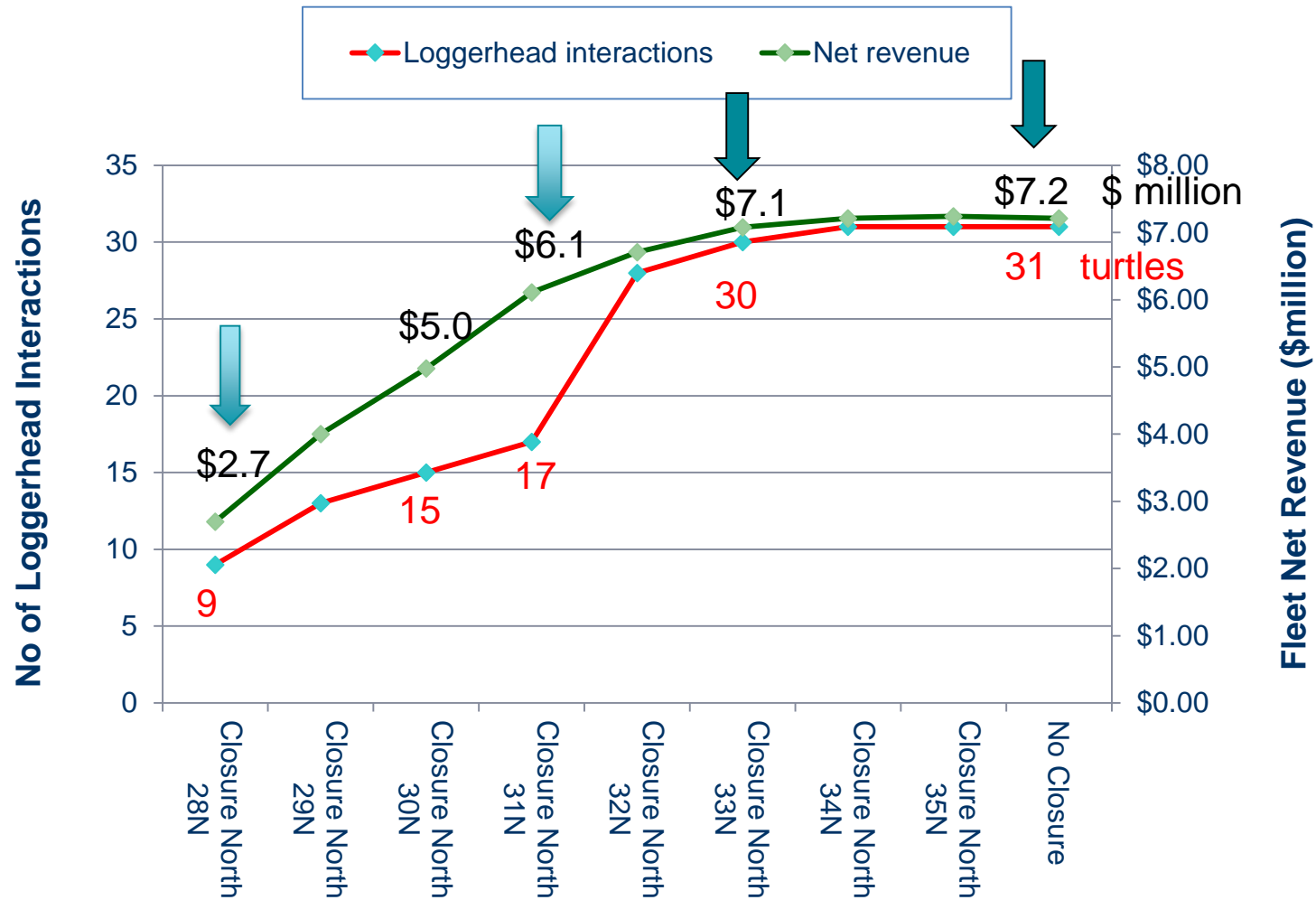
<http://www.pifsc.noaa.gov/eod/turtlewatch.php>
contact: Evan.Howell@noaa.gov

Data provided by Central Pacific CoastWatch node

TURTLEWATCH



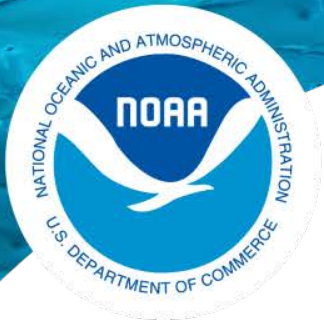
The Trade-off Analytical Model Built on Observers Collected Economic Data



Summary

- The success of the “At Sea” economic program relies on the collaboration of the existing data collection programs
- At sea data collection program provides valuable and **timely** information to support fisheries management
- Database management plays important role in the data quality control and data implications.





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Any Questions?

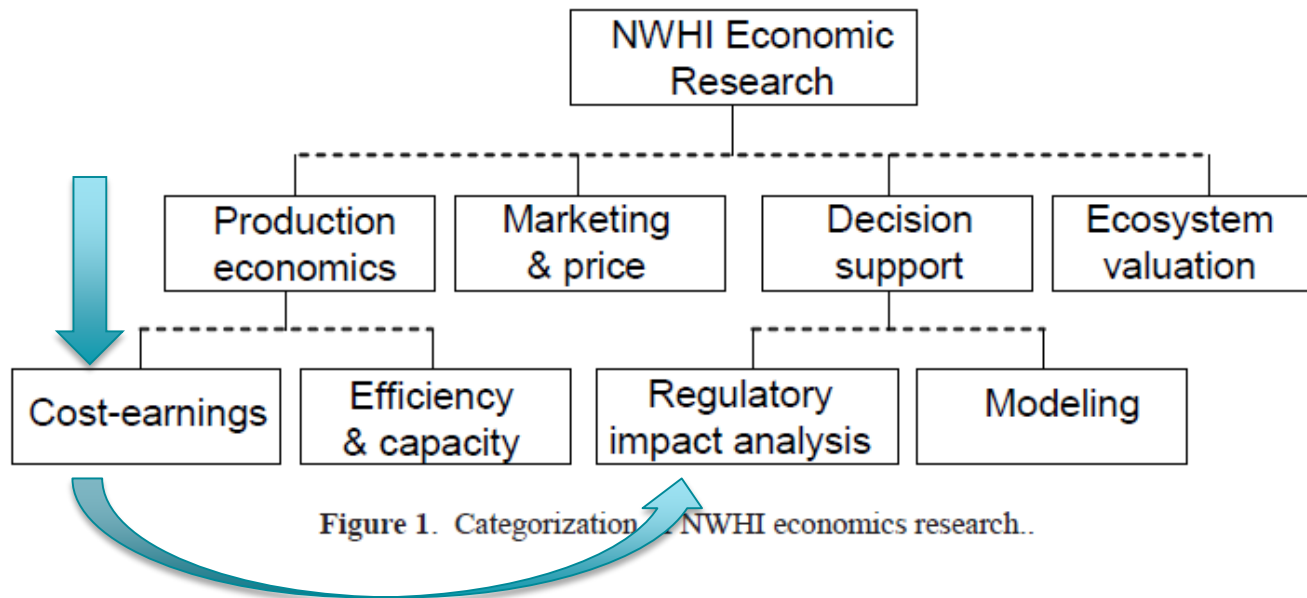


Discussion

- The will – Where are the calls for data collections from?
- The obstacles – Any difficulty for implementing data collection programs?
- The uses – How are used in the fisheries management?
 - ✓ Track changes of economic performance
 - ✓ Urgent calls
 - ✓ Compensation/vessel buy back
 - ✓ Impact analysis

Before “At Sea” Data Collection

- Early economics studies focused on productions



- ✓ Production economics studies/performance indicators
- ✓ Regulatory impact analysis

Acknowledgments

- The fishermen of the Western Pacific Islands
- PIRO observer program & the other “at sea” data collection program & their local partners in the fields
- Database management support in PIFSC

