

Immediate need of managing blue swimming crab resource off northern Sri Lanka for a sustainable industry

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- Due to increasing pressure on global fisheries there is a growing concern on gaining a **more sustainable small-scale fisheries** sector
- **Understanding the dynamics** of these small-scale fisheries is much more challenging
 - high diversification & scattered nature (species; crafts; methods & fishers)
 - dynamic patterns in their spatial and temporal usage
 - supply landings directly to consumers
- This inadequate understanding has created many “**boom and bust**” fisheries around the world (Norse et al., 2012; Clark and Dunn, 2012).

Blue swimming crab fishery

- Expanded after 2008 in post-war context
- Drastically booming and shifting to commercial level
 - “self consumption” towards “export market”
- Fiber reinforced plastic (FRP) fishing craft



Introduction

A blooming fishery in Sri Lanka

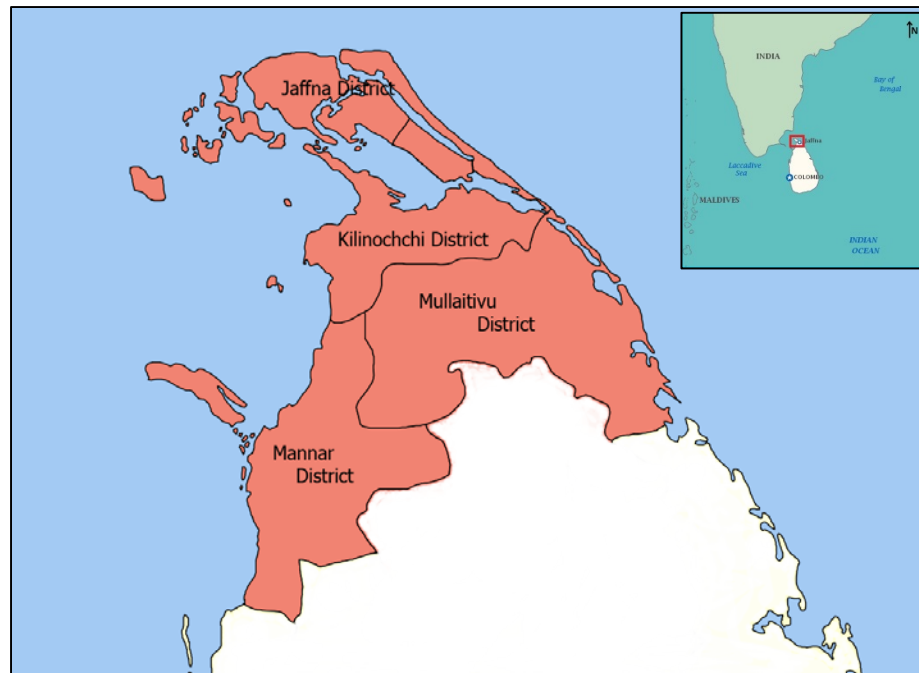
Blue swimming crab fishery

- Bottom set gillnets
 - illegal monofilament gillnets
- Catches are rejected by exporters due to higher damages
- Despite to the higher discards fishers impel to catch more and more crabs to cater high market demand



To evaluate the present status of BSC resource and the fishery

- Random BSC samples were monitored from landings in 4 districts,
 - from November 2014 to December 2015
 - on weekly-basis
 - with respect to different gears
- Catch records from 2005 to 2015 were collected from fish-collectors' log-books



- Percentage occurrence of **4 damage levels & under size** (<50g) BSC individuals were recorded from randomly selected catches



Stage I

Damaged or removed walking legs



Stage II

Pincers are removed



Stage III

Loosely fixed or removed abdomen part



Stage IV

Severe damages in carapace

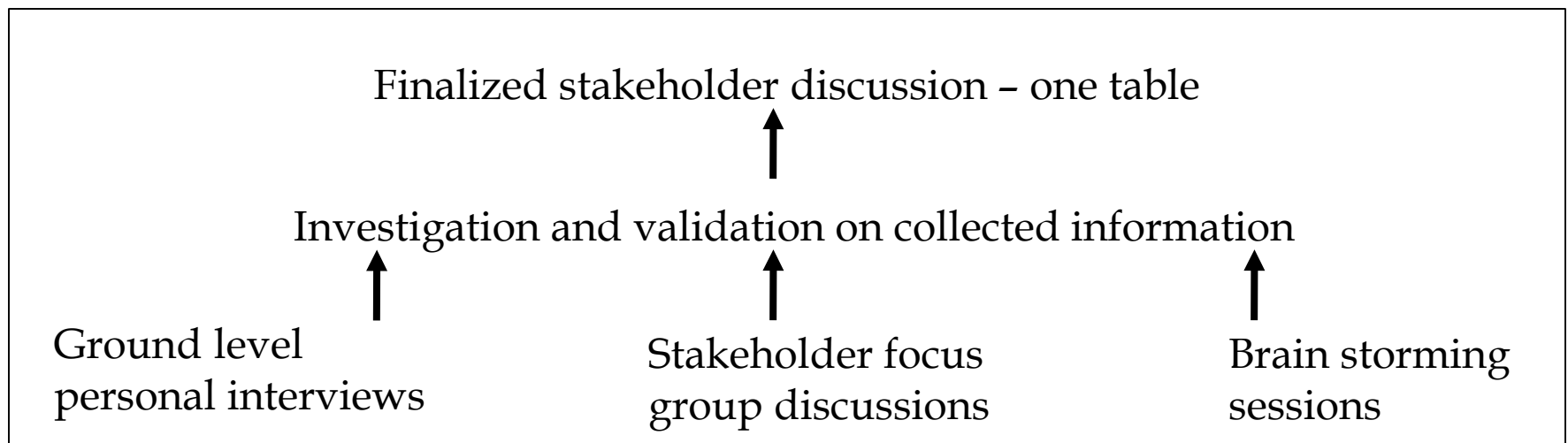
Methodology

Data collection

- Randomly selected stakeholders (n=76) were taken into one discussion forum and asked them to identify and prioritise strengths, weakness, opportunities and threats (SWOT) of the industry.
 - **Stakeholders:** fishers; processors; collectors, exporters, scientists etc.
- Multi-stage data collecting process was used



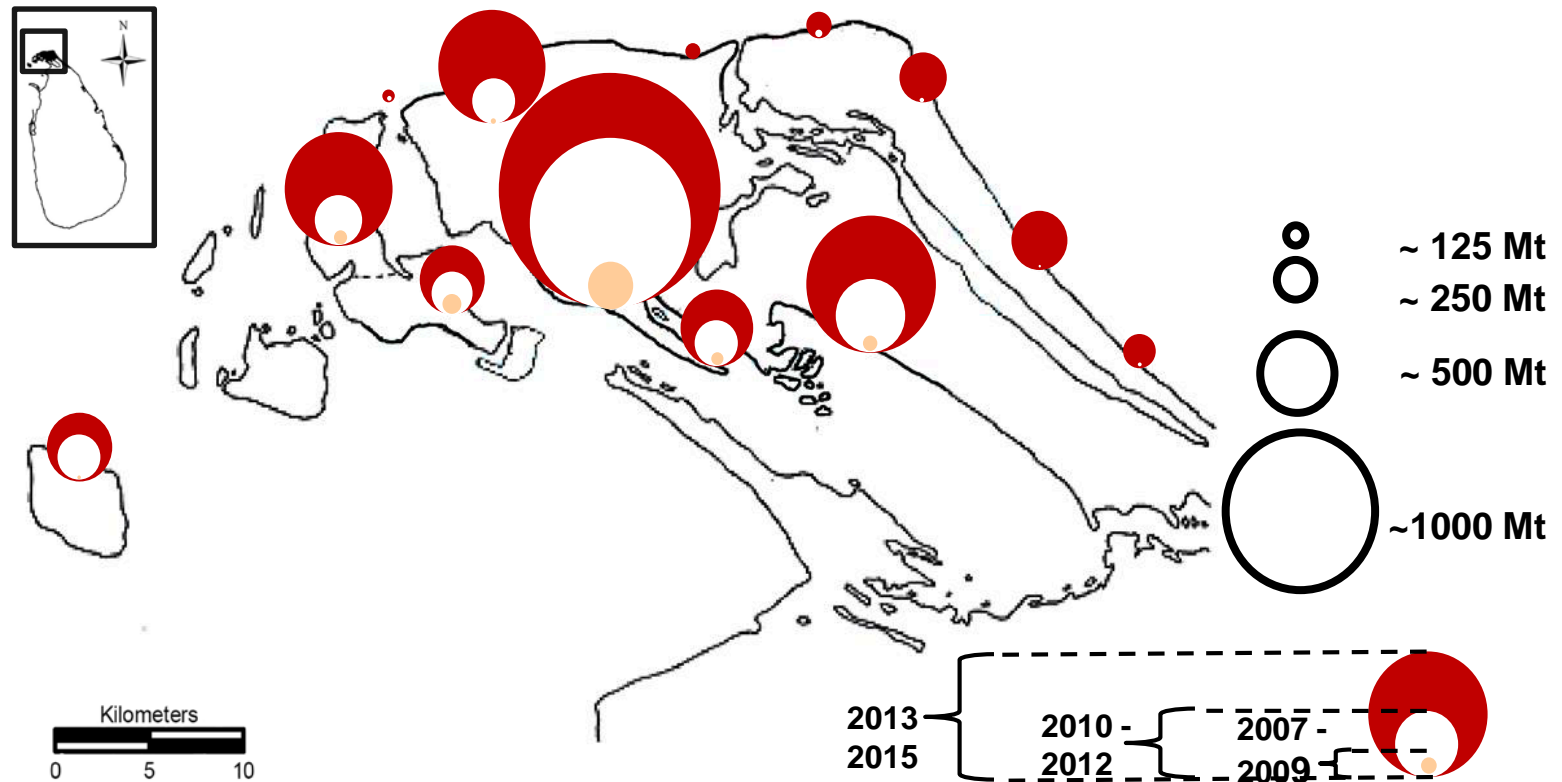
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Results

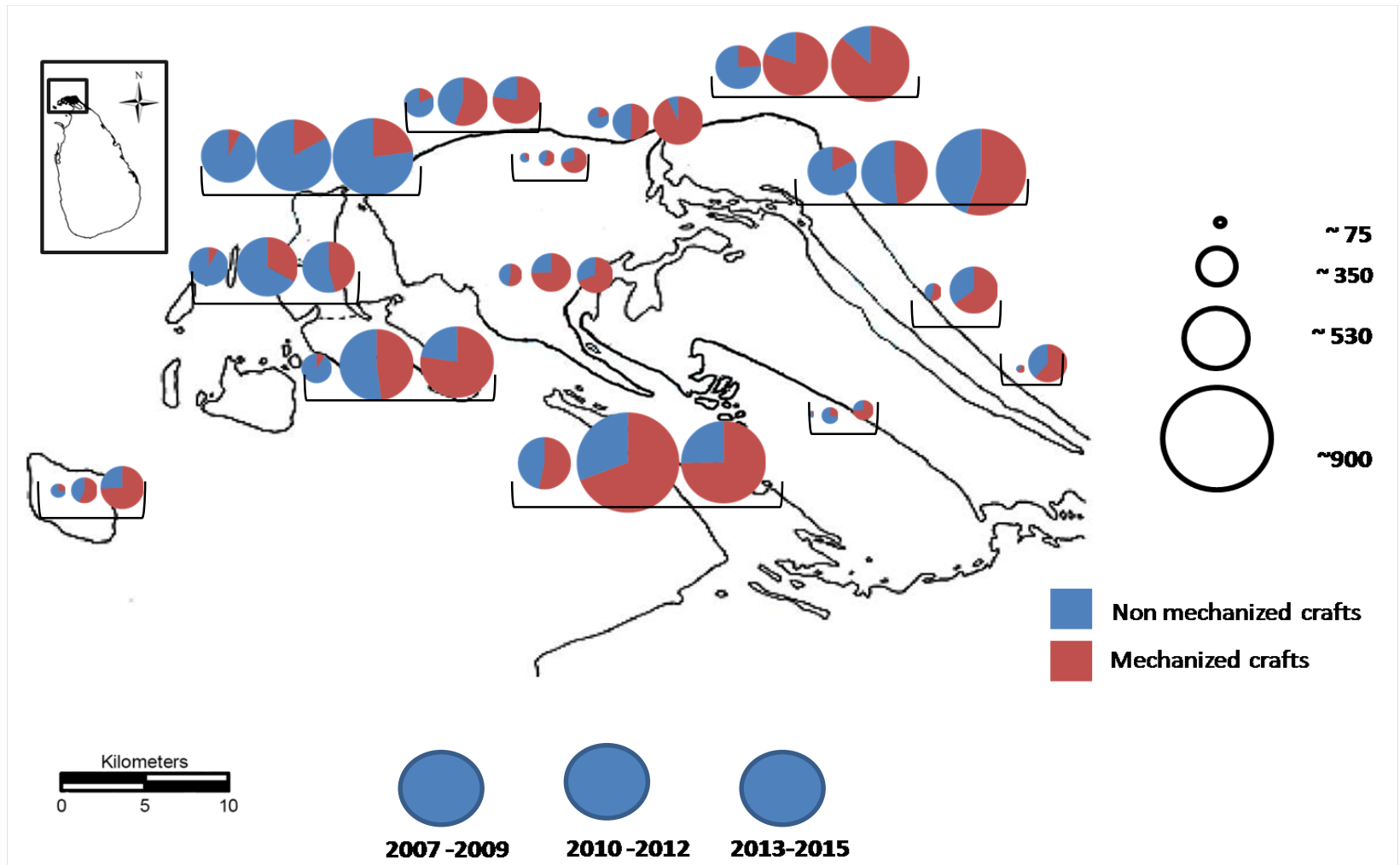
Fishery

Increased production – Due to increasing demand from export and tourist industries



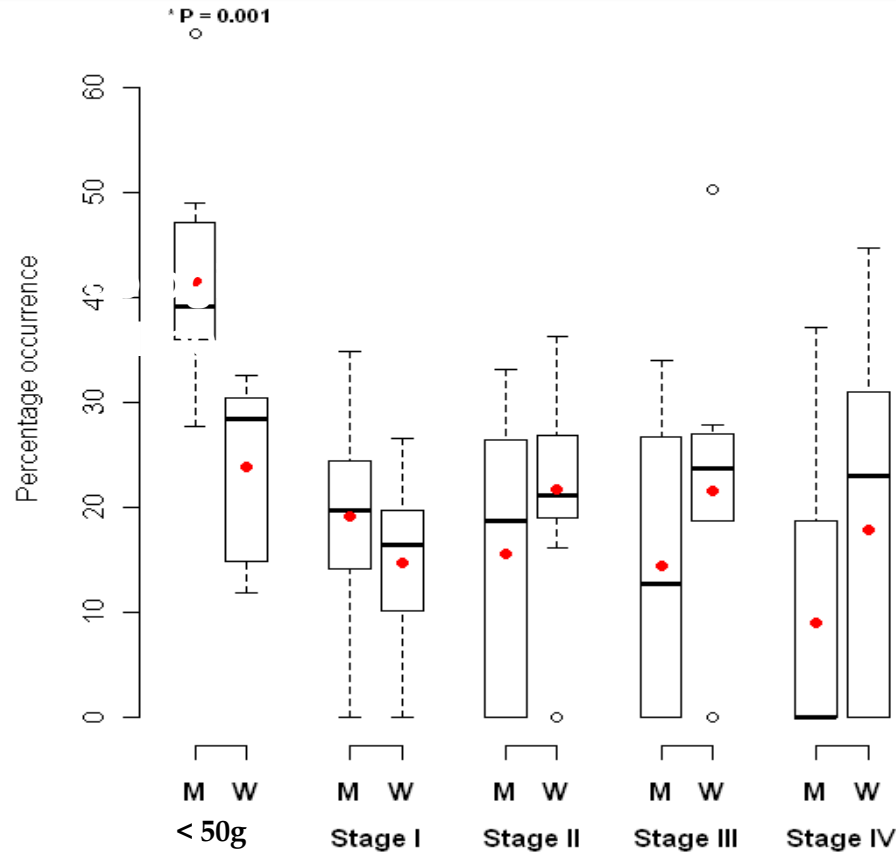
Source: (Sivanthan and De Croos, 2015)

Increased fishing effort



Results

Damages caused by gillnets

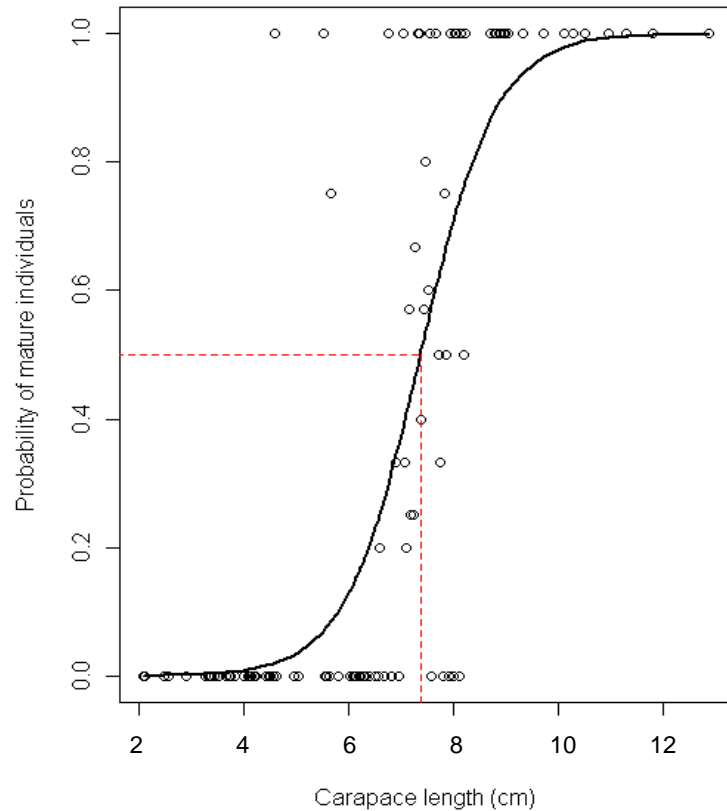


- Level of damages caused by both gillnets were similar ($P > 0.05$)
- Significantly high % of small crabs (<50g) from monofilament gillnets

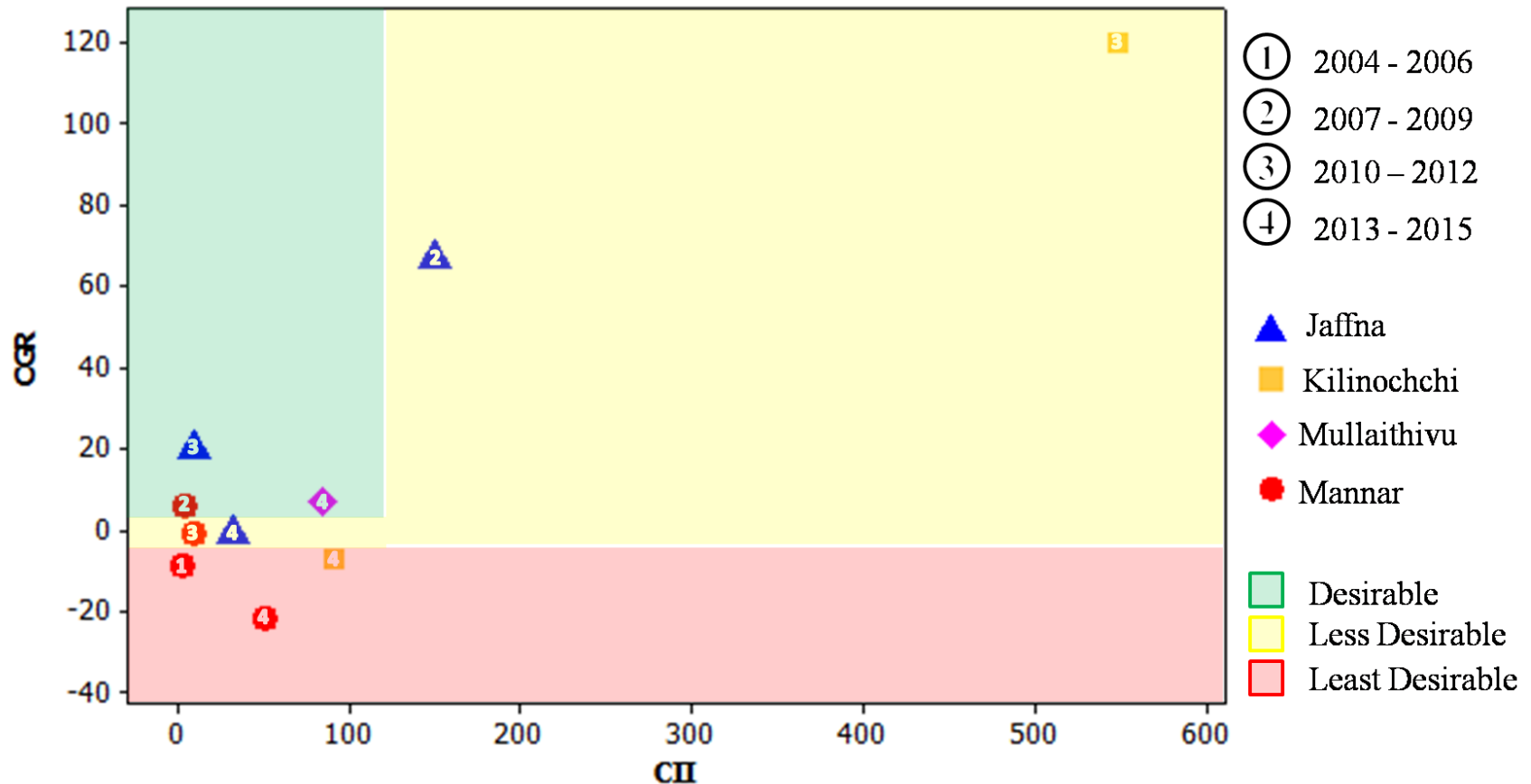
Results

Non-selective catches in landings

- Very small immature individuals and eggs bearing individuals

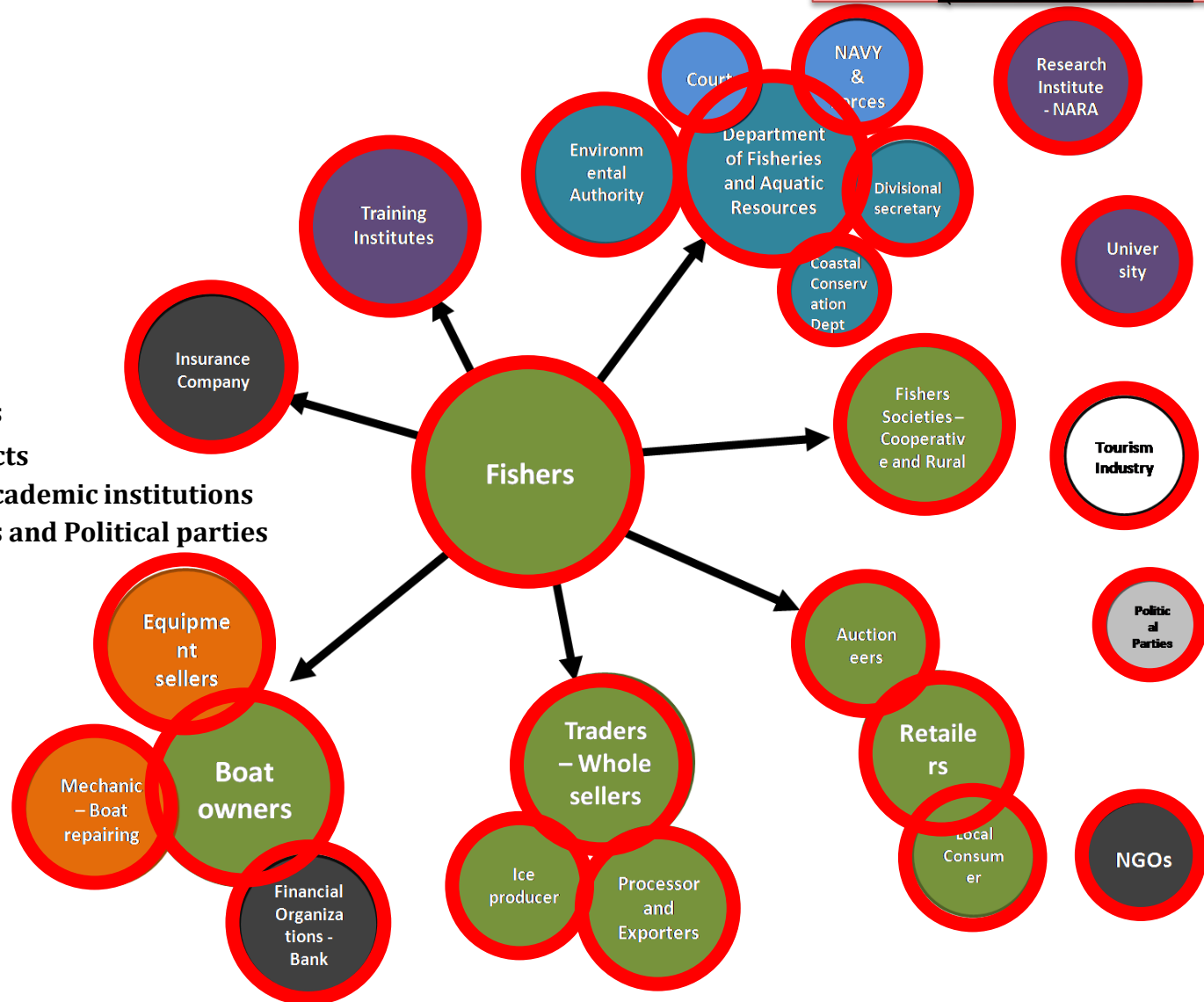


Overall performance of northern BSC fishery for the period of 2013-2015 was found to be 'less desirable' with negative compound growth rate of 2.21% and high instability of 37.68% CII (Coppock Instability Index)





(Overall view)



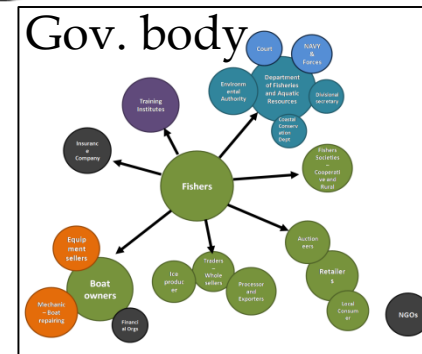
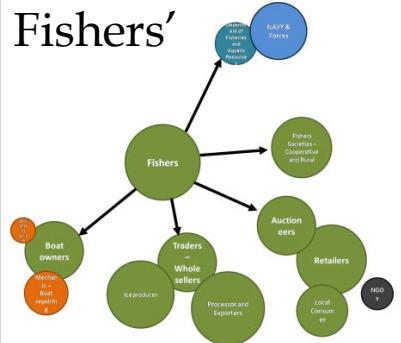
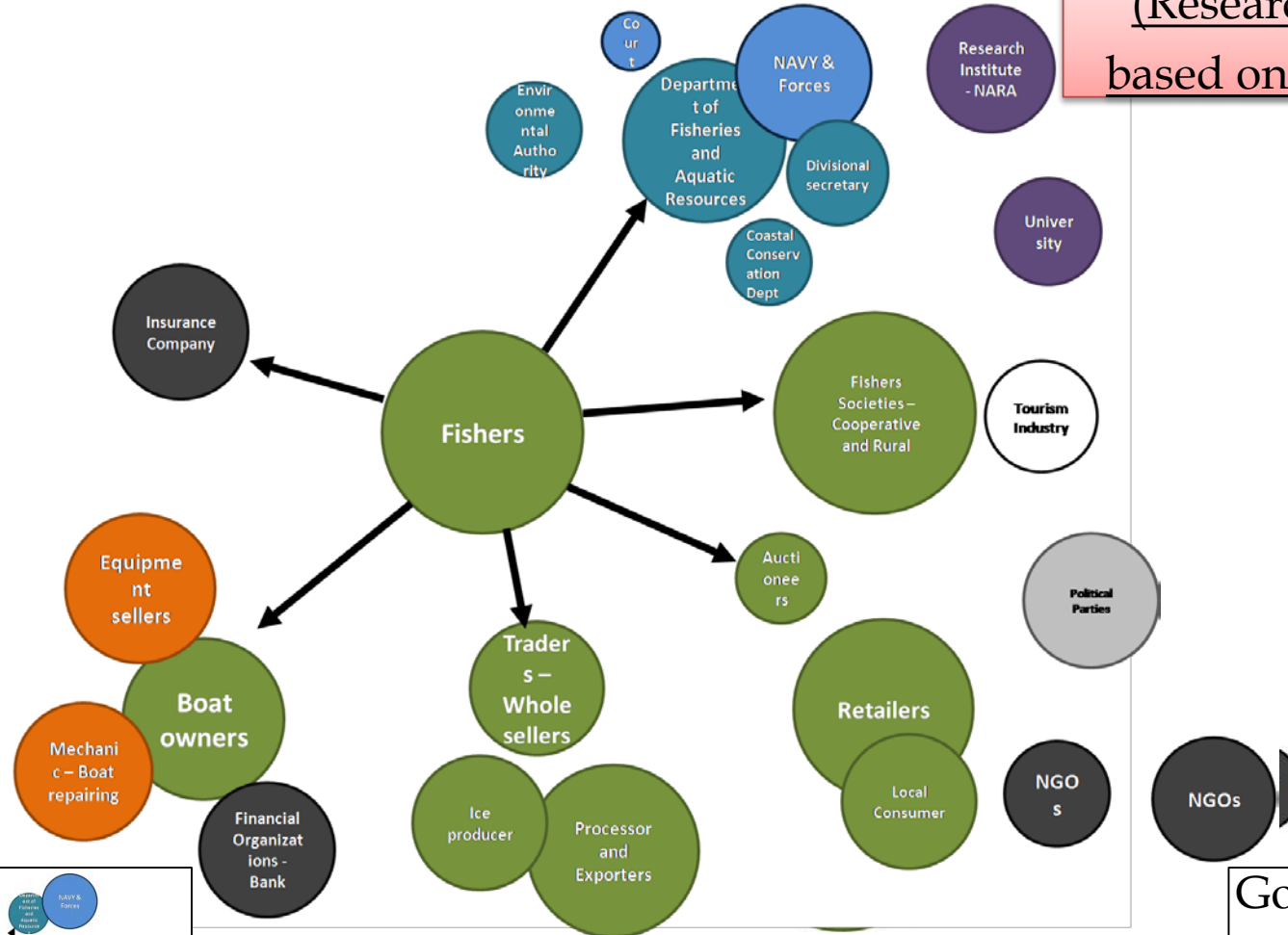
Local user communities
 Governing bodies
 Financial supporters
 Gears and crafts suppliers
 Protection and legal aspects
 Research, trainings and academic institutions
 Remote user communities and Political parties

Results

Stakeholders



(Researchers' view – based on study region)



Strengths

- Long coastline
- High level of commercial fish diversity
- High demand in local and export market
- Experienced workforce with young entrants
- Capacity of capital investment
- Willingness for diversification
- Landing sites are mostly located near to the towns for easy marketing
- Strong entrepreneurship capacities among coastal communities
- Entry of technically innovated processing companies to northern Sri Lanka
- Good fisheries science and experts are available
- Strong Fisher's Societies exist

Opportunities

- Growing demand for seafood in export market
- Transferring nature of global vision of fisheries sector to sustainability and eco friendly
- Capacity to conduct quality researches to overcome the constraints

Weaknesses

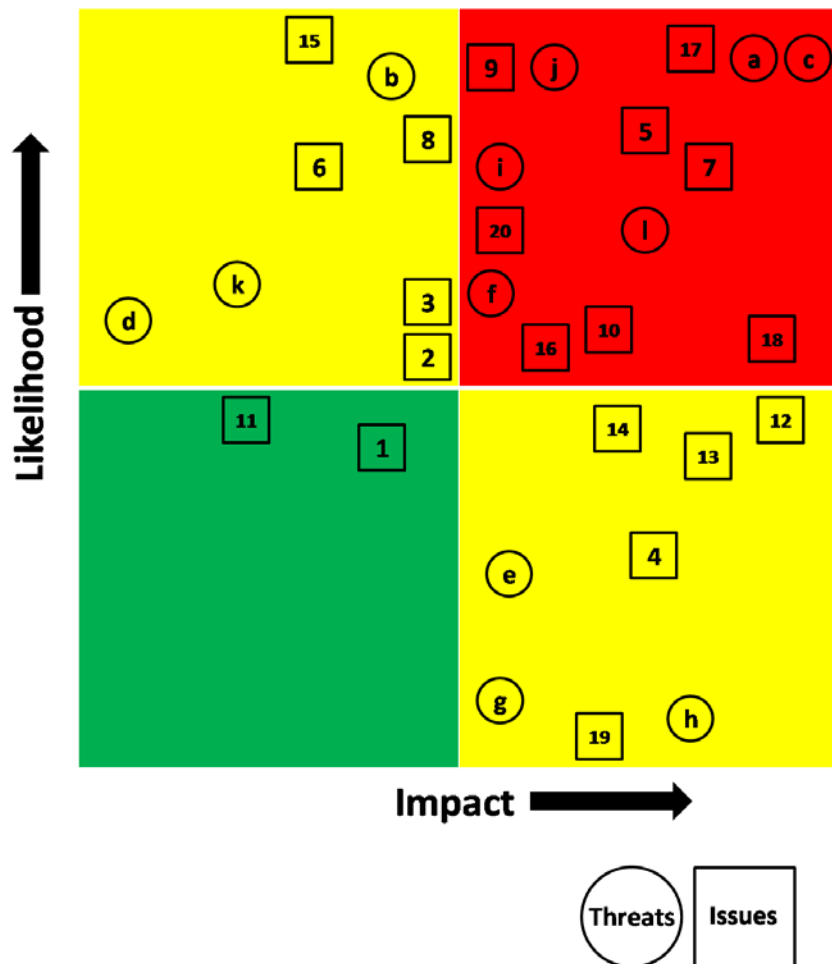
- Complex nature of the fisheries sector – difficult to monitor and manage
- Economical fluctuation of the country
- Old fishing fleets with poor technologies
- Poaching of local fishers from south
- Operations of illegal, unregulated and unreported fishing practices
- Lowering the bargaining power of the active fishers by the presence of middlemen at the landing sites
- Conflicts between fishers and aqua culturists
- Poor understanding of the stock and sustainable development of the resource
- A declining nature of fish production in recent years
- Poor infrastructure facilities at the landing sites
- A part of the productive coastal areas have announced as high security zones and restricted to enter in
- Higher proportion of discards including immature individuals of commercial species and non marketable species in the catches
- Lack of technical innovations
- Gaps in fisheries data and information

Threats

- Illegal entry of Indian fishermen and sustaining from Sri Lankan waters
- Increasing costs rather increment in prices
- Negative climate changes
- Heavy competition in export market

Results

Threats and Issues



- a – Indian fishers poaching,
- b – Illegal fishing of local southern fishers,
- c – IUU by local fishers,
- d – Conflicts in fishing communities,
- e – Gaps in law enforcement,
- f – High proportion of immature catches,
- g – Biodiversity degradation,
- h – Ghost fishing,
- i – High proportion of berried females in catches,
- j – Higher proportion of bycatches and discards,
- k – Anthropogenic effect,
- l – Local trawler operation;

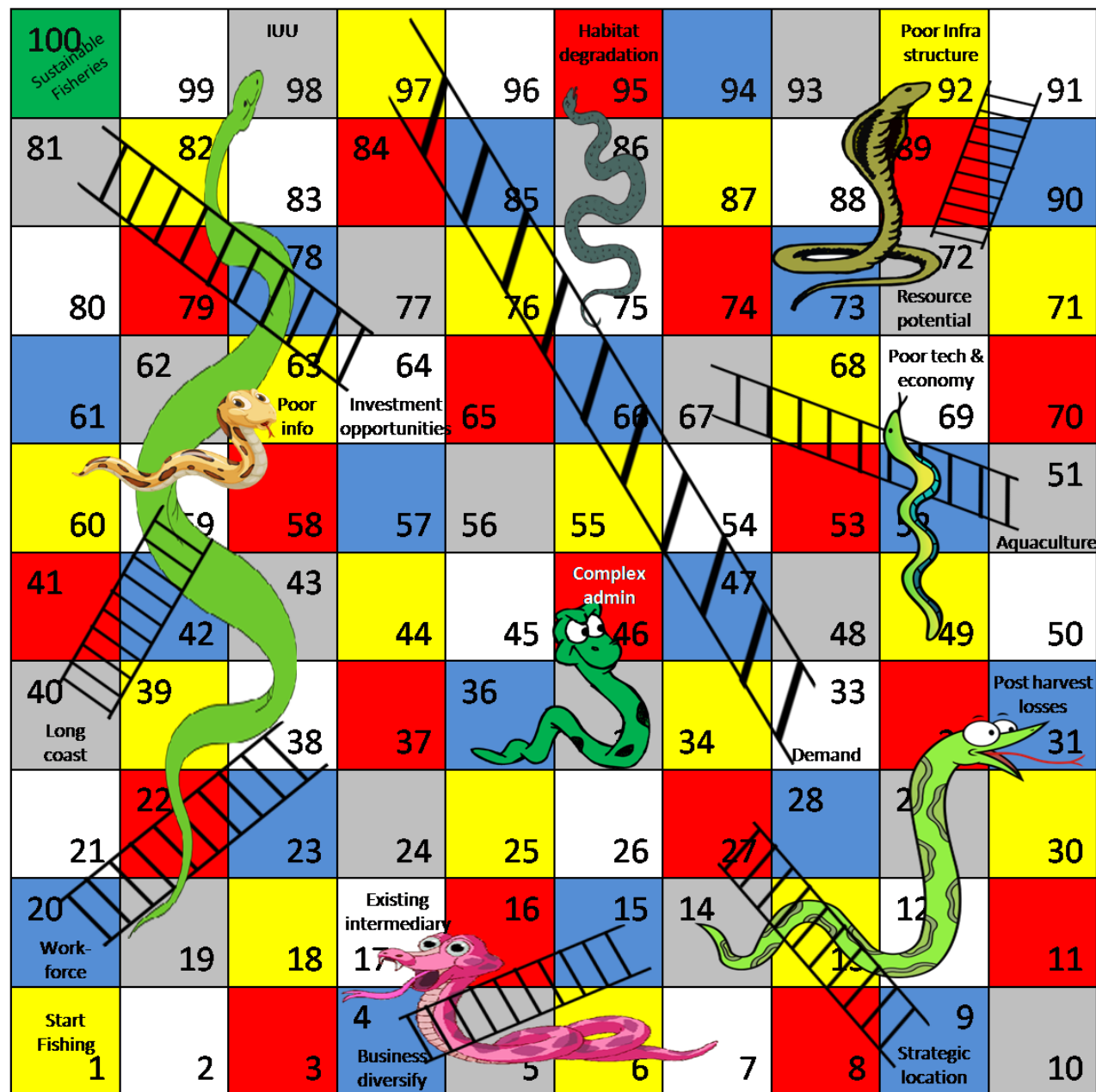
- 1 – Poor technological advancement,
- 2 – Less financial support,
- 3 – Poor economical status of the fishing communities,
- 4 – lack in Government allocations for fisheries development,
- 5 – Gap between fishers and processors/ exporters,
- 6 – Improper coastal management,
- 7 – Smuggling & drugs trafficking,
- 8 – Thieving & stealing,
- 9 – Habitat degradation,
- 10 – Catch reduction,
- 11 – Defense related issues such as high security zone announcement,
- 12 – Less support to rehabilitation of war affected fishers,
- 13 – Complex nature of administration,
- 14 – Poor functioning administrative boards of societies,
- 15 – Increasing demand for fishery products,
- 16 – lack of awareness on conservation & sustainability,
- 17 – Increasing fishing efforts,
- 18 – Fishing during spawning season,
- 19 – Poor infrastructure facilities,
- 20 – Presence of middlemen)



Results

Community empowerment

Educational tools
- based on SWOT
outcomes



Cooperative Level

Fishermen's Co-operative
Union's Federation



Fishermen's Co-operative
Society Union



Fishermen's Co-operative
Society (FCS)



Fishermen/women

Ministry of Fisheries and Aquatic Resources Development

Ministry of Fisheries and Aquatic Resources Society
Development



Department of Fisheries and Aquatic resources



Rural Fisheries Organization (RFO)



Fishermen/women

Future challenges & conclusions

The open-access and common-property rights have triggered ~70-times increased fishing effort during last 10-years.

Poaching by fishermen of neighbouring countries impose high pressure on the resource leading to wrong estimates of fishing effort and subsequently maximum-sustainable yield.

Fishery needs to be managed immediately prioritising threats and issues identified in this study.

The correct choice of management may require co-management and community-based management through locally based fishing rights.

Acknowledgements

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UNITED NATIONS
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Thank you!