

Community achieves higher economic returns but neglect ecological sustainability: a case from a coastal trap-net fishery from northern Sri Lanka

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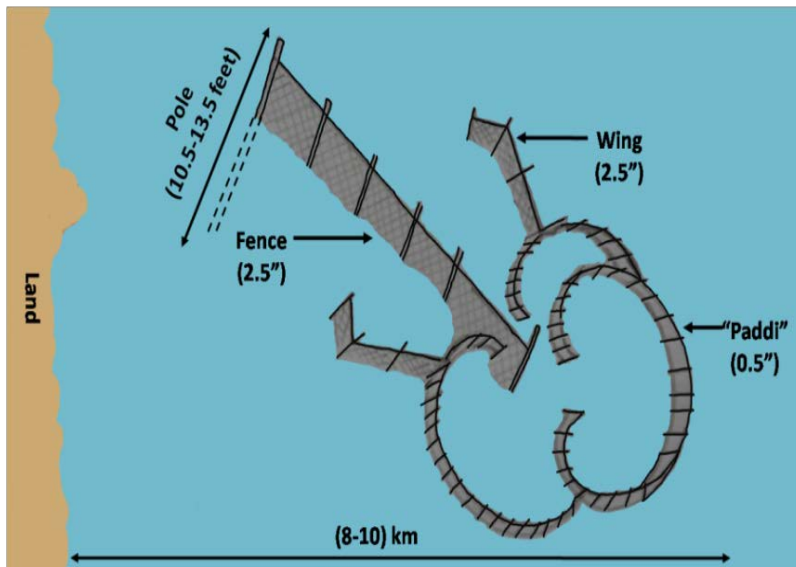
- Management of fisheries, especially coastal fisheries, provide unique challenges due to its **dynamic nature**
- Managing small-scale fisheries (**monitoring & enforcing regulations**) is much more challenging
 - high diversification & scattered nature (species; crafts; methods & fishers)
 - dynamic patterns in their spatial and temporal usage
 - supply landings directly to consumers

Introduction

A case of “Paddi-valai” trap-net fishery

Gear: trap-net

- **Passive fishing gear** made out of wooden poles and netting materials
- Fixed in selected **shallow coastal areas**
- Fixed **across the water current** and movement of shrimps & fish



Introduction

A case of “Paddi-valai” trap-net fishery

Location

- Coast in northwest Sri Lanka - Mannar
- ~150 gear units
- Harvest in every two days



Introduction

A case of “Paddi-valai” trap-net fishery

Catches

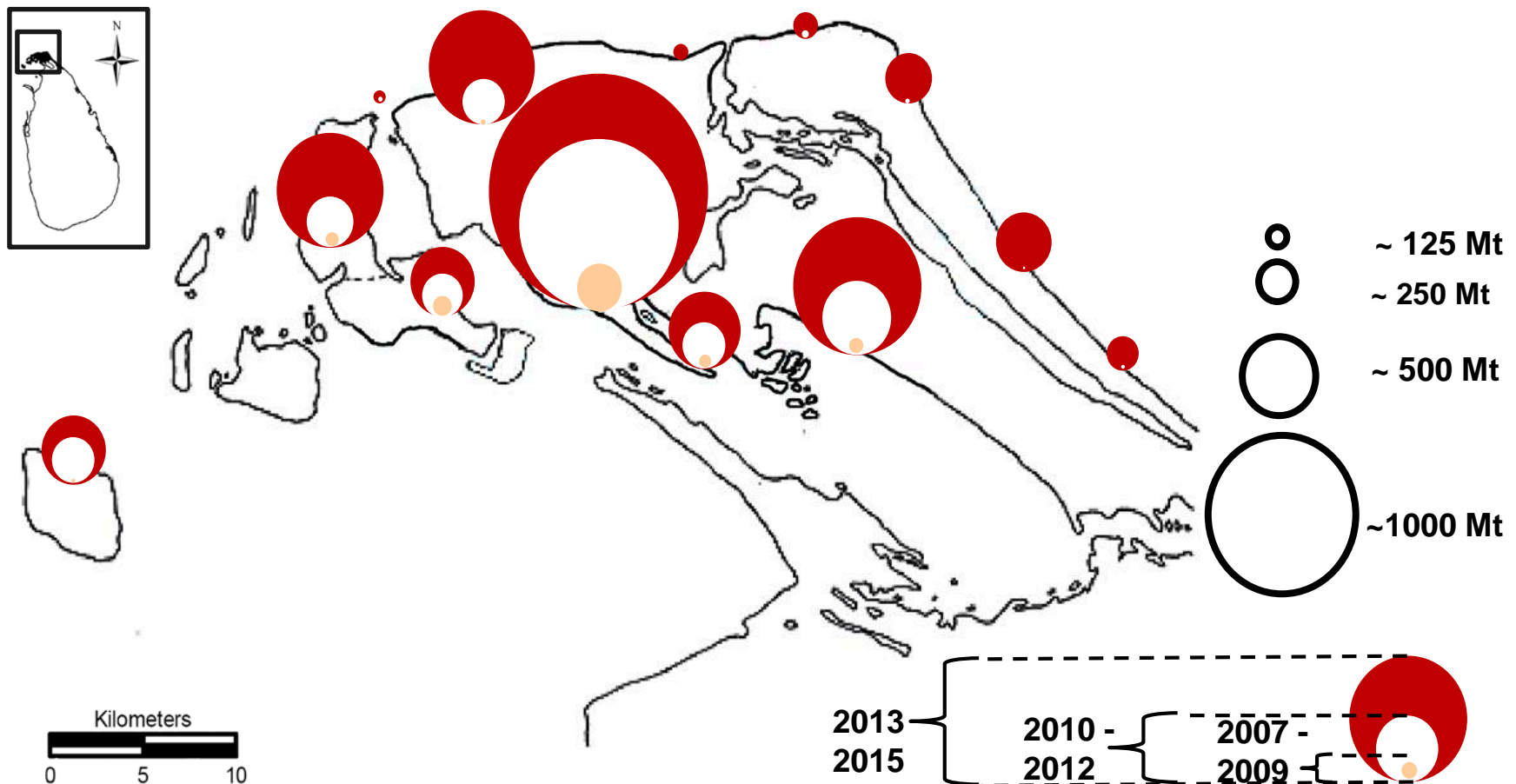
- **Target catch:** Shrimps
- **By-catch:** Blue swimming crab (BSC) – *Portunus pelagicus*



Introduction

Increasing blue swimming crab production

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



Source: (Sivanthan and De Croos, 2015)

Price discrepancy

- “Paddi-Valai” trap-net fishers also **get relatively higher price for their BSC catches than the target catch; shrimps.**
- But the price that trap-net fishers get from BSC retailers is **well below than the price gets by other BSC fisheries.**
- Moreover, highly **varied prices** were received by trap-net fishers for their catches

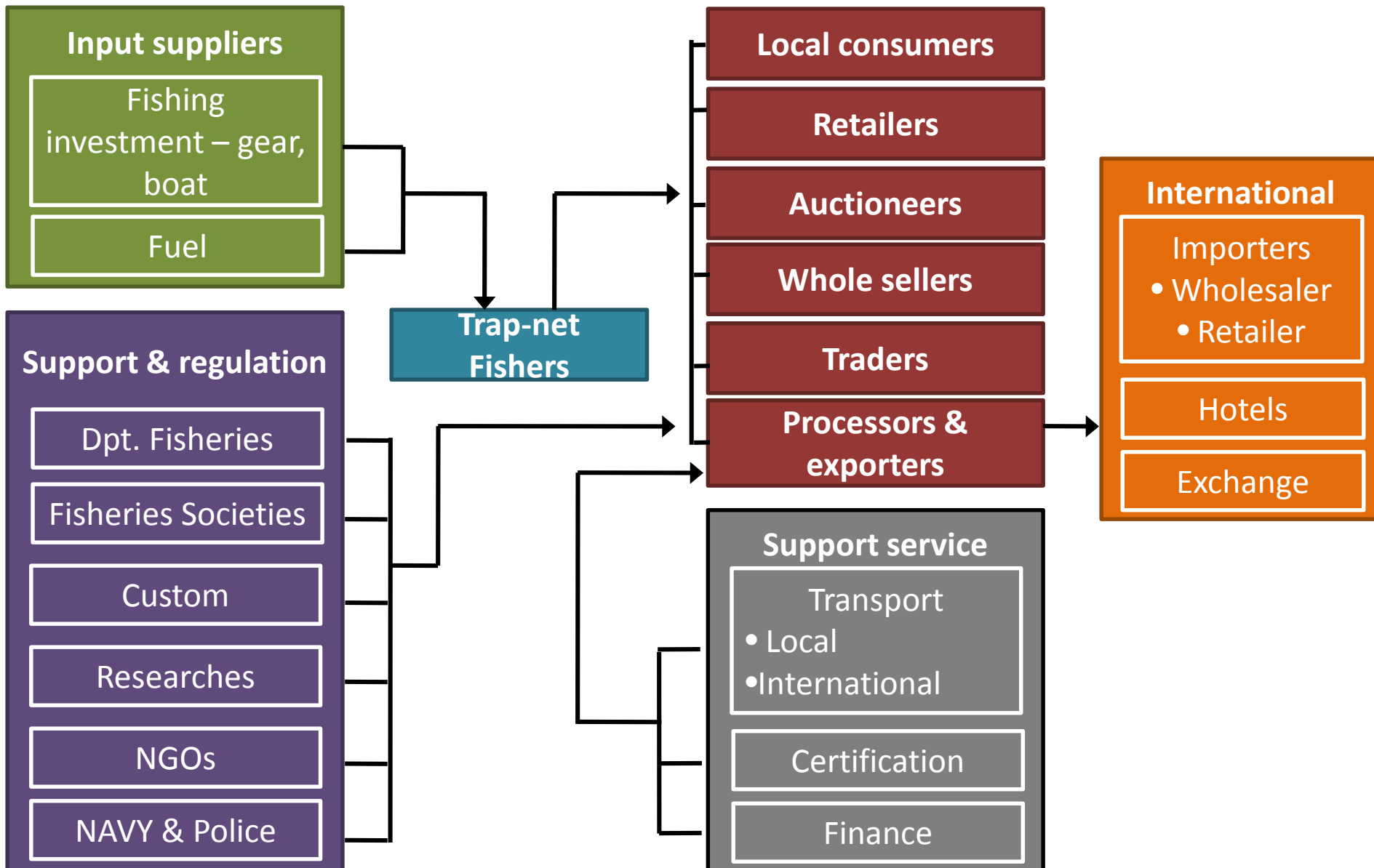
To evaluate how “Paddi-Valai” trap-net fishers are attempting to maintain equitable sharing of boosted economic returns among themselves

- Information on fishery and market structure were collected,
 - during October 2014 to August 2015
 - covering 90% of market actors
 - using
 - ✓ semi-structured questionnaires,
 - ✓ small group discussions
 - ✓ field data



Results

Market actors



Results

Market chain mapping for BSC

| Fishermen | | | Collectors/traders | | |
|--|---|---|--|--|--|
| Pre-harvest | Harvest | Delivery | Receiving | Storing & grading | Fixing price |
| <u>Preparation of Trap net:</u> <ul style="list-style-type: none"> • Cleaning the net & poles • Dying • Fixing the trap net | <u>Harvesting the catches:</u> <ul style="list-style-type: none"> • Travelling to fishing site • Collect the catches trapped • Back to landing | <u>Supply the fresh catches to collectors</u> | <u>Make the records of the collected fish</u> <ul style="list-style-type: none"> • Weigh the crab | <u>Packing and transport</u> <ul style="list-style-type: none"> • Sort the crabs based on their grading scale • In plastic boxes with the ice - Container vehicles | <u>Make payment to the fishers</u> <ul style="list-style-type: none"> • Pay fishers according to the price they fix |

| Size of the crab | L | M | S |
|--------------------------|-----|-----|-----|
| Cost (LKR/ kg) | 10 | 10 | 10 |
| Selling price (LKR / kg) | 580 | 320 | 210 |
| Net-income (LKR / kg) | 570 | 310 | 200 |

| Size of the crab | L | M | S |
|--------------------------|-----------|-----------|-----------|
| Cost (LKR/ kg) | 2 | 2 | 2 |
| Buying price (LKR / kg) | 580 | 320 | 210 |
| Selling price (LKR / kg) | 660 | 390 | 240 |
| Net-income (LKR / kg) | 78 | 68 | 28 |

Results

Market chain mapping for BSC

Retailers / processors

Hotels/ export market

Receiving

Processing

Storing & delivery

Make the records of the collected fish

- Sort the crabs based on their grading scale
- Pay for suppliers

Processing at the landing site

- Cook the crabs

Send to factory

- Pack the fresh crabs with the ice

Transport

- Pack in plastic boxes and send to factories
- Flesh out

Pack in plastic boxes & send

Type of product

Canned crab meat

L M S

Buying price (LKR / kg)

660 390 240

Selling price (LKR / kg)

5290

Cost (LKR/ kg)

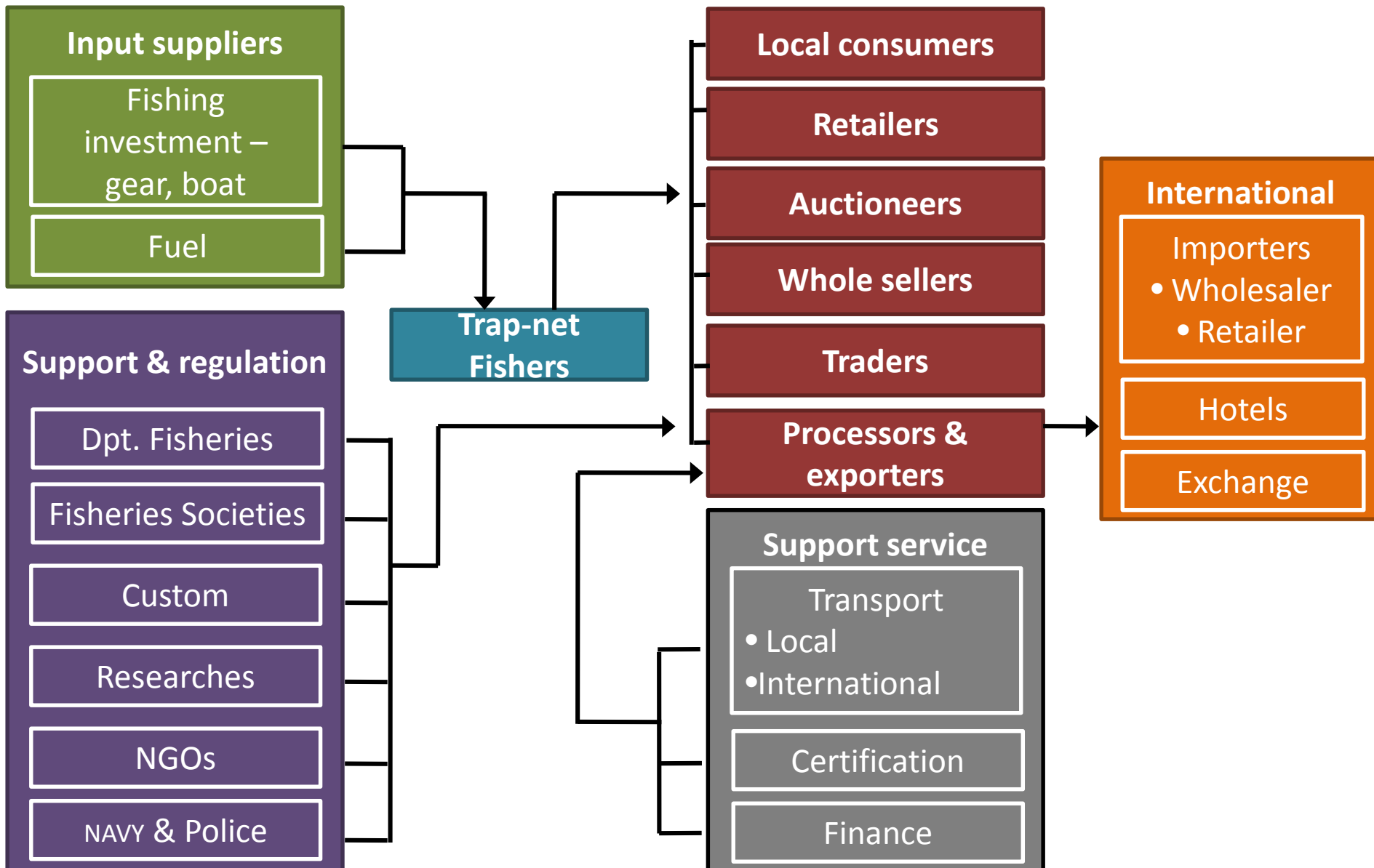
3110

Net-income (LKR / kg)

1750

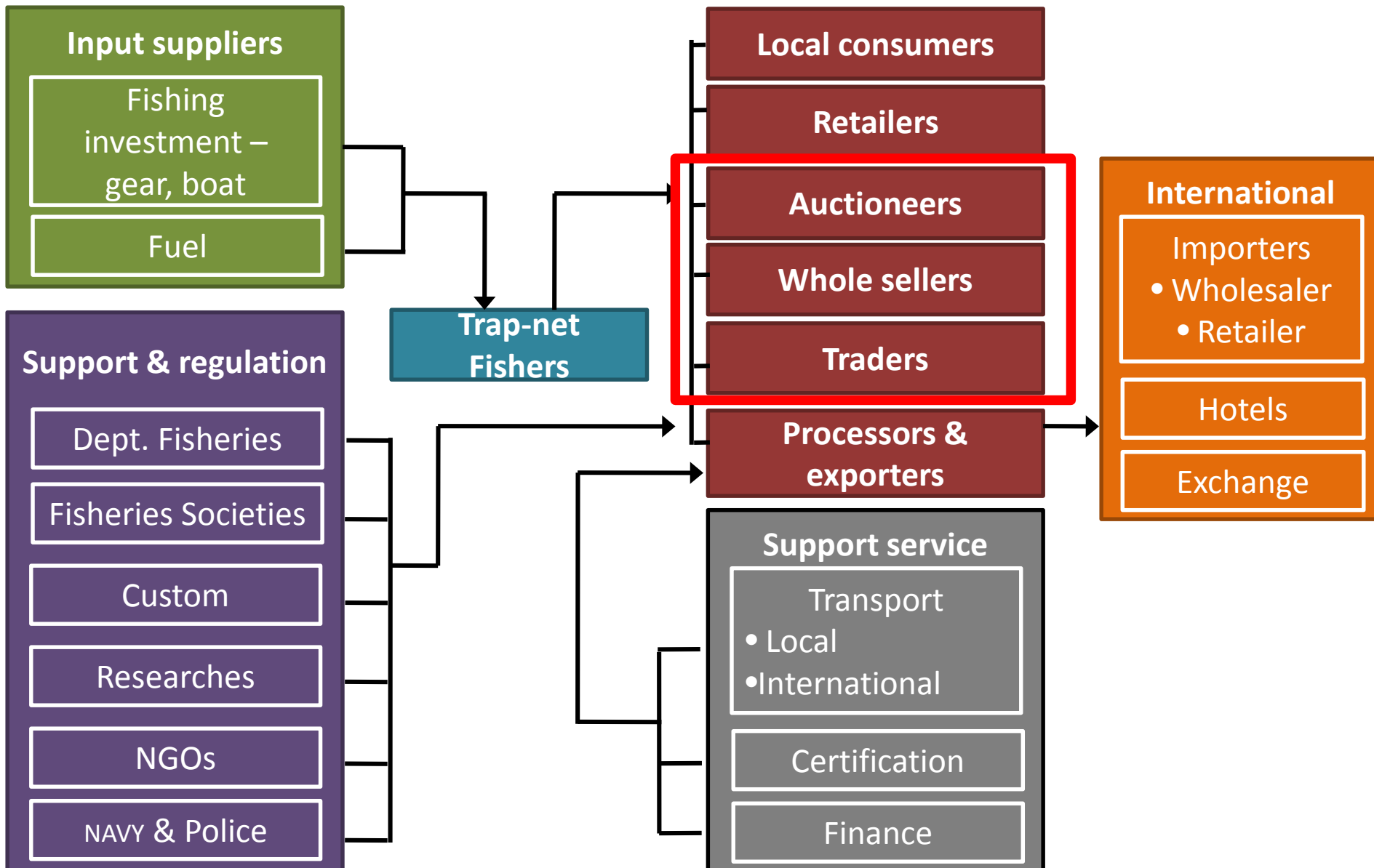
Results

Involvement of bargaining collectors



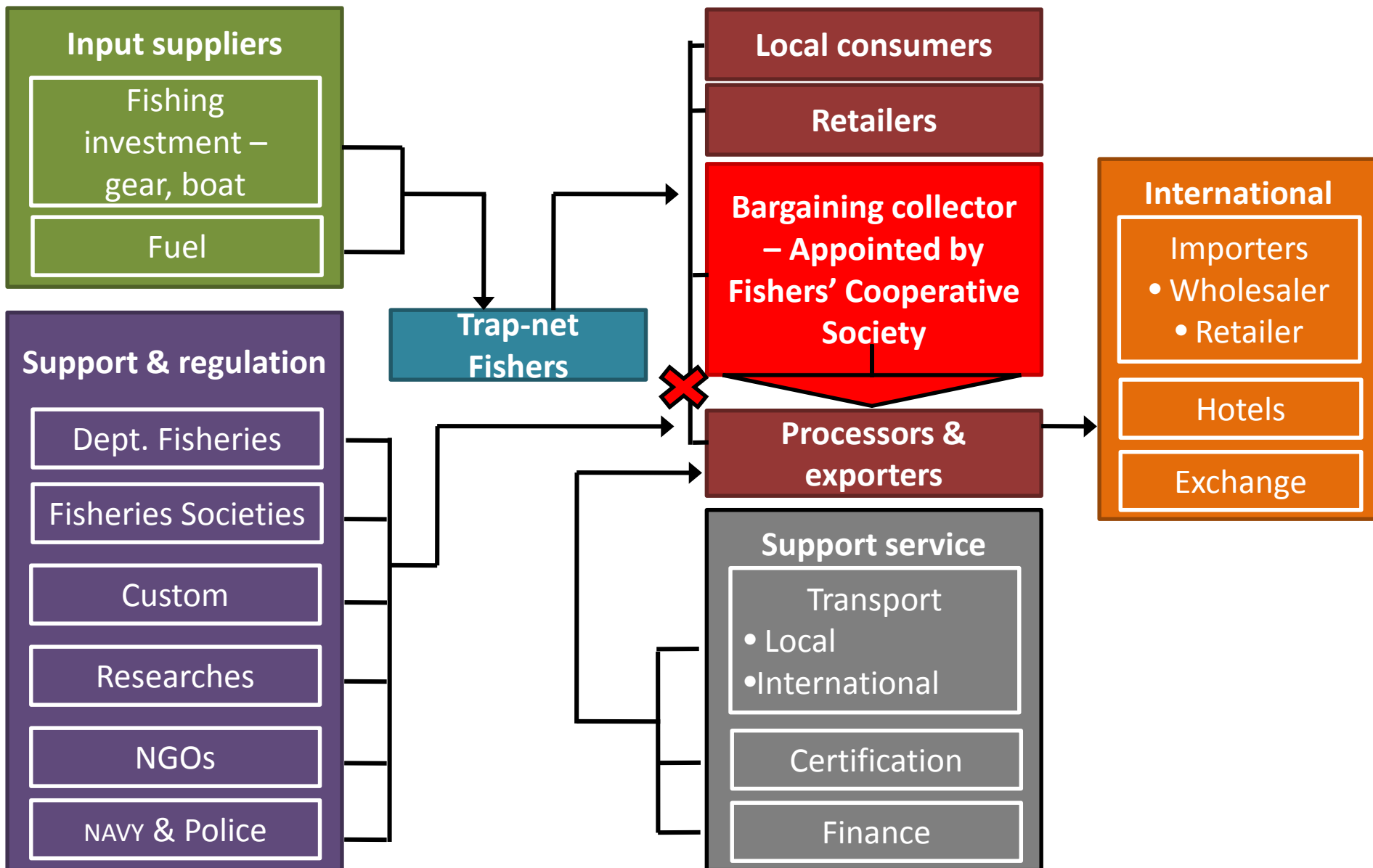
Results

Involvement of bargaining collectors



Results

Involvement of bargaining collectors



Results

Economic returns

- Community based catch selling mechanism - due to the inequitable sharing of profit
 - ✓ strengthened their bargaining power



- One fisher owns 2-3 units of “Paddi valai”

| Phase | Monthly income from one unit (LKR) |
|---------------------------------|------------------------------------|
| Before the new mechanism | 8,000 ± 2,000 |
| After the new mechanism | 22,000 ± 4,000 |

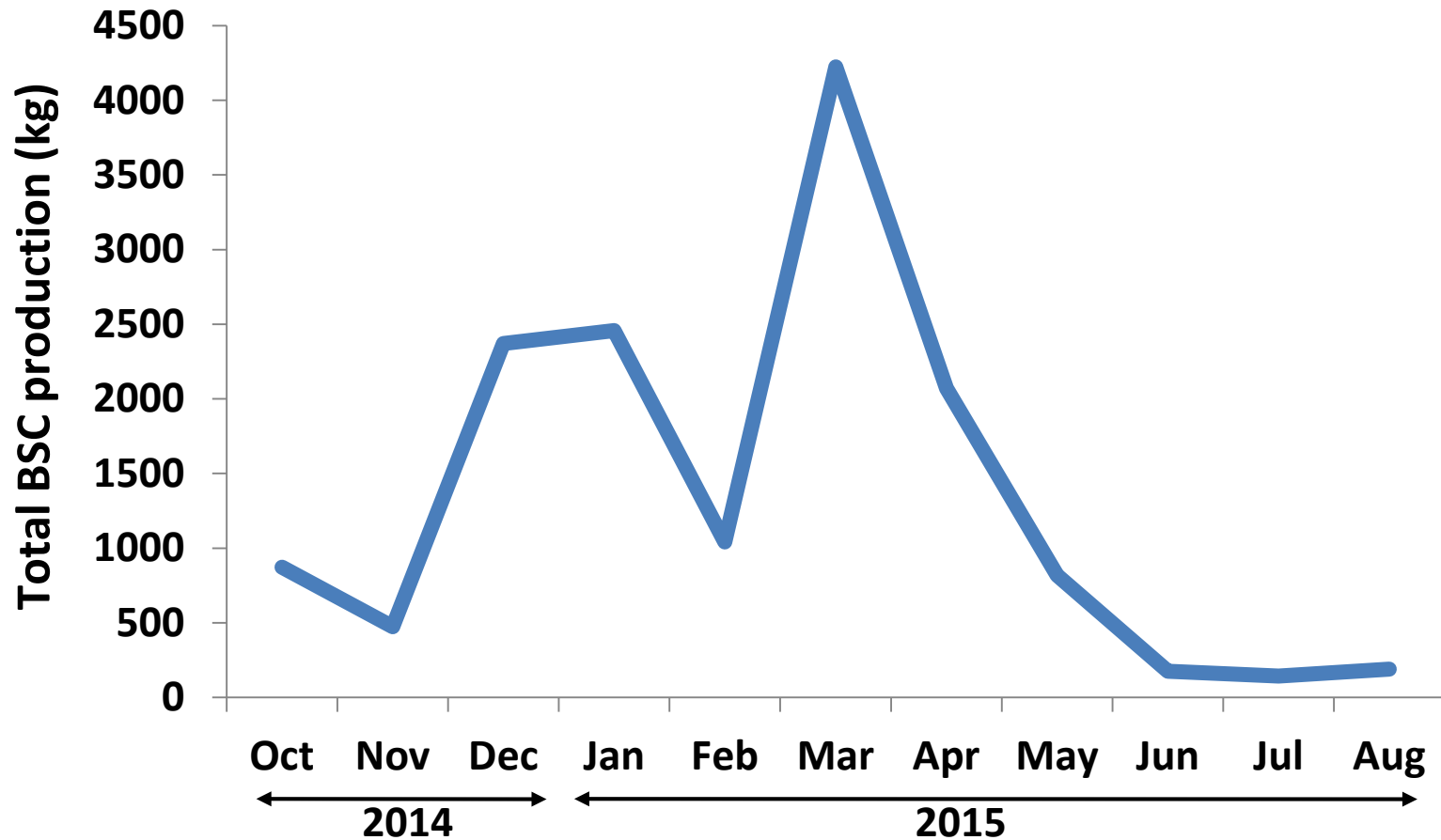
Equitable profit sharing mechanism

- It takes **2-3 days** for trap-net fishers to get a price for their catch
- **100%** satisfaction
- **High price** from BSC exporters



Results

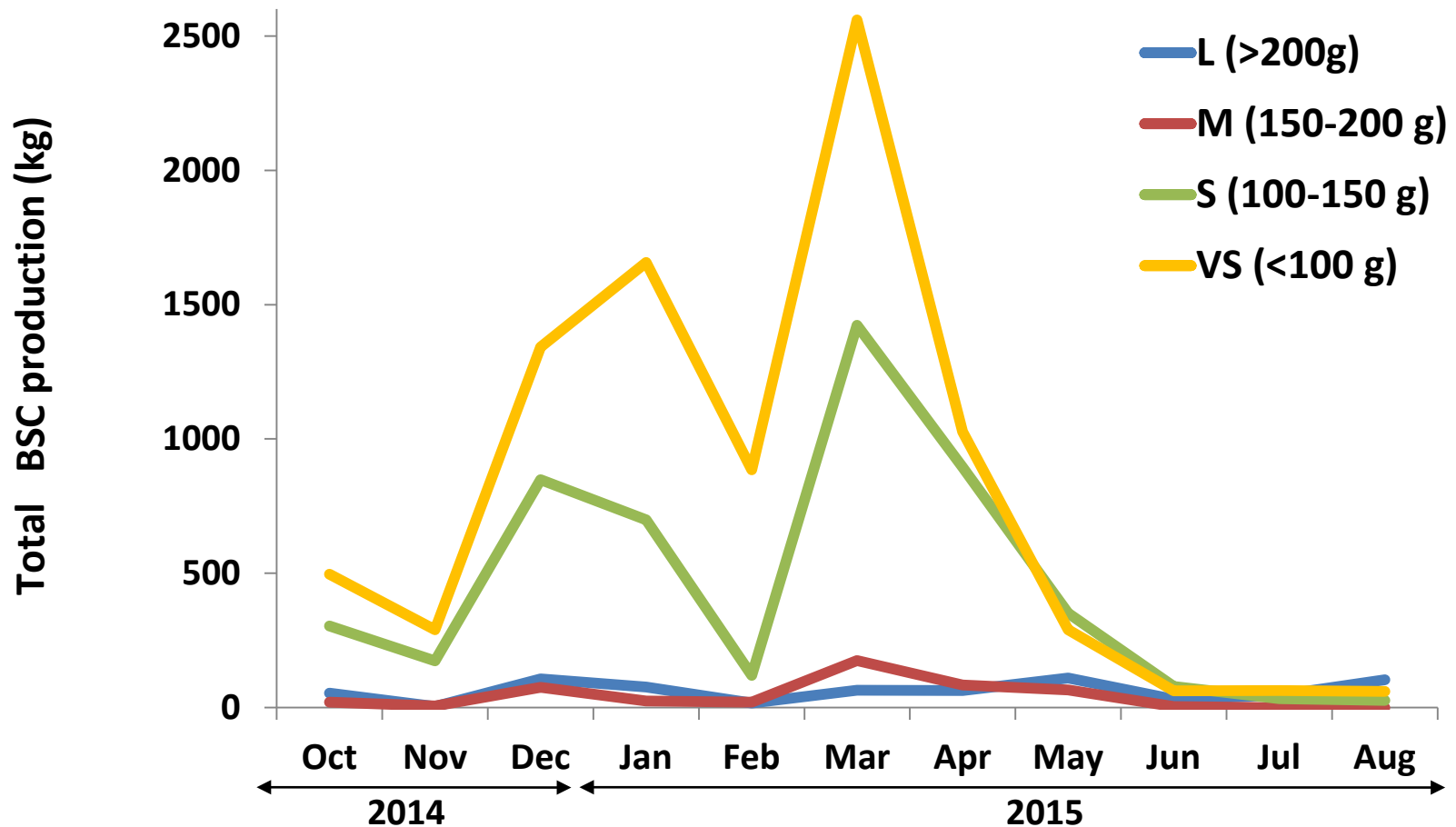
Increased by-catch



Results

Impacts on ecological wellbeing

Danger of growth overfishing



Results

Impacts on ecological wellbeing

- Almost 85% of BSC which taken into the landing-site, during January-February, were smaller than the L_{50}



Size variation of *P. pelagicus* catch



Five crabs to meet estimated W_{50} value ☹



Very small *P. pelagicus* catch (2g)



Future challenges conclusions

“Urgent need for integrating fisheries management strategies with equity sharing of social and economic returns is needed for sustainable utilisation of *P. pelagicus* resource”.

- minimize the impact on resource and
- improve the benefits to the society

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UNITED NATIONS
UNIVERSITY

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Resources

- Carlos G. García-Quijano and Manuel Valdés Pizzini. 2015. Ecosystem-based knowledge and reasoning in tropical, multispecies, small-scale fishers' LEK: What can fishers LEK contribute to coastal ecological science and management?. *FAO Fisheries and Aquaculture Technical paper* 591: 19-40

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Thank you!

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