Food and Agriculture Organization of the United Nations

TAC Use Rights For Fishing

DISCUSSION OF RIGHTS-BASED FISHERY MANAGEMENT IN CHINA

CASE STUDY OF TAC IN ZHOUSAN

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2018.09.11 YEOSU, REPUBLIC OF KOREA

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Overview of the pilot

Policy background

•*Circular of the Ministry of Agriculture on strengthening domestic fishing vessel control and implementing total amount control over marine fishery resources, Letter on implementing TAC pilots for marine fisheries resources management* by Ministry of Agriculture and Rural Affairs

Significance

- *One of the first TAC pilots in China's domestic waters*
- *Establish various data collection mechanisms for a data-rich and promote science-based fisheries management*

Overview of the pilot

Overview

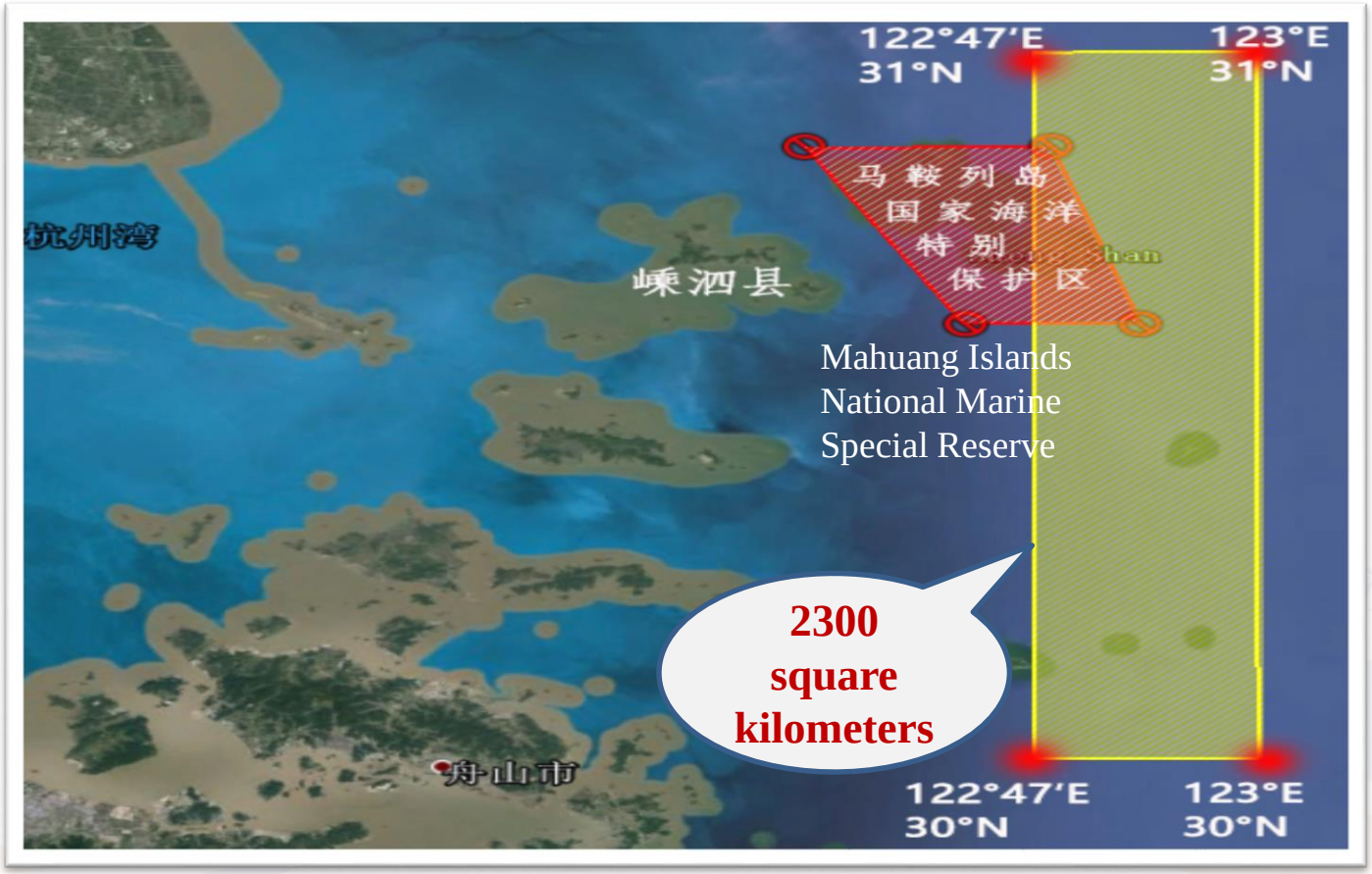
Pilot area

Pilot period

Pilot specie

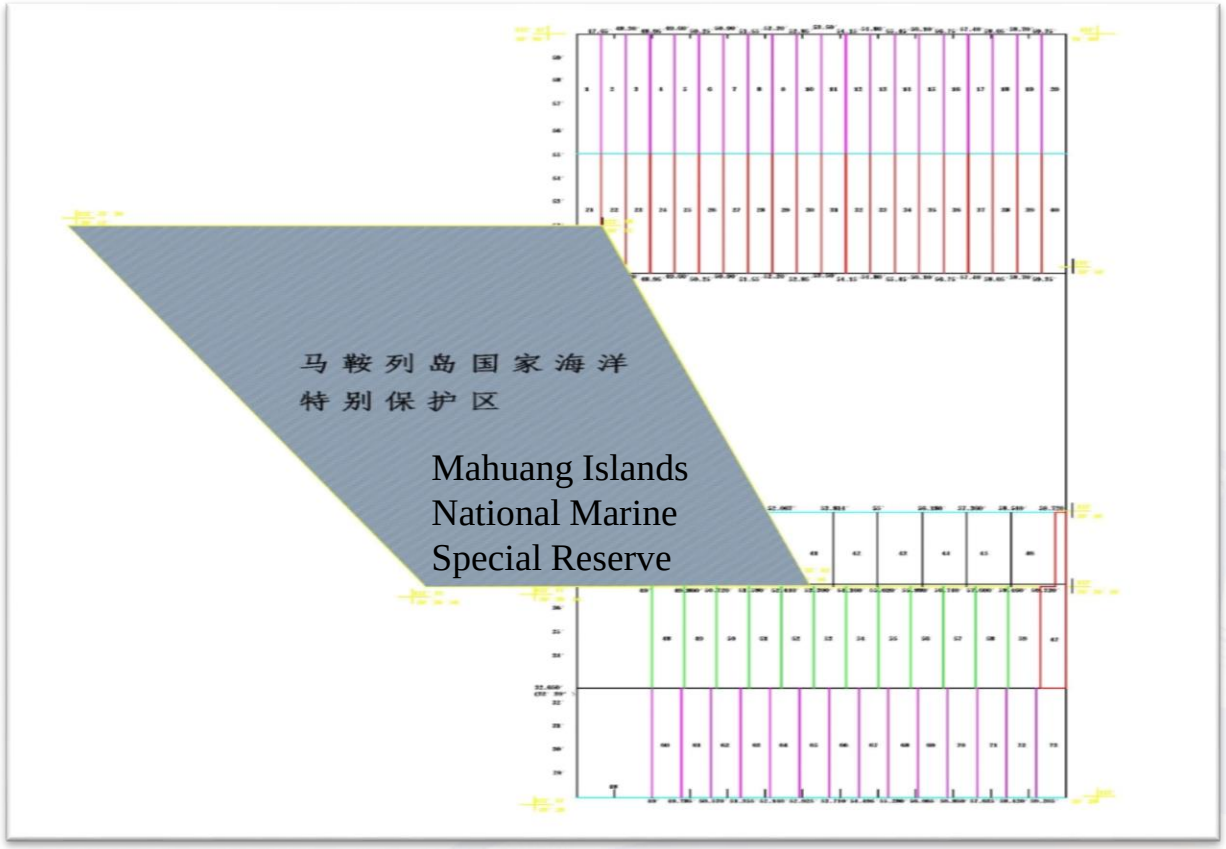
Gear type

Vessel No.



Overview of the pilot

- **Pilot area**
- Pilot period
- Pilot specie
- Gear type
- Vessel No.



Thanks for **Dr.** ZHU WENBIN

Overview of the pilot

Pilot area

Pilot period

Pilot specie

Gear type

Vessel No.

试 点 时 间

Pilot Time

2017年9月16日 | 2018年3月31日

Overview of the pilot

Pilot area

Pilot period

Pilot specie

Gear type

Vessel No.

Gazami crab or *Portunus trituberculatus*

- Important economic species in East China Sea
- Short-lived species
- Basic regulatory measures in place， fishing area under provincial jurisdiction
- Relatively stable fishing season (Oct-Jan)

Overview of the pilot

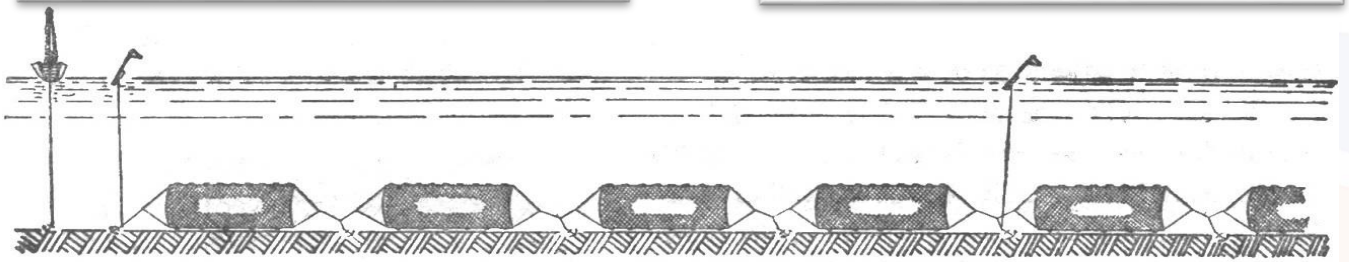
Pilot area

Pilot period

Pilot specie

Gear type

Vessel No.



Thanks for **Dr.** ZHU WENBIN

Overview of the pilot

Overview

Pilot area

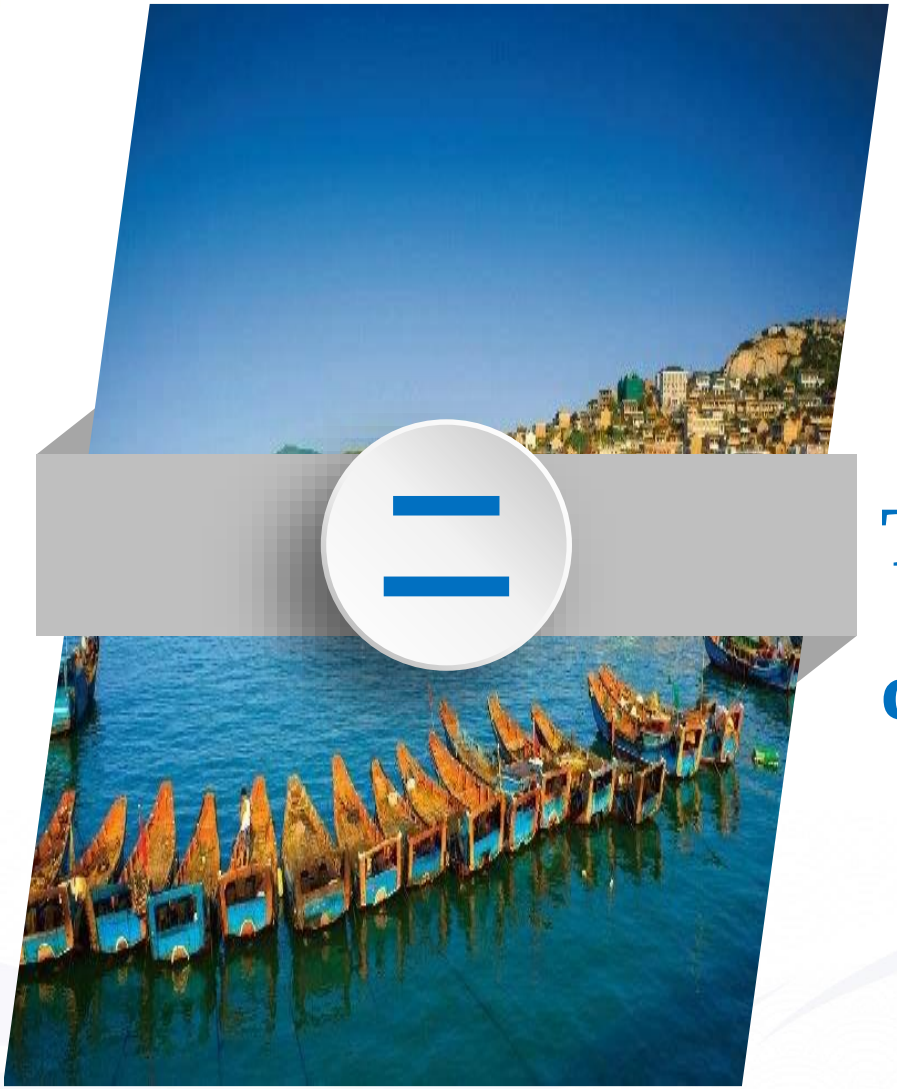
Pilot period

Pilot specie

Gear type

Vessel No.

A total of **108** vessels, including 93 fishing vessels and 15 transshipment vessels

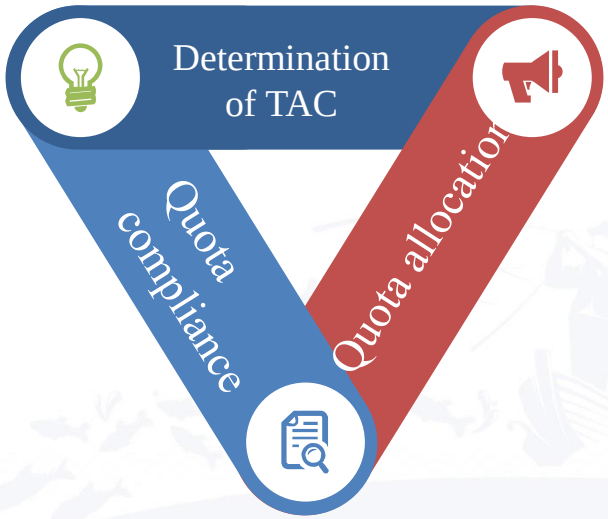


二

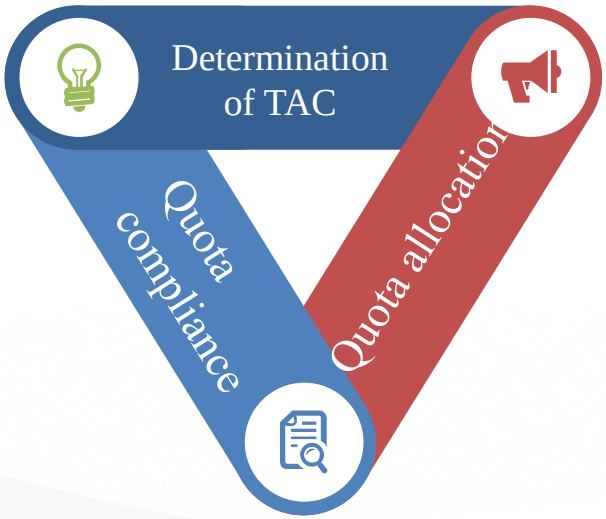
TAC pilot of gazami crab fishery in Zhousan

“3 plans”

- Designated sites transaction and quota management plan
- Supervision and inspection plan for vessels in TAC pilot sea area
- Resource survey and monitoring plan



Determination of TAC

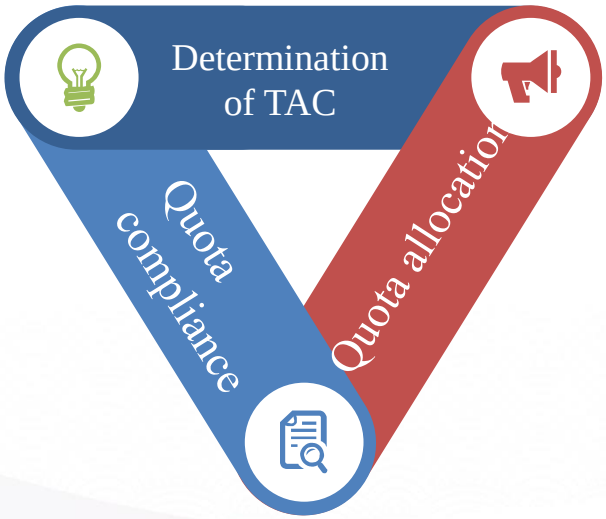


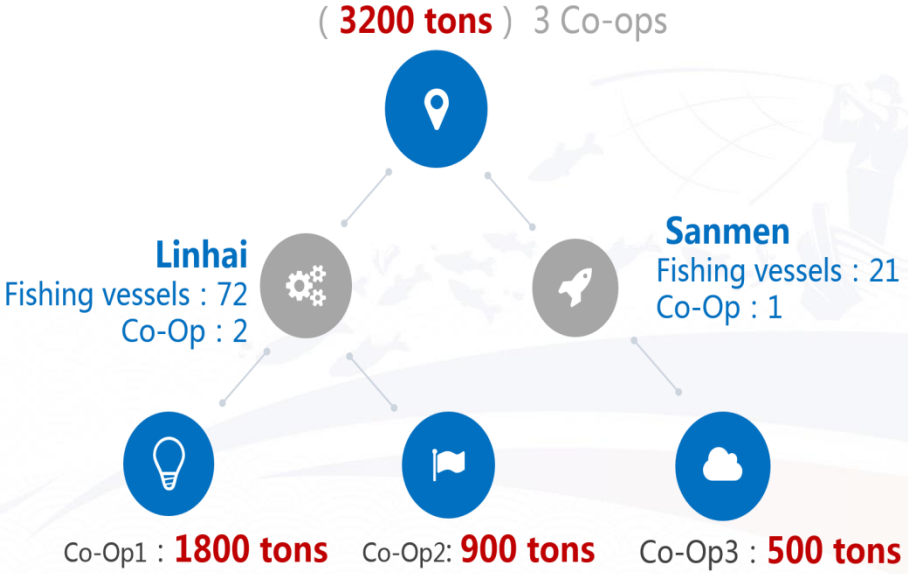
3200 tons

- Data provided by the cooperatives where the pilot vessels are from
- Information include the number of fishing vessels, catch and production value from 2011-2016
- Look into the management experience of other data-limited fisheries

Quota allocation

Quotas were allocated to cooperatives according to the catch history, and coops decided how to further allocate quota to individual vessels

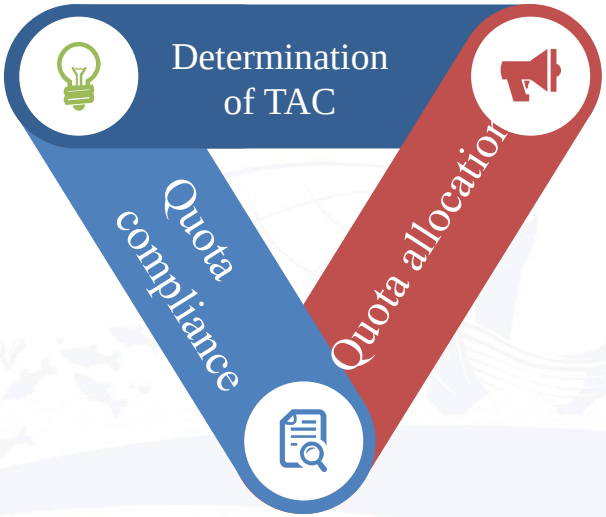




6 systems

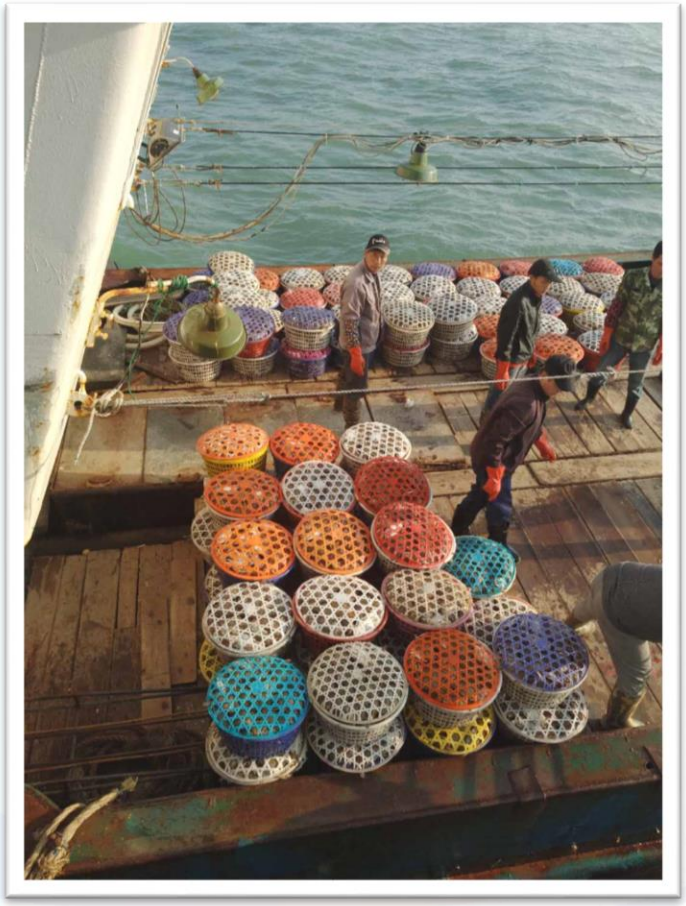
“6 systems”

- Designated sites transaction
- Fishing logbook
- Vessel location notification
- At-sea observers
- Supervision and law enforcement
- Reward and punishment



Designated sites transaction

Implementation



Trading at designated ports or with former documented transshipment vessels

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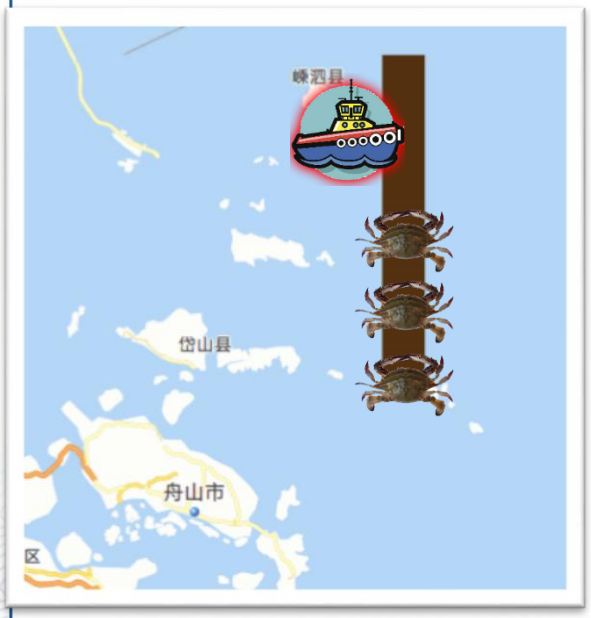
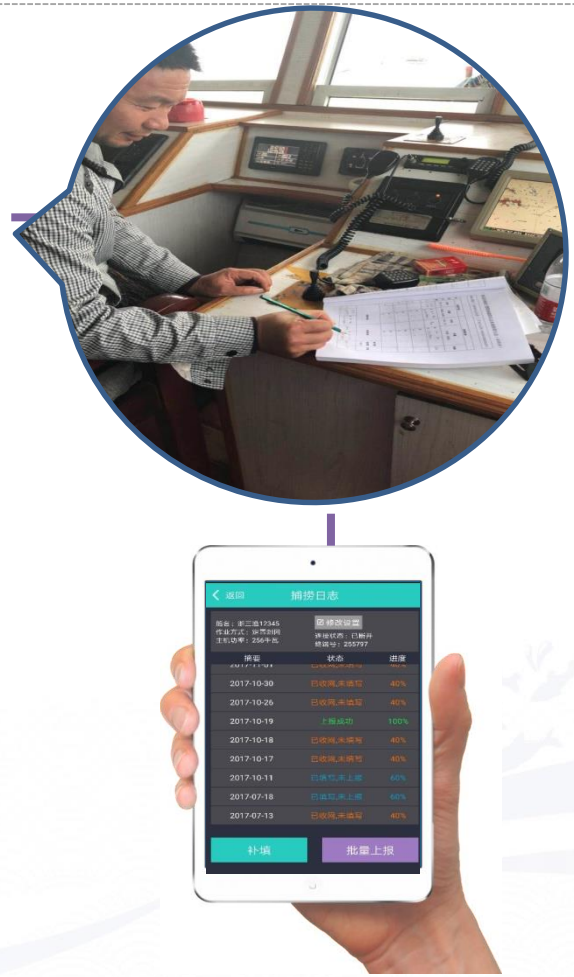
Fishing logbook system

Implementation





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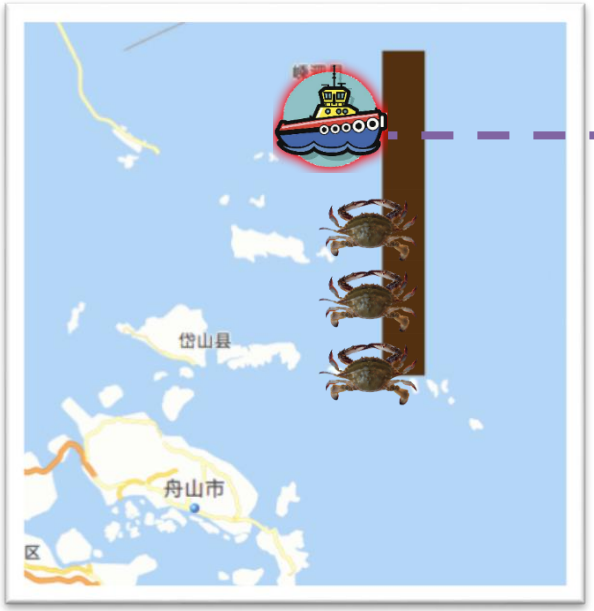
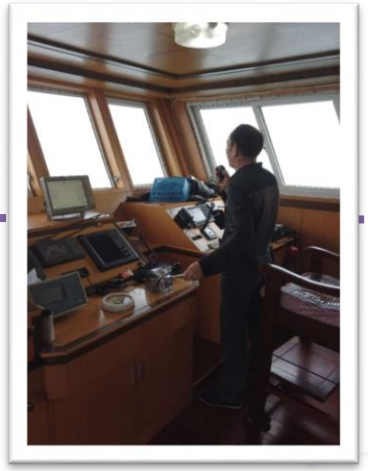
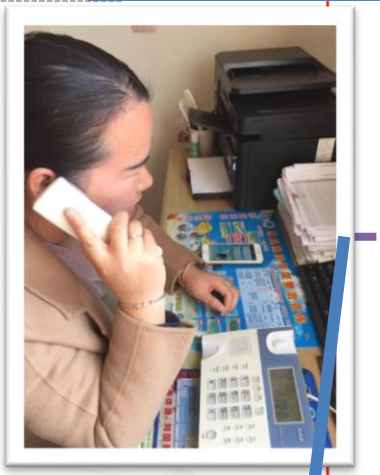
Vessel location notification system

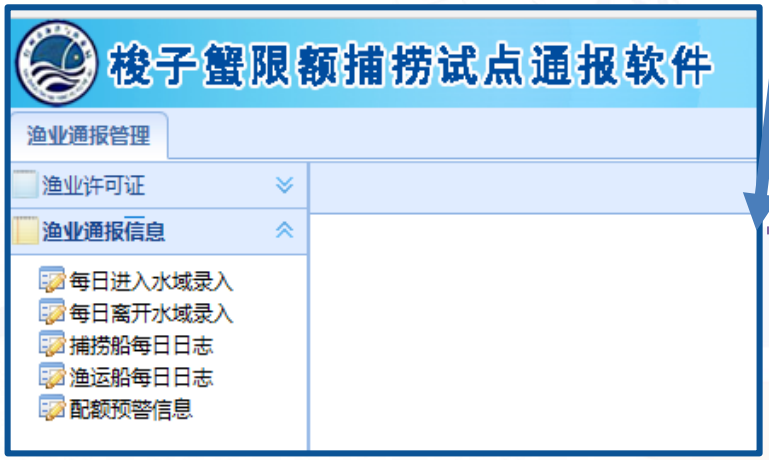
Implementation

VMS



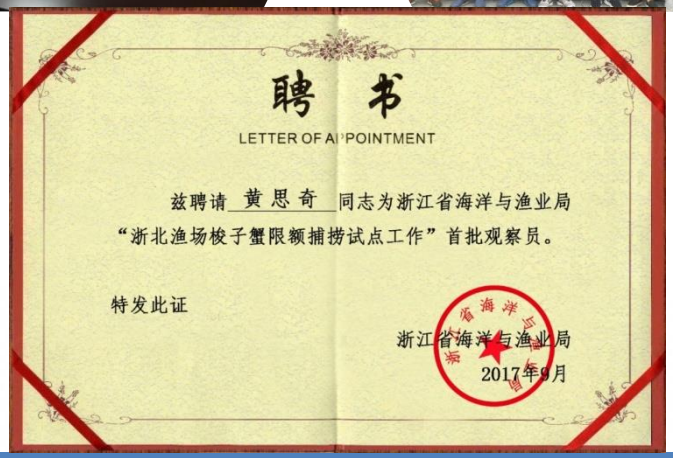






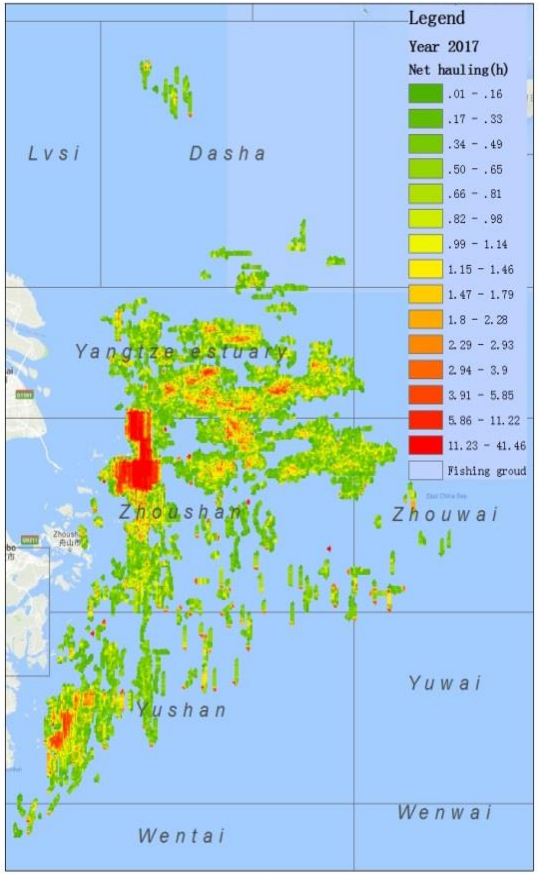
At-sea observer system

training



Supervision and law enforcement system

Implementation



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Implementation

Reward and punishment system

- Set up subsidy, formulate subsidy rule and encourage fishermen to abide by the regulations.
- Set up regulations to crack down on illegal activities, deducting of quota and subsidy of those vessels.
- Encourage mutual supervision.

台州市海洋与渔业局文件

台海渔〔2017〕108号

台州市海洋与渔业局

关于印发《浙北渔场梭子蟹限额捕捞试点奖惩办法》的通知

临海市、三门县海洋与渔业局：

现将《浙北渔场梭子蟹限额捕捞试点奖惩办法》印发给你们，请认真组织实施。

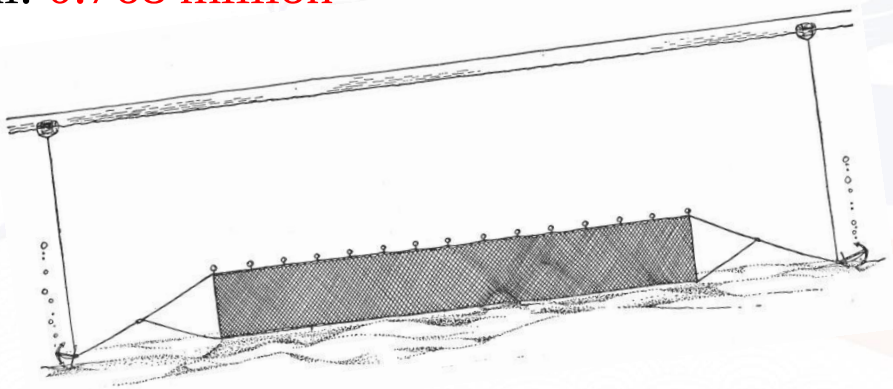
台州市海洋与渔业局

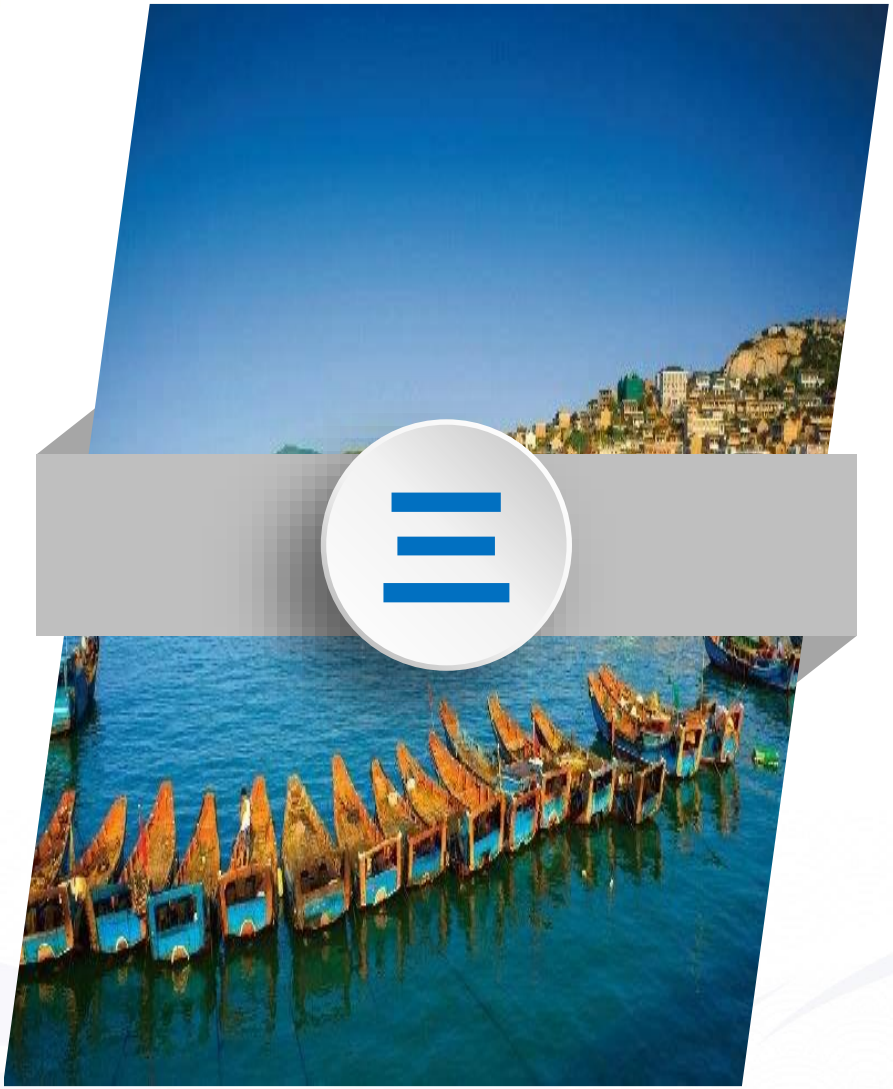
2017年9月4日

Quota compliance result

Implementation

- Catch in 2017 is 1612 tons, 50.39% of TAC (3200 tons)
- Official pilot period: 9/16-3/31
- Actual fishing period: 10/1- 1/15
- Effective harvesting in TAC pilot area averaged 1559 vessels/day
- Number of gillnet pieces in total: 0.768 million
- Average CPUE: 2.1kg/P





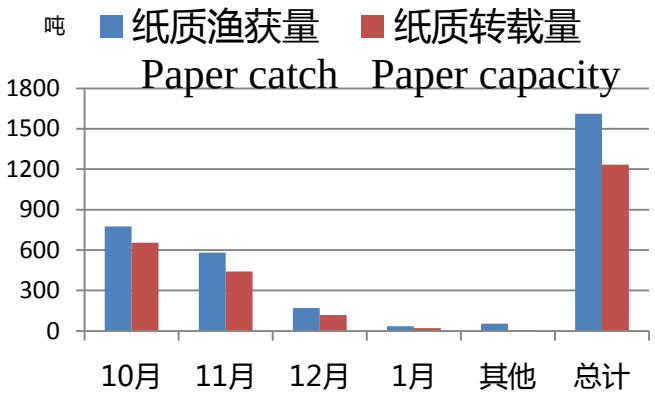
Contribution of the TAC approach to achieving sustainability

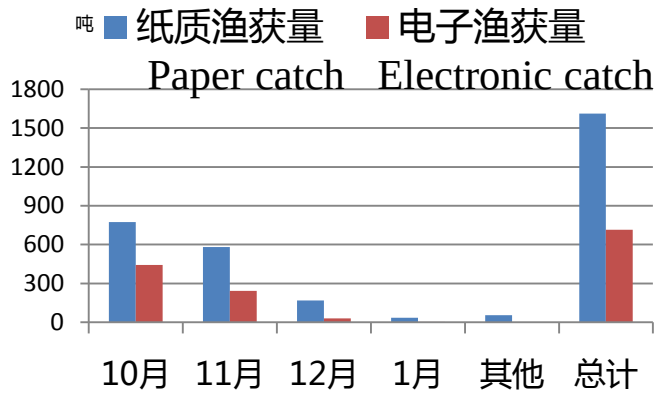
Program Goals

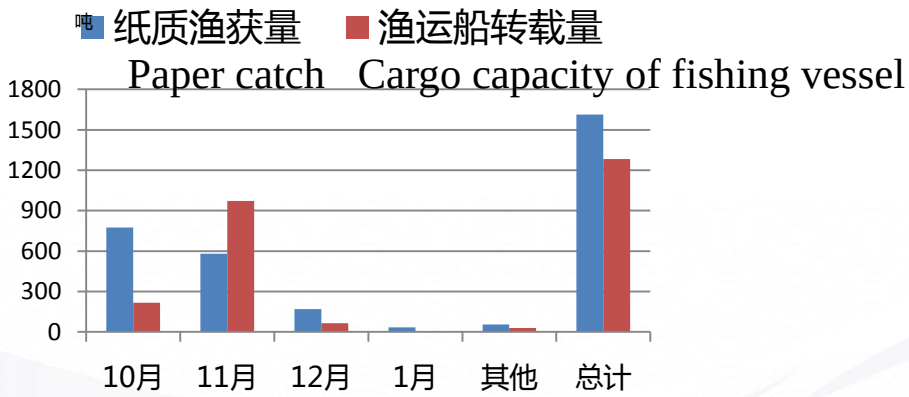
fishery	Biological and ecological	economic	social
Gazami crab fishery in north Zhejiang	Sustainable use of the swimming crab resources.	Control fishing capacity; Improve efficiency; Increase value.	Solve the conflict over fishing ground; Maintain long-term stability of the fishery; Provide experience for TURF-based TAC management.

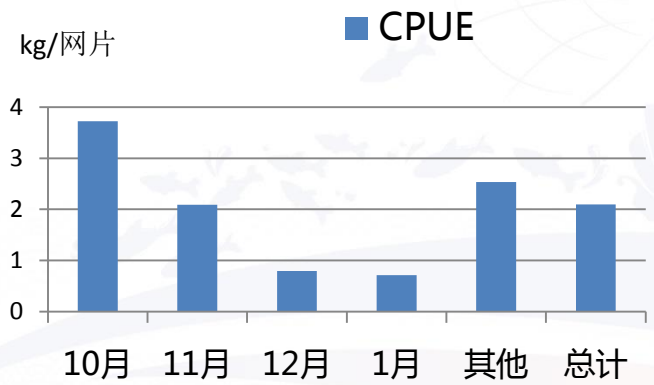
Overall implementation of quotas

Results









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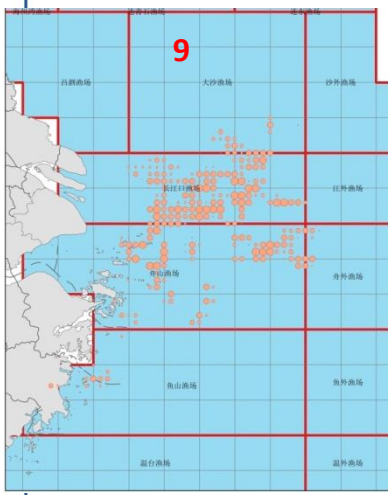
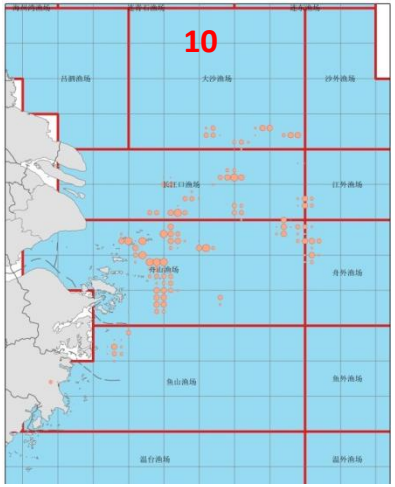
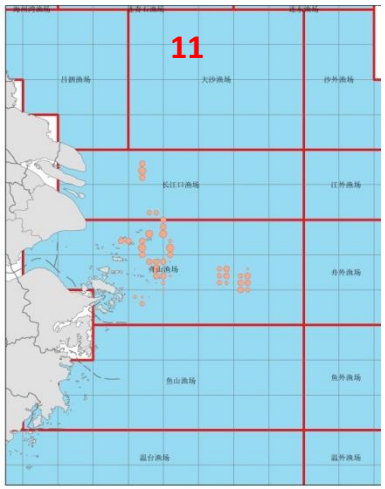
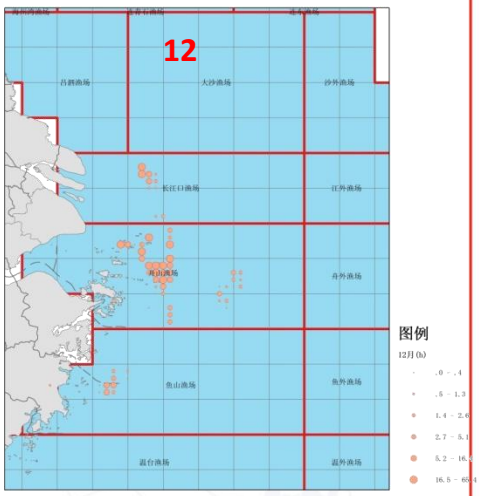
Information

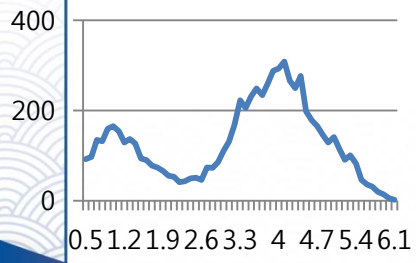
vessel position information extraction

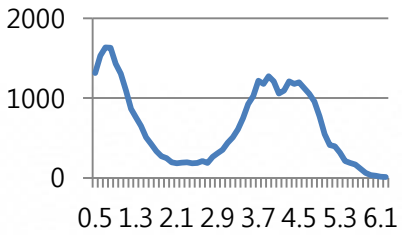


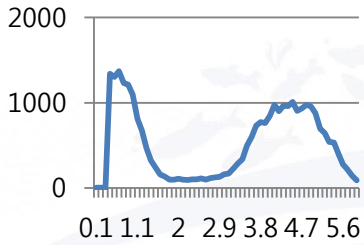


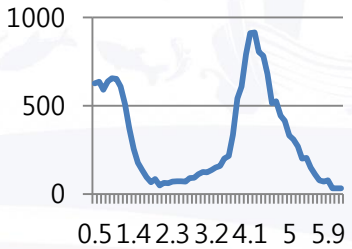








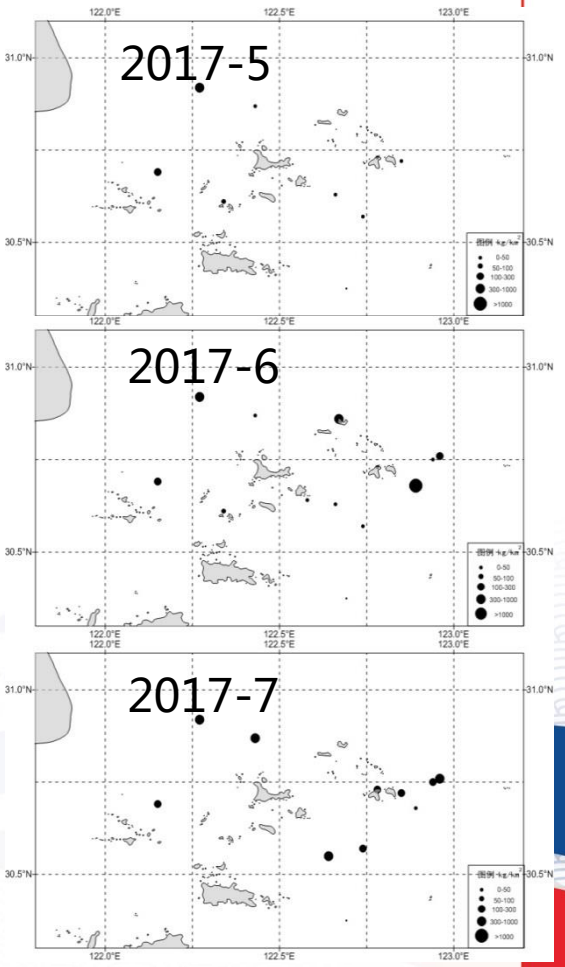




Investigation

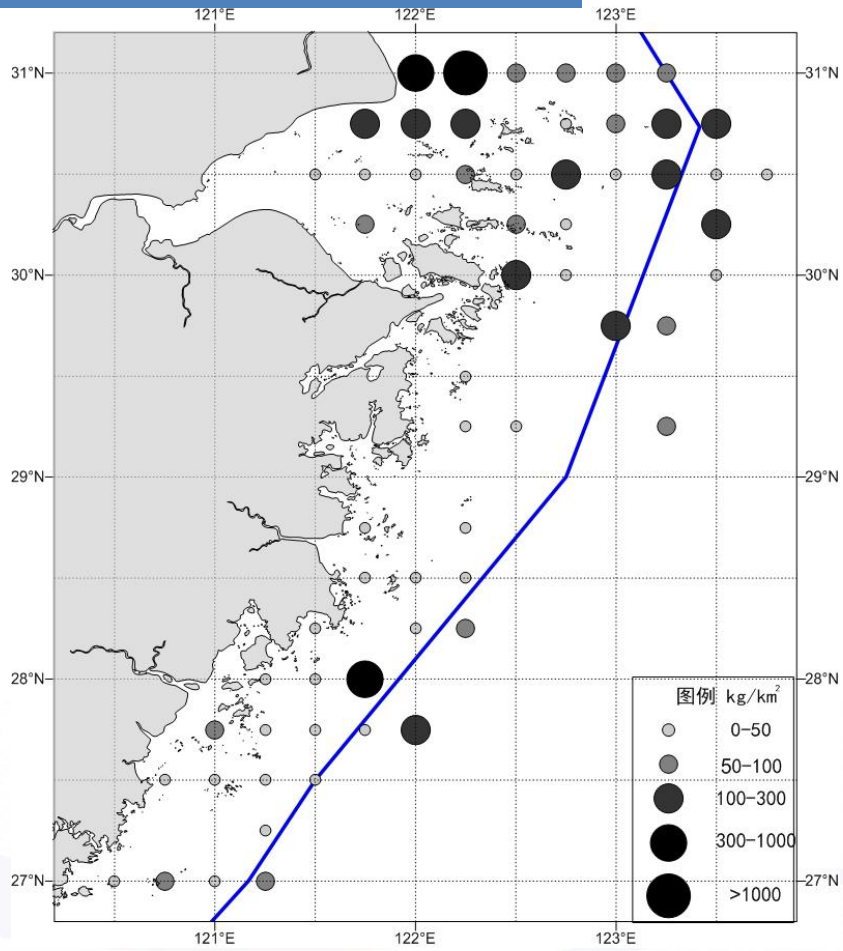
Special investigation on summer vacation

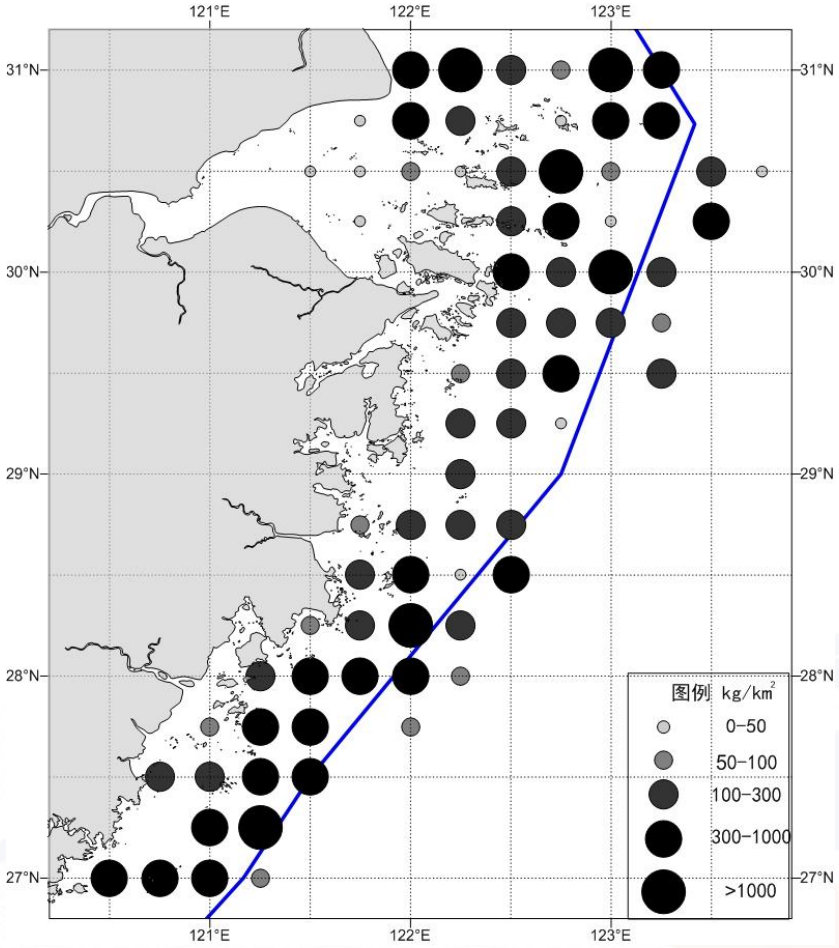
- A special survey was carried out to investigate the hydrological environment characteristics, population structure and resource density distribution of the pilot water area during the summer recess.



Investigation

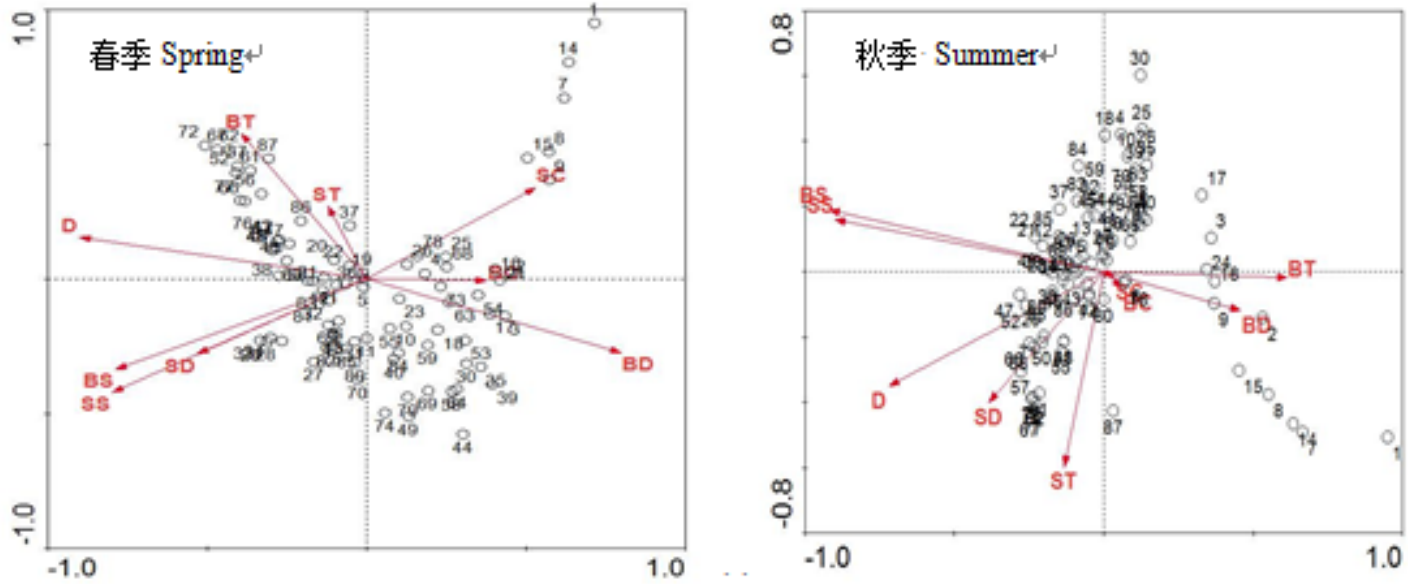
Extensive resource surveys





results

Community and environment



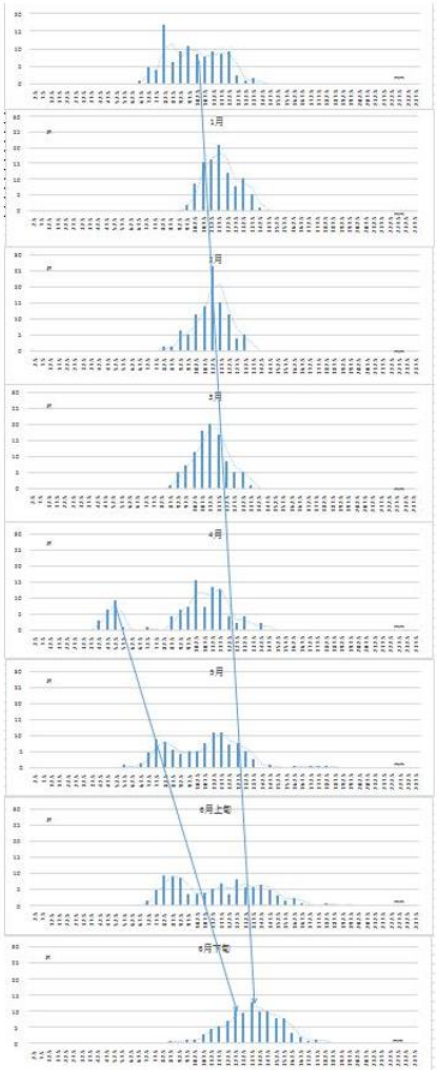
The results show that:

•In spring, environmental factors such as water depth, dissolved oxygen at the bottom and salinity at the surface bottom had a greater impact on population distribution.

•In autumn, environmental factors such as salinity, water depth and temperature at the bottom layer have a great influence on population distribution.

Analysis

	种类	年份	月份	日期	作业类型	作业经纬	健壮	雌性	甲宽	甲高	甲前	体重
1	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		68.0	136.2	34	152.1
2	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0		1	64.6	136	34.56	131.1
3	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		64.0	130.3	31.35	129.1
4	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		62.0	125.7	32.08	119.1
5	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		60.0	130	32	113.1
6	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		58.8	127.1	31.9	110.1
7	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		63.0	123	31	108.1
8	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0		1	63.0	123	31	107.1
9	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0		1	49.2	103.4	25.6	106.6
10	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0		1	61.2	121.6	32.39	106.5
11	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		47.0	96	24	10(
12	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0		1	60.0	122	31	105.5
13	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0		1	622.0	124	32	101.1
14	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		59.0	119	30	99.5
15	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0		1	60.0	121	31	99.1
16	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		59.0	122	29	97.6
17	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		59.0	119	30	97.1
18	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		58.5	120.3	29.2	97.1
19	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		58.0	121	30	95.8
20	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0		1	57.8	120.2	30.33	94.1
21	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		57.4	124.4	29.12	90.1
22	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		57.6	117.2	30.41	89.5
23	三疣梭子蟹	2016	12	26	单拖	122° E, N29.5-N30.0	1		62.0	121	28	89.1



Population structure analysis

proliferative discharge

Discharge conditions

•In 2015, there were **3.2** million.

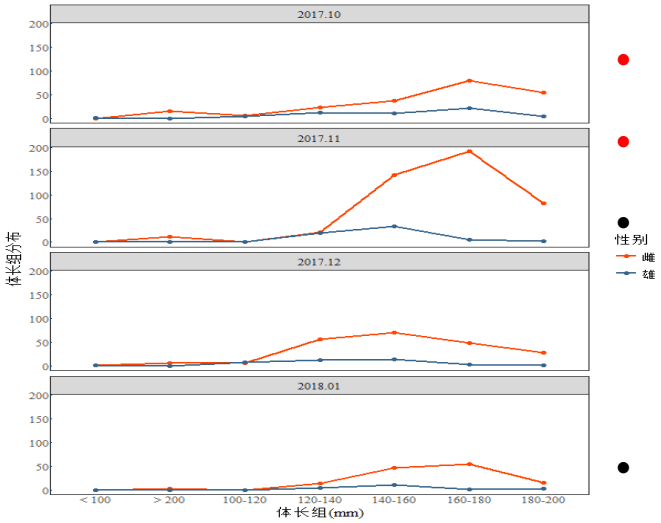
•**8.75** million in 2016.

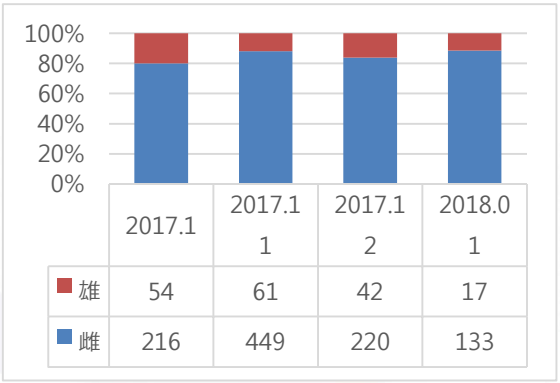
•**16.65** million in 2017

The recovery rate is 3.3%.

Investigation of proliferative discharge

Observer sampling and record bycatch



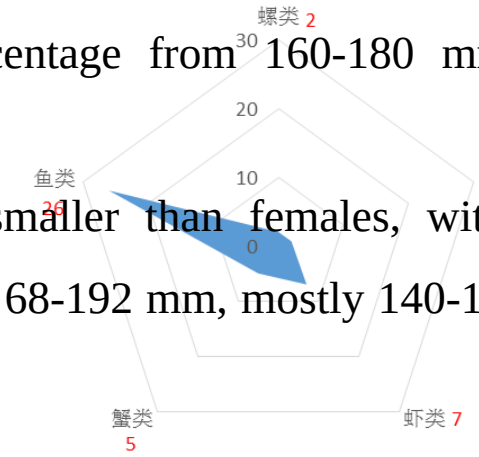


	2017.1	2017.11	2017.12	2018.01
雄	54	61	42	17
雌	216	449	220	133

- 1192 gazami crab were randomly selected during 6 trips
- 1018 are females, 8 bearing eggs and 174 are males

The carapace of females ranged from 62-223 mm, with highest percentage from 160-180 mm (36.93% of all females).

- Males are smaller than females, with carapace length ranged from 68-192 mm, mostly 140-159 mm (39.08% of all males)



Bycatch are mainly fish (26 species), shrimp (7 species), crab (5 species), cephalopod (2 species) and snail (2 species)。

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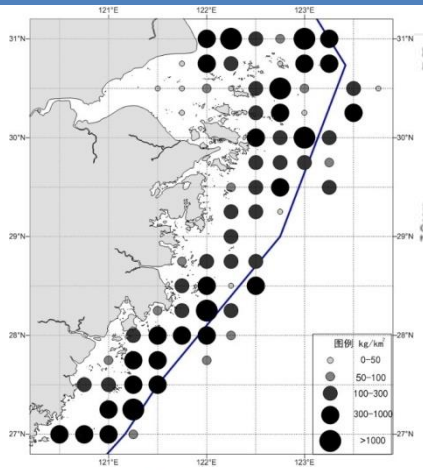
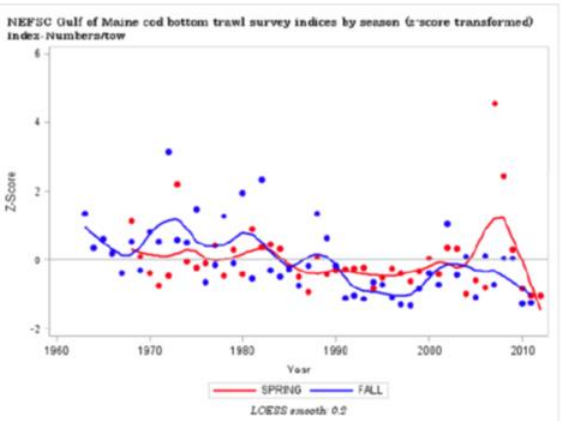
Main challenges and way forward

Managment

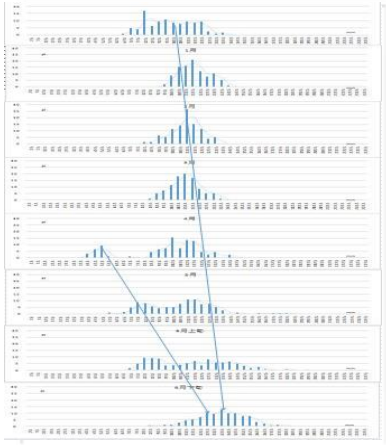
Strengthening scientific fisheries management capacity



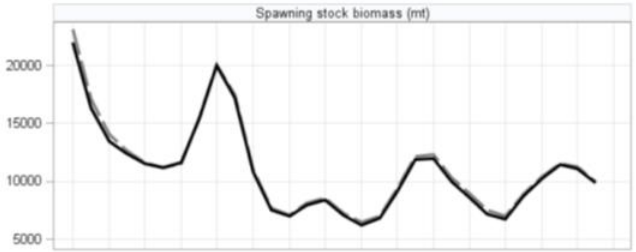
Spatial distribution
空间分布



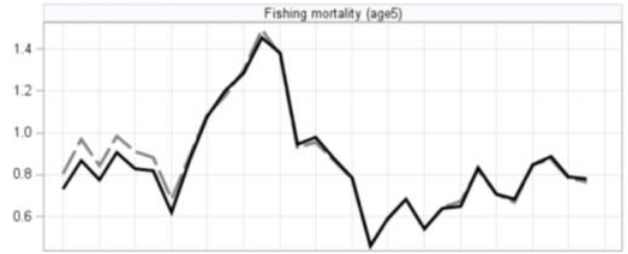
Fishery-independent survey trends
基于独立渔业调查的趋势分析



Catch-at-age
捕获年龄

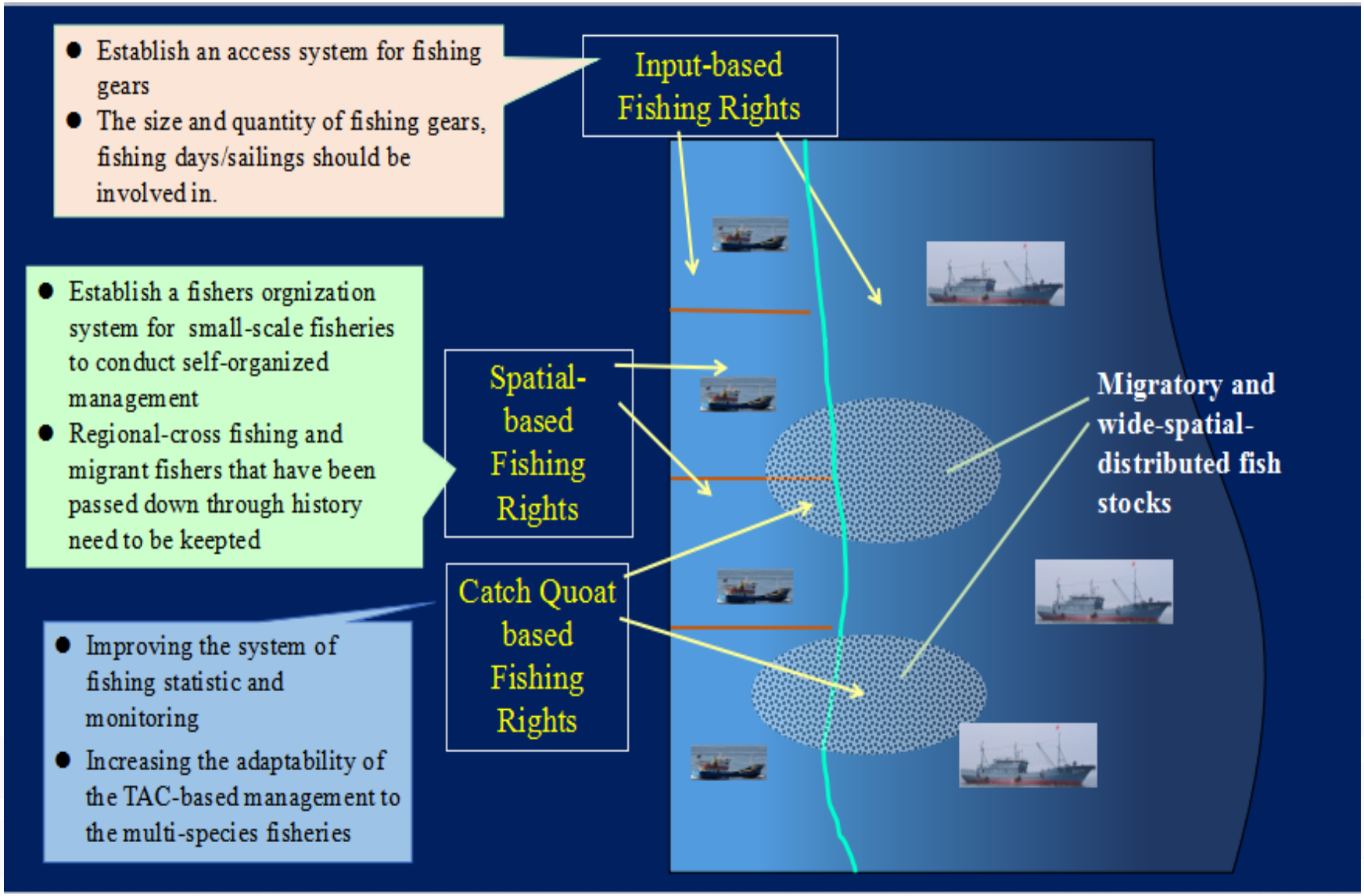


Spawning stock biomass
产卵资源生物量



Fishing mortality rate
捕捞死亡率

Thanks for **Dr. Jacob Kritzer**


Establish an access system for fishing gears
The size and quantity of fishing gears, fishing days/sailings should be involved in.
Input-based Fishing Rights
Establish a fishers orgnization system for small-scale fisheries to conduct self-organized management
Regional-cross fishing and migrant fishers that have been passed down through history need to be keepted
Spatial-based Fishing Rights
Migratory and wide-spatial-distributed fish stocks
Improving the system of fishing statistic and monitoring
Increasing the adaptability of the TAC-based management to the multi-species fisheries
Catch Quoat based Fishing Rights

improvement

- Strengthen the influence of limited fishing management
- Distribution of quotas is equivalent to the distribution of wealth
- The total allowable catch is the core of the implementation of quota catch.
- Social stability

Thank you!