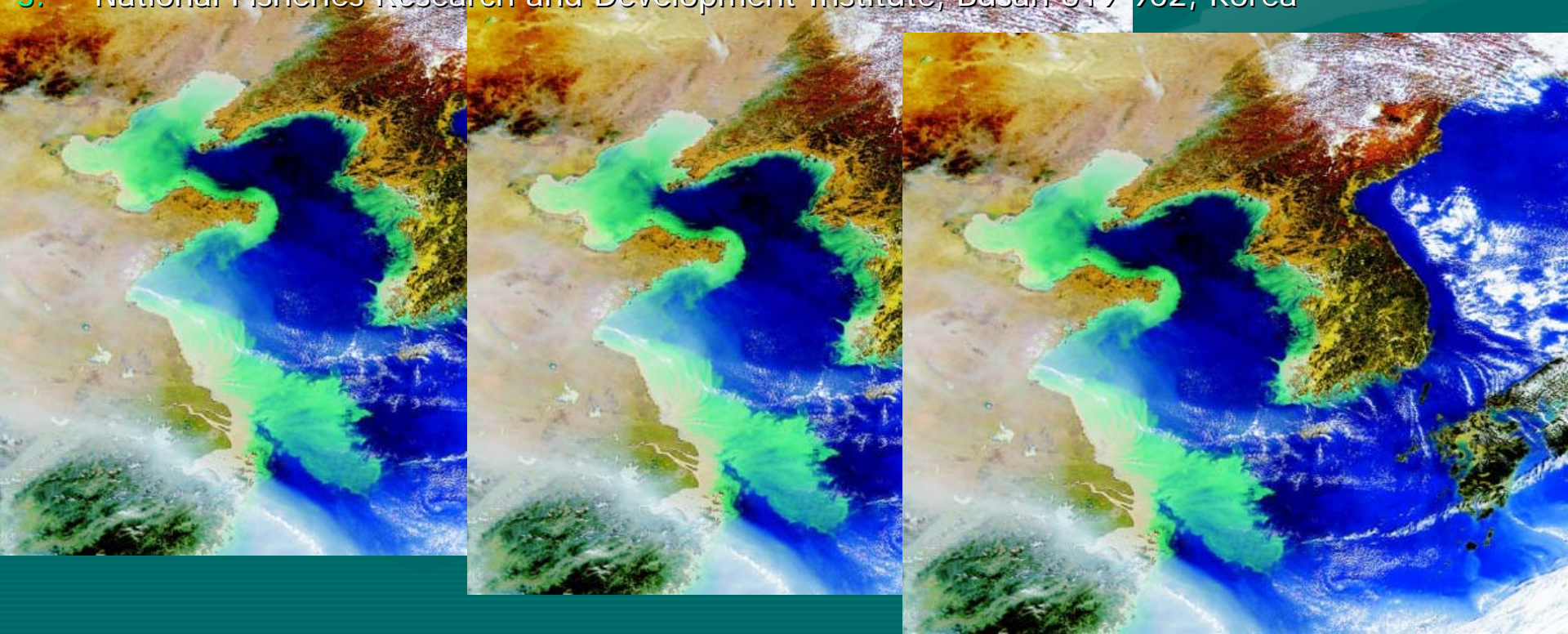


Korean Institutional and Ecosystem-based Approaches for Sustainable Fisheries under Fluctuating Marine Resources

Inja Yeon¹, Chang Ik Zhang², Jae Bong Lee³, Hak-Jin Hwang¹, Jong-Bin Kim¹,
Myoung-Ho Sohn¹, Mi-Young Song¹, Heeyong Kim¹, Yi-Un Kim¹

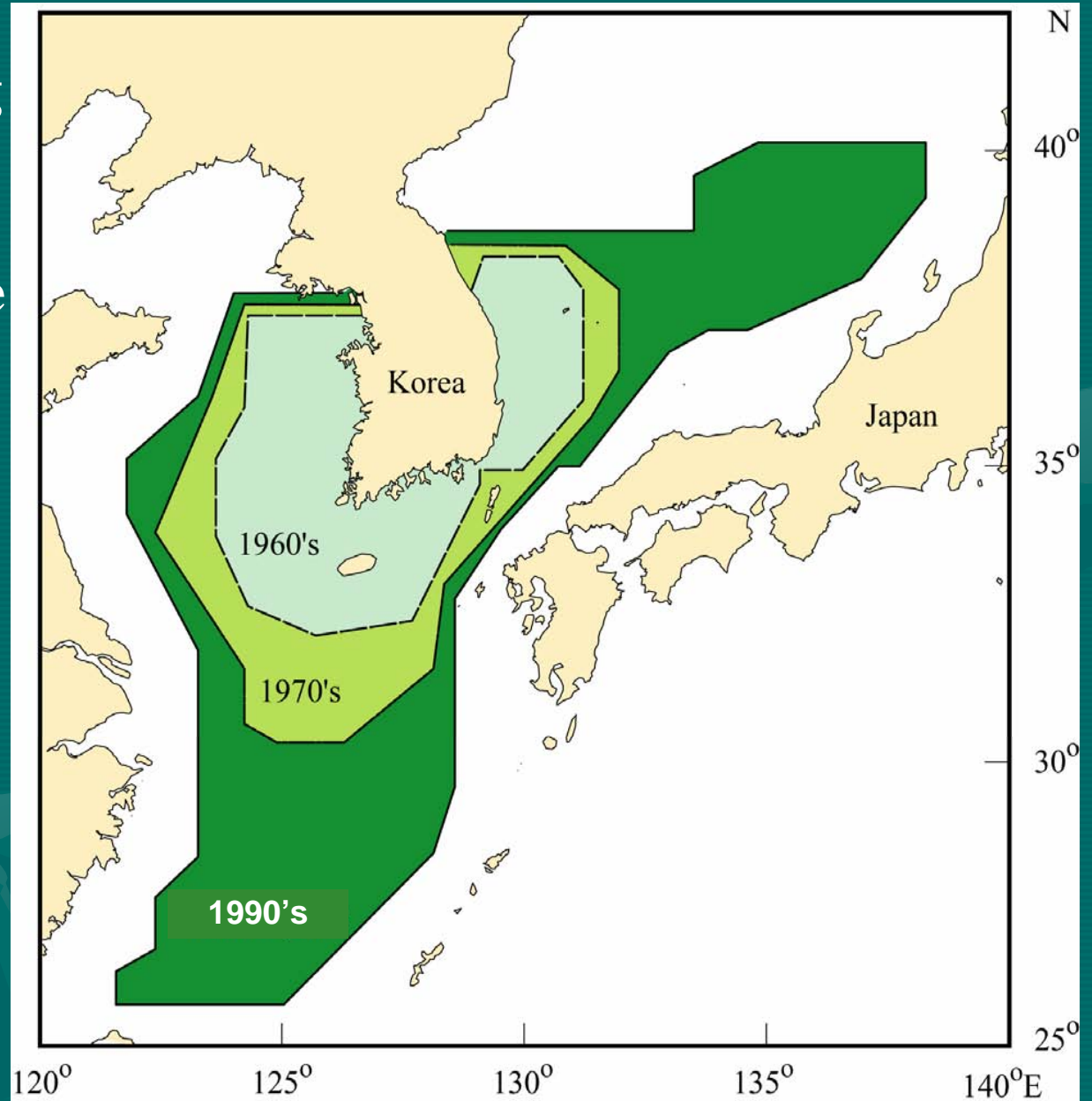
1. West Sea Fisheries Research Institute NFRDI, Incheon 400-420, Republic Korea
2. Pukyong National University, Busan 608-737, Korea
3. National Fisheries Research and Development Institute, Busan 619-902, Korea



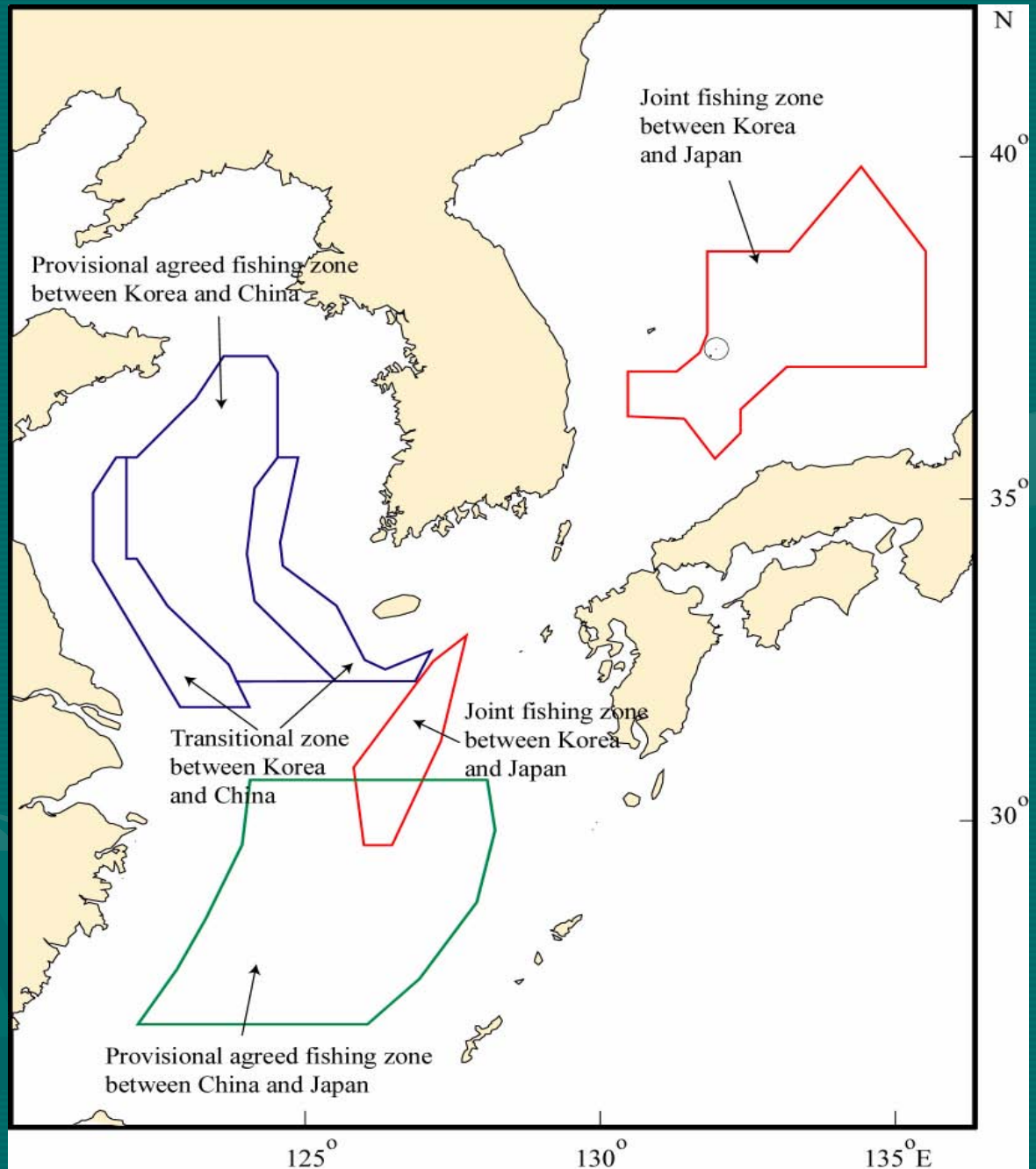
Contents

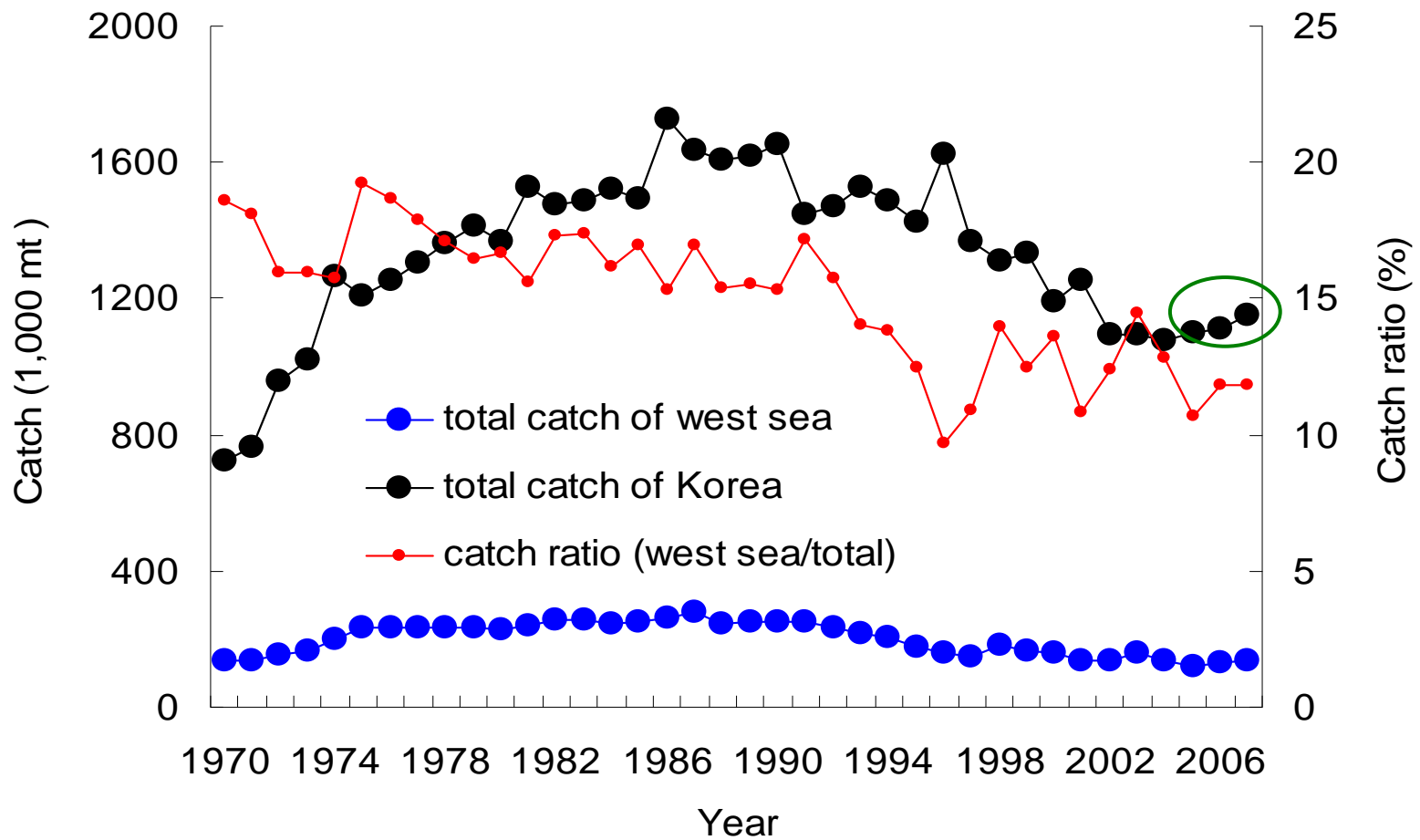
- **Current status of Korean Fishery**
- **Current and future fishery legislations for Sustainable fisheries**
- **Research programs to support sustainable fisheries management in an ecosystem context**

Expansion of fishing grounds of Korean coastal and offshore fisheries during the 1960's-1990's.



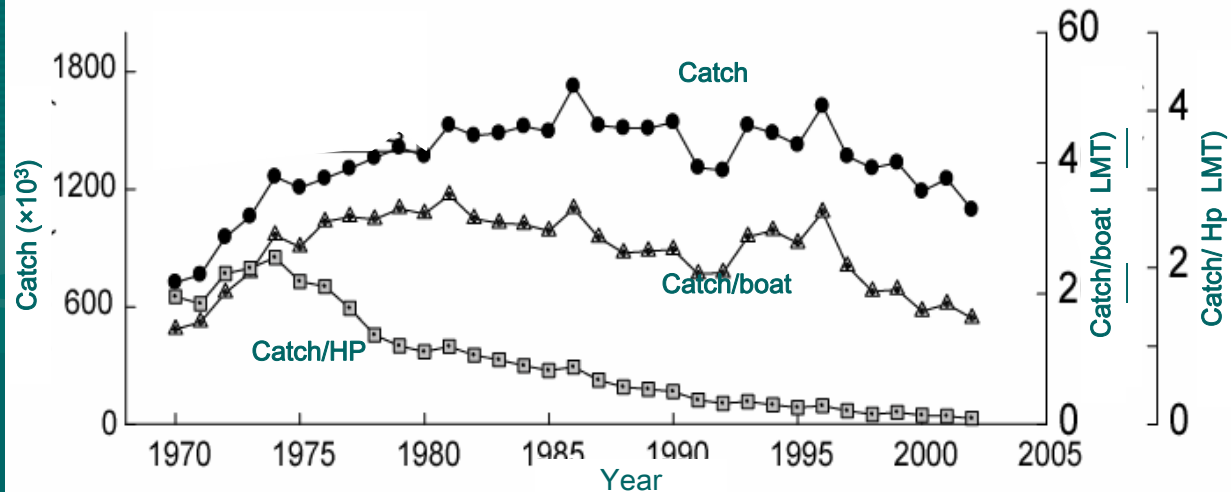
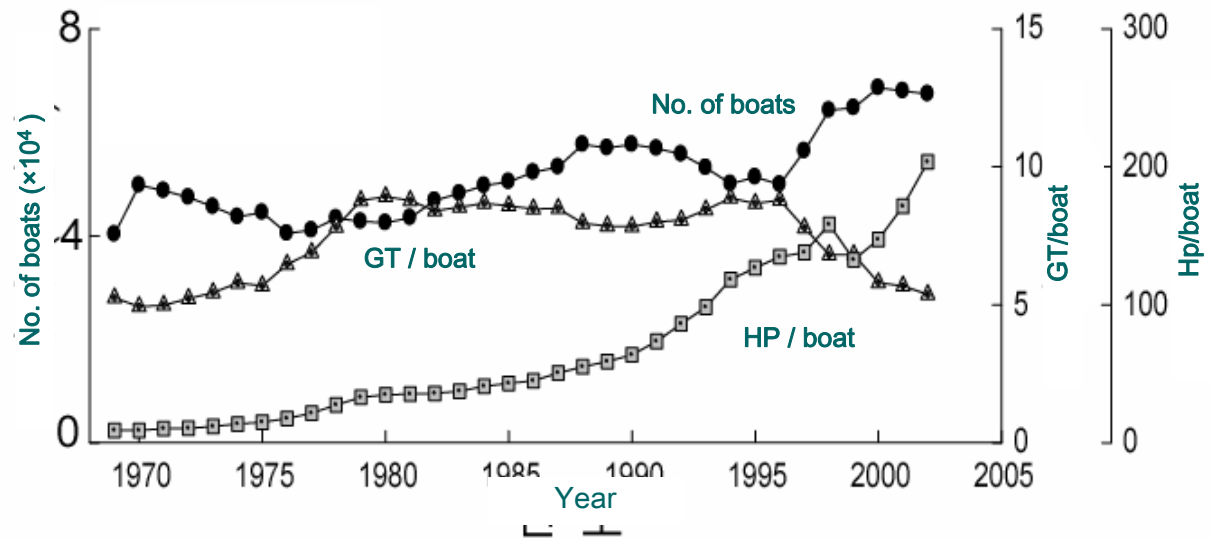
The agreed fishing zones between Korea and China, and Korea and Japan.





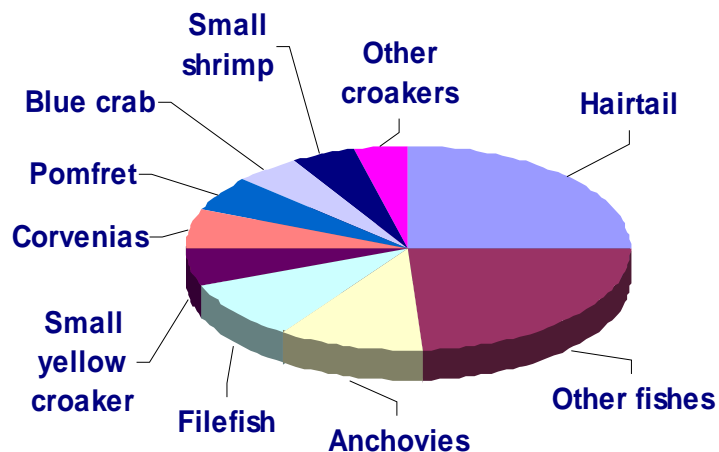
Interannual variation of landings and the landing ratio between the Yellow Sea and total Korea fishing area from 1970 to 2007.

Trends of Fishing Effort and CPUE for all fishing boats in Korean waters.

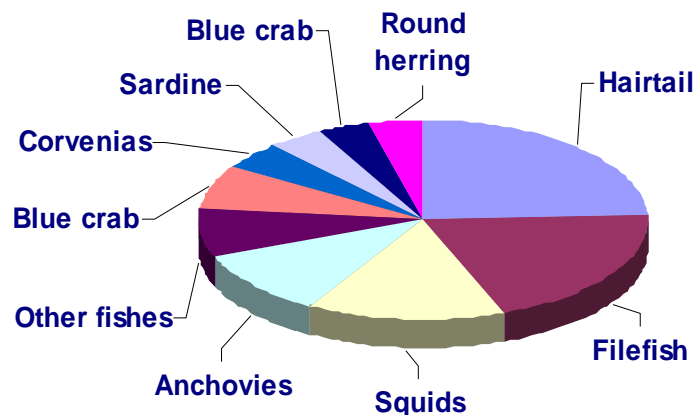


Species Catch Composition in the Yellow Sea by Decade

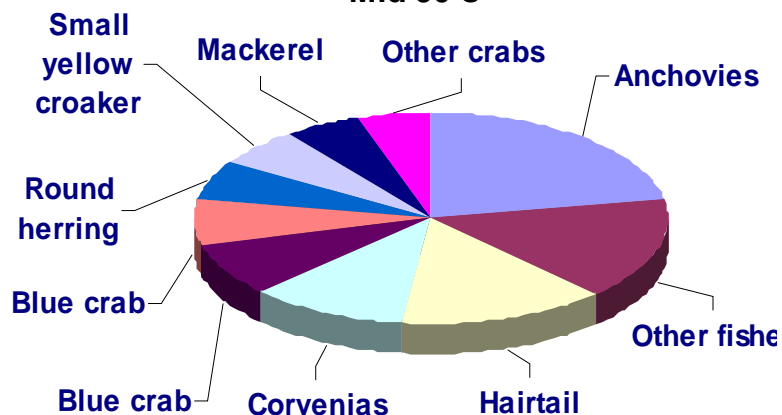
Mid 70's



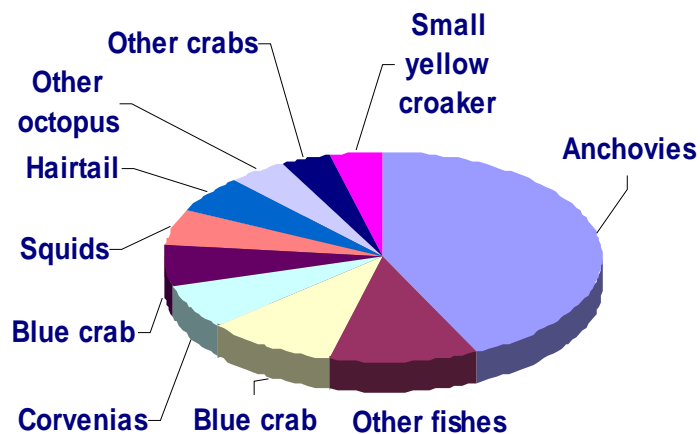
Mid 80's



Mid 90's



Early 2000's



Desirable Consequences of Ecosystem-based Management

- **Sustainability of yields**
- **Maintenance of biodiversity**
- **Habitat protection from the effects of pollution and degradation**
- **Various socio-economic benefits**

Korean EBM Legislation

- **14 Acts**
- **15 Presidential & Ministerial Orders**
- **Major EBM legislation in Korea**
 - Basic Act of Ocean and Fisheries Development

“ Korean government should conserve biodiversity of living marine resources and make every effort to reserve and rehabilitate marine ecosystem including their habitats ”

Most Korean Acts are focused on the maintenance of biodiversity and/or the minimization of pollution

Current Actions for EBM

- **Fish size- and sex-controls**
 - **Limit fishing size or weight regulation:** 27 species, based on their 50% spawning length or weight
 - **Female of crab species not permitted to catch**
 - ✓ Tanner crab, Snow crab

Current Fishery Management Actions

- **Fishing gear restrictions**

- **Closed fishing areas and seasons: 18 fishing gears**
- **Size controls for fishing vessels in gross tonnage**
- **Licenses limitations: 10 or 5 years**
- **Permission of fisheries in special fishing areas**

Current Actions for EBM

- **Artificial reef construction project**
 - Rebuilding habitats and spawning areas
 - Developing versatile reefs for specific target species and areas
- **Seed release**
 - Rock fishes, flounders, shrimps, crabs
- **Ocean clean-up program**
 - Under the new Fishing Ground Management Act, 2001
 - Basic plans of 5-year terms
 - Comprehensive and systematic management of fishing grounds

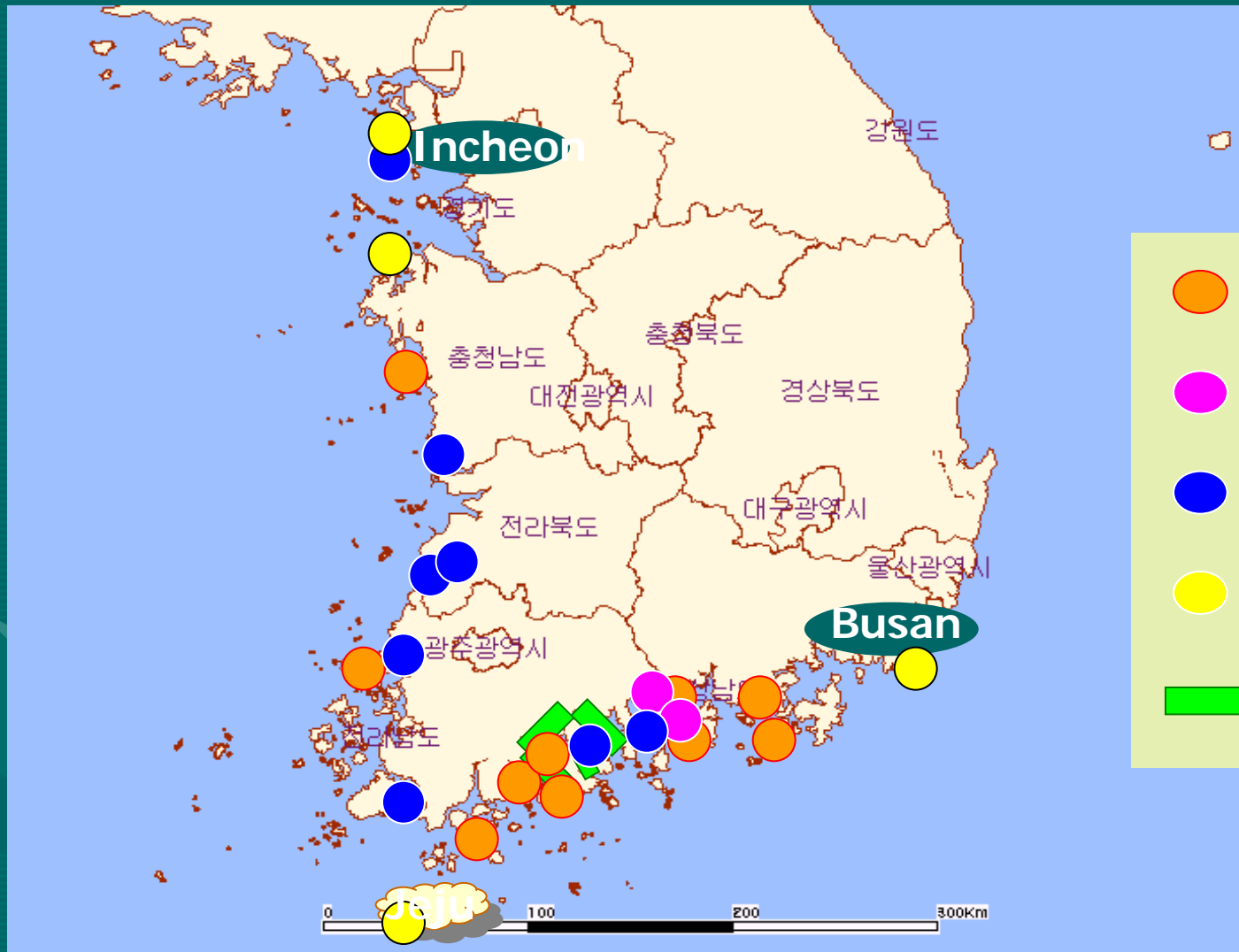
Current Actions for EBM

- **Buy-back system: started in 1994**
Reduced vessels during 1994-2006: 5,114
2007~2008: another 4,200 boats
- **Community self-regulation system**
 - ✓ To protect and reasonably utilize resources in the coast
 - ✓ Participation: 50,500 fishermen, 652 fishery communities involved in a voluntary rational and efficient manner

Current Actions for EBM

- **Marine protected areas (MPA)**
 - Spawning and nursing areas protected from fishing
 - ✓ 2 areas in bays and coasts; 768 ha
 - Fishery resources conservation area
 - ✓ 10 areas in bays and estuaries; 3,831 km²
 - ✓ 21 areas around lakes
 - Conserving biodiversity in wetlands and coasts
 - ✓ 5 areas along the west and south coast; 70.37km²
 - ✓ 9 areas around mountains, lakes and estuaries; 2,627 km²

Marine Protected Areas (MPA)



- Fisheries Resources Conservation Area; 10
- Nursing Area of fisheries Resources; 2
- Protected wetlands; 8
- Ecosystem conservation Area; 4
- Protected Area; 4

Developing EBM Programs

1. Ecosystem-based Marine Ranching

- Designed for the **enhancement and efficient management of fisheries resources**
- **Research focus is to understand:**
 - ecological interactions of major species with predators, competitors, and preys
 - effects of climate on fish ecology
 - complex interactions between fishes and their habitats
 - effects of fishing on fish stocks and their ecosystem

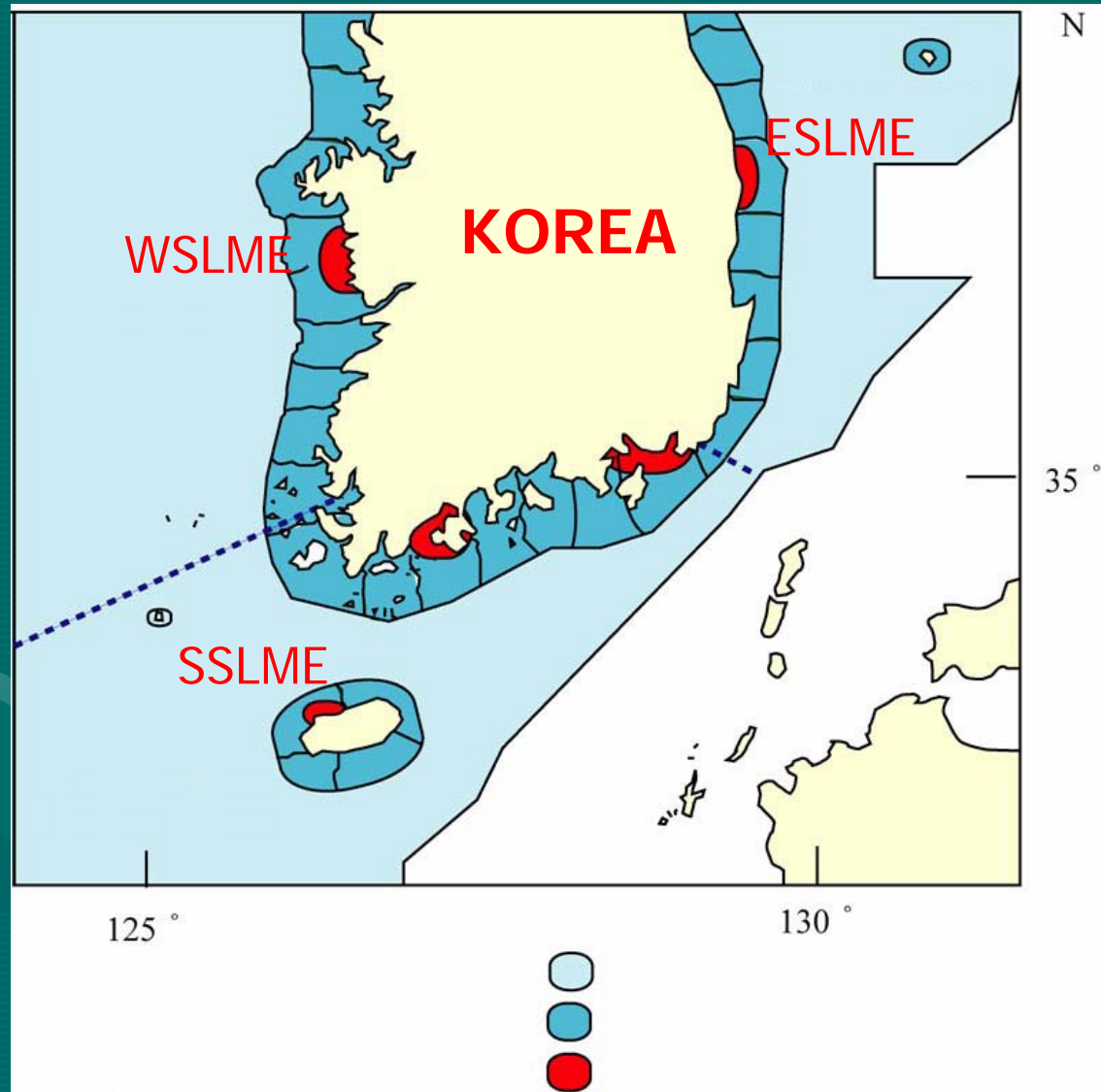
Developing EBM Programs

- **Fisheries management using marine ranching is to mitigate significant and potentially irreversible changes in marine ecosystems caused by fishing.**

통영해역 바다목장 개념도



Comprehensive Ecosystem-based Marine Ranching Program



- Marine ranching Projects: 5 areas

- Tongyeong
- Yeosu
- Teaan
- Jumunjin
- Jeju Island

Developing EBM Programs

Legislation:

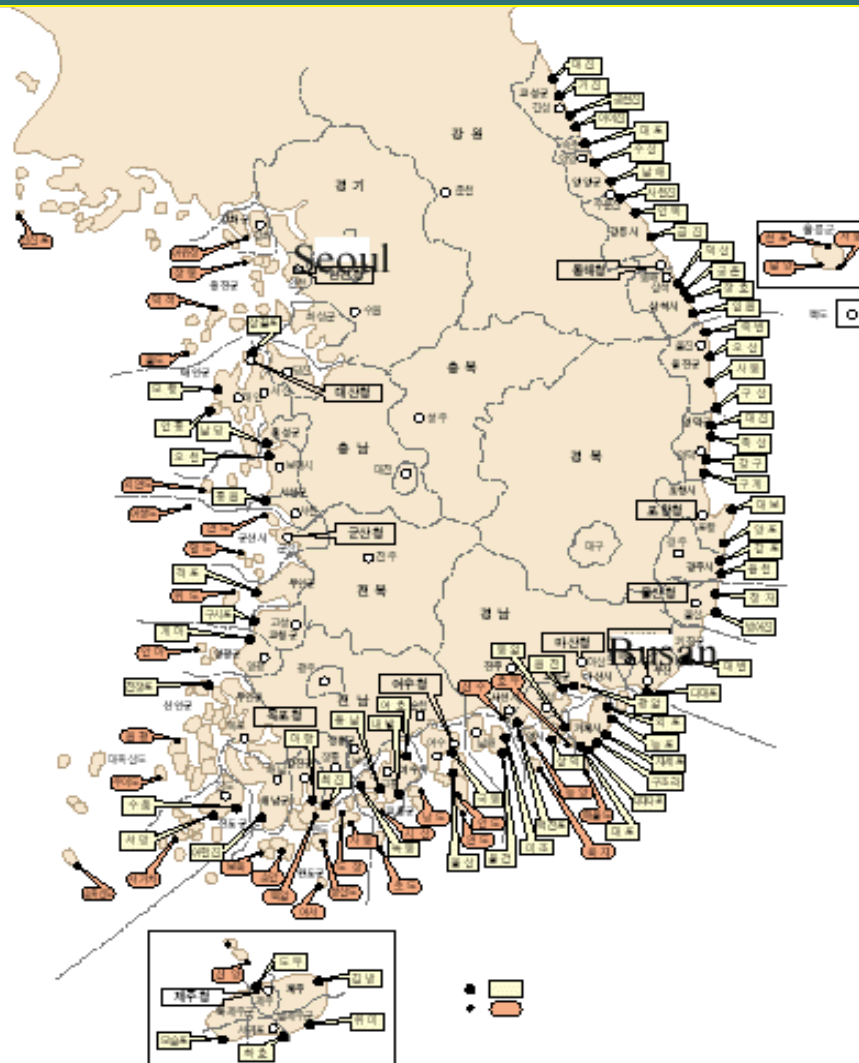
- Marine Ecosystem Conservation Act
- Fisheries Resources Management & Conservation Act
- ✓ Stock rebuilding program - 10 species:
Blue crab, Sandlance, etc.

Research activities to support sustainable fisheries-EBM

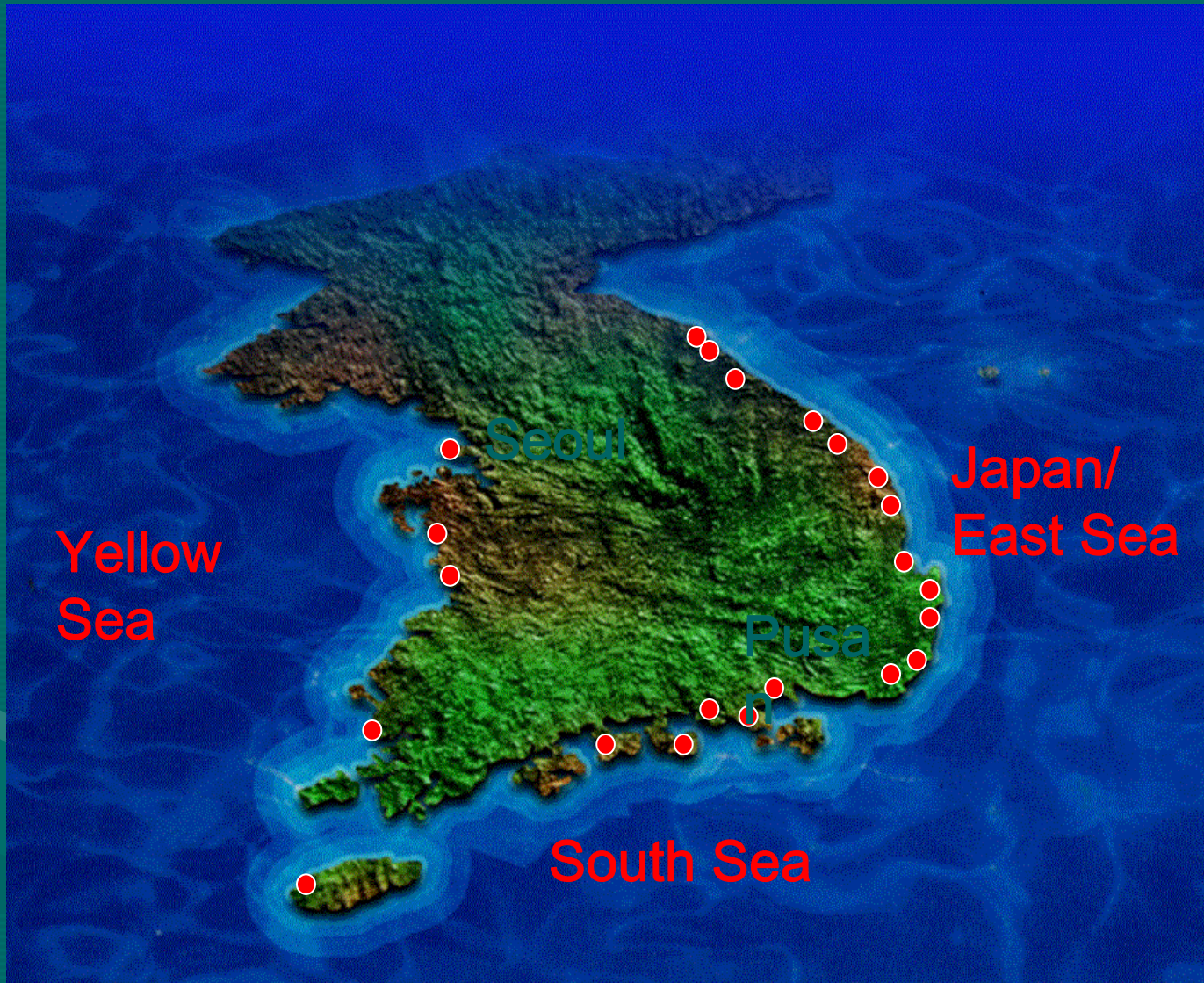
Expanding of scientific surveys

- Fishery data collection
- Experimental trawling
- Hydro-acoustic surveys
- Ichthyoplankton surveys
- Oceanographic monitoring

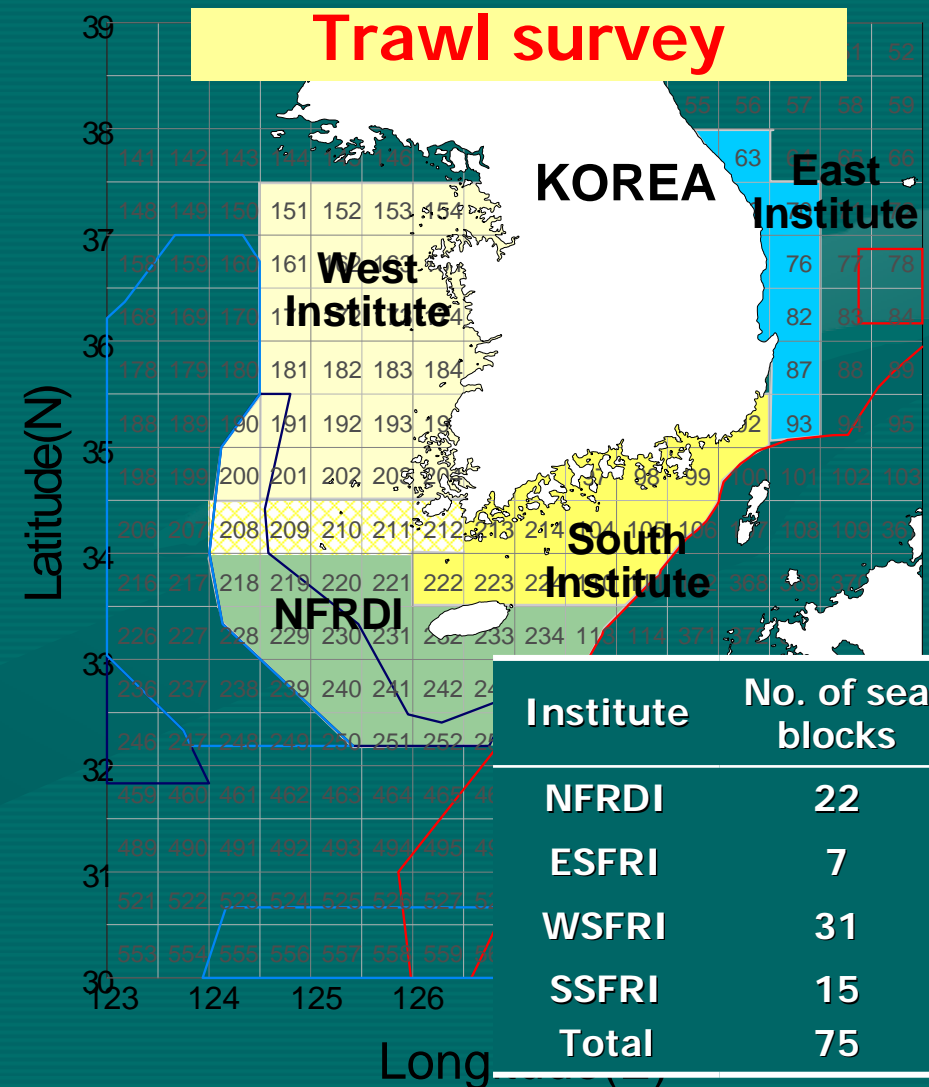
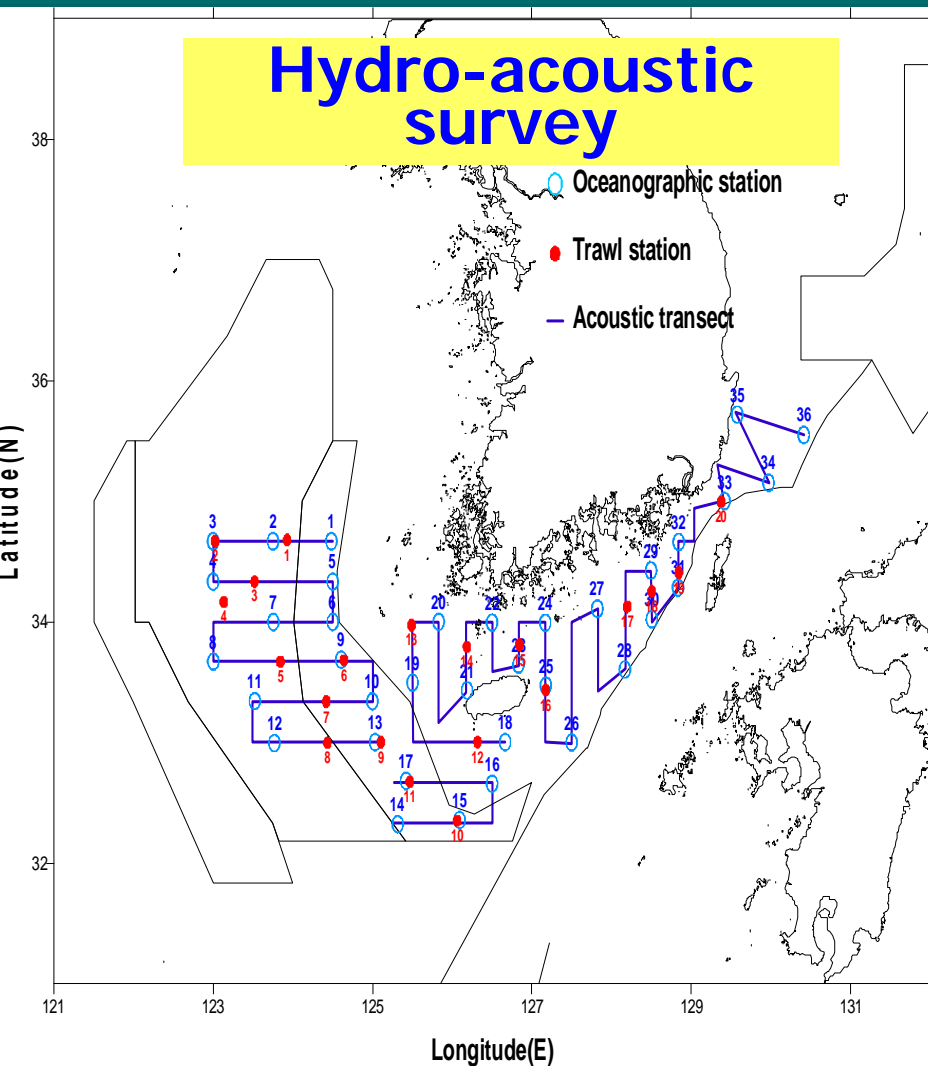
Designated fishing ports: 105



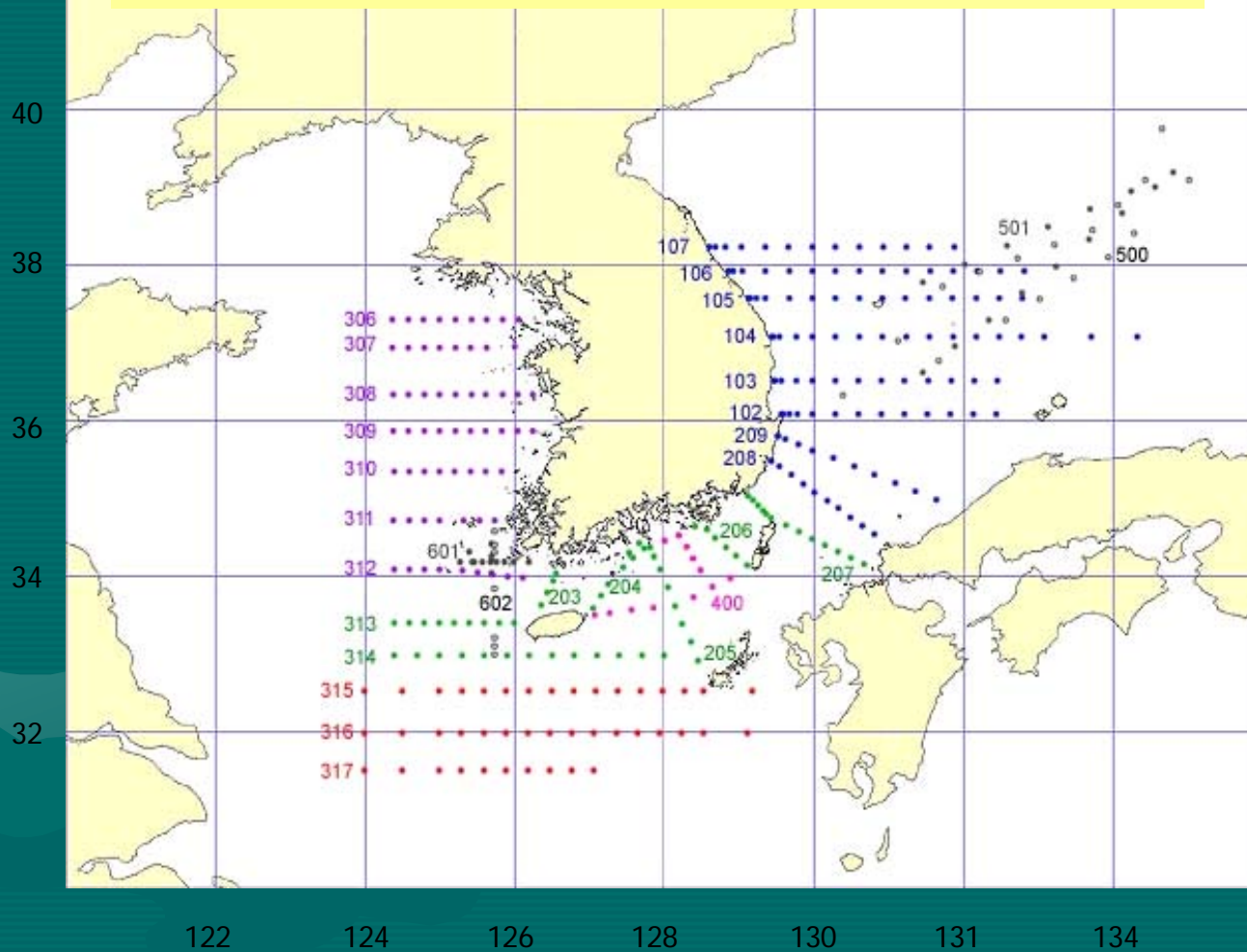
Sampled port by NFRDI: 22



Fishery-independent monitoring (NFRDI)



Oceanographic monitoring (KODC)



Thank you

For your attention

