

# **Long-term change in dominant fishery species and their cold-water habitats in the Korean coastal waters**

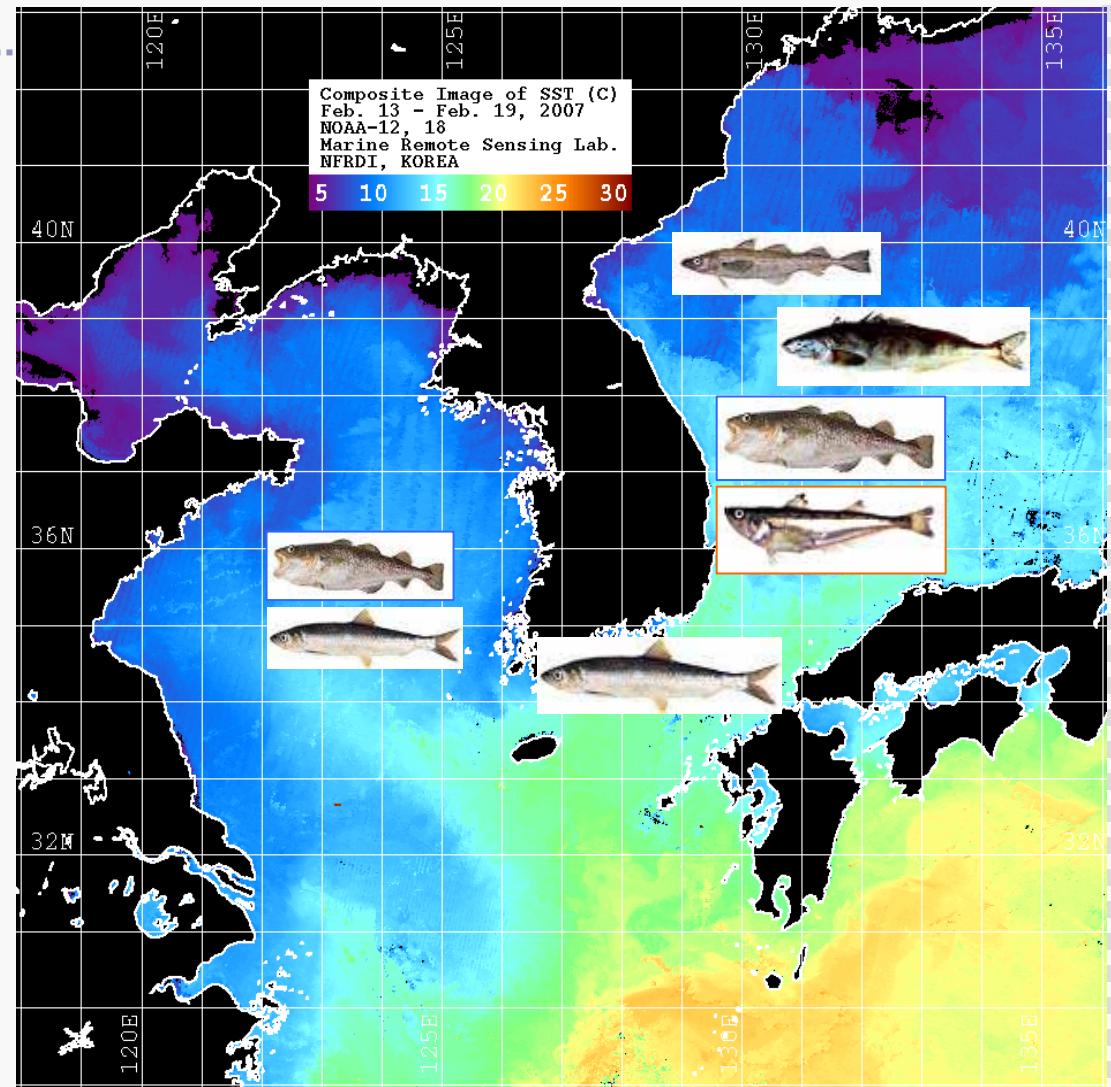
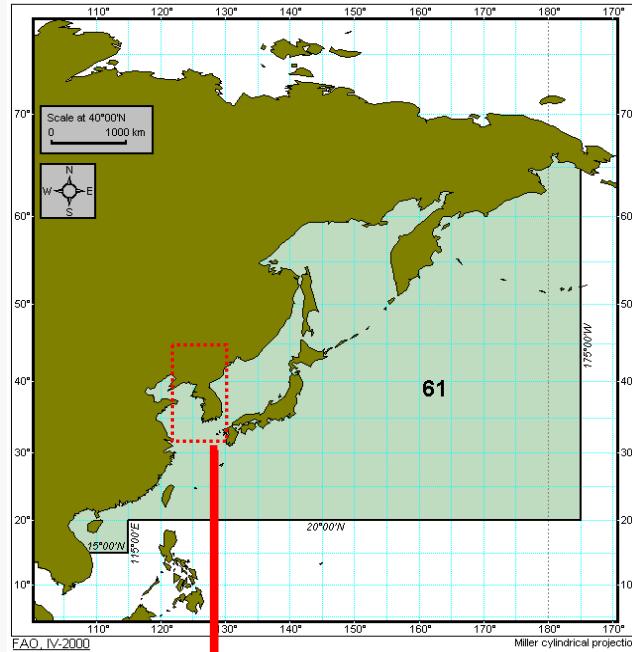
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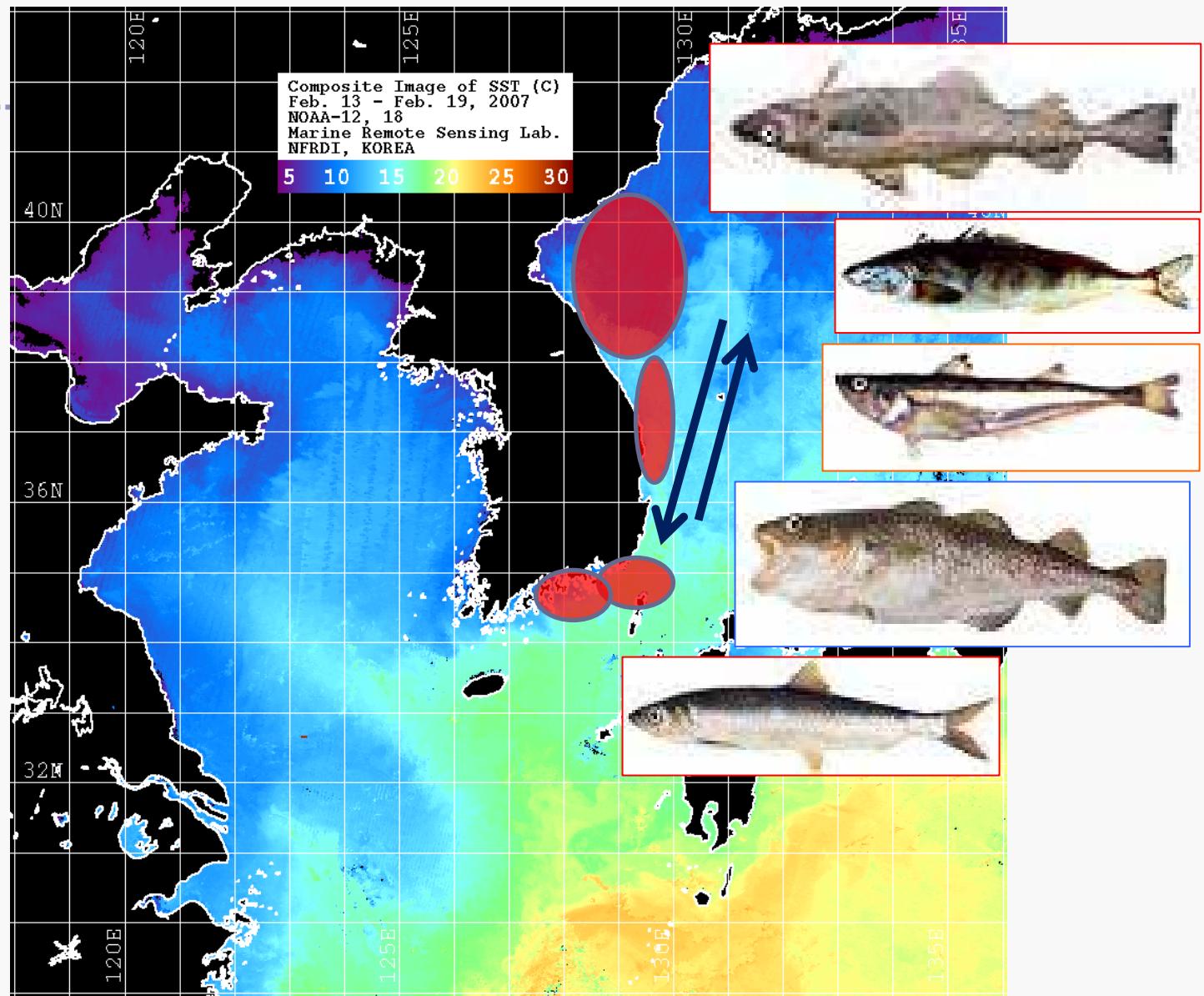
# Contents

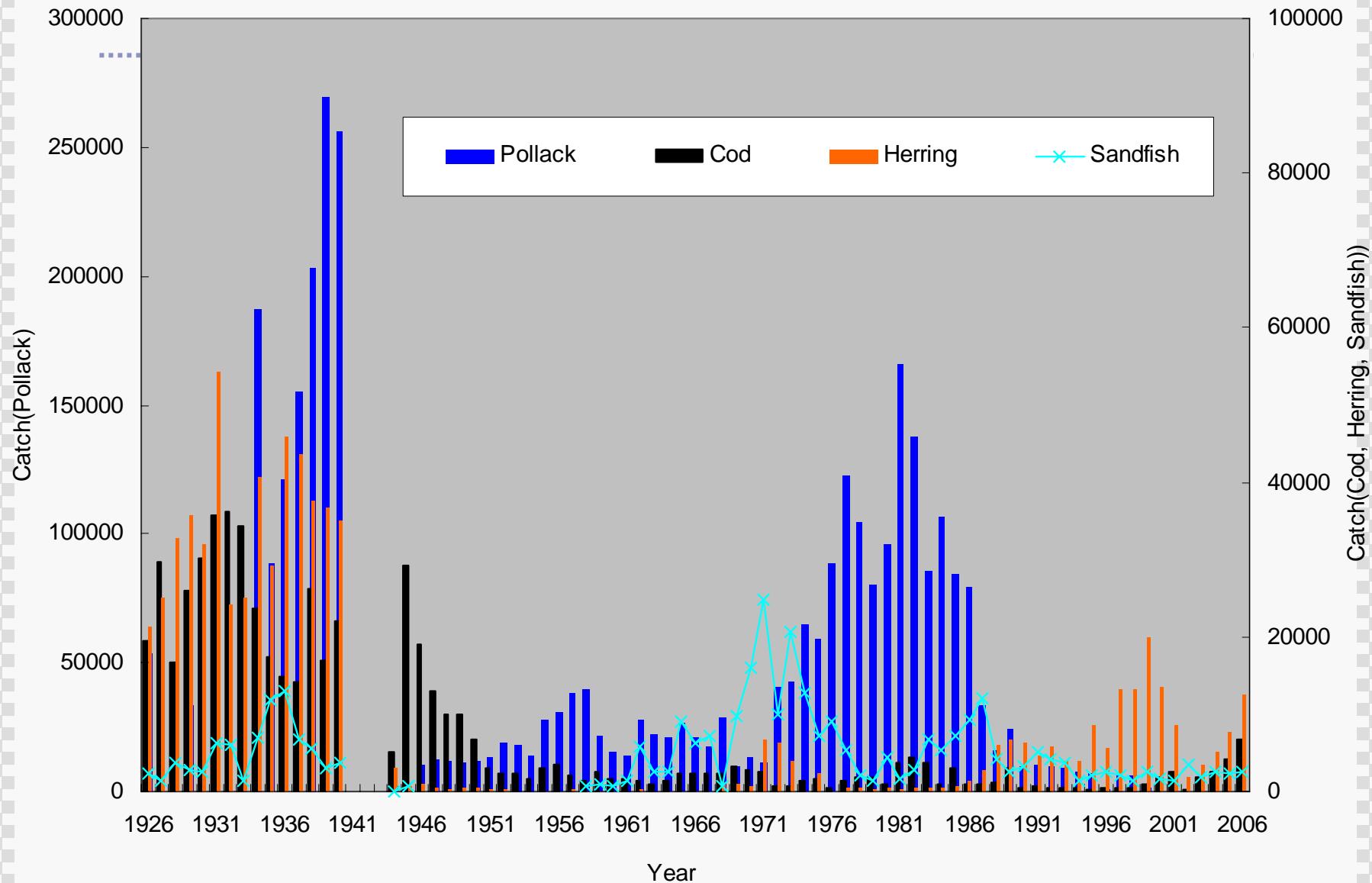
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- ❖ **Dominant fishery species and environment factors**
  - Temperature condition of Korean coastal waters ranges from the sub-arctic/temperate to the subtropical.
  - Reefs and seaweeds of deep(??) shelf-area serve cold-water fishes as spawning and nursery grounds
- ❖ **Conditions in the spawning habitats**
  - Recovering biogenic habitats to rebuild stocks

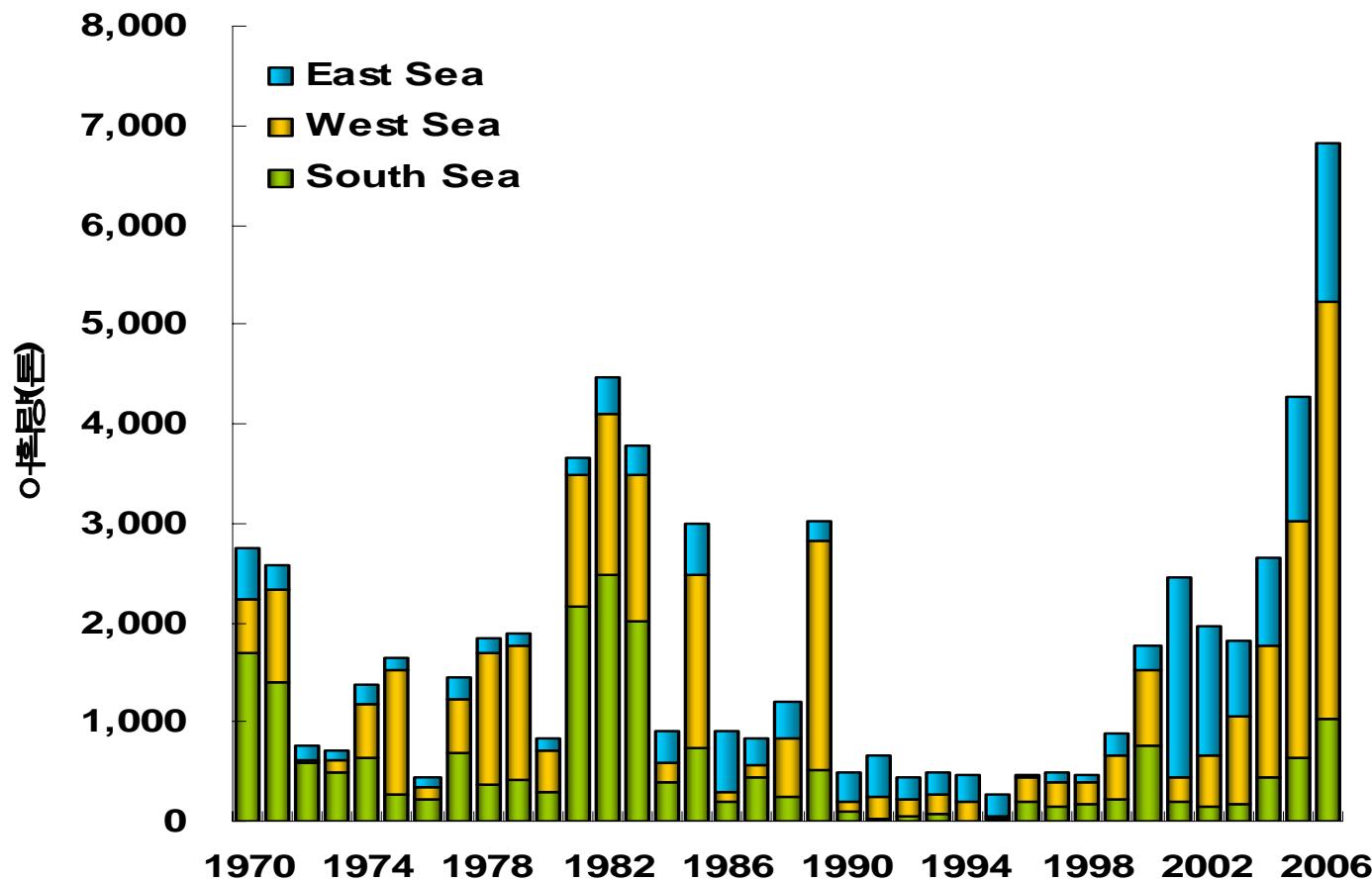


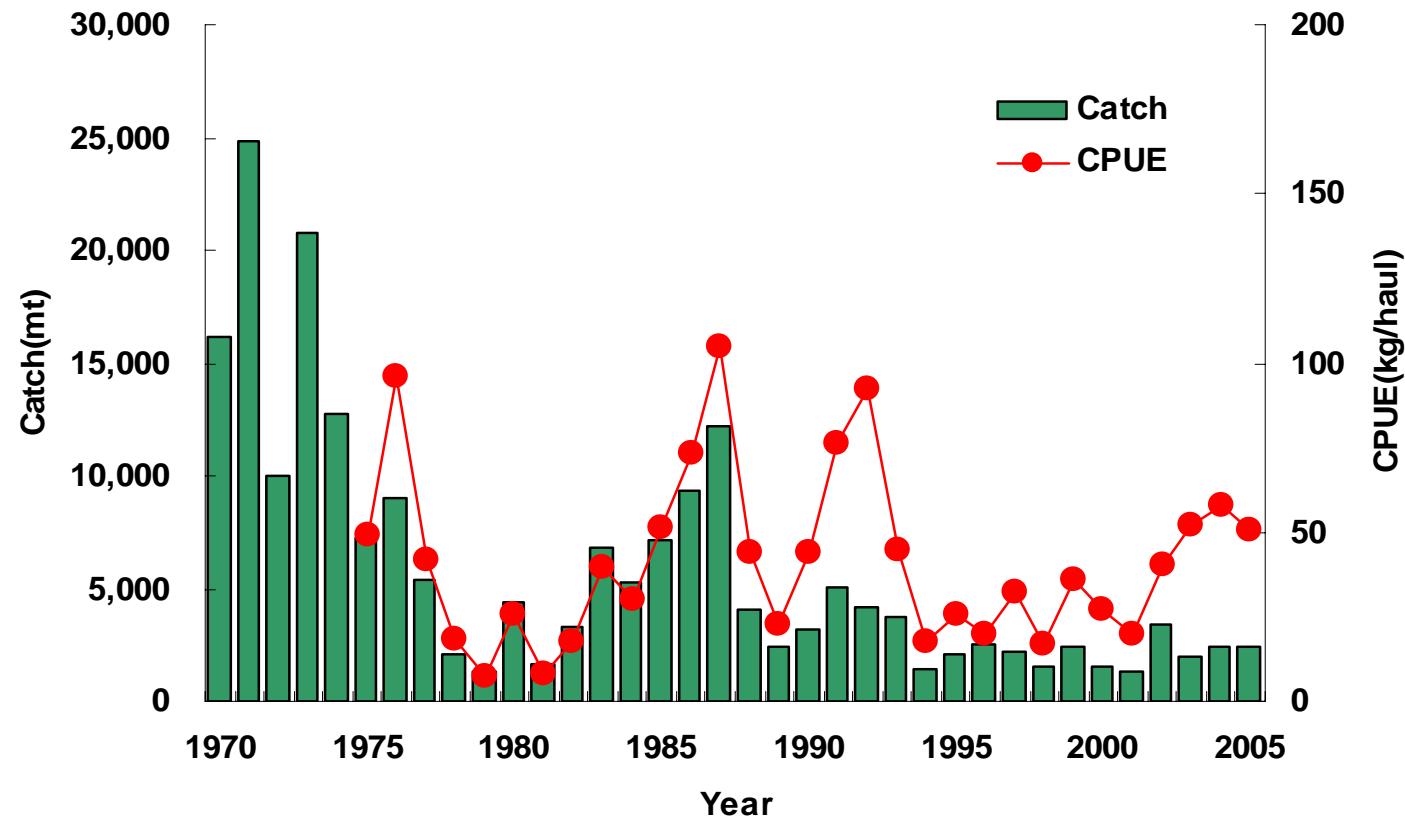
Map showing  
study area



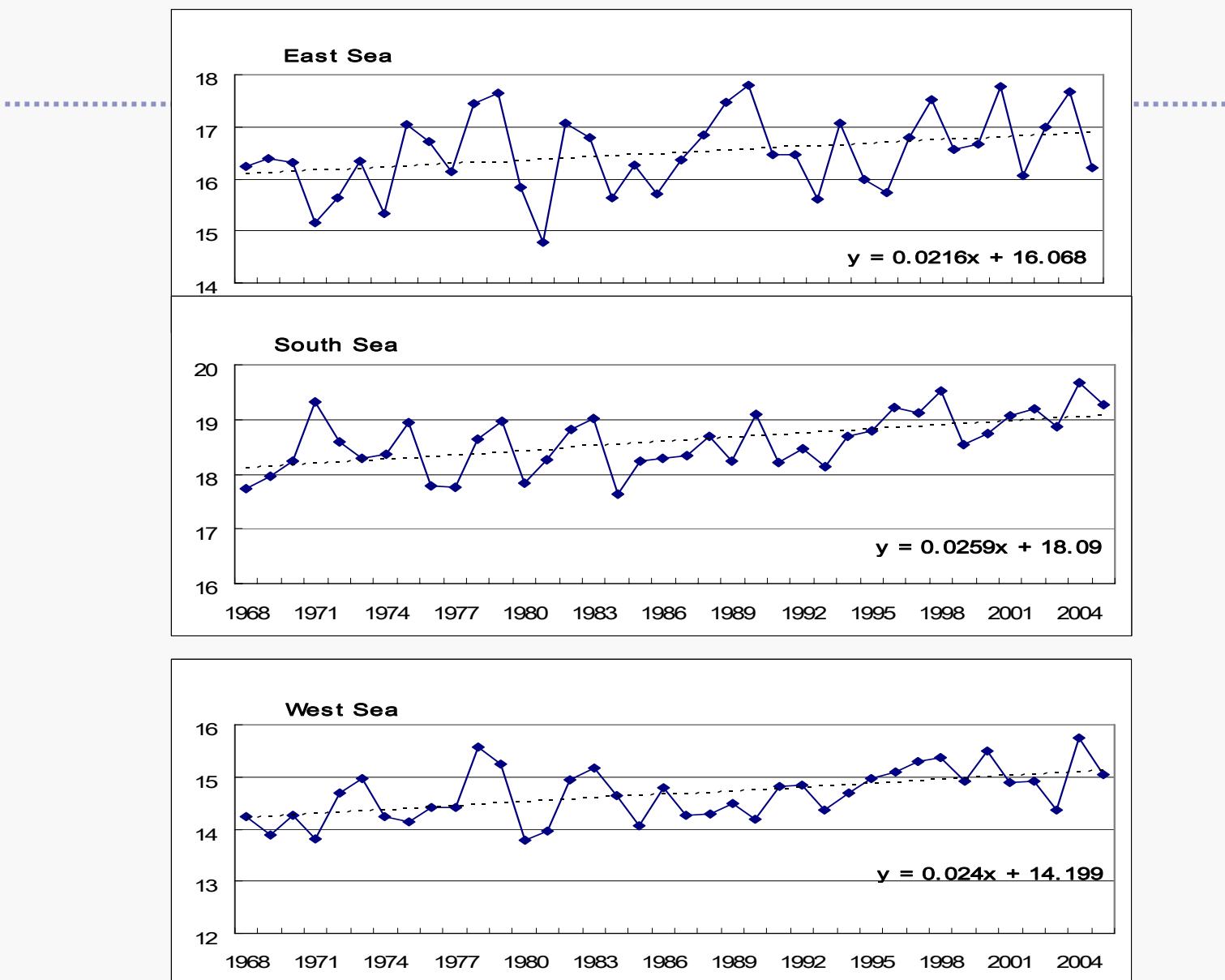


# Annual Catch of Cods (1970-2006)

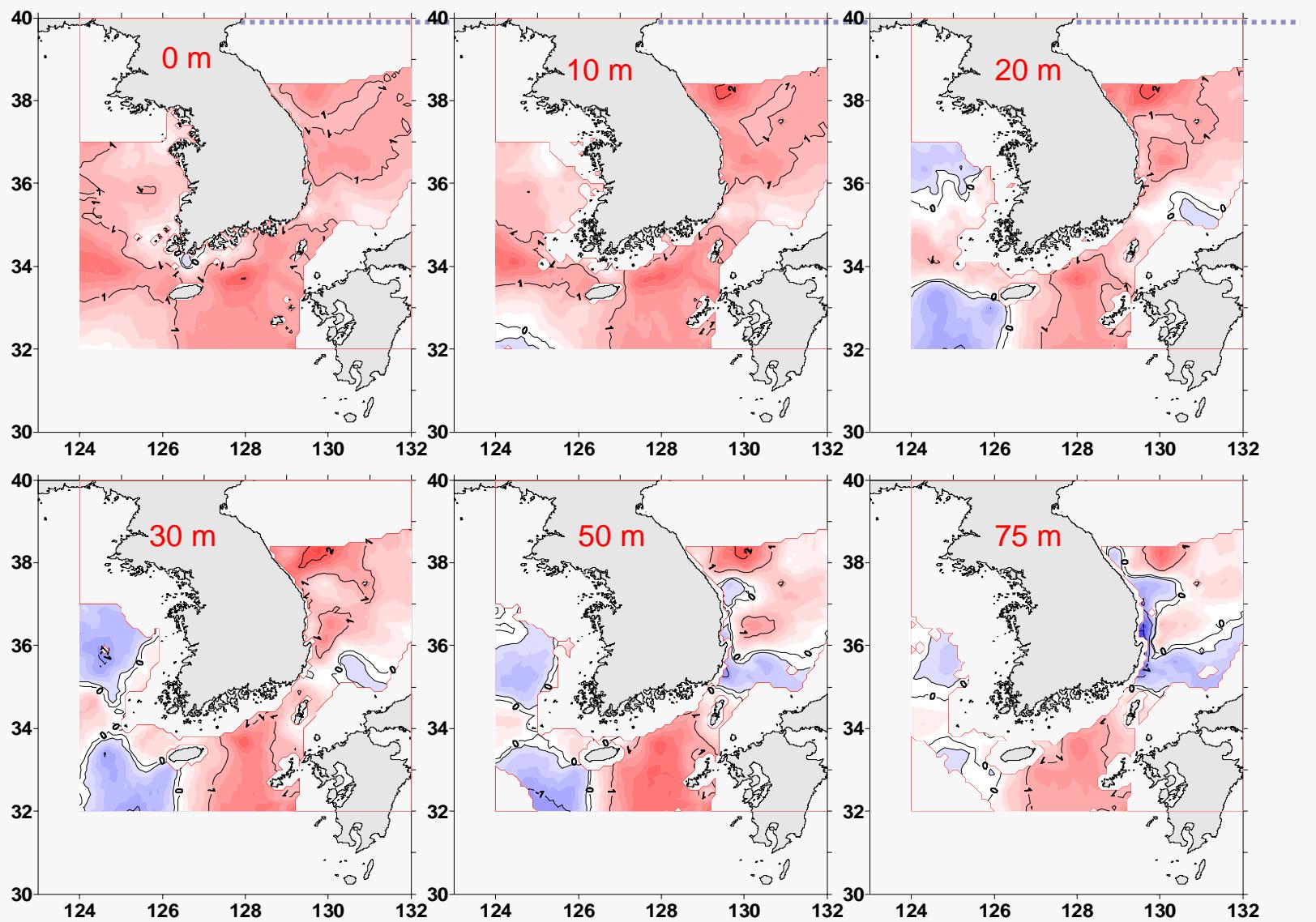




## Surface Temperature (°C)



# Spatially-explicit Linear Trends of Water Temperature Change (1968-2005)

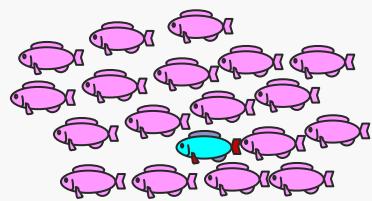
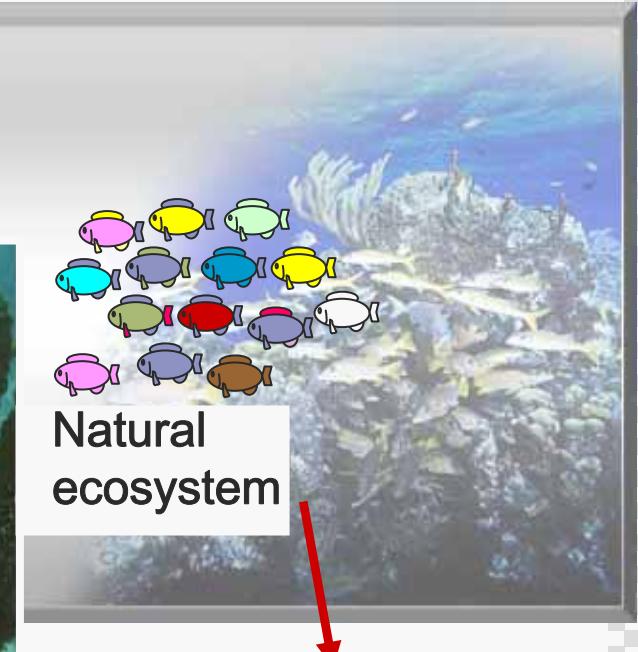


# Typical appearance of barren rock



# Ecosystem recovering, Stock enhancement

- Effect of artificial reefs and seaweed forest
- Juvenile-release program



After releasing

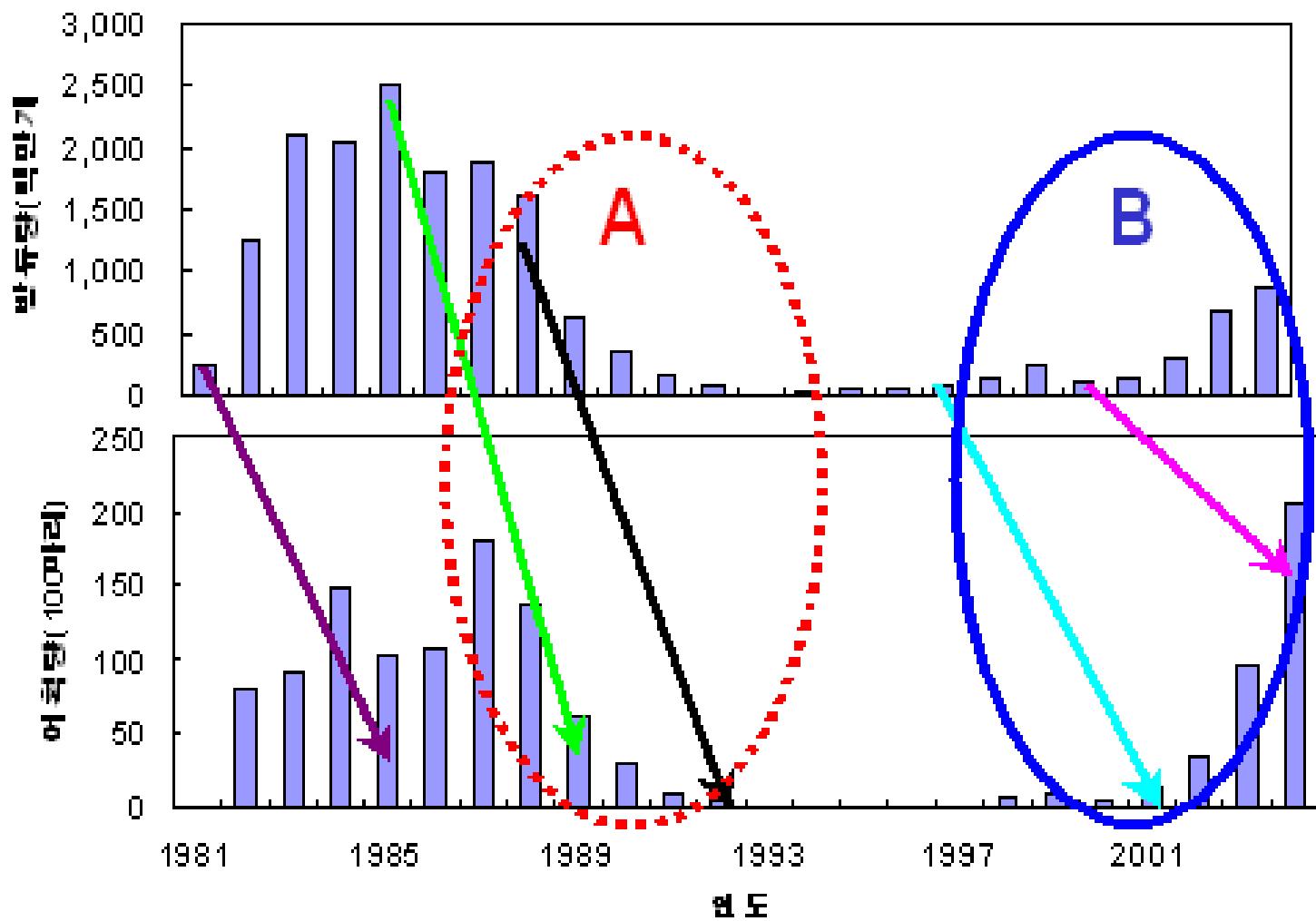
# Ecosystem recovery, Stock enhancement

- Functions of artificial reefs

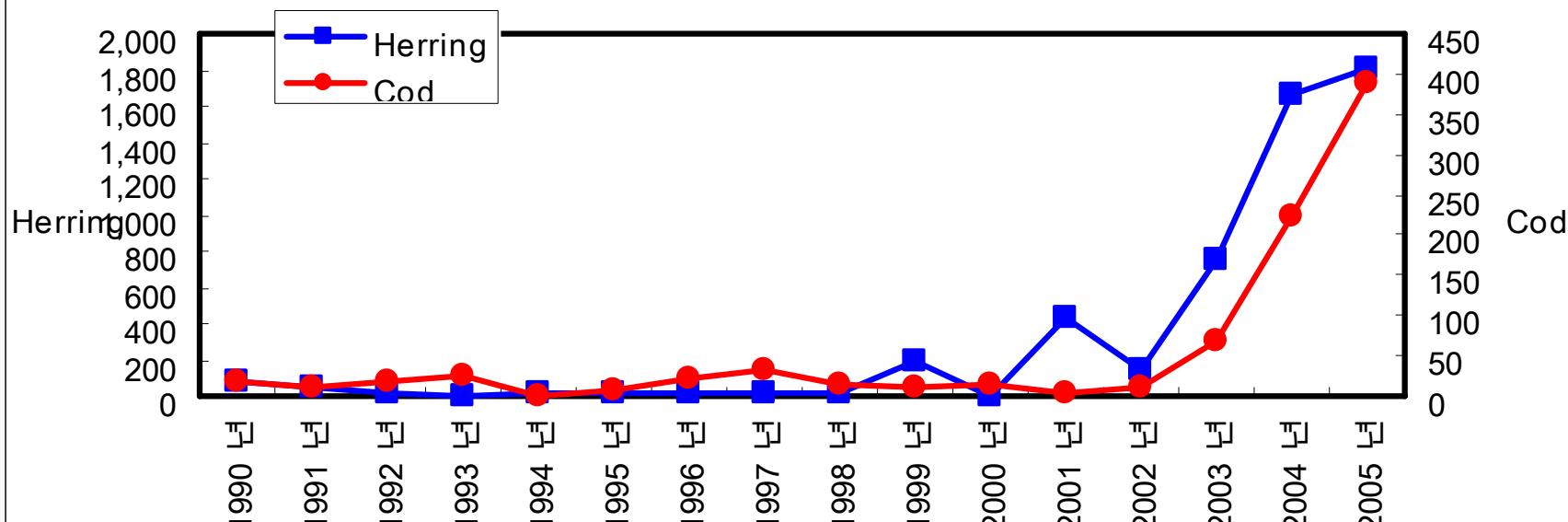


## ❖ Artificial seaweed forests

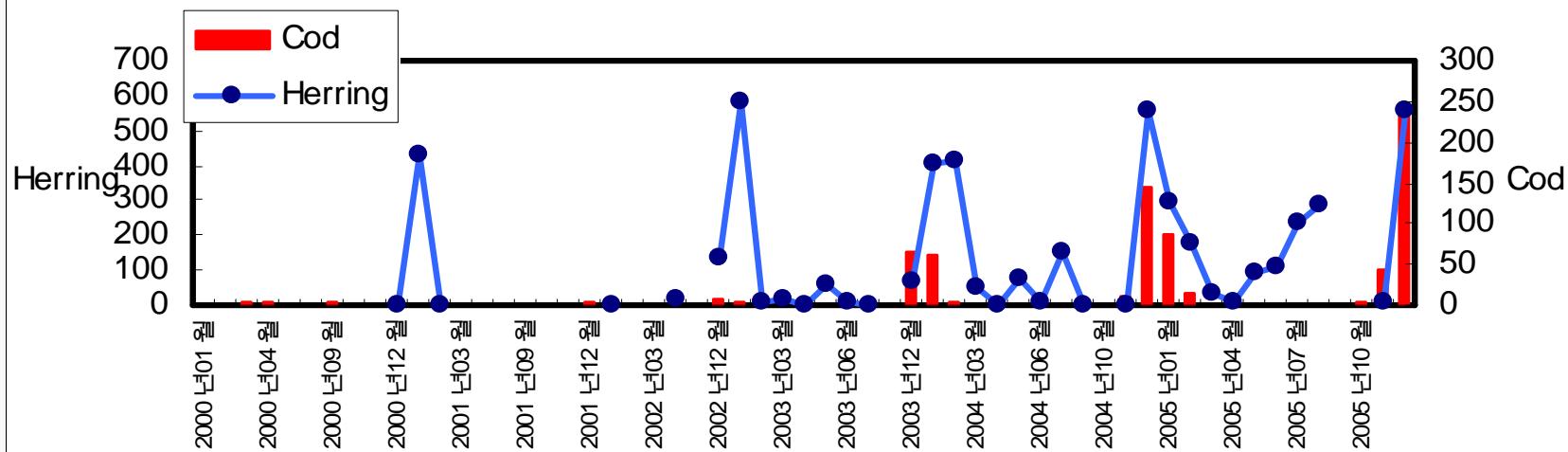




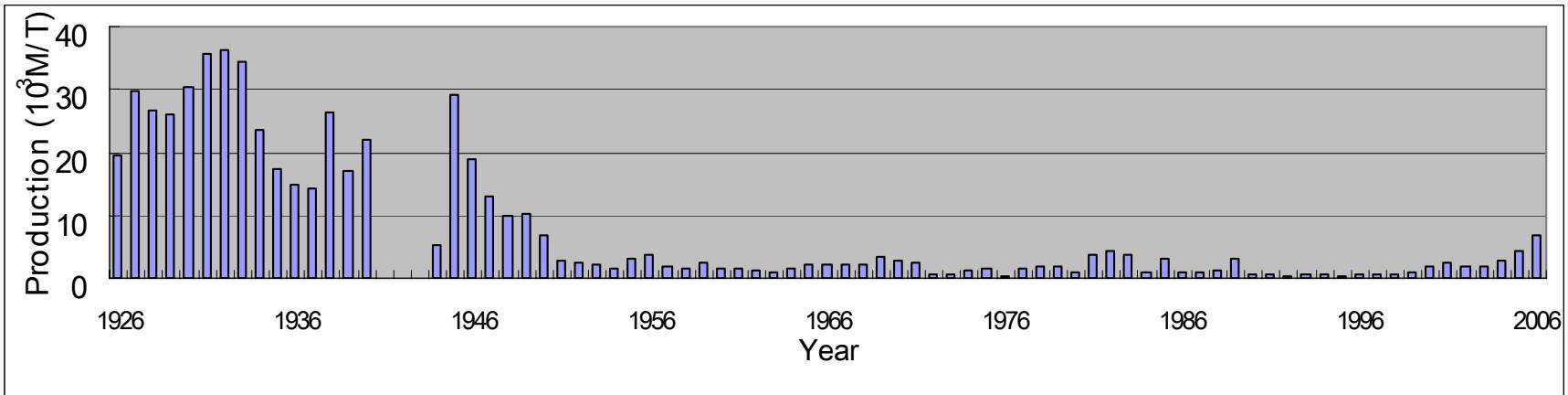
Annual landings (tons) of Herring & Cod from Kyungsang Province, Korea



Monthly landings (tons) of Herring & Cod from Kyungsang Province



# Cod stock rebuilding



## 2007 Plan

- Closing during the spawning season
- Limitation of length at first capture
- Improvement of catch statistics
- Stock-enhancement program

# Recommendation for the sandfish stock

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➤ **Limited length:** from 10cm to 13cm FL

**Closing season:** spawning periods (Nov.-Jan.)

**Fishing Effort:** self-regulation for the Gill-net fishery

**Closing area:** 2 places based on a survey on  
spawning grounds



# Future Study

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- ❖ Biological characteristics of coldwater species and their environment
- ❖ Habitat enhancement
- ❖ Ecosystem-based fisheries management

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Thank you !!

