# Yellow Sea LME Project

## Assessment and Fisheries Conditions

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# History and Progress of YSLME Project

“ First Talking ”
Narragansett , 1985

“ First Suggestion ”
Monaco, 1990

“ First Proposal ”
Narragansett , 1991


“First Workshop”
Qingdao, 1992




**The project takes off in 2005**

- The goals of the project
  - Develop ecosystem-based, environmentally sustainable management strategies for the Yellow Sea and its watershed,
  - Prepare Transboundary Diagnostic Analysis (TDA), National Yellow Sea Action Plans (NYSAPs), and Strategic Action Plan (SAP).
  - Establish regional framework for cooperation

- **The strategy of the project**

  **Four major components were developed for the project**

- **The first component, "Regional Strategies for Sustainable Management of Fisheries and Mariculture",**
  **addresses the need for sustainable fisheries management and fisheries recovery plans agreed on a regional bases.**

- **The second component, "Effective Regional Initiatives for Biodiversity Protection",**
  **addresses the need for coordinated regional action to preserve globally significant biodiversity.**

- **The third component, "Actions to Reduce Stress to the Ecosystem, Improve Water Quality and Protect Human Health",** addresses the YSLME as a marine ecosystem, and develops management practices based on an understanding of ecosystem behavior, the very basis for the Large Marine Ecosystem Concept.

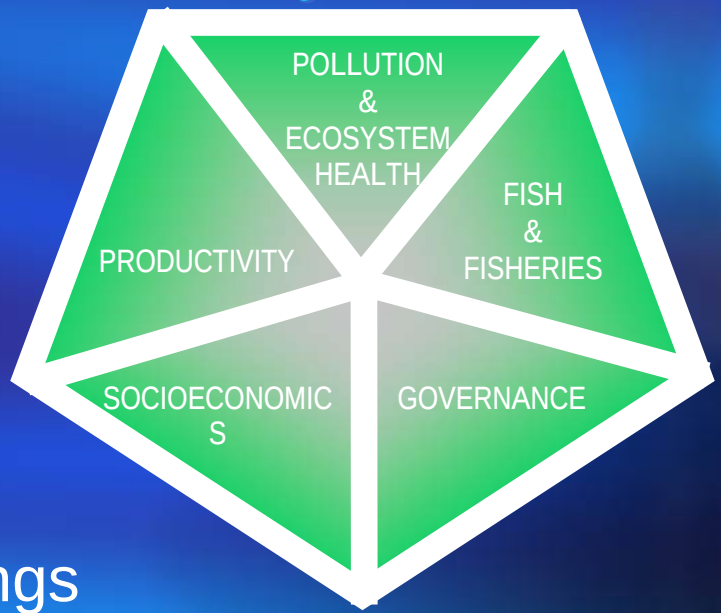
- **The fourth component, "Development of Regional Institutional and Capacity Building",** focuses the intervention on the required national and regional institutional and capacity building and strengthening, on the preparation of investment portfolios, and on coordination of preparation of the project.

# The strategy of the project

## The project is conducted by 5 Regional Working Groups in the implementation plan

- Fisheries
- Biodiversity
- Ecosystem
- Pollution
- Investment

5 Module for the Monitoring, Assessment and Management of LMEs




## Activities in 2005-2006

- Two PSC meetings
- Two regional technical meetings
- Ten meetings of the Regional Working Groups (RWG)
- One special technical meeting for the co-operative study cruises

Y S L M E

## Yellow Sea Partnership for Public Awareness

# Current Partners


Global Village of Beijing (GVB)

Korea Ocean Research and Development Institute (KORDI)

Marine Stewardship Council (MSC)

Partnerships in Environmental Management for the Seas of East Asia (PEMSEA)

The Nature Conservancy (TNC), Beijing

UNEP Regional Seas Programme Northwest Pacific Action Plan (NOWPAP)

UNDP/GEF Yellow Sea Large Marine Ecosystem (YSLME) Project

United Nations Development Programme (UNDP), China

Wetlands International (WI)

Worldwide Fund for Nature – China

Worldwide Fund for Nature – Hong Kong

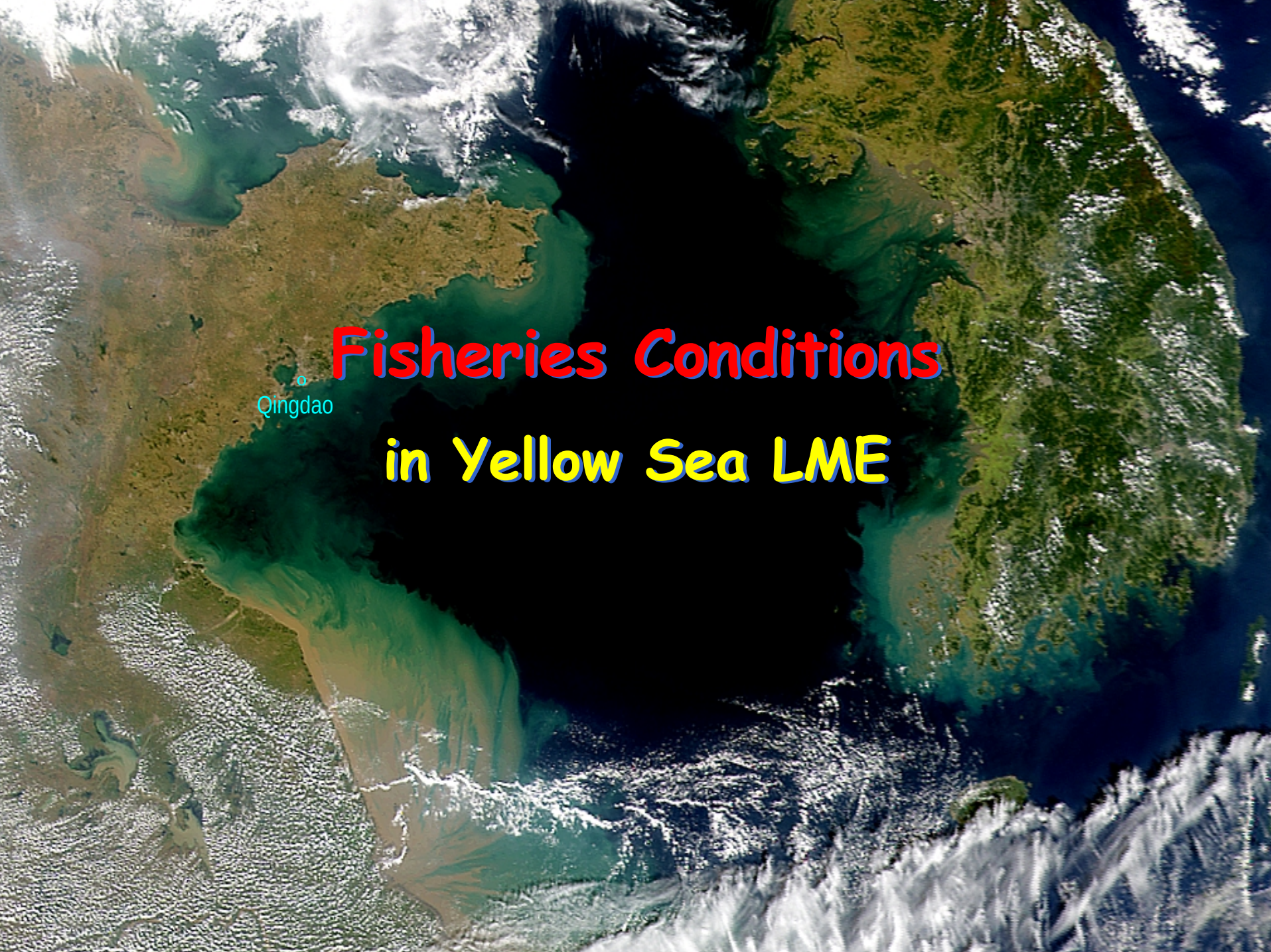
Worldwide Fund for Nature – Japan

WWF/KORDI/KEI Yellow Sea Eco-Region Planning Programme (YSEPP)

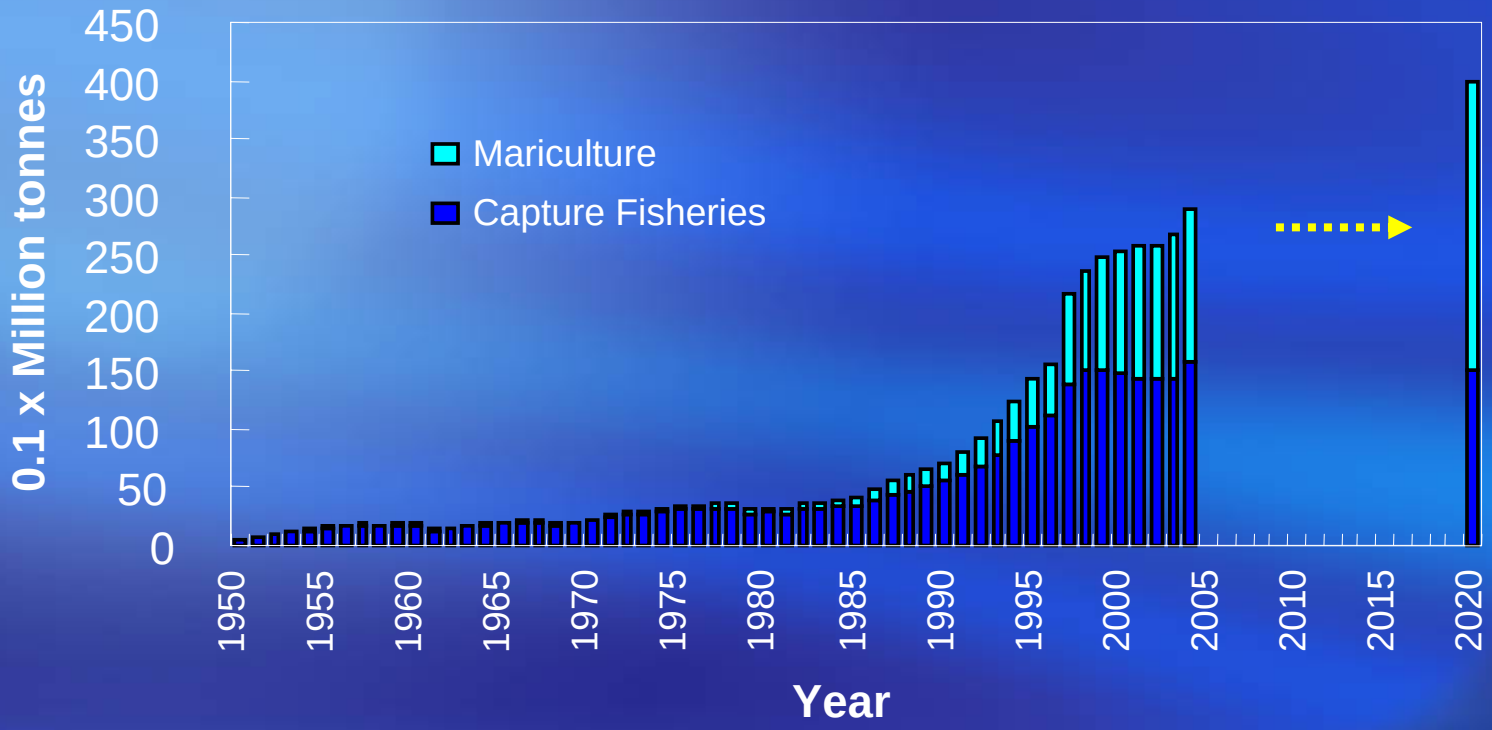
# Example: Parliamentary Conference

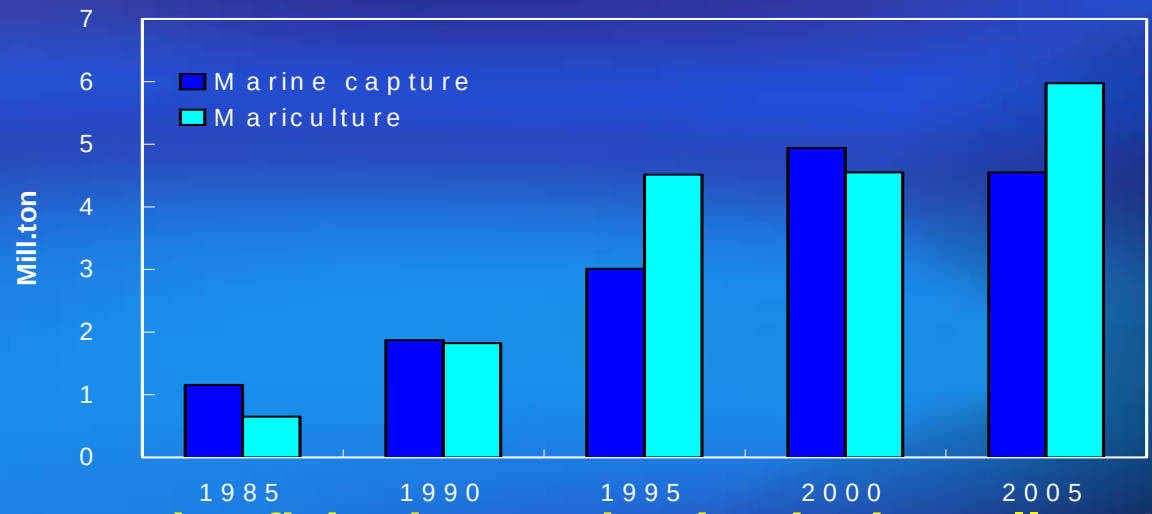
Held in Qingdao, China, 28th - 30th March 2006

51 participants, including 14 members from the parliamentary organizations, attended.

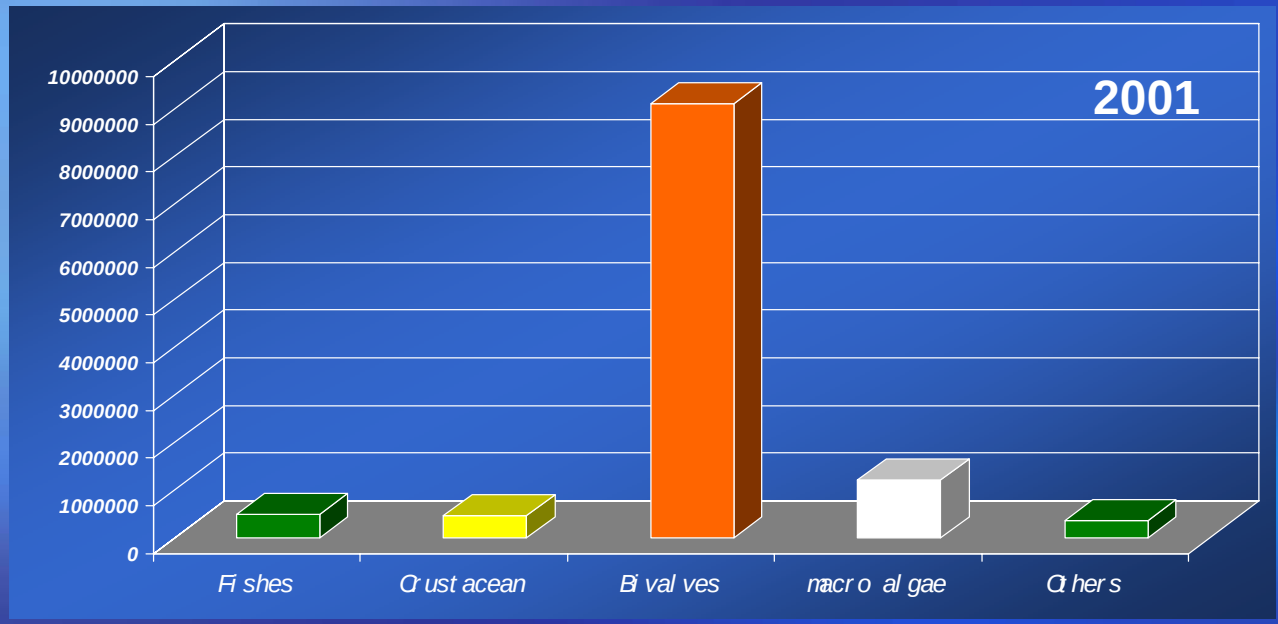

Fisheries Conditions
in Yellow Sea LME
Qingdao

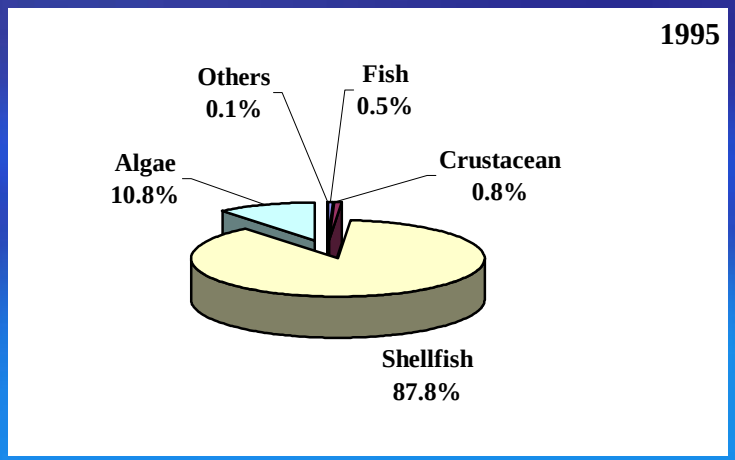
# Marine fisheries production in China

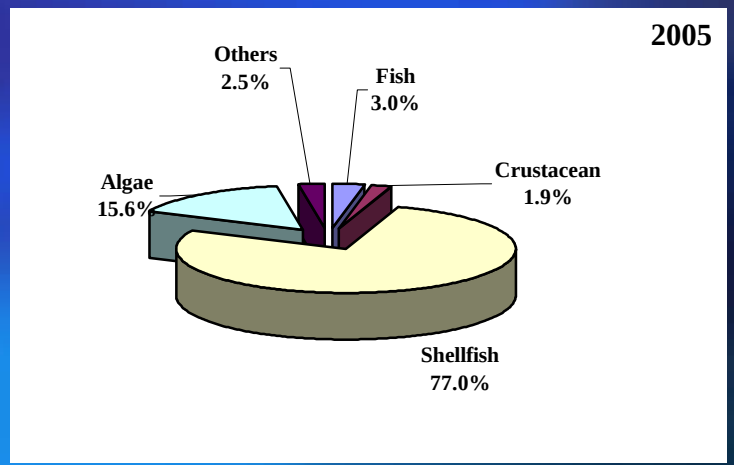


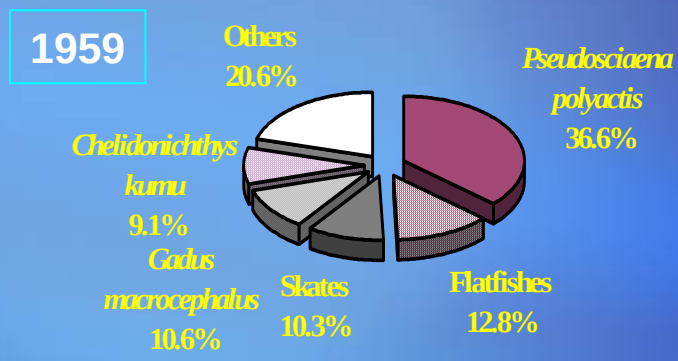

Marine fisheries production in the Yellow Sea

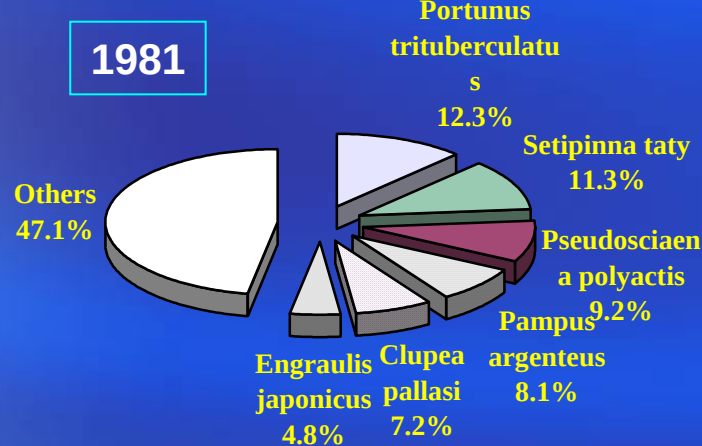


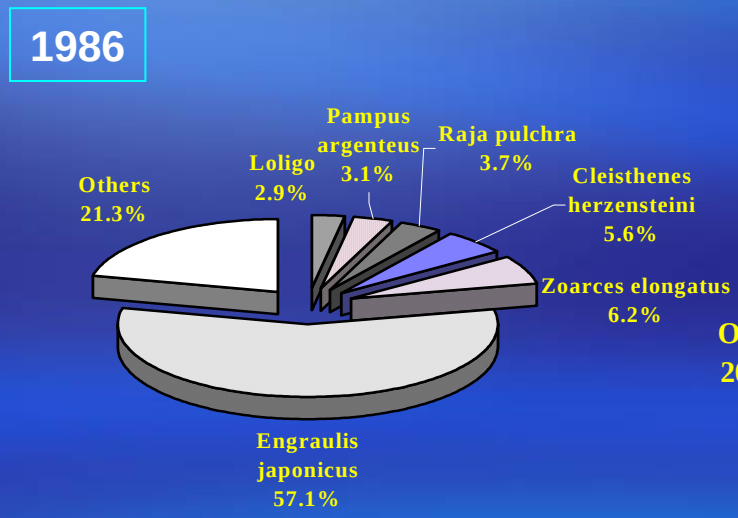



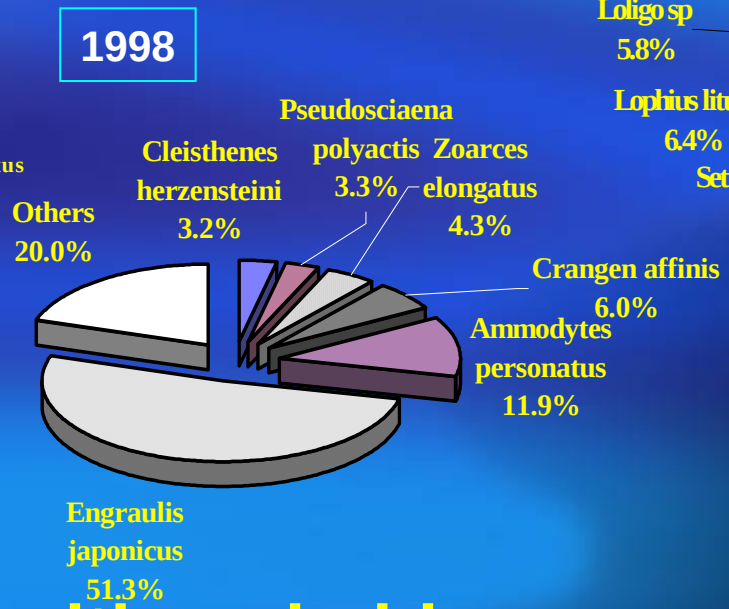



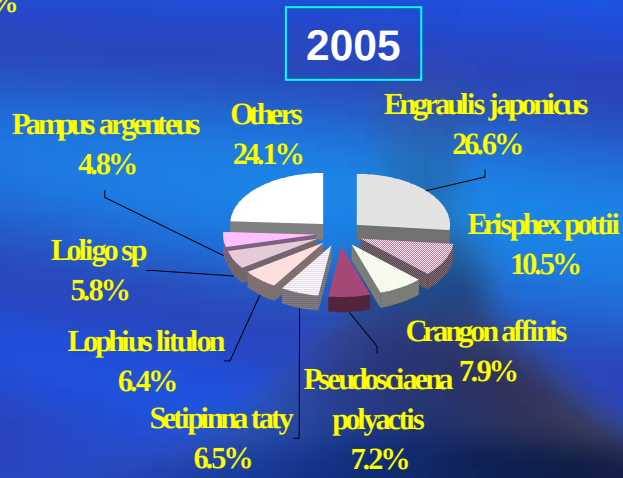

# Species composition of mariculture in the Yellow Sea



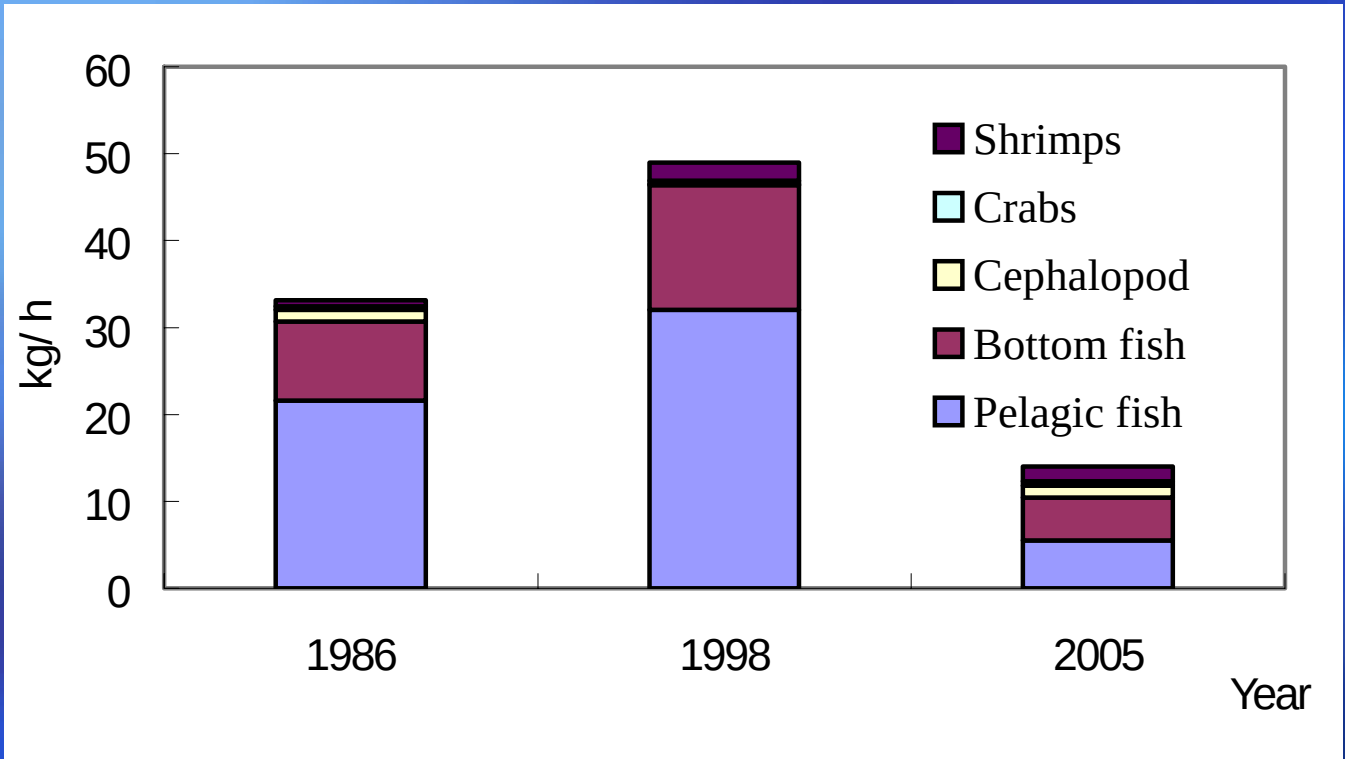



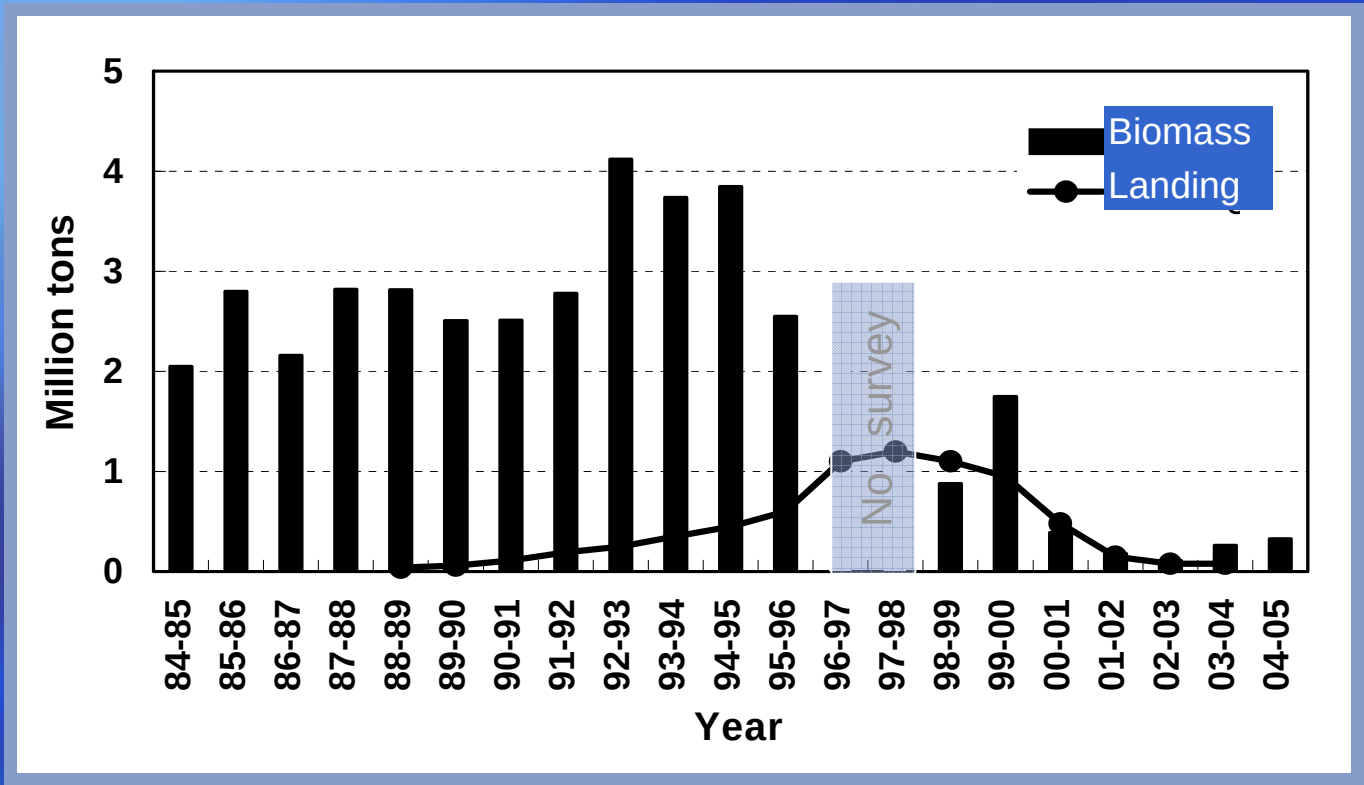

# Species compositions in biomass yields

## *Yellow Sea (Spring)*

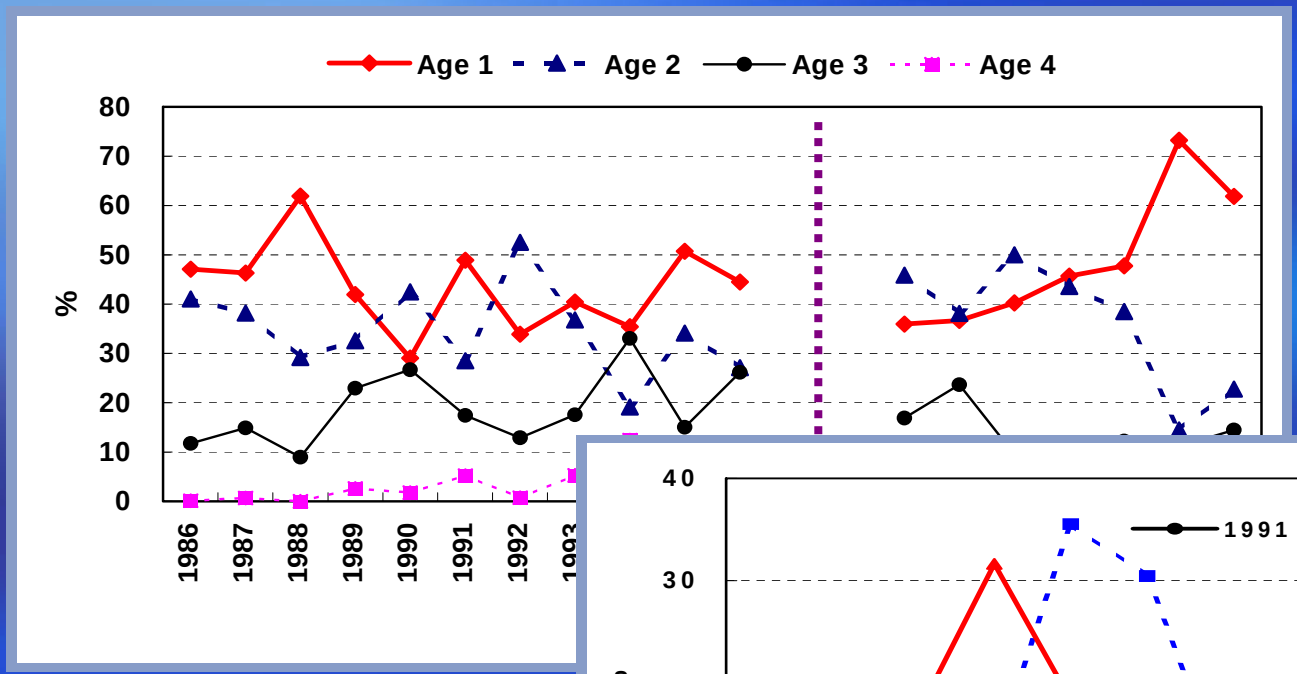


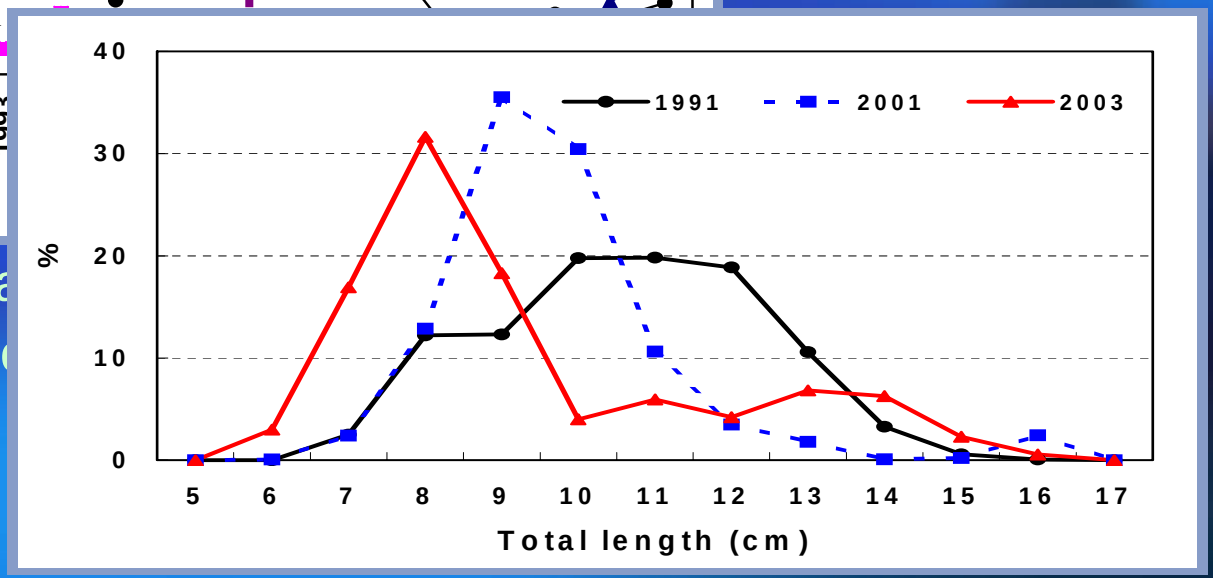

**Changes in biomass yield in the central to southern part of YS**

# Wintering stock biomass and annual landings of the anchovy in the Yellow Sea




# Decadal changes in age structure of the wintering anchovy and size structure of the spawning stock of anchovy in YS, 1986–2005

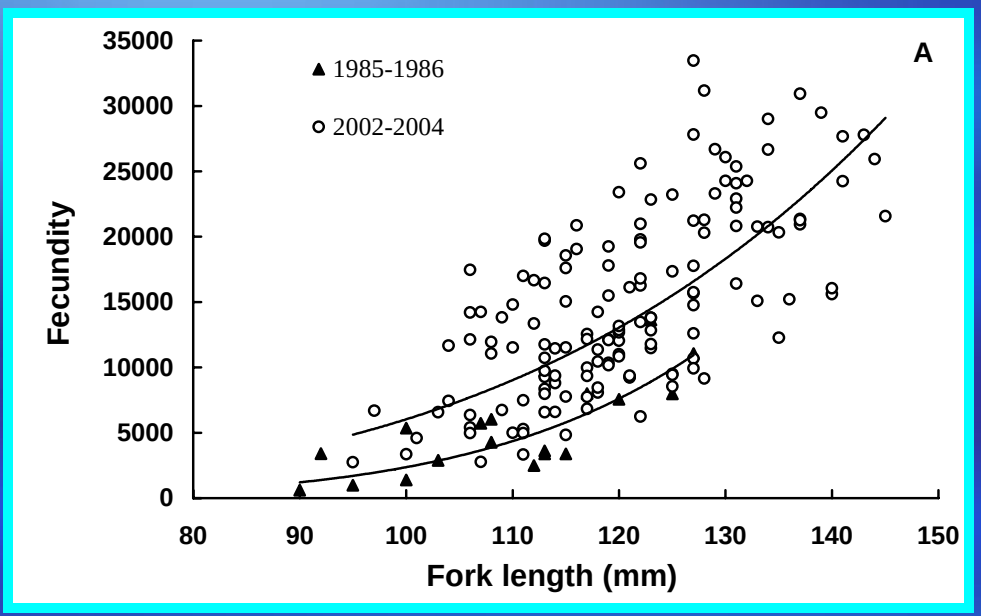


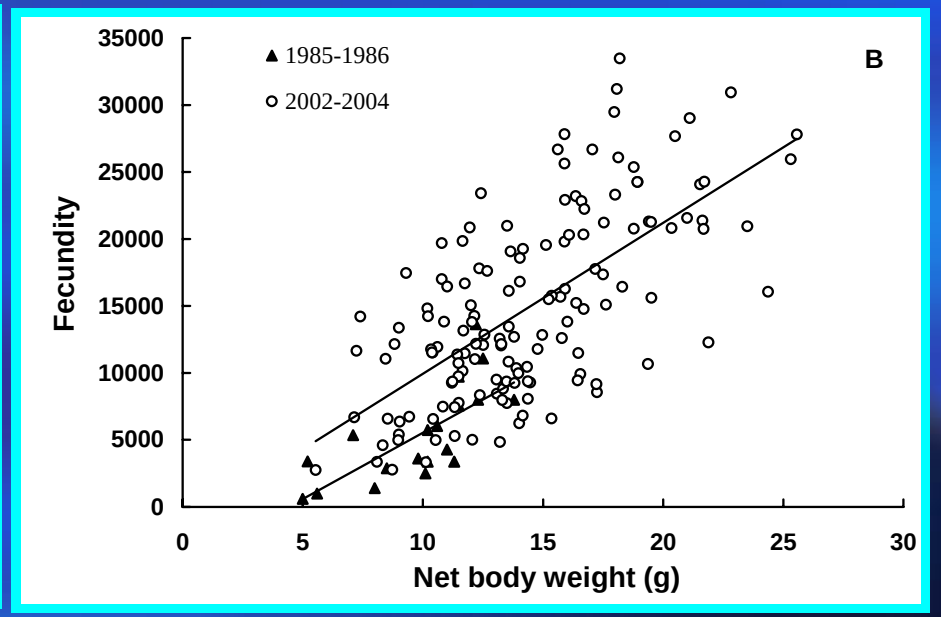




- Before 1996: Fluctua
- After 1999: Age 1 in
  decreased

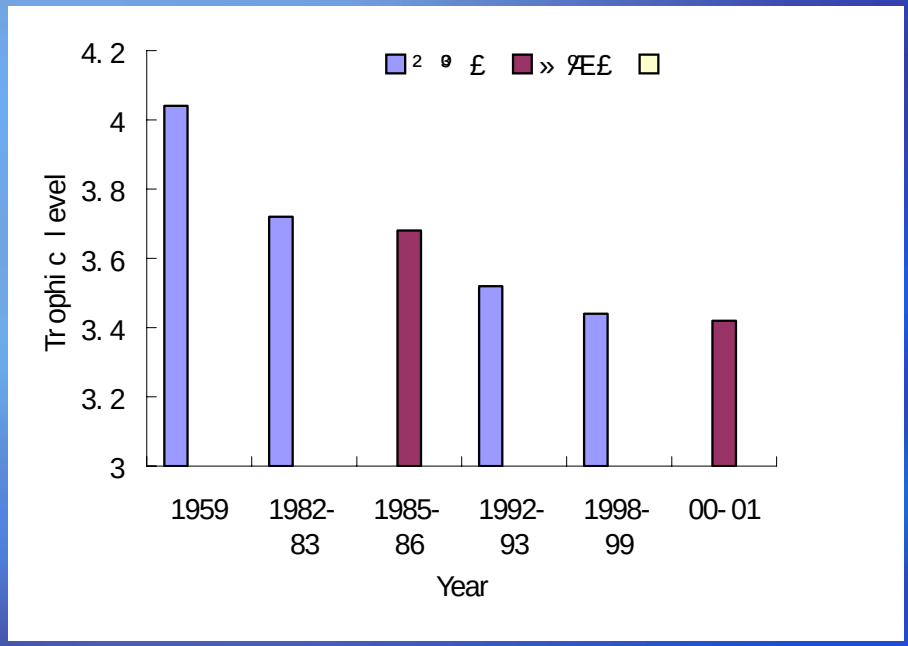
The main component changed progressively from larger fish (10-12 cm) to smaller ones (8-10 cm)

# Fecundity and its decadal changes of anchovy in the Yellow Sea



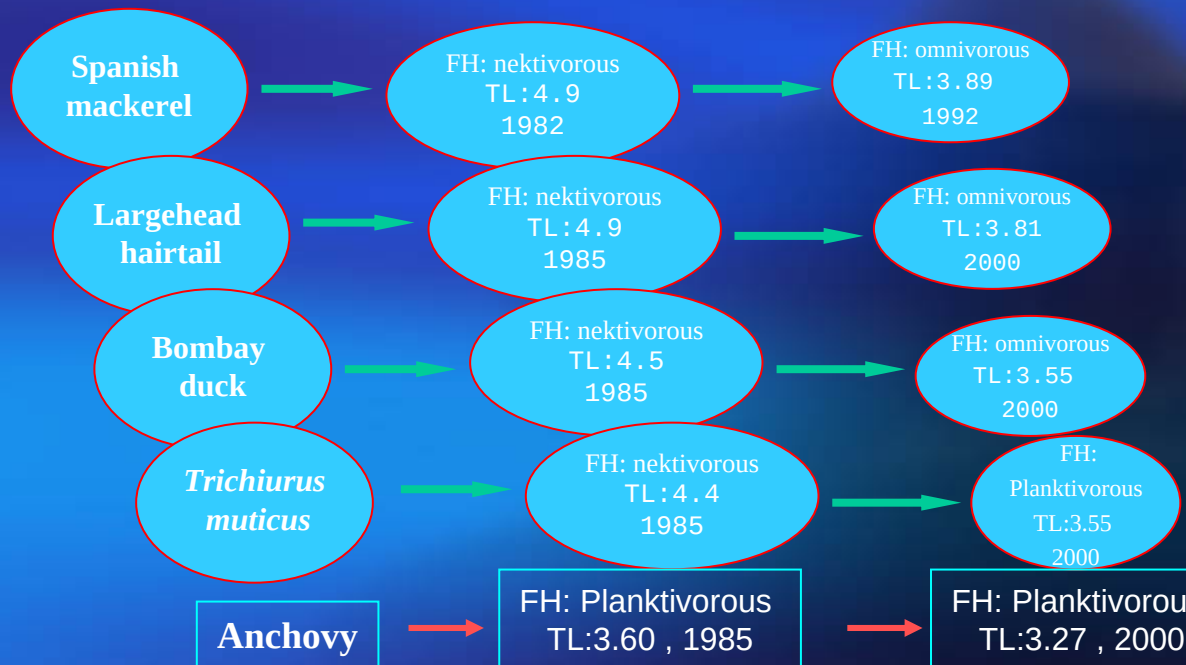

Both total (A) and relative fecundity (B) almost doubled




Trophic level (TL) of important species declined obviously from 4.1 in 1959~60 to 3.4 in 1998~99, the Bohai Sea; from 3.7 in 1985~86 to 3.4 in 2000~01, the Yellow Sea .

## Changes in feeding habits in the YS

The results indicated that feeding habits of some species changed significantly over past 20 years.



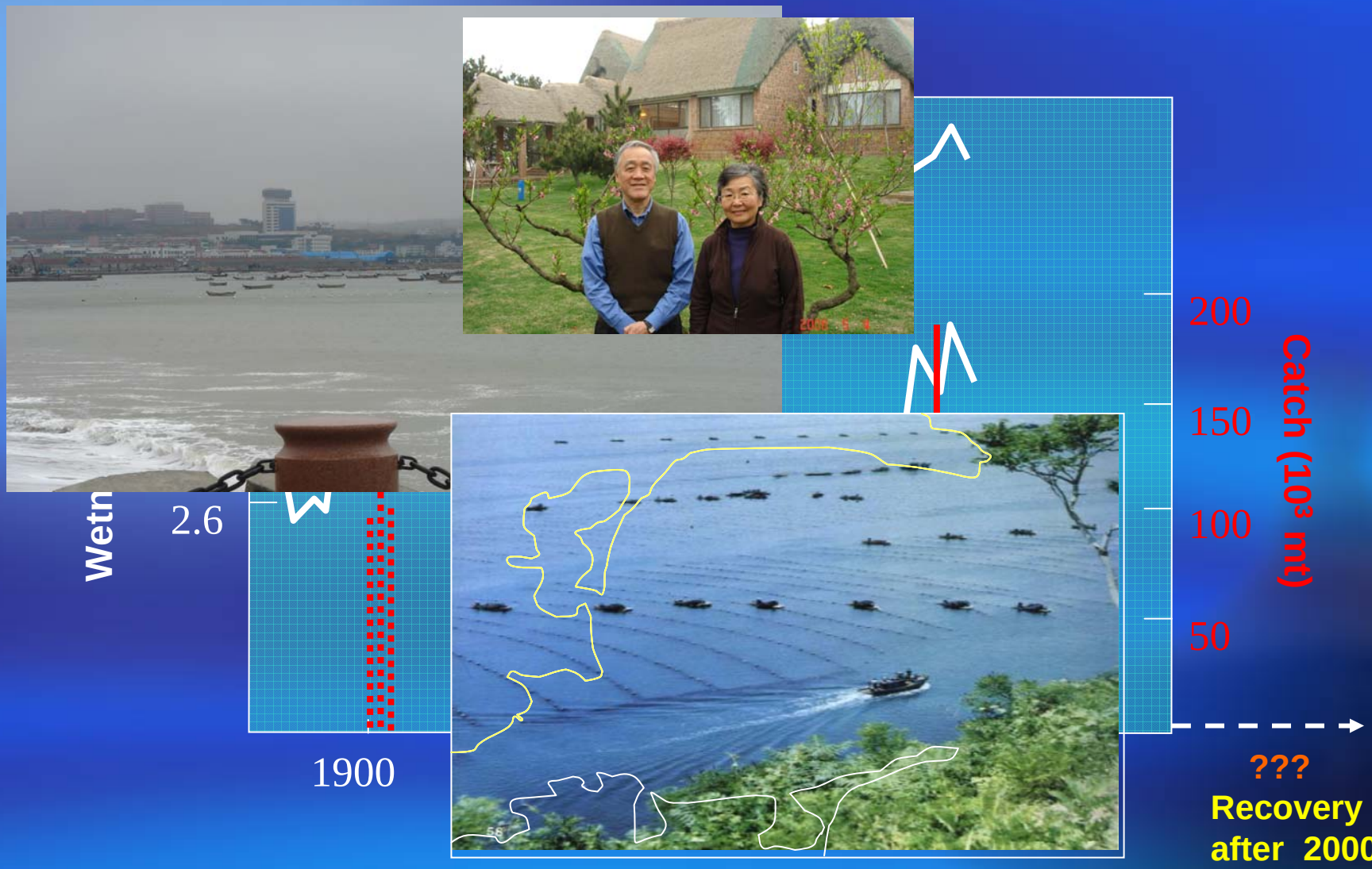
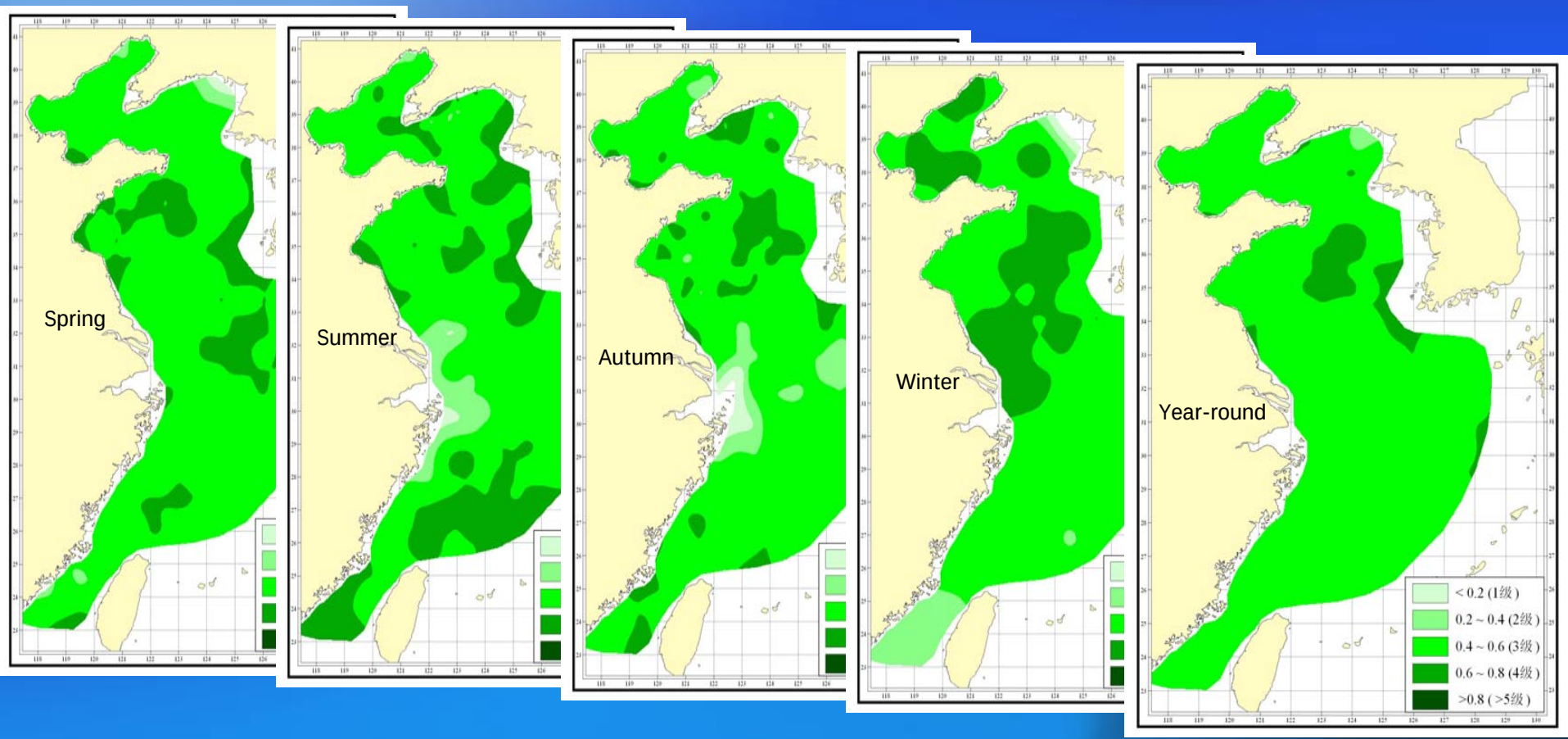
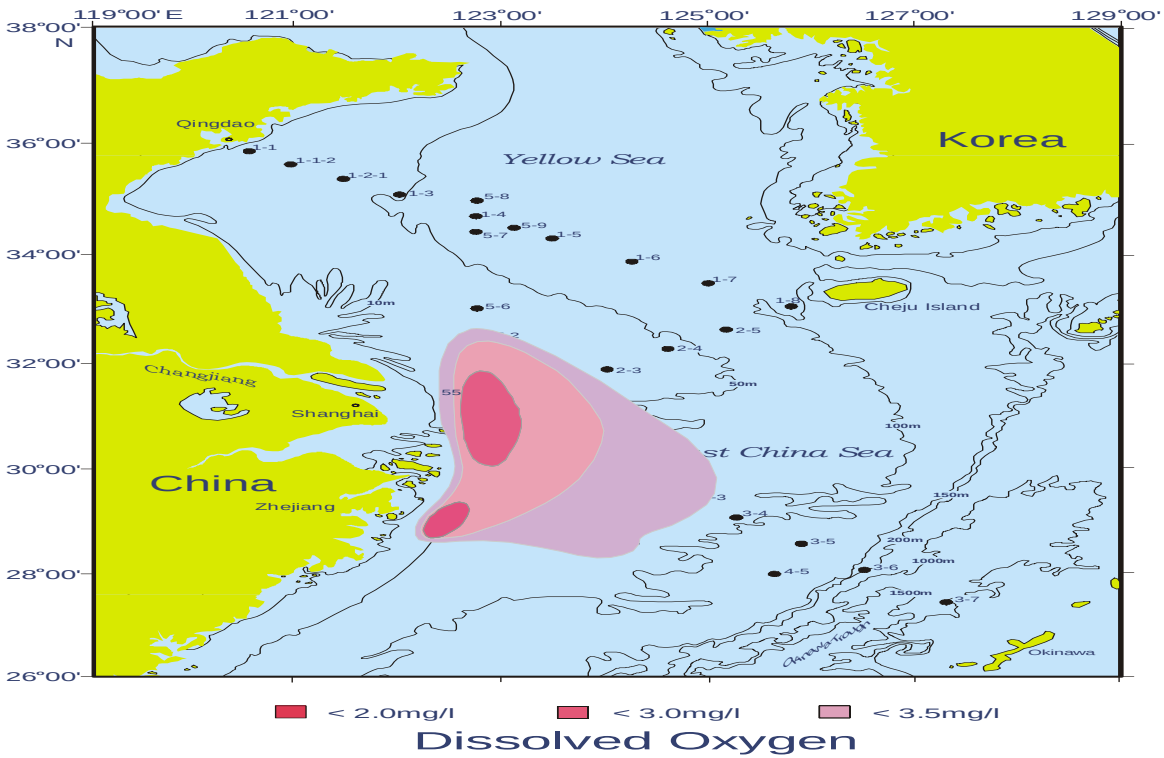



Fig. 6. Relationship between the fluctuations in herring abundance of the Yellow Sea and the 36-yr cycle of wetness oscillation in eastern China. (adapted from Tang, 1981)

# Nutrient condition (environmental quality) of marine fisheries waters in the Yellow Sea and the East China Sea



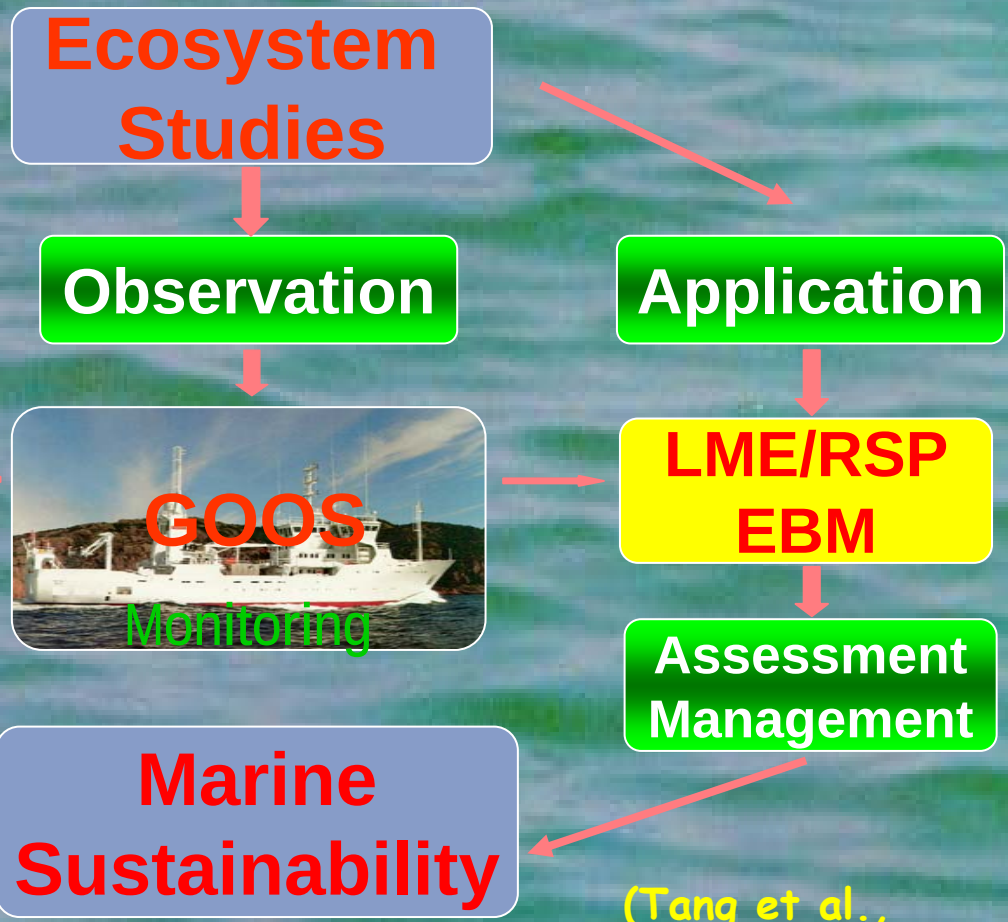

(Based on a analysis of integration index, including water quality, primary production, zooplankton producon.




# Low oxygen area in the East China Sea and the Yellow Sea

# Future Actions:

Establish a ecosystem-based monitoring, assessment and process-oriented studies Program.



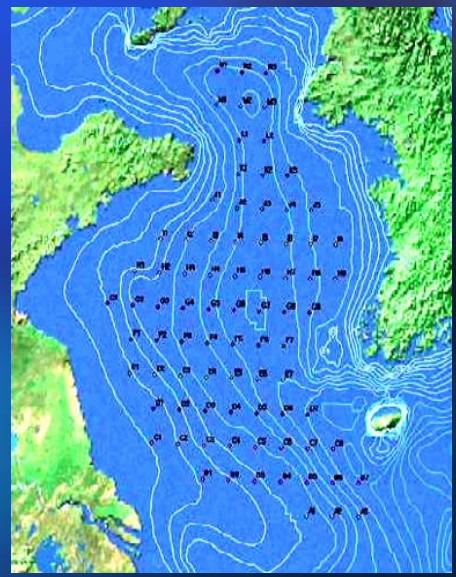

(Tang et al., 1995, 2000, 2003)

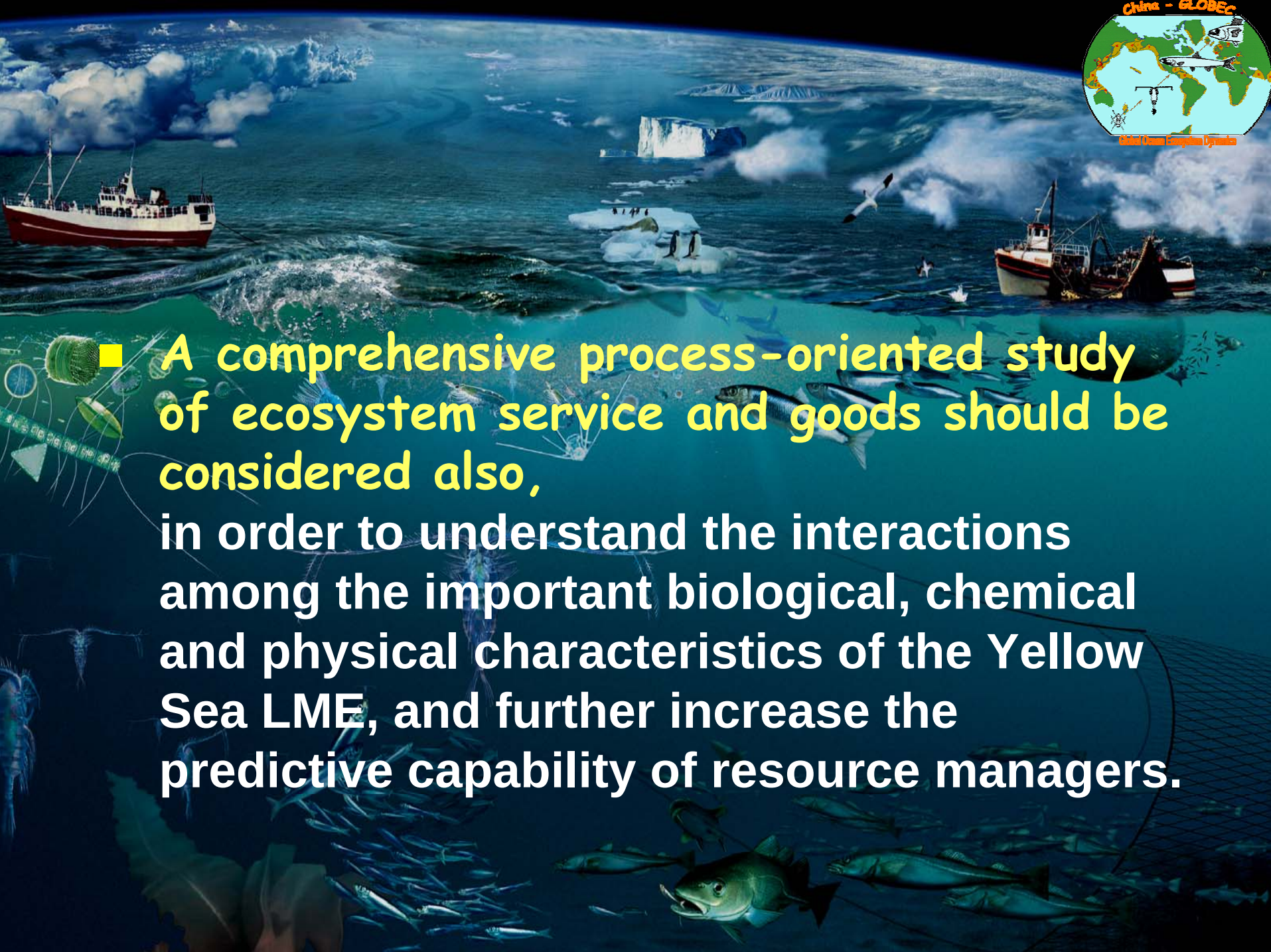
Y S L M E

- **Monitoring and assessing the changing states and health of the ecosystem is a scientifically based strategy.**

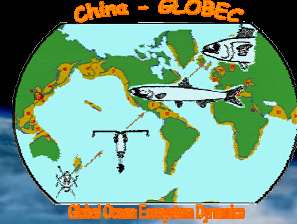
**--- The YSLME Project "Reducing Environmental Stress in the Yellow Sea Large Marine Ecosystem", 2005-2009, GEF funding support .**

- **Planning for the Co-operative Study Cruises:**
  - **Provide basin-wide data and information for all components;**
  - **Provide data and information that will be used, together with other existing data and information, in the preparation of the TDA; and**
  - **Prepare necessary baselines of the status of the Yellow Sea environment at start of project implementation.**





- A comprehensive process-oriented study of ecosystem service and goods should be considered also,
  in order to understand the interactions among the important biological, chemical and physical characteristics of the Yellow Sea LME, and further increase the predictive capability of resource managers.



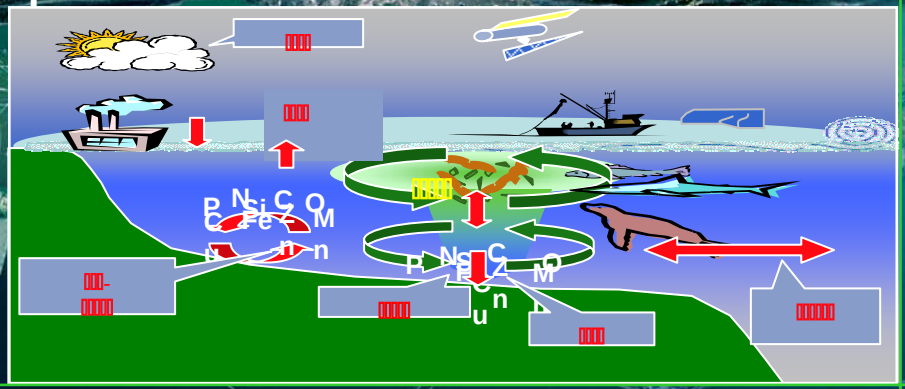

# Ecosystem Studies in the coastal ocean of China

- China-GLOBEC I: Ecosystem Dynamics and Sustainable utilization of Marine Living Resources in the Bohai Sea , 1997-2000; Budget: US$ 0.6 Million.
- China-GLOBEC II: Ecosystem Dynamics and Sustainable utilization of Marine Living Resources in the East China Sea and Yellow Sea , 1999-2004; Budget: US$ 4.5 Million.
- China-GLOBEC III /IMBER I: Key Processes and Sustainable Mechanisms of Ecosystem Food Production in the Coastal Ocean of China, 2006-2010; Budget: US$ 4. Million.

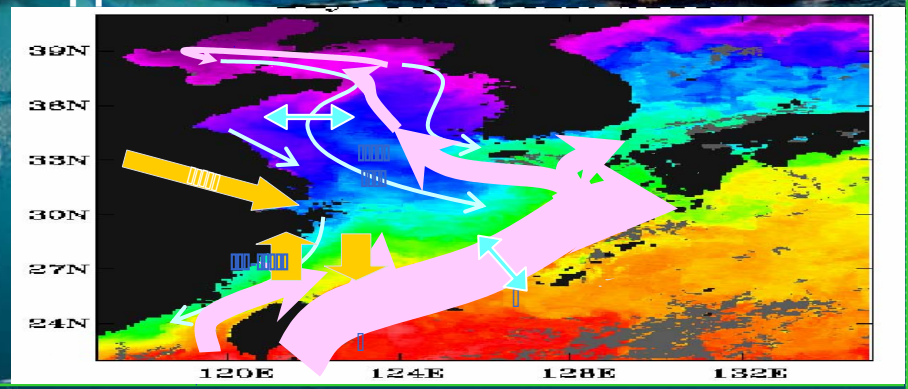
**Chief Scientist: Qisheng Tang (ysfri@public.qd.sd.cn)**

# China-GLOBEC III /IMBER I focus on function (ecosystem service and goods) and integration (between biogeochemistry processes and food webs (from end to end)) studies.

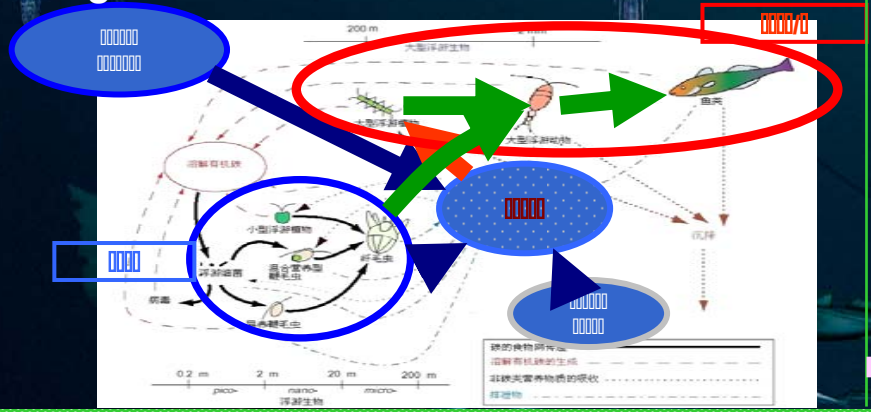
## KSQ 1: Supporting role of main biogeochemical processes in food production



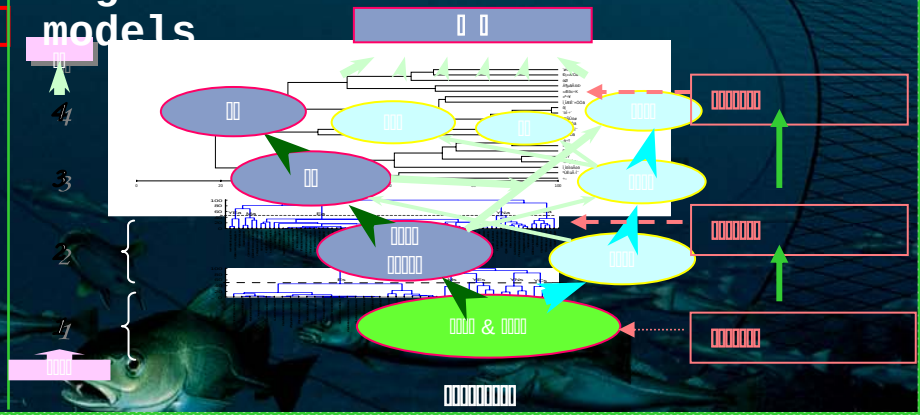
## KSQ 2: Key physical processes of biogenic element cycle and supplement




## KSQ 3: processes Primary production coupling with main biogeochemical



## KSQ 4: Food production processes of biological function groups together with their sustainable models



# First Announcement

## The Second Global Conference on LMEs will be held in Qingdao, China on September 11-13, 2007

**Convener:**

**Dr. Kenneth Sherman and Prof. Qisheng Tang**


Thank You!
2004 1 22

# Management Implication

- Key scientific points:

✓ Ecosystem-based approach

✓ The Yellow Sea is

semi-enclosed shelf sea;

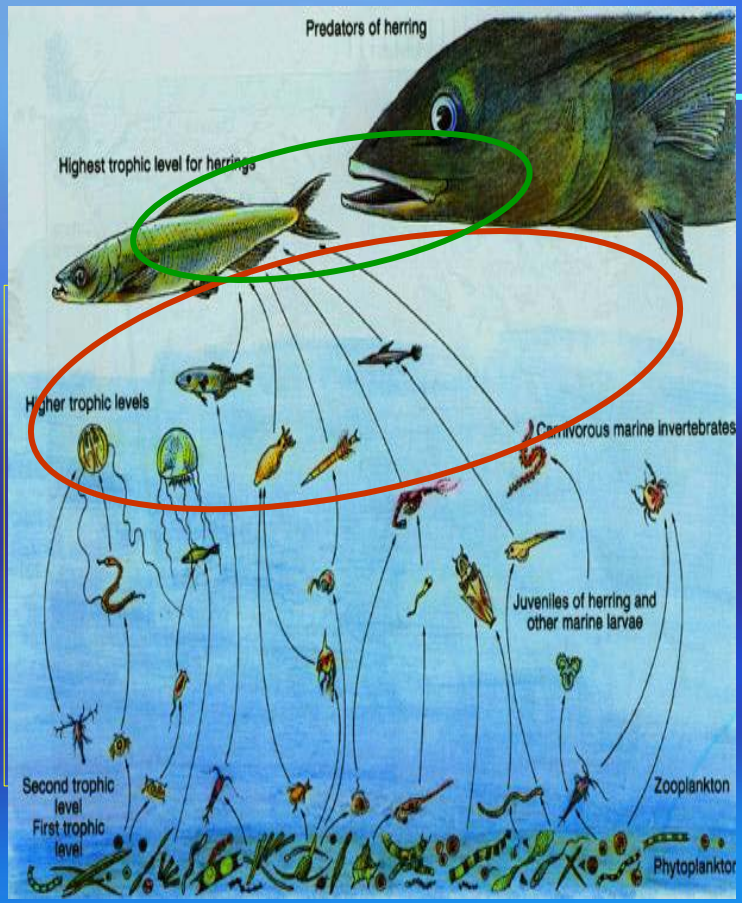
heavy exploitation area;

changing states of ecosystem resources.

# *Management implication*

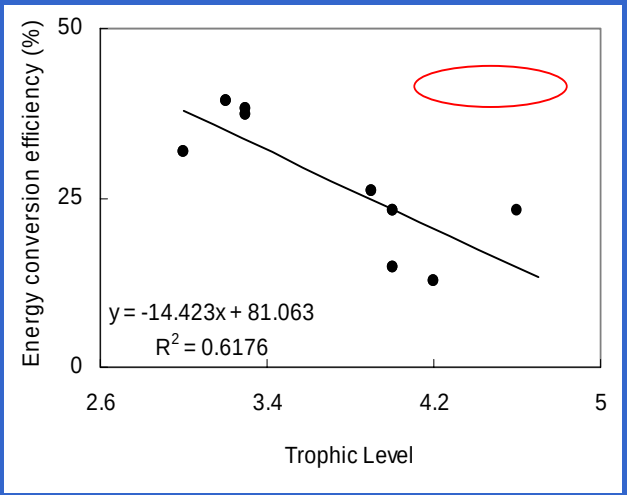
- Reversing the decline of their marine ecosystems,
- Restoring the depleted biomass of food fish for sustaining growing populations of coastal communities, and
- Conserving the integrity of highly fluctuating ecosystems to ensure continued benefits for future generations.

# One inference:




**Negative relationship between ecological conversion efficiency and trophic level in the Yellow Sea ecosystem (Tang et al., xxxx).**

**Low TL with higher ECE; high TL with lower ECE. (High ECE: 0.32-0.43; medium ECE: 0.23-0.26; low ECE: 0.13-0.15)**




**LH: rednose anchovy, sand lance, gizzard shad and finespot goby.**

**HL: red eabream, black porgy, tiger puffer, fat greenling and halfbeak.**

**??: black rockfish, chub mackerel .**

**ecological efficiency in the same trophic levels would increase.**

**It may be an adaptive response to a forced ecosystem !**

**It may be a new challenge to fisheries management also !**