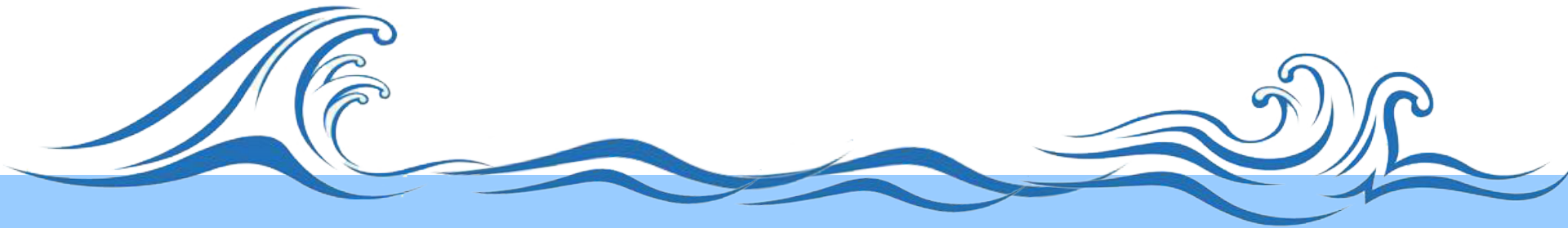


# Challenges and Opportunities of Taiwan Far Sea Fisheries



**Kwang-Ming Liu**

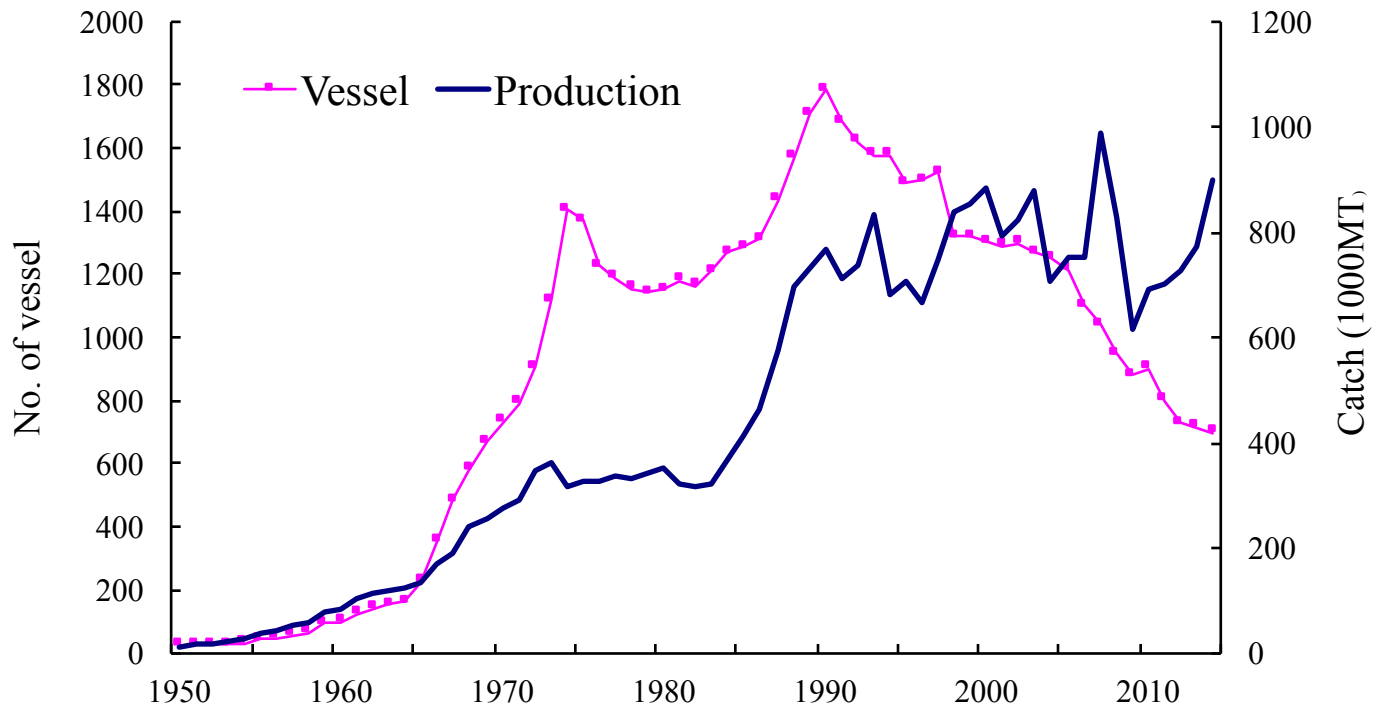
Institute of Marine Affairs and Resources Management  
National Taiwan Ocean University

# Introduction

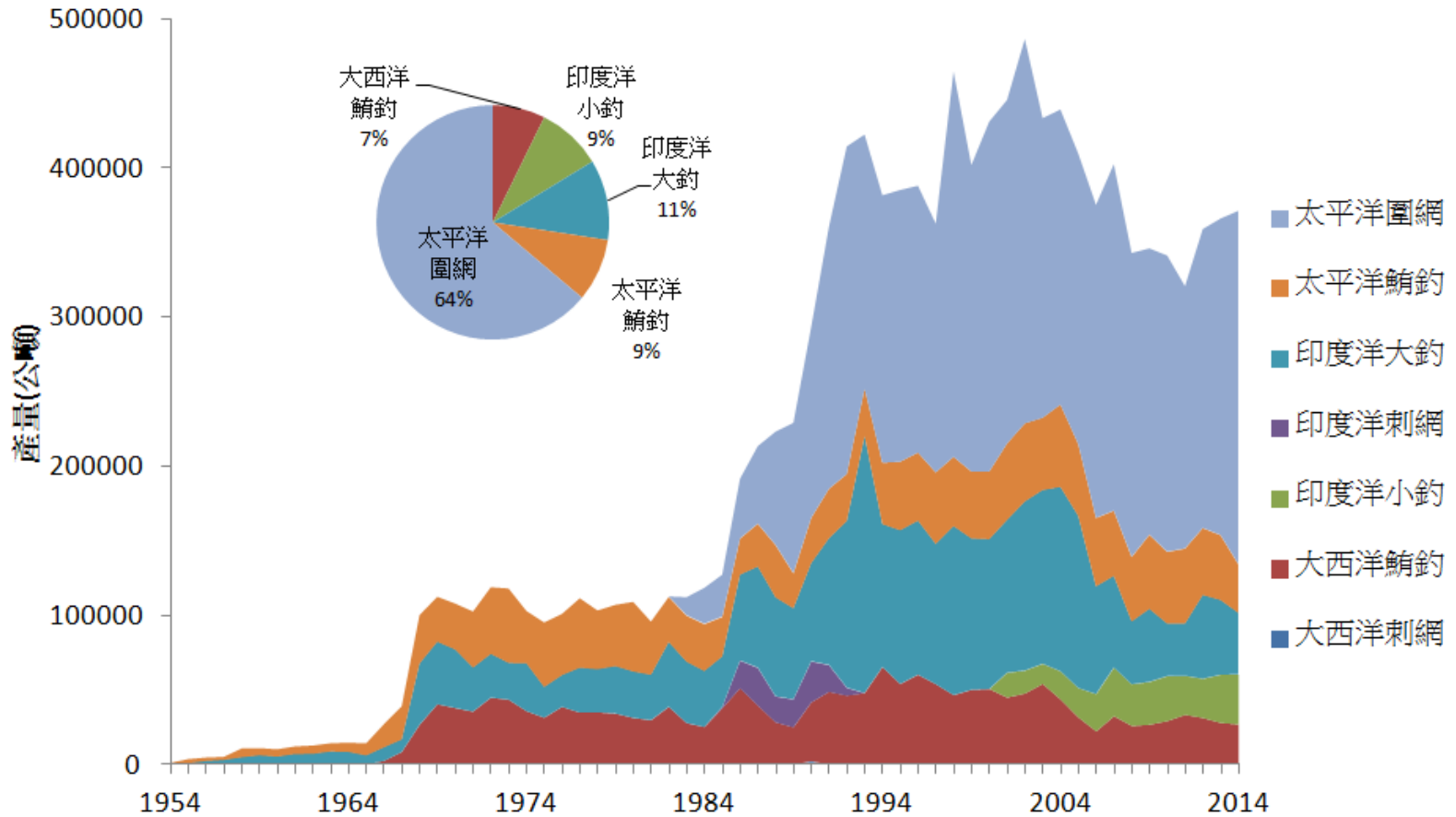


- Taiwan has one of the largest far sea fishing fleets in the world. The major fisheries include tuna longline, purse seiner, squid jigging and saury.
- The catch fluctuated with a decreasing trend.
- To ensure sea food security and sustainability of fisheries resources, Taiwan should take actions to conquer the challenges.

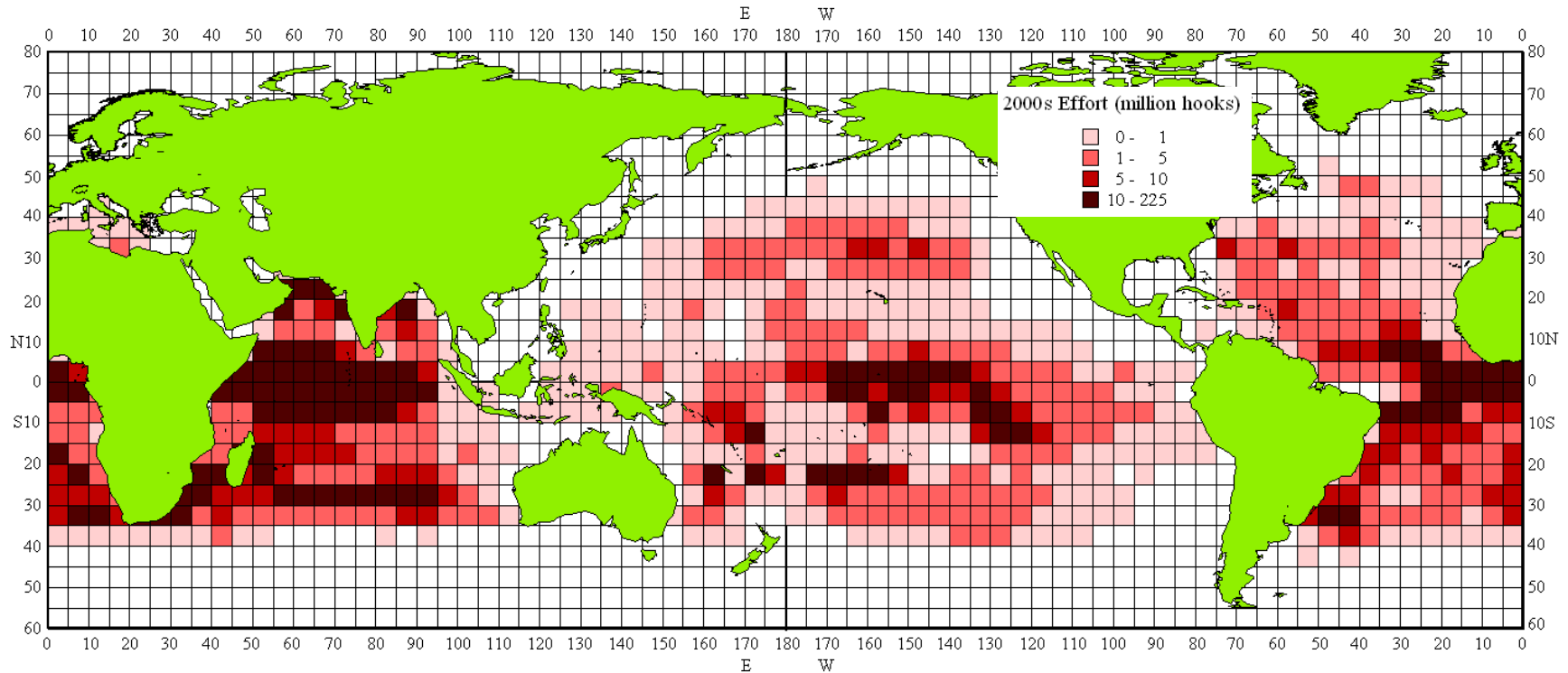
# Taiwan far sea fisheries production and effort



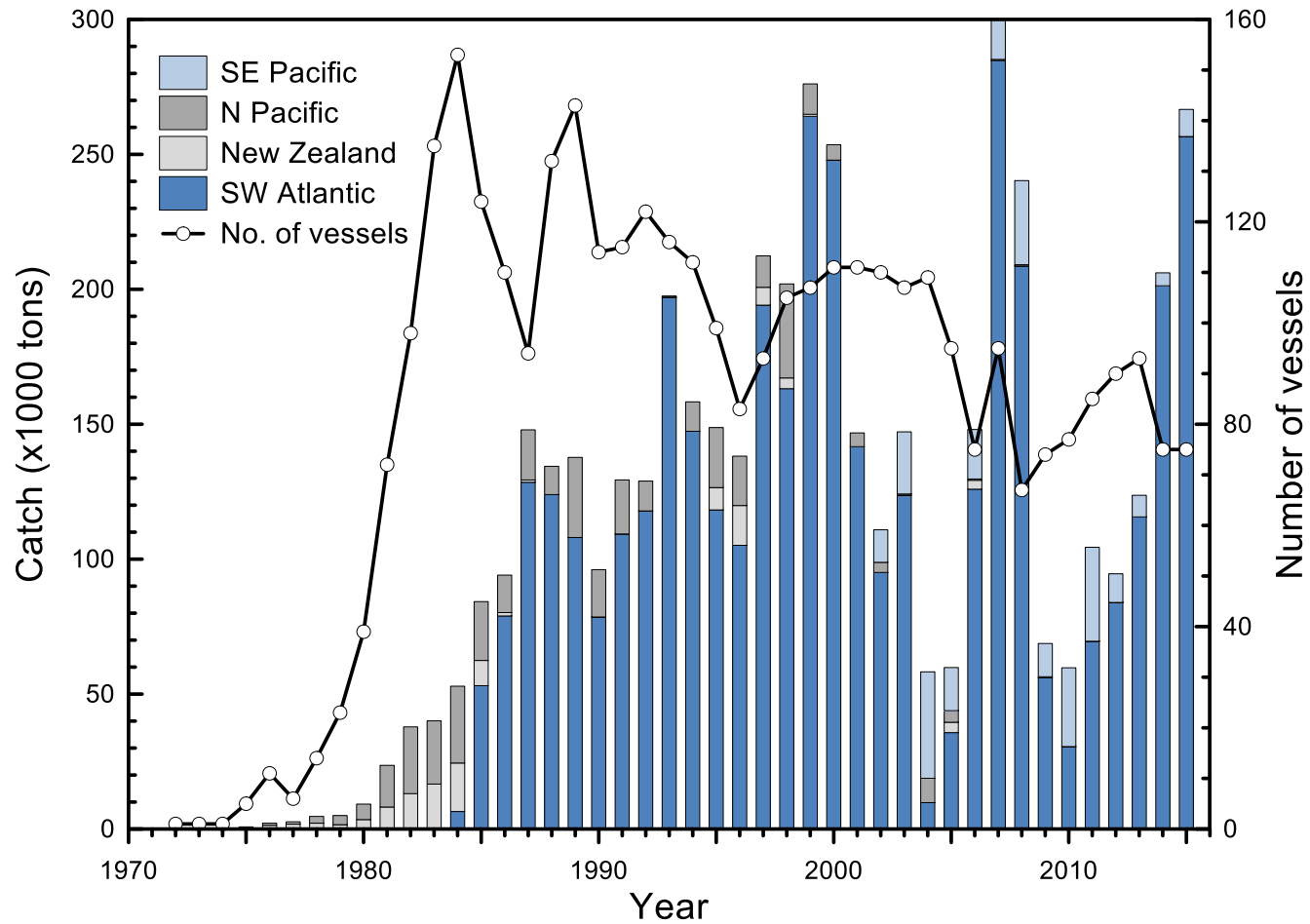
# Taiwan tuna fisheries production



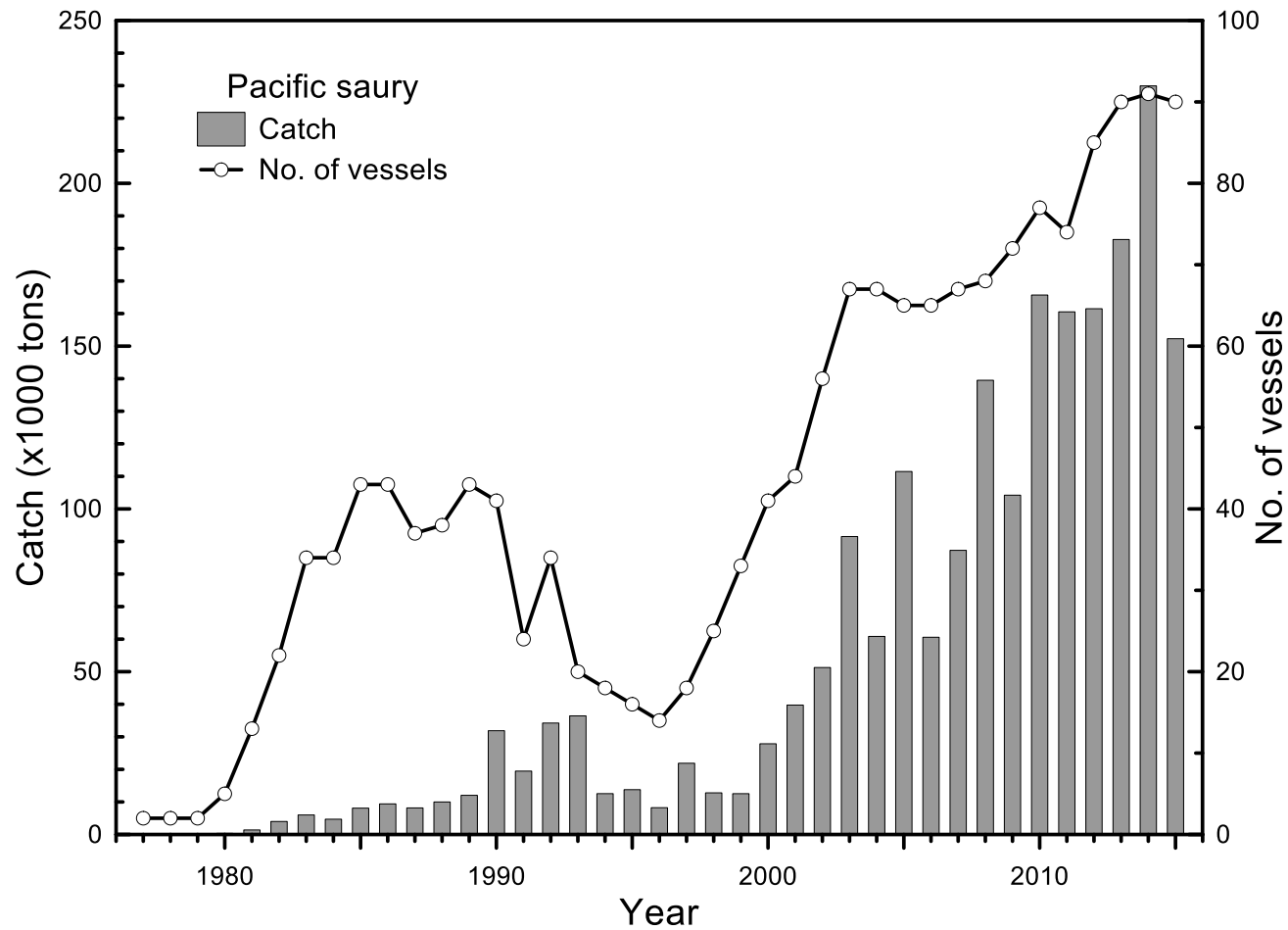
# Fishing grounds of Taiwan far sea tuna longline fisheries



# Taiwan squid fisheries production and effort



# Taiwan saury fishery catch and effort



# Two major challenges of fisheries



## Food security

- Pre-harvest: overfishing, overfished, IUU, bycatch
- Post-harvest: processing, fully utilization

## Food safety

- traceability, eco-labelling, sustainable sea food



# Why fish population vary?



## Biological factors

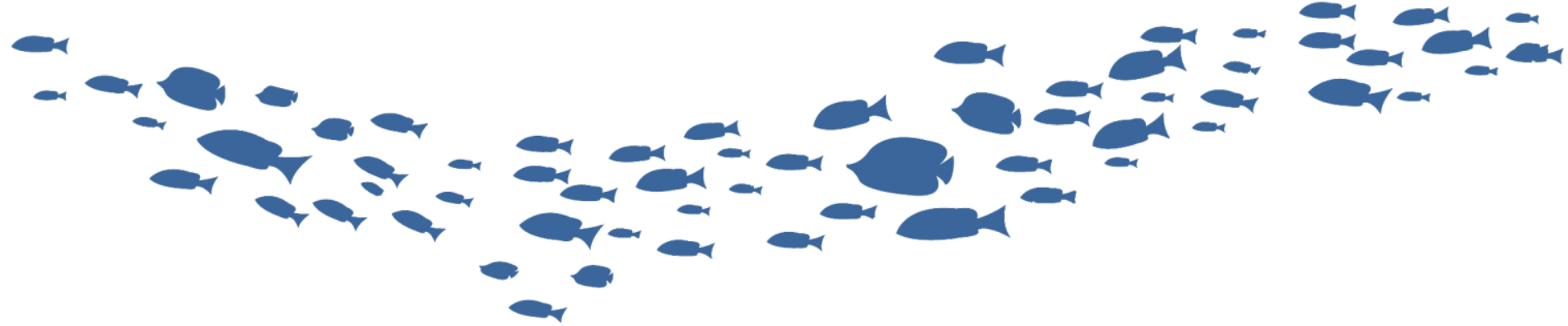
- Predator-prey, competition, disease

## Environmental factors

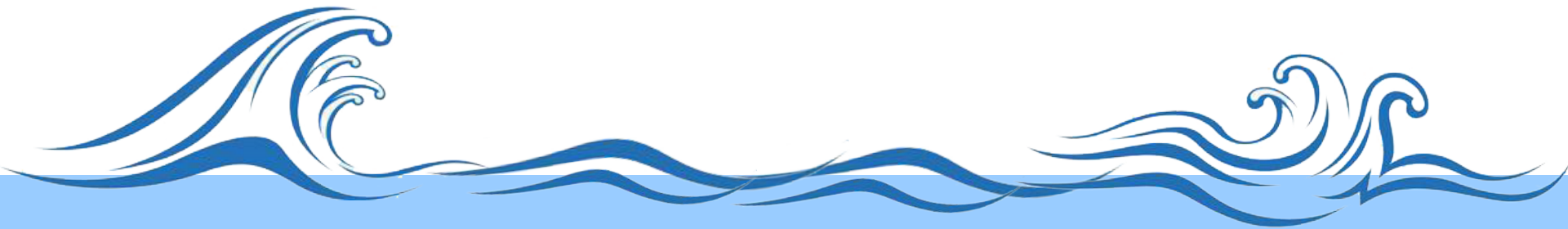
- Climate change: extreme weather, El Niño, La Niña, physical, chemical factors, habitat loss

## Anthropological factors

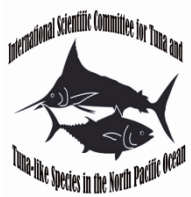
- house waste, industrial waste, power plants, overfishing, illegal fishing etc.



- **Regional Fisheries Management Organizations (RFMOs)**
- **Asia-Pacific Economic Cooperation (APEC)**



# Regional Fisheries Management Organizations (RFMOs)



International Scientific Committee



Western and Central Pacific Fisheries Commission



South Pacific Regional Fisheries Management Organization



North Pacific Fisheries Commission

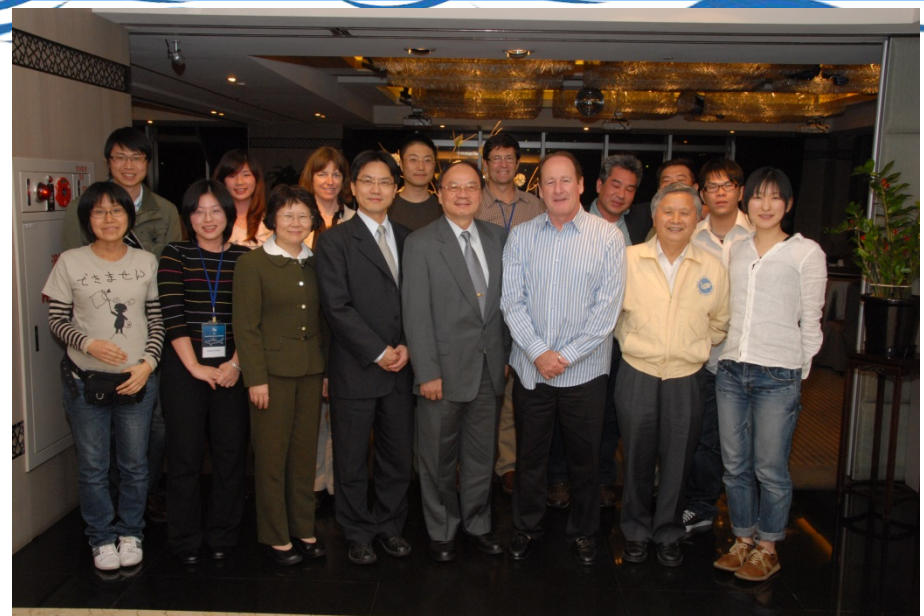
Inter-American Tropical Tuna Commission

# International Scientific Committee (ISC)

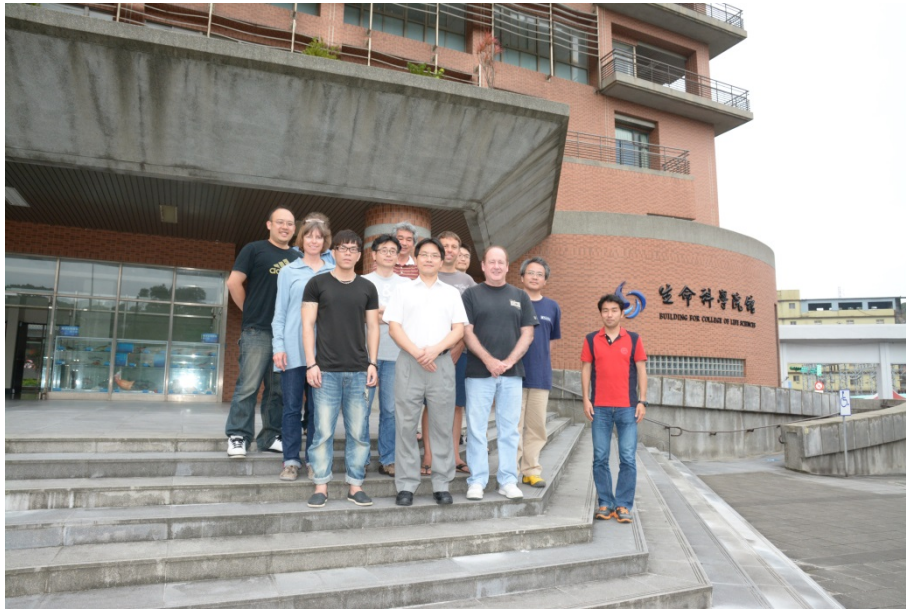


- The ISC was established in 1995 for the purpose of enhancing scientific research and cooperation for conservation and rational utilization of tuna and tuna-like species (HMS) of the North Pacific Ocean.
  - ☑ Albacore: Overfishing is not experiencing and no overfished
  - ☑ Pacific Bluefin Tuna: Recruitment is low and SSB slightly increased
  - ☑ Billfish: the stock status is OK except striped marlin
  - ☑ Sharks: blue shark stock is in healthy condition

# ISC Shark Working Group Meeting, Keelung City, Taiwan, 2011



# ISC Shark Working Group Meeting, Keelung City, Taiwan, 2016



# Western and Central Pacific Fisheries Commission (WCPFC)



- The WCPFC Convention seeks to address problems from **unregulated fishing, over-capitalization, excessive fleet capacity, vessel re-flagging to escape controls, insufficiently selective gear, unreliable databases and insufficient multilateral cooperation** in respect to conservation and management of highly migratory fish stocks.
- A **legally binding** framework for the participation of fishing entities in the Commission

# Joint Tuna RFMO Bycatch Working Group Harmonization of Longline Observer Data Fields Technical Specialist Meeting of Technical Specialist Meeting, Keelung City, Taiwan, 2015





# South Pacific Regional Fisheries Management Organization (SPRFMO)




- The SPRFMO aims to conserve and sustainable use of the fishery resources in the high seas of the South Pacific. Currently, the main commercial resources fished in the SPRFMO Area are **Jack mackerel and jumbo flying squid** in the Southeast Pacific and, to a much lesser degree, **deep-sea species** often associated with seamounts in the Southwest Pacific.

# North Pacific Fisheries Commission

- NPFC focuses on the species in the high seas but not included in other RFMOs such as **saury and squids**. Taiwan has 90 fishing vessels operating in the NPFC waters seasonally. The total saury catch was 230 thousand tons in 2014. The latest meeting allocated the **TAC of saury** for Japan, Taiwan, and China based on the historical catch records.

# Taiwan's Actions in response to RFMOs' management measures



- Far sea fishing act, increase violation fine
- Release national plan of actions – IUU, Sea birds, sharks
- Increase port inspection (domestic/foreign ports)
- Increase observer coverage rate
- Enhance Log book collection, e-logbook
- Shark bycatch issue (fin naturally attached regulation or no retention for several species)
- Sea bird, sea turtle mitigation measures
- Combating IUU fishing (using VMS and AIS)

# Recommendations



- Provide fisheries and observed data for stock assessment
- Actively participate species stock assessment meeting
- Collaborate with other members in RFMOs on scientific research issues
- Consider the optimum size of fishing vessels



## Asia-Pacific Economic Cooperation (APEC)

- ▶ Oceans and Fisheries Working Group (OFWG)
- ▶ Roundtable Meeting

# Oceans and Fisheries Working Group

- APEC's Oceans and Fisheries Working Group (OFWG) was formed in 2011, following a decision to merge the former Marine Resource Conservation and Fisheries working groups (in operation since 1990 and 1991, respectively).



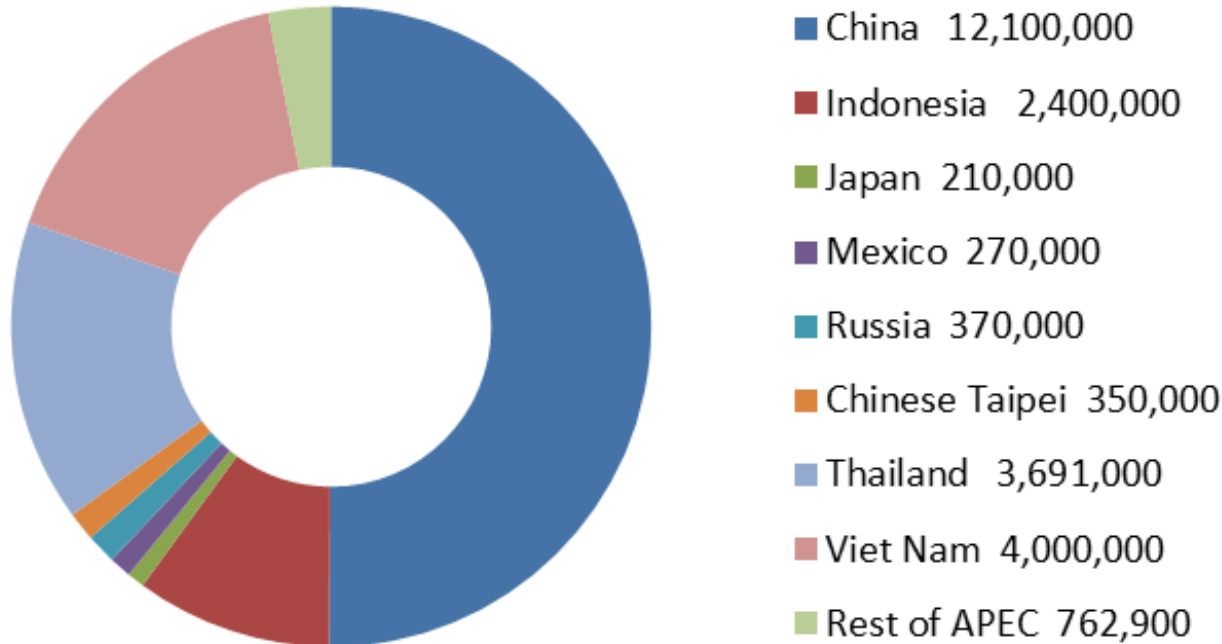
# Oceans and Fisheries Working Group



- APEC's focus on oceans and fisheries issues is natural, given that APEC members account for over **80 percent of global aquaculture production** and more than **65 percent of the world's capture fisheries**. The consumption of fishery products in the APEC region is 65 percent higher than the world average. Moreover, APEC economies represent **nine of the top ten fish producers** in the world.

# Oceans and Fisheries Working Group

## Employment Size of the Fisheries Sector by APEC Economies



Source: Employment figures based on data from The State of the World Fisheries and Aquaculture (SOFIA) by the UN Food and Agriculture Organization (FAO).



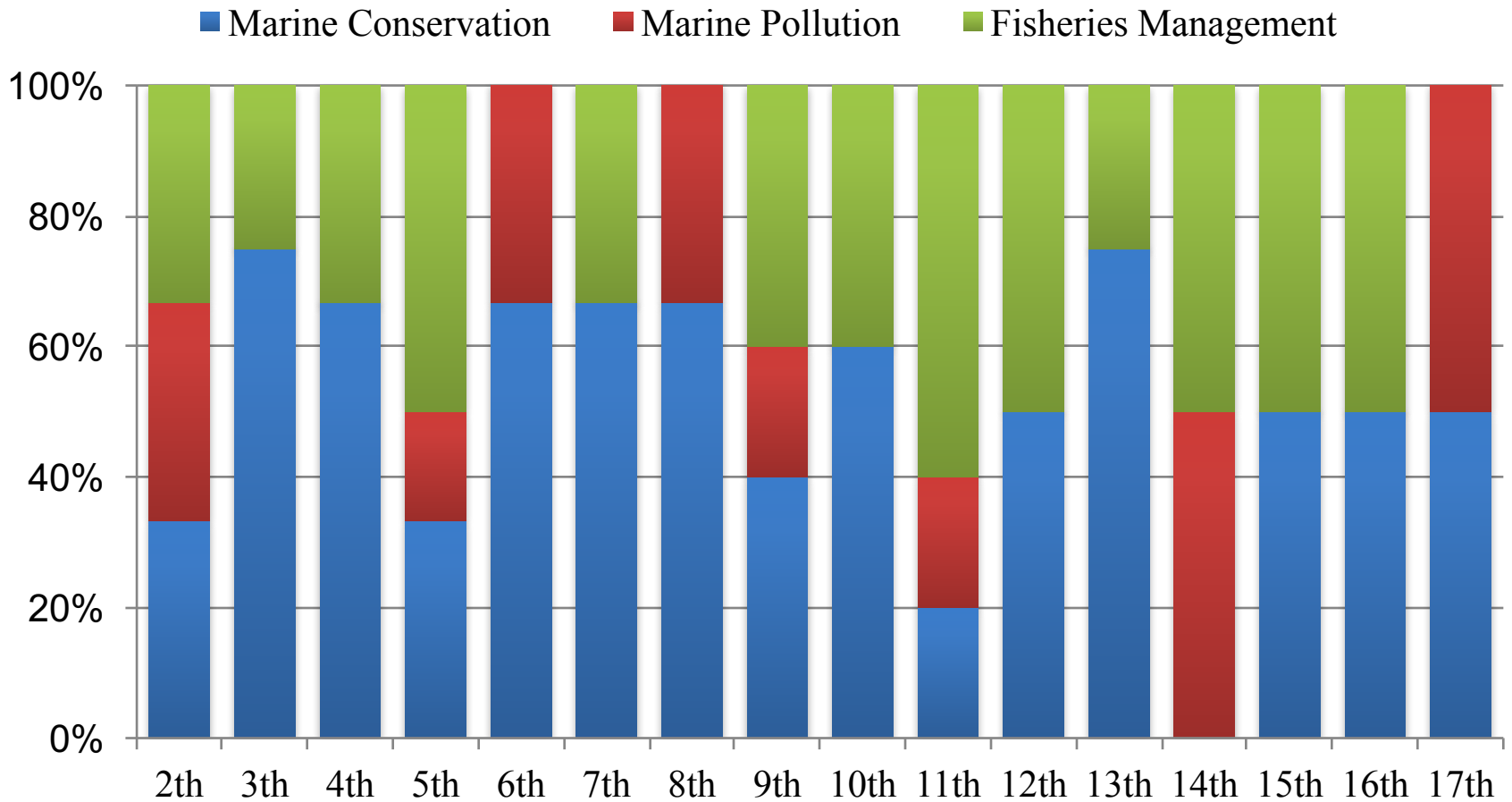
# 7 priorities in strategy plan

1. Free and Open Trade and Investment
2. Sustainable Development and Protection of the Marine Environment
3. Food Security
4. Climate Change
5. Natural disaster/Emergency Preparedness/Disaster Resilience
6. Blue Economy
7. OFWG Operations

# APEC Roundtable Meeting



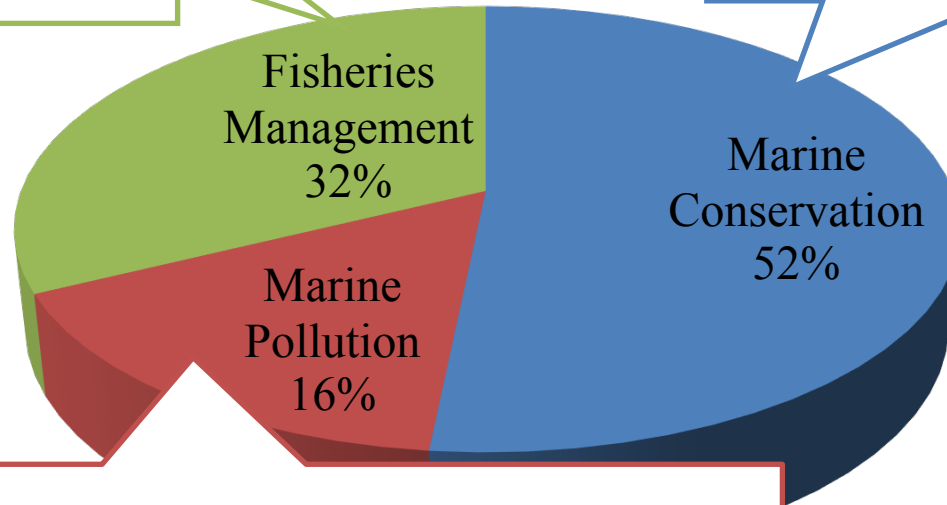
- A platform to share experience and promote collaboration on marine conservation issues.
- Taiwan has hosted the APEC Roundtable Meeting on the Involvement of the Business/Private Sector in the Sustainability of the Marine Environment for **17 years** and the 18<sup>th</sup> APEC Roundtable Meeting will be held in October in Taipei. **Food Security and Marine Resources**, and **Environmental Protection** will be discussed.



**The percentages of three major themes in the APEC Roundtable Meeting**

- Eel conservation and management
- Climate change and fisheries
- Shark conservation and management

- Impact of climate change
- Marine conservation
- MPA planning and management



- Marine pollution control
- Oil spill response and management
- Marine debris management

## Major themes of APEC Roundtable meetings and their related topics

# Fisheries Management



## **Shark:**

- Promote responsible and sustainable use of sharks.
- Promote collaboration on shark research, sharing data and information in regional or sub regional level.
- Conduct capacity building such as species identification, data collection and enforcement, especially for CITES enlisted species.
- Conduct more studies on shark's migration such as using satellite tracking.

## **Eel:**

- Promote responsible and sustainable utilization of eel resources through effective management measures.
- Conduct in-depth study on life history traits and spatio-temporal habitat use of anguillid eels using techniques such as mark and capture, otolith microchemistry for effective management purpose.

# Marine Conservation



## Blue Economy:

- Develop research and innovative technologies to improve responsible aquaculture and capture fisheries to maintain marine ecosystem balance.
- Achieve the requirement of eco-labeling on sea food products.

## Climate Change:

- Share adaptation strategies and measures in the coastal areas to cope with global warming and climate change to improve the capability to respond to natural disasters.
- Reduce the carbon footprints of marine fisheries and aquaculture operations.
- Prepare guidelines for mainstreaming climate change impact in integrated coastal management (ICM) in their economy.

## Wetland Conservation:

- Cooperate among member economies to ensure the sustainability of the wetland ecosystem and its endangered and migratory species.

# Marine Pollution



## Marine Debris:

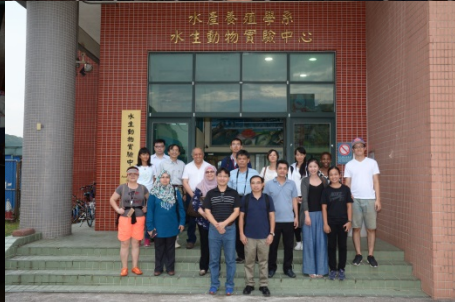
- Investigate the sources, occurrence, and distribution of macroplastics and microplastics along the coast lines and mechanisms of transport, as well as its economic and social impacts.
- Promote and share the science, technology, knowledge and experience on reduction, recycling, and reuse of the waste.

## Clean waters:

- Increase frequency of coastal cleanup activities by involving private sectors, industries, governments, NGOs and local communities.
- Incorporate education on marine environmental issues in schools or communities.







# Recommendations

## Government

- Educate fishermen the latest conservation and management regulations

## Fishermen

- Follow the international and domestic management measures

## General public

- Promote stakeholders' including public, private and NGOs involvement

**Thank you**

