

An overview of 2025 Chinese survey by fishery research vessel "Song Hang" in the NPFC convention area



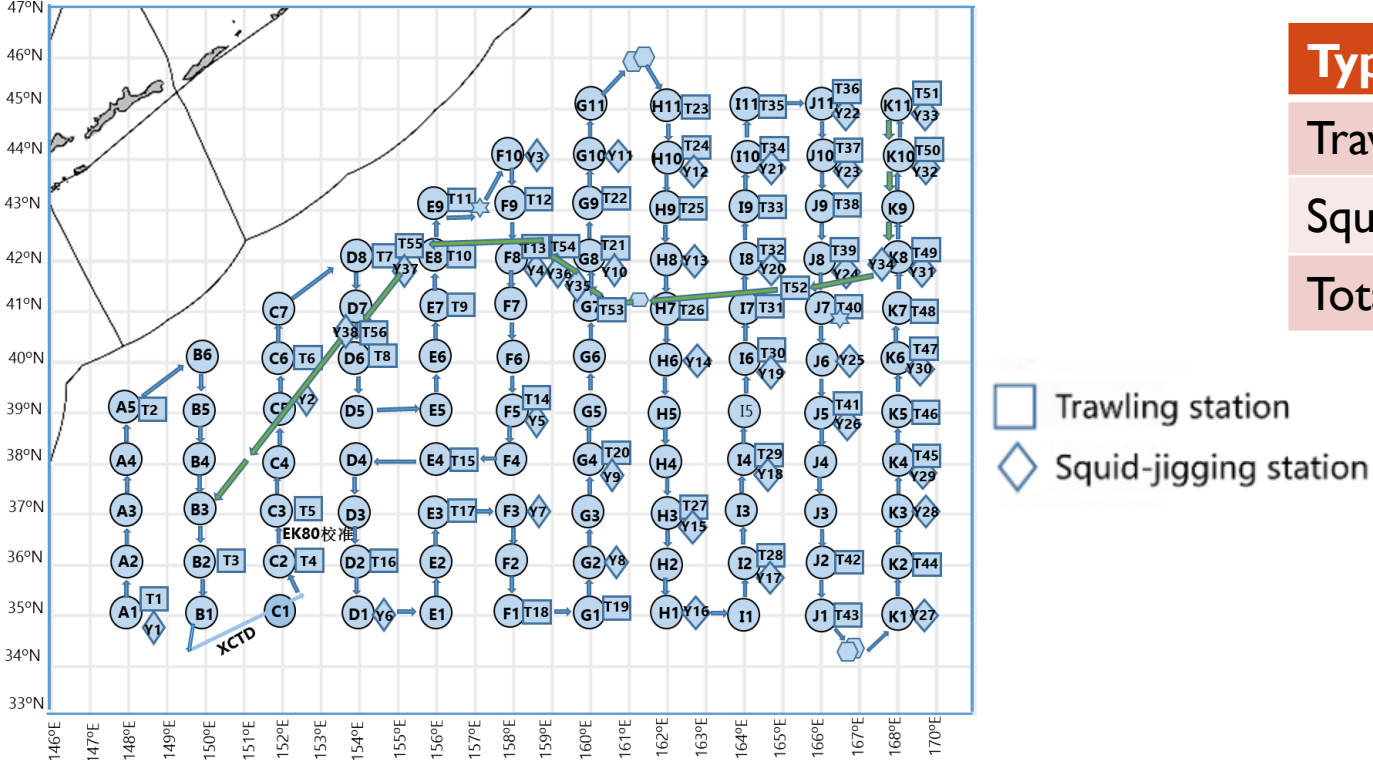
Yufei Zhou, Qiuyun Ma, Bilin Liu,
Siquan Tian, Libin Dai

College of Marine Living Resource Sciences
and Management,
Shanghai Ocean University,
China



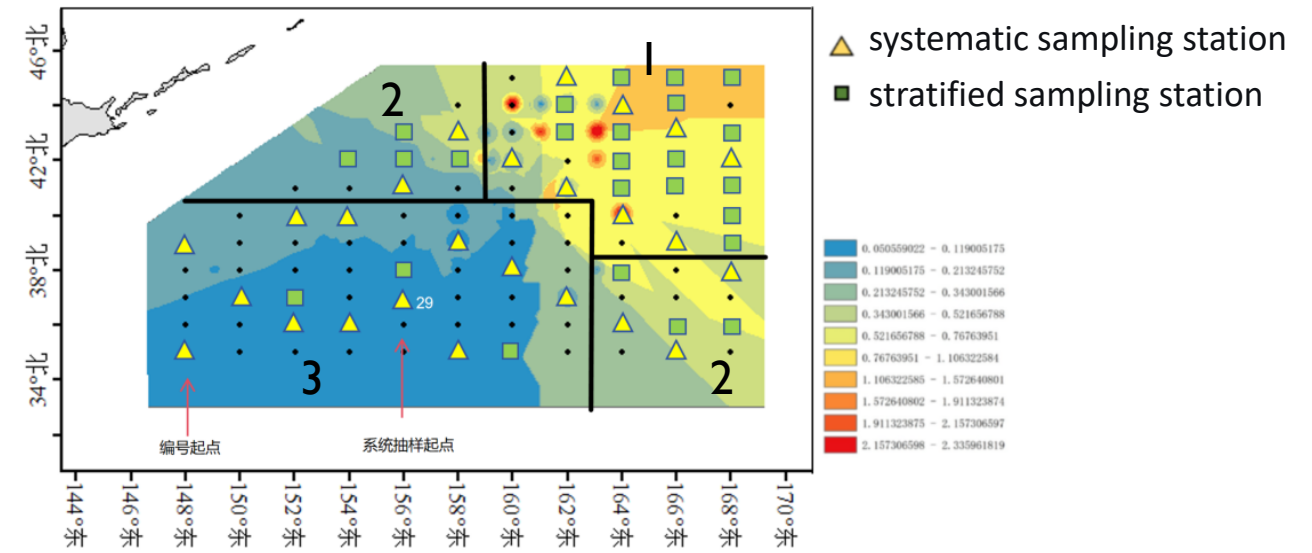
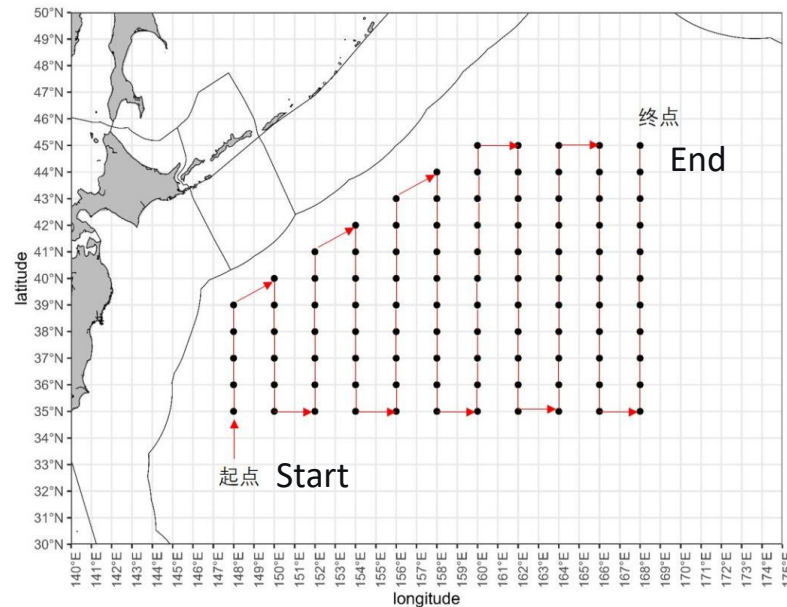
Survey station in 2025

- Two months from 12th June to 17th August
- 148° E~168° E, 35° N~45° N



Type of Stations	Number
Trawling	56
Squid Jigging	38
Total	94

Survey station in 2025



- Systematic sampling: The **25 systematic stations** were selected at an interval of 4 from a circularly ordered set of 100 potential stations, starting from a randomly chosen point.
- Stratified sampling: Building on the 2021-2024 resource maps that showed consistently higher biomass in the northeast, the waters were stratified into three layers to maximize between-layer differences, with **4, 9, and 18 stations** allocated to the third (lowest biomass), second, and first (highest biomass) layers, respectively.

Survey design

- Fishery Resources Trawling
 - 1 hour, with 3 kn
 - The footrope operated at depths of 30 to 85 m, with the vertical opening of the net being approximately 30 m.
- Squid Jigging
 - 5 hours
- Egg-larva-juvenile Trawling
- Zooplankton & Phytoplankton Vertical Trawling
- Environmental Factors Monitoring
 - Temperature, salinity, transparency, dissolved oxygen, pH, nitrogen, etc.
- Acoustic Survey
- Environment-DNA
- etc.



Number of Species

Year	Fishes			Cephalopoda		
	Family	Genus	Species	Family	Genus	Species
2021	12	16	18	6	9	11
2022	12	13	17	8	13	14
2023	23	36	46	6	12	12
2024	29	52	55	6	10	11
2025	23	32	39	5	10	11



Total 50 species in the mid-trawling and squid jigging

Dominant species



- Chub mackerel
- Blue mackerel
- Japanese sardine
- Bigfin lanternfish

Mid-trawling
survey

- Neon flying squid
- Purpleback flying squid

Squid jigging
survey



Common economic fishes



日本鯖 *Scomber japonicus*



澳洲鯖 *Scomber australasicus*

Rare fishes



石川粗鳍鱼 *Tradhypterus ishikawae*



泰勒灯鱼 *Tarletonbeania taylori*



叉尾深海带鱼 *Benthodesmus tenuis*



粗鳞灯笼鱼 *Myctophum asperum*

Cephalopoda



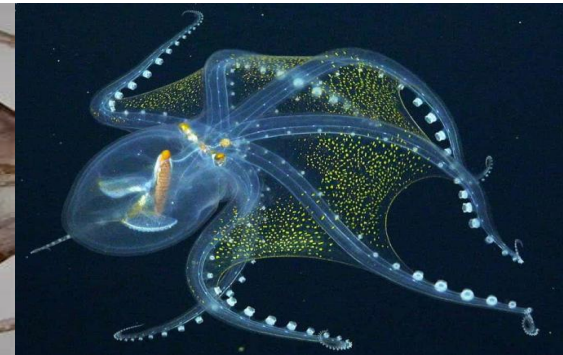
发光柔鱼 *Eucleoteuthis luminosa*



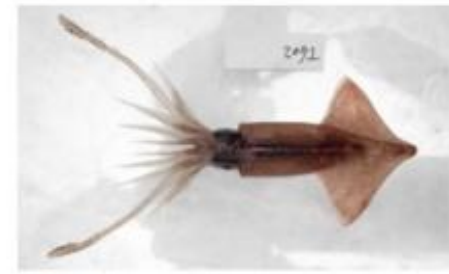
萤乌贼 *Watasenia scintillans*



日本爪乌贼 *Onychoteuthis borealijaponicus*



玻璃蛸 *Vitreledonella richardi*

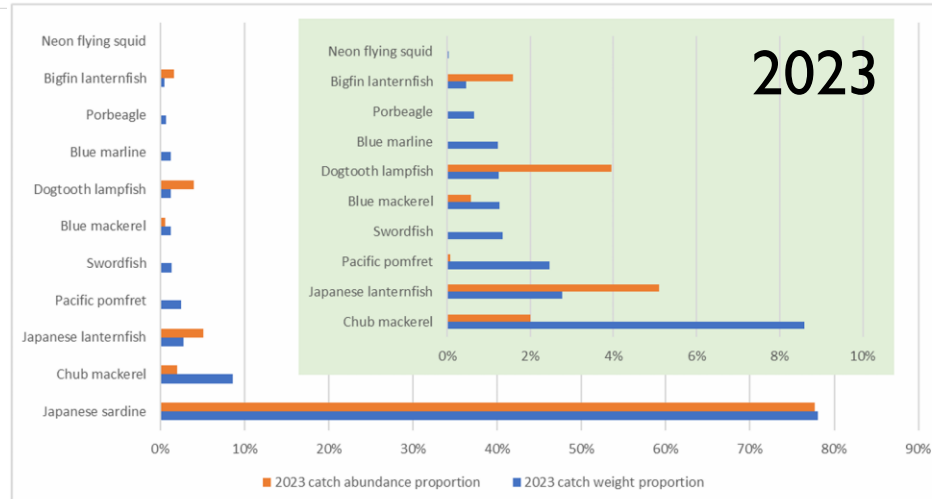
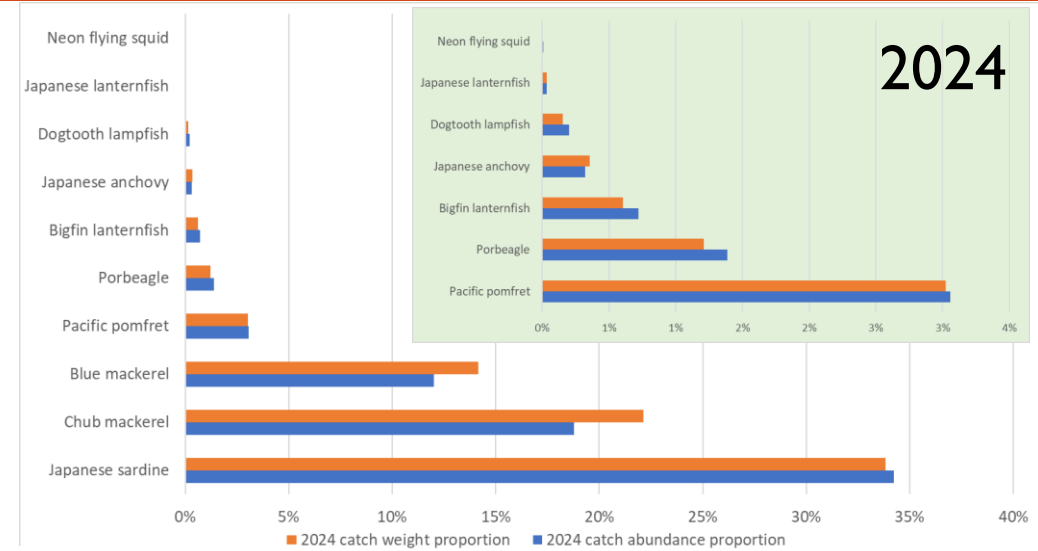
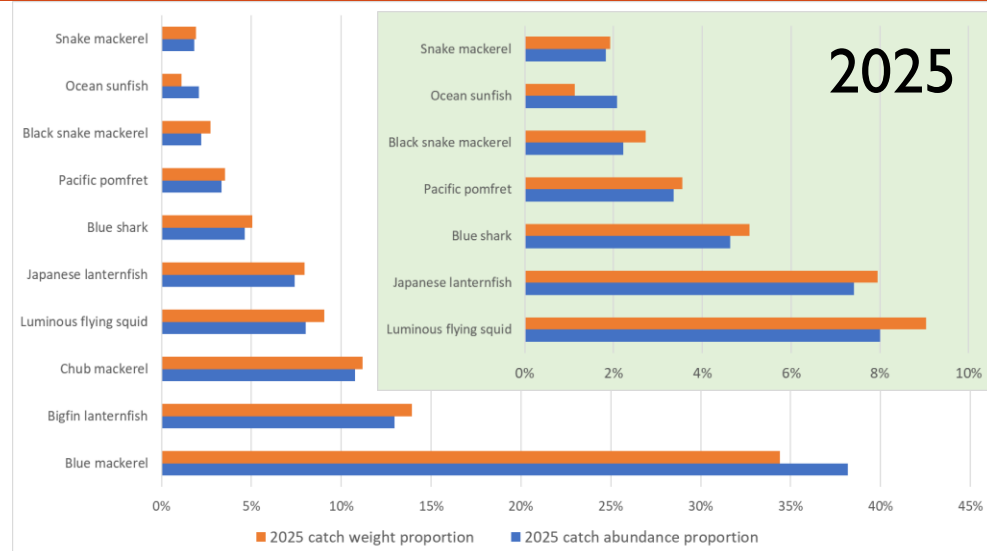


隆突爪乌贼 *Onychoteuthis compacta*



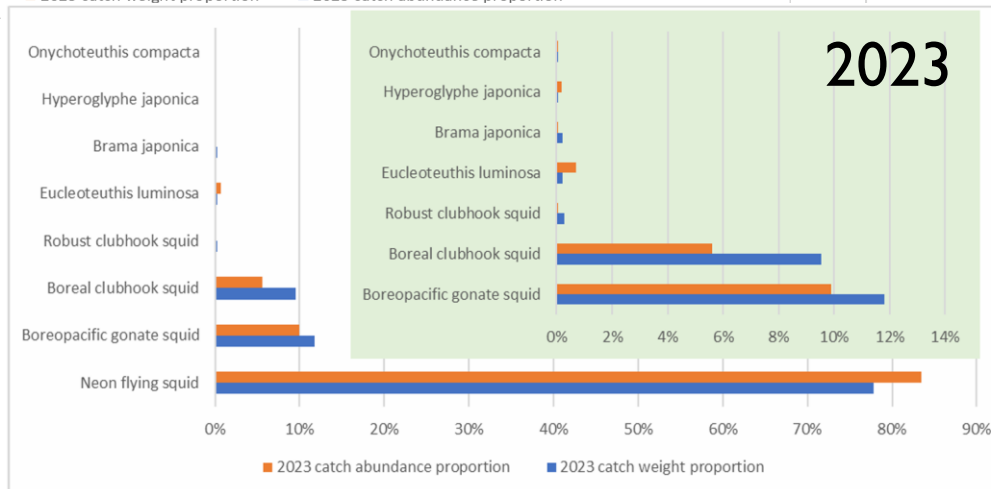
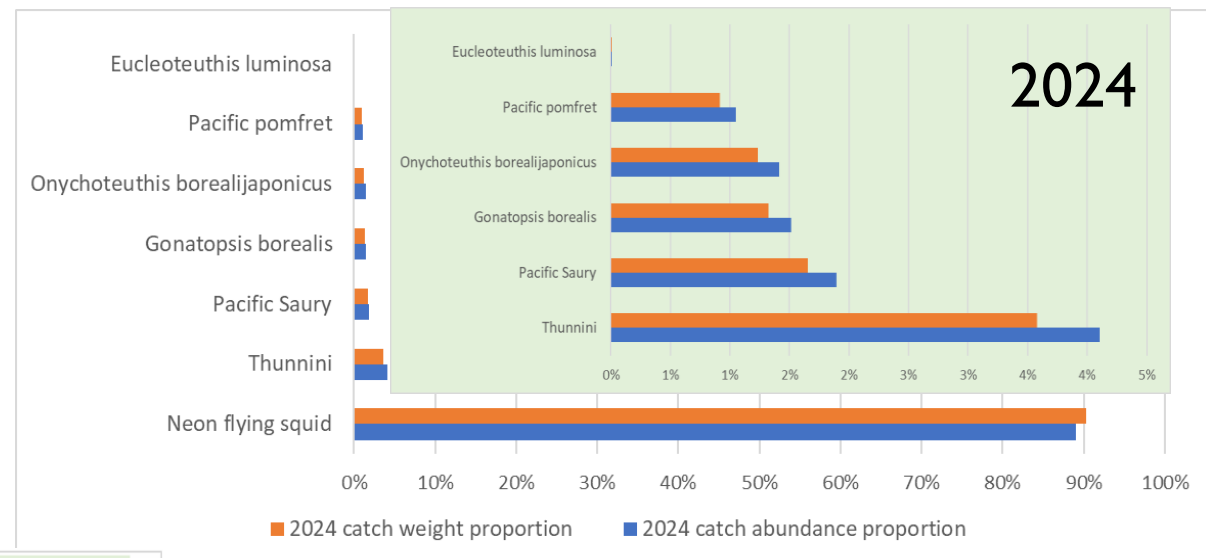
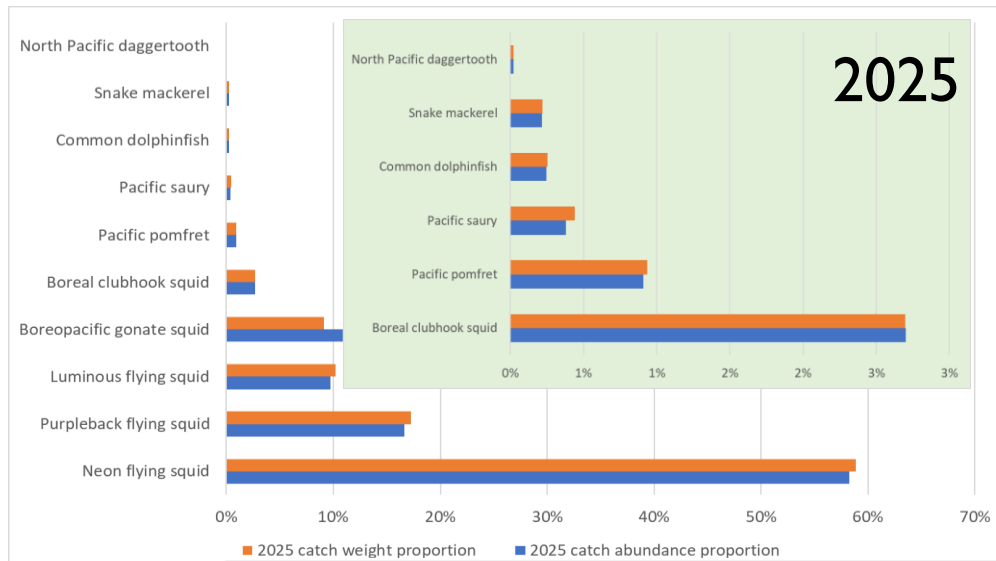
北方拟贍乌贼 *Gonatopsis borealis*

Catch Weight and Abundance Proportions in Trawling Survey



The proportion of Blue mackerel in the catch has increased, while that of Japanese sardine has declined.

Catch Weight and Abundance Proportions in Squid Jigging Survey

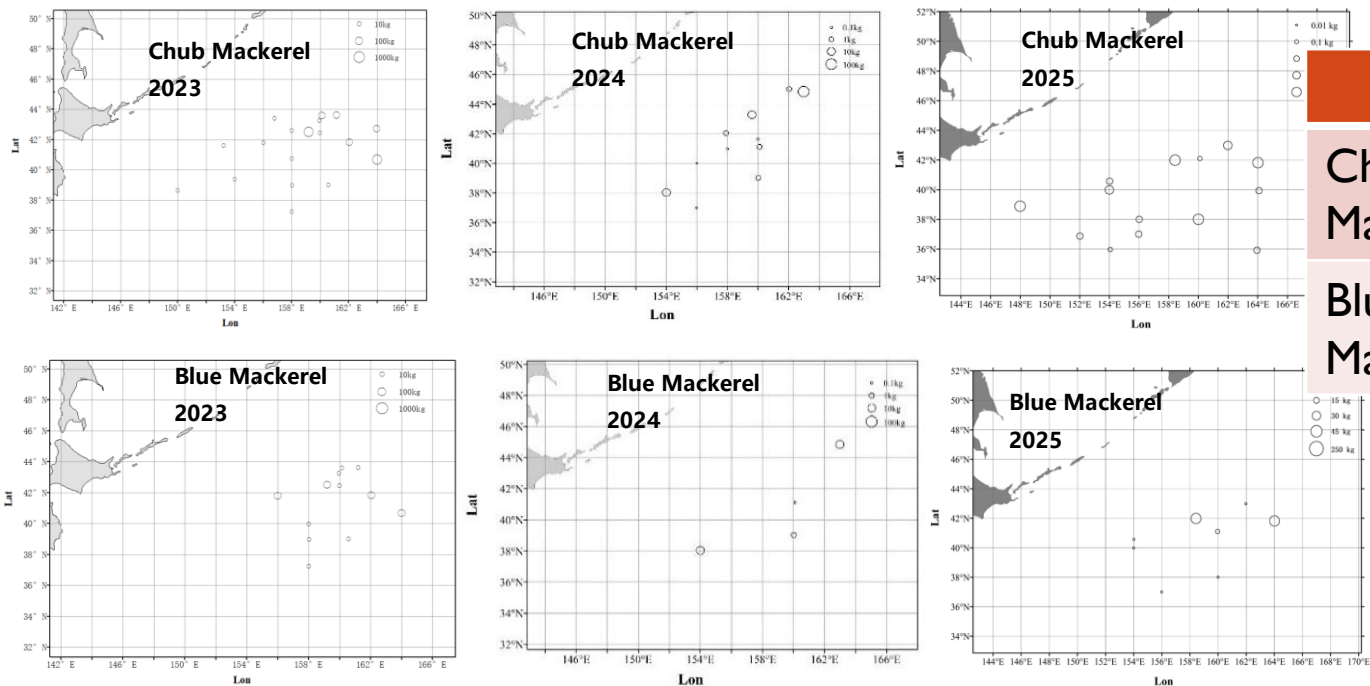


Over the three years, Neon flying squid consistently accounted for the largest proportion. In 2025, Purpleback flying squid ranked second in the catch.

Catch spatial distribution



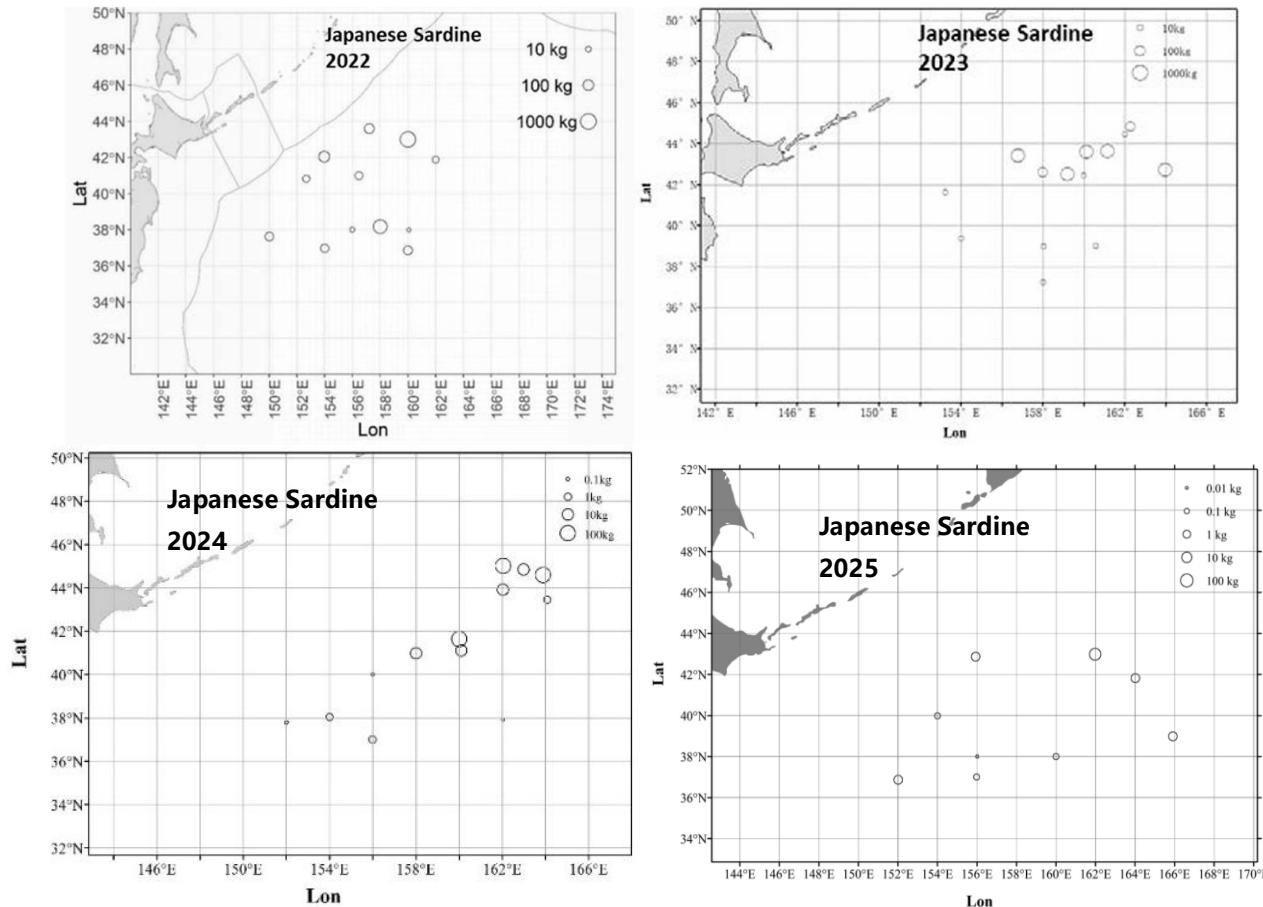
- Mackerels relative density used swept-area method (kg/km²)



	2021	2022	2023	2024	2025
Chub Mackerel	1163.96	136.18	89.83	65.63	20.29
Blue Mackerel			22.38	121.82	117.86

Species identification has not been conducted for 2021 and 2022.

Catch spatial distribution

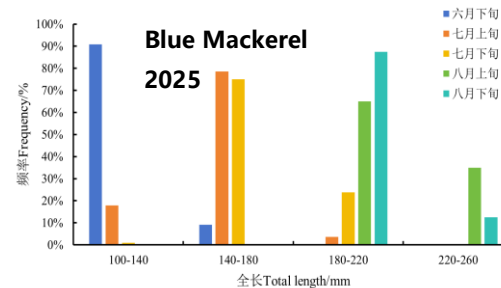
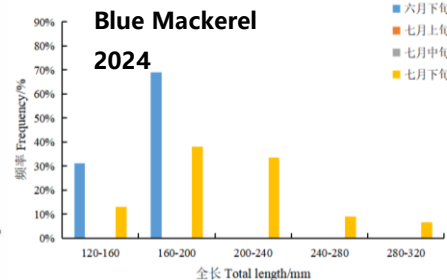
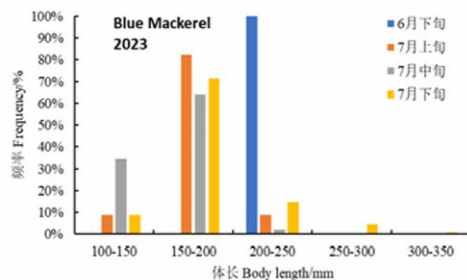
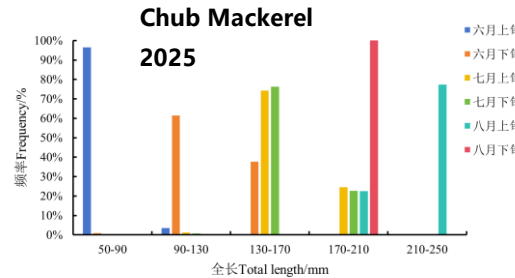
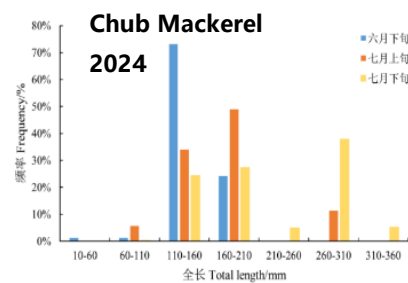
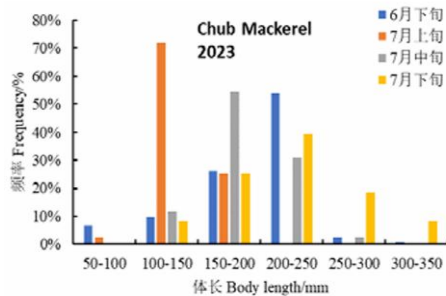
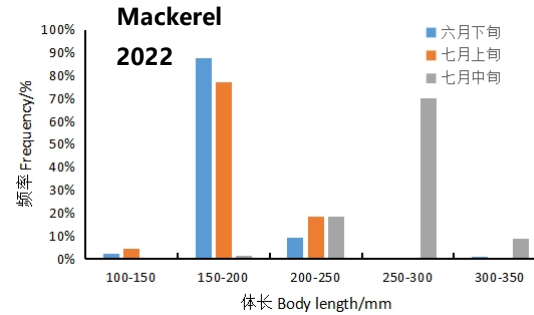
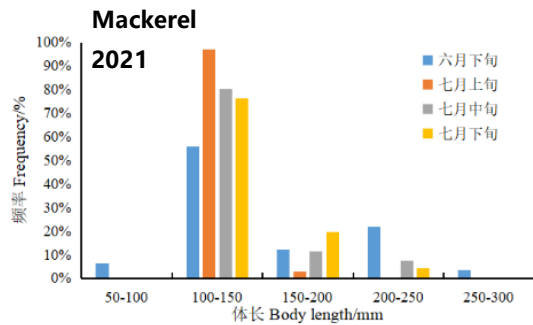


- Japanese sardine relative density used swept-area method (kg/km^2)

2021	2022	2023	2024	2025
1591.35	731.66	865.39	85.32	2.11

Whether mackerels or Japanese sardine, the catch of both declined between 2021 and 2025, and their spatial distribution became increasingly dispersed.

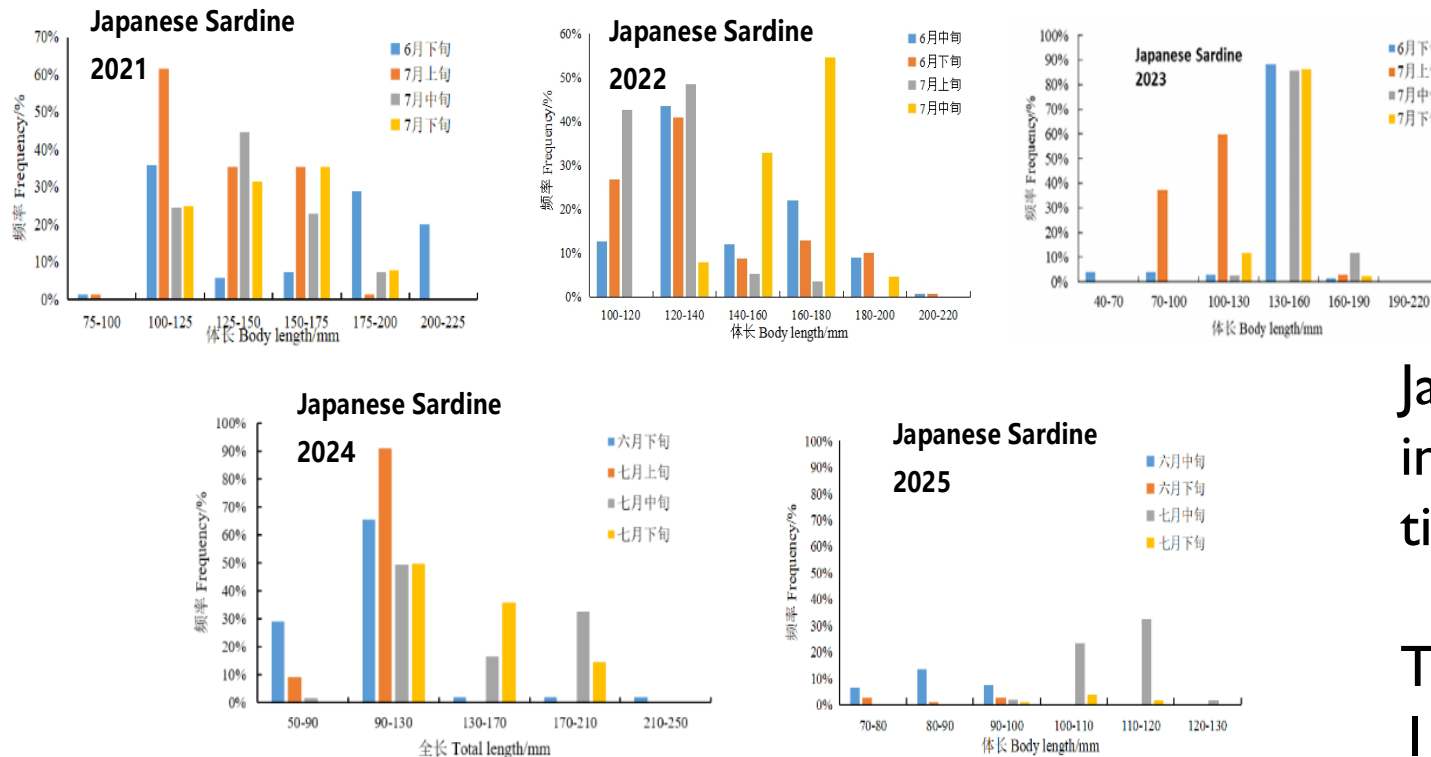
Length distribution of specimens



The population structure of Chub Mackerel shifted from initially being dominated by smaller individuals to progressively being dominated by medium-length groups from June to August.

The length distribution of Blue Mackerel remained relatively stable across all sampling periods.

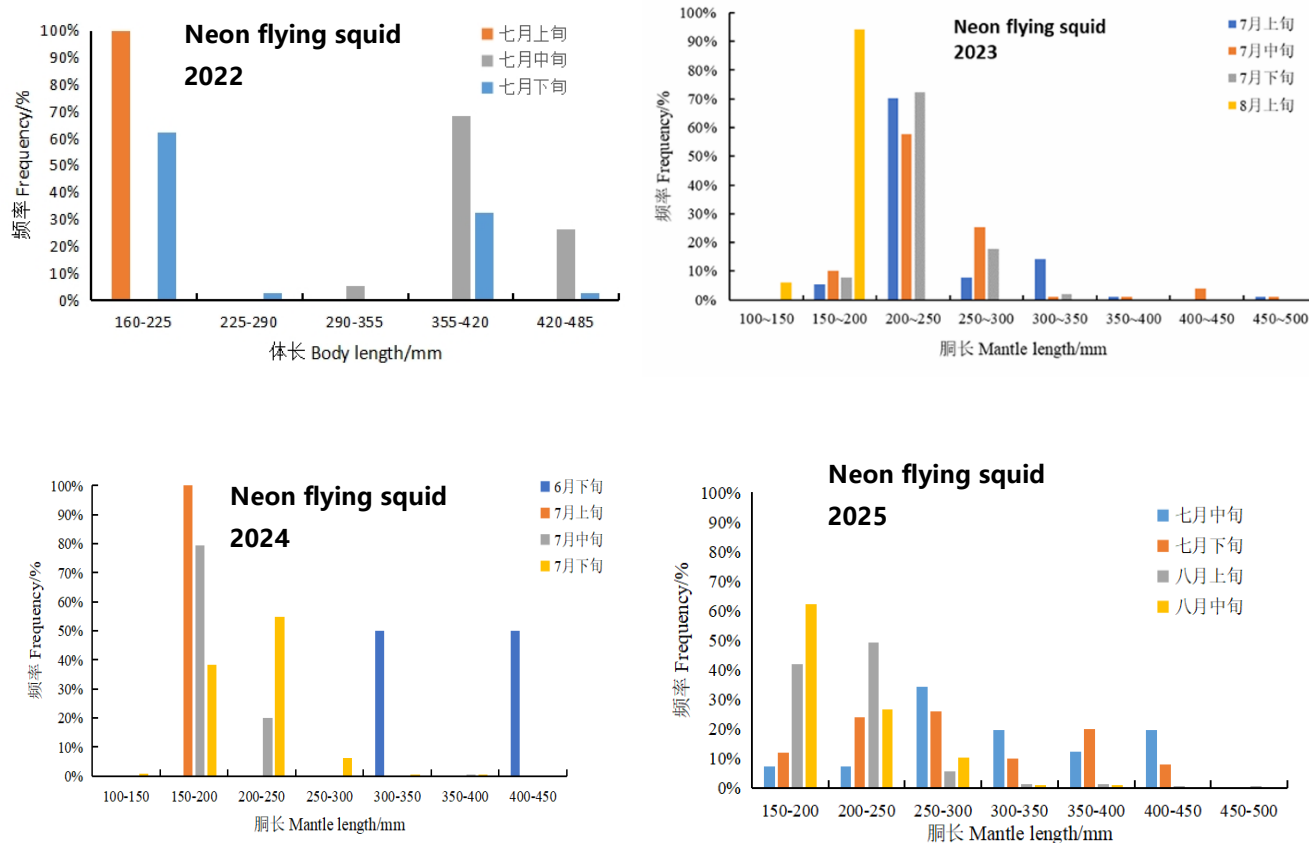
Length distribution of specimens



Japanese Sardine exhibited notable interannual variations in both sampling timing and population structure.

The dominant length group shifting from 75-160 mm in 2021 to a broader range of 90-250 mm by 2024.

Length distribution of specimens

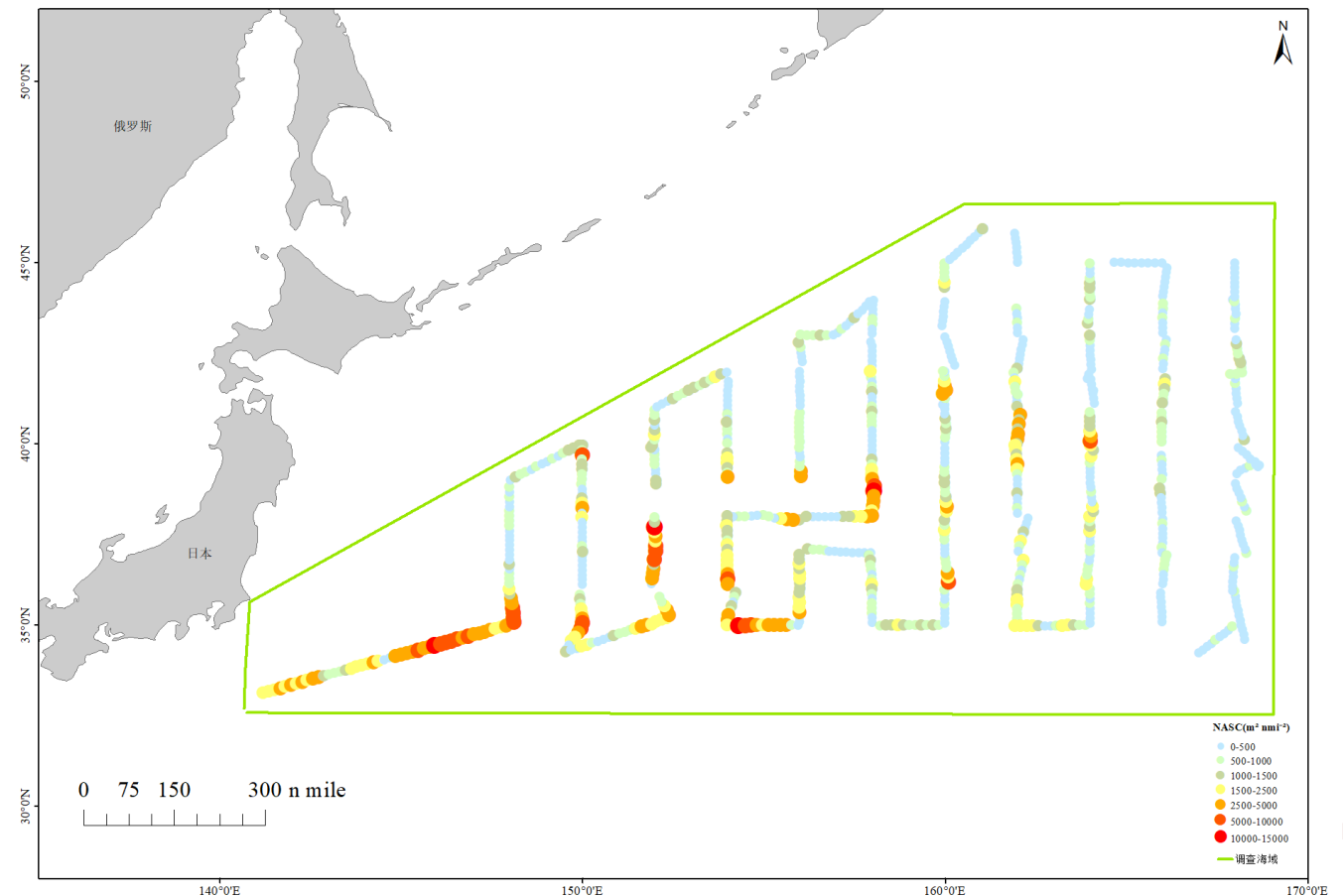


Neon flying squid consistently exhibited a mantle length concentrated between 150-300 mm across all years.

The spatial distribution of Nautical Area Scattering coefficient from the 2025 acoustic survey

■ Density

- Chub mackerel 20.99 t/nmi²
- Blue mackerel 82.59 t/nmi²
- Japanese sardine 1.37 t/nmi²

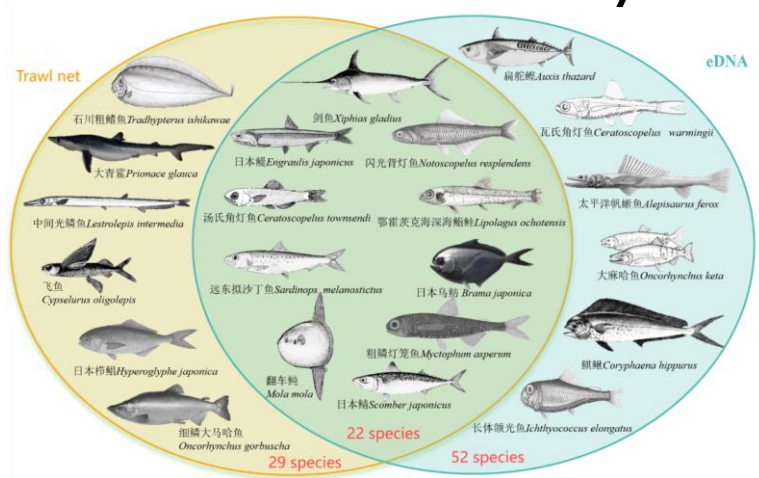


Summary

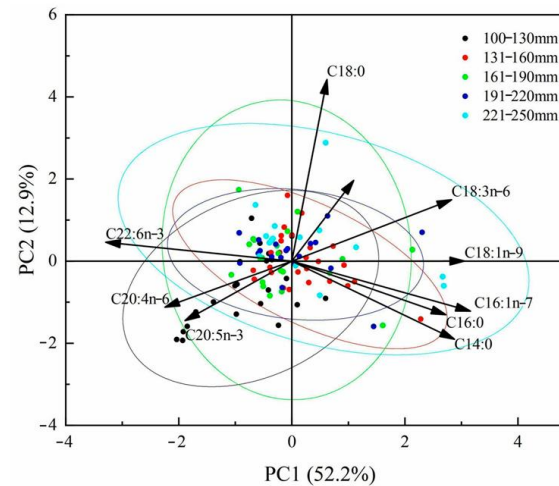
- Findings:
 - 50 species were measured, with the associated environmental factors with multiple approaches.
 - Chub mackerel, Blue mackerel, Japanese sardine and Neon flying squid, with high priority in NPFC.
 - Pacific saury and Japanese flying squid were seldom collected.
- The collected fundamental data and biological samples could support the study for the life history traits, population dynamics, spatial-temporal distribution, feeding ecology, interspecies relation, community ecology, the abiotic environment, etc.
- The findings presented here are part of an ongoing series of investigations conducted during scientific surveys in the Northwest Pacific.

Case studies

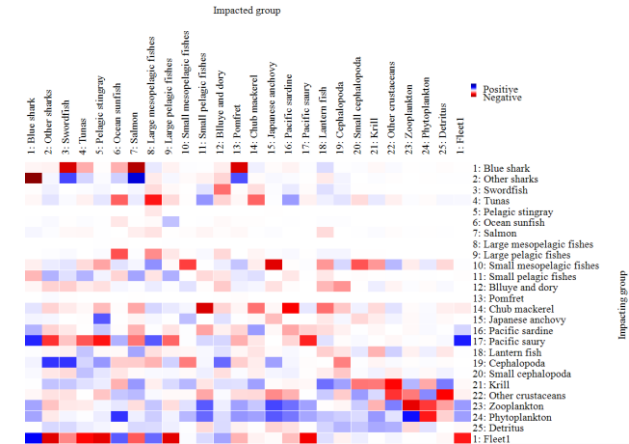
■ eDNA and Biodiversity



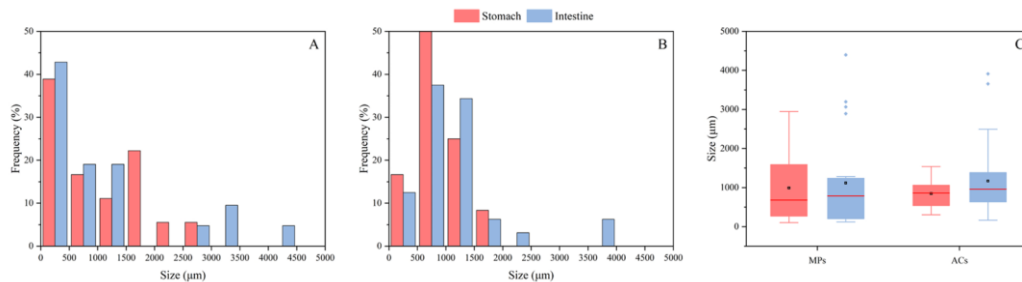
■ Feeding ecology



■ Ecosystem modelling



■ Microplastic



■ Abundance Index from trawling and acoustic

All relevant studies are ongoing.

Thank you!

