Non-Anadromous Species in the Subarctic North Pacific

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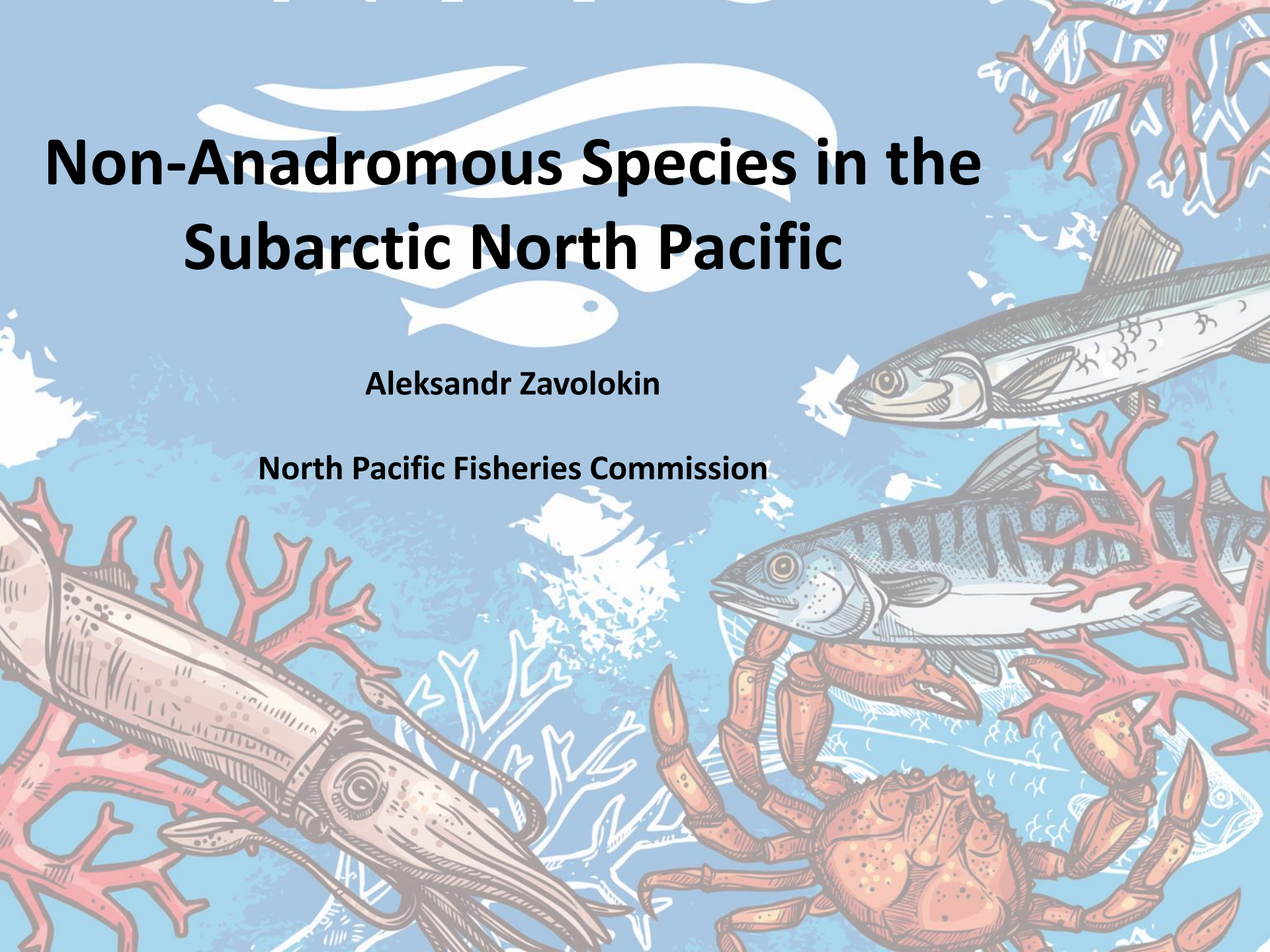
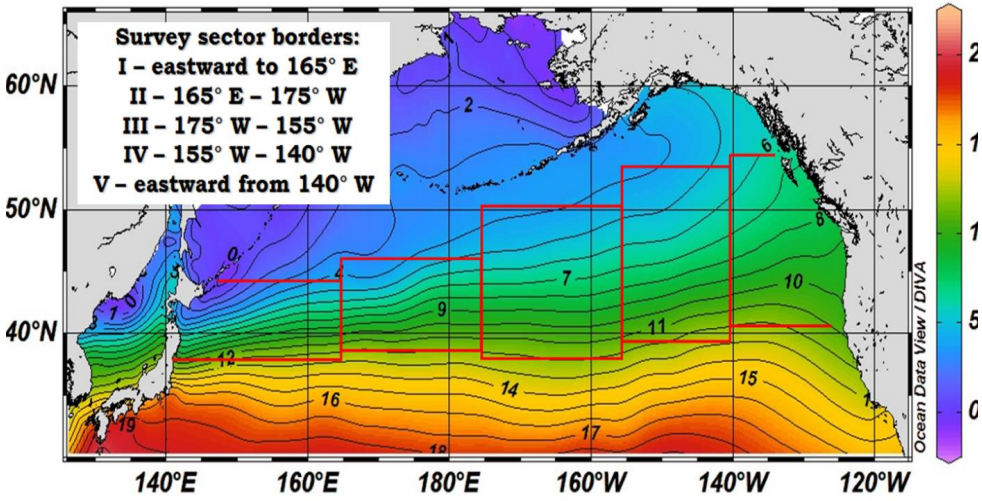
North Pacific Fisheries Commission

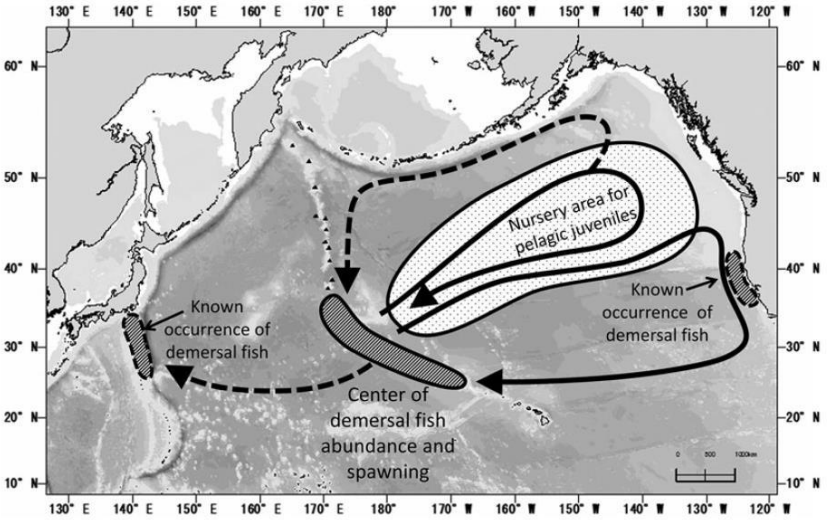


1. WHY

NORTH PACIFIC FISHERIES COMMISSION



Proposed survey area of the large-scale IYS expedition in the North Pacific



Hypothesized distribution and migration routes of North Pacific armorhead (Boehlert&Sasaki 1988)

The goal of this work is to review the past pelagic surveys conducted in the North Pacific with the emphasis on the period from January to March and find out what can be expected from participation of NPFC in the IYS survey.

OUTLINES

1. INTRODUCTION

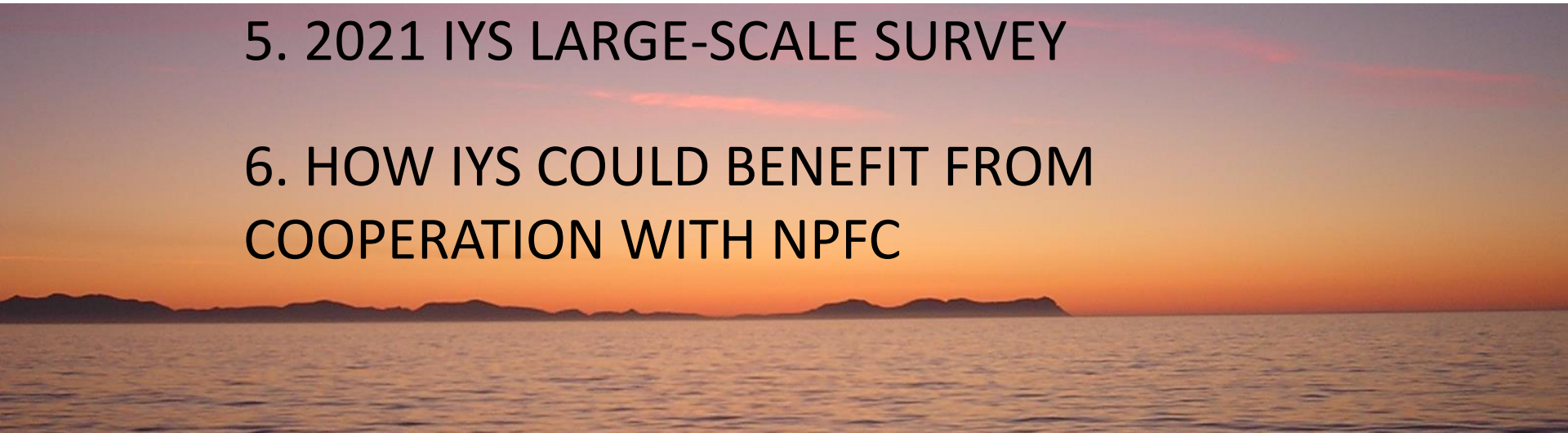
2. PAST RUSSIAN TRAWL PELAGIC SURVEYS

3. 2019 INTERNATIONAL EXPEDITION IN THE GULF OF ALASKA

4. PAST JAPANESE SURVEYS

5. 2021 IYS LARGE-SCALE SURVEY

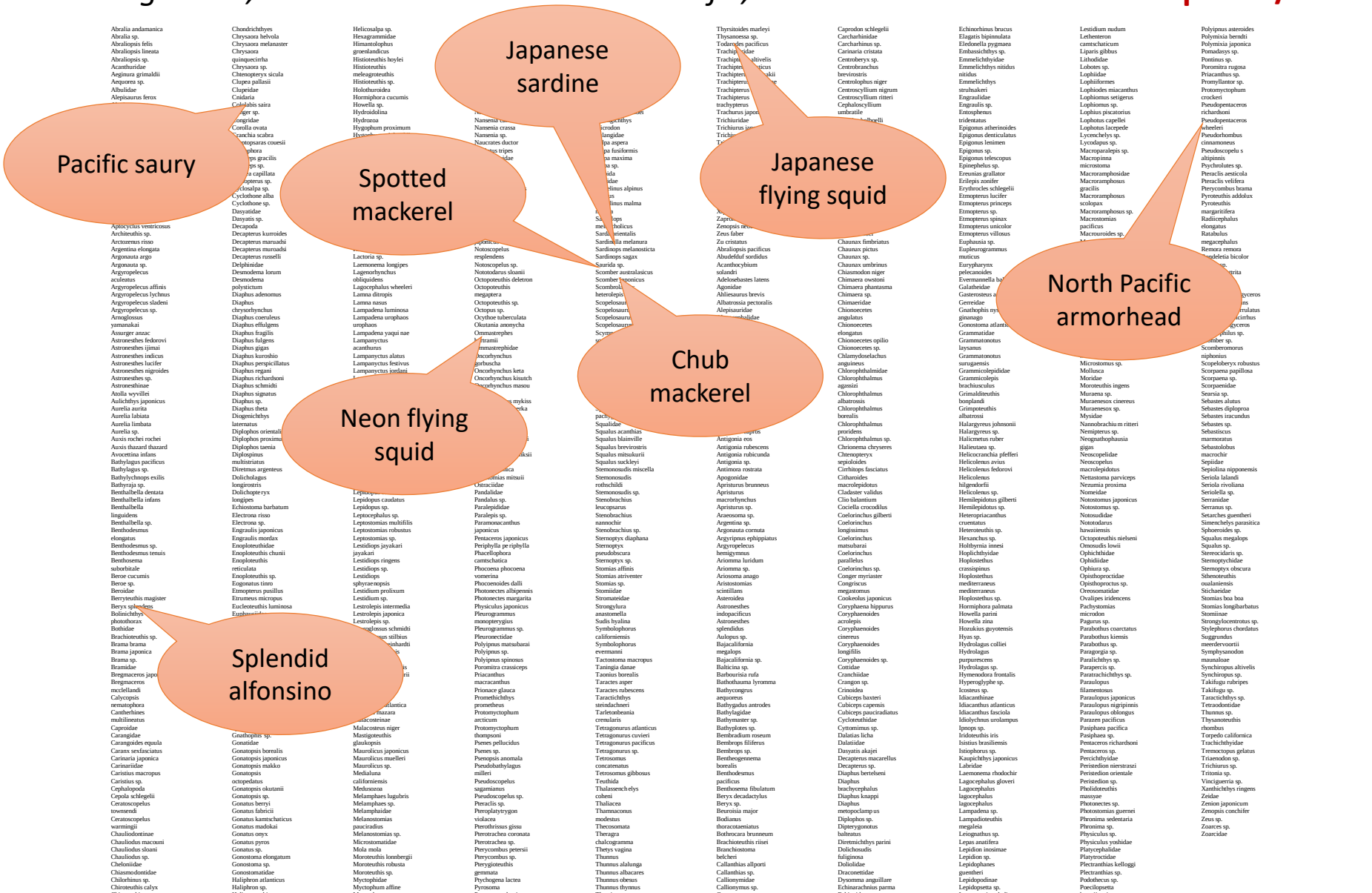
6. HOW IYS COULD BENEFIT FROM COOPERATION WITH NPFC



2. PAST RUSSIAN TRAWL PELAGIC SURVEYS

High seas, western and central North Pacific, 1969-2017

947 “NPFC” species/taxa



OCCURRENCE OF THE NPFC's PRIORITY SPECIES

High seas, western and central North Pacific, 1969-2017

North Pacific armorhead *Pentaceros wheeleri* *269*

Splendid alfonsino *Beryx splendens* *1610*

Pacific saury *Cololabis saira* *278*

Neon flying squid *Ommastrephes bartramii* *197*

Japanese flying squid *Todarodes pacificus* *334*

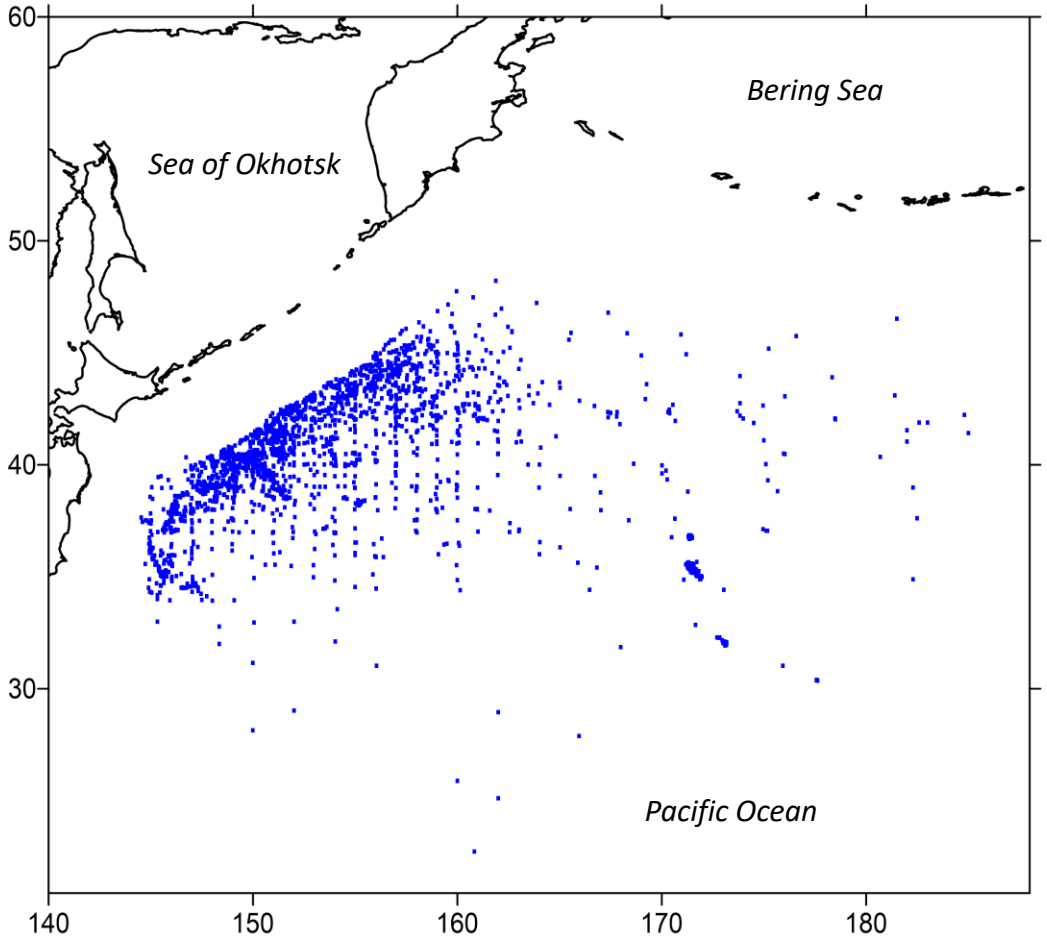
Chub mackerel *Scomber japonicus* *2498*

Spotted mackerel *Scomber australasicus* *59*

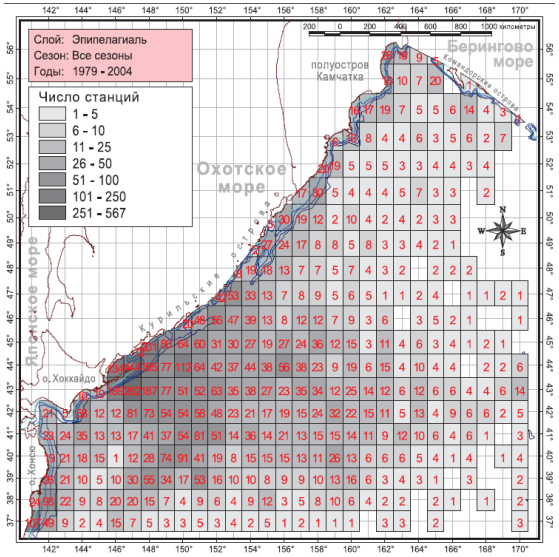
Japanese sardine *Sardinops melanostictus* *1683*

DISTRIBUTION OF THE NPFC's PRIORITY SPECIES

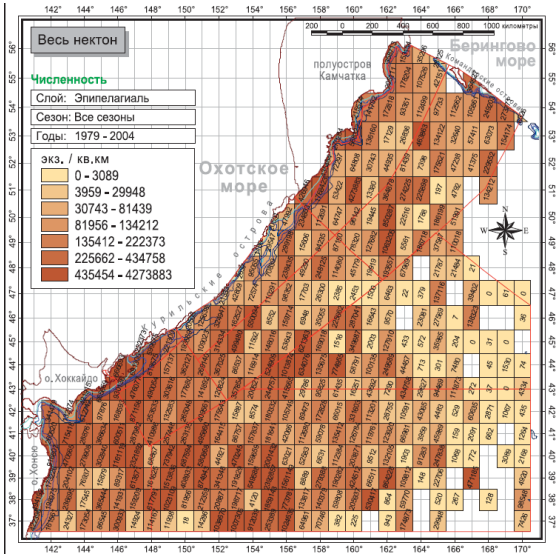
All seasons



Number of stations



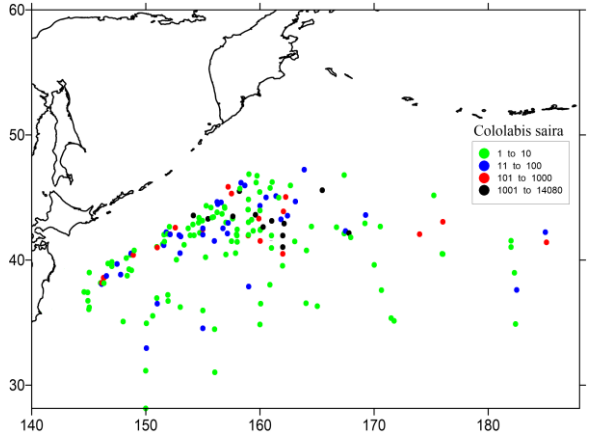
Nekton abundance



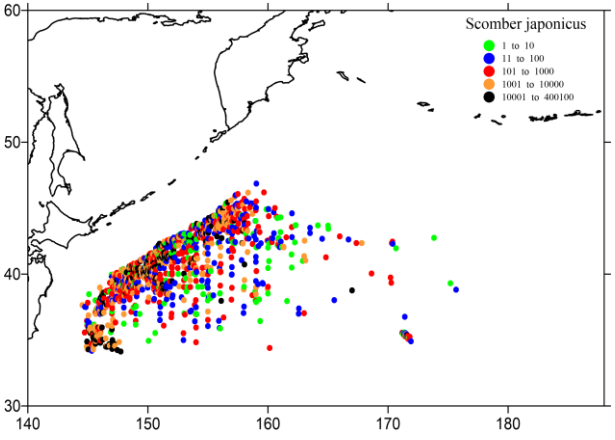
Shuntov V.P.&Bocharov L.N. (eds). Atlas … 2005

DISTRIBUTION, 1969-2017, ALL SEASONS

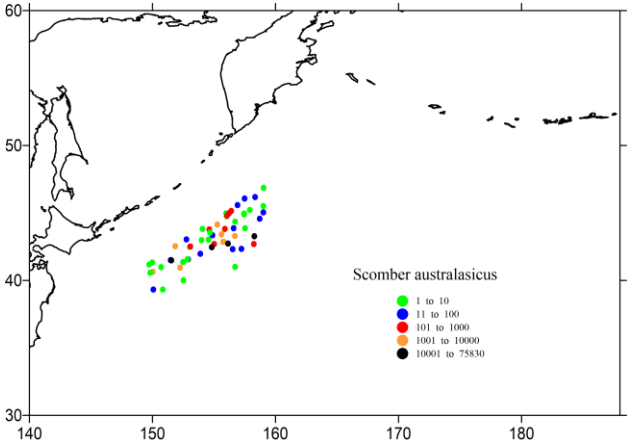
Pacific saury



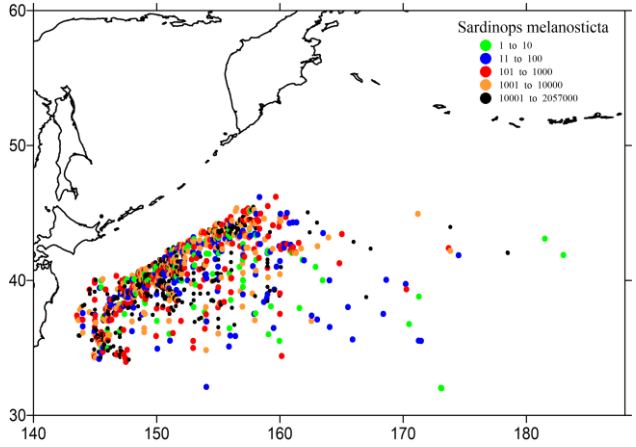
Chub mackerel



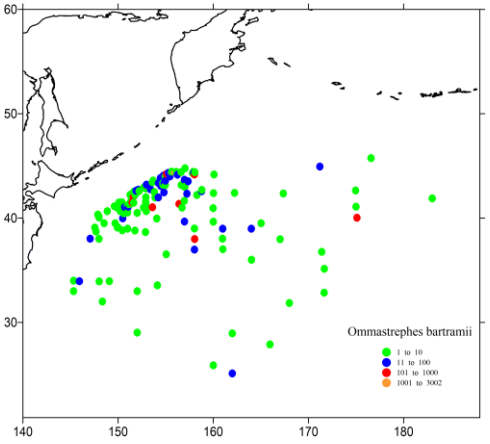
Spotted mackerel



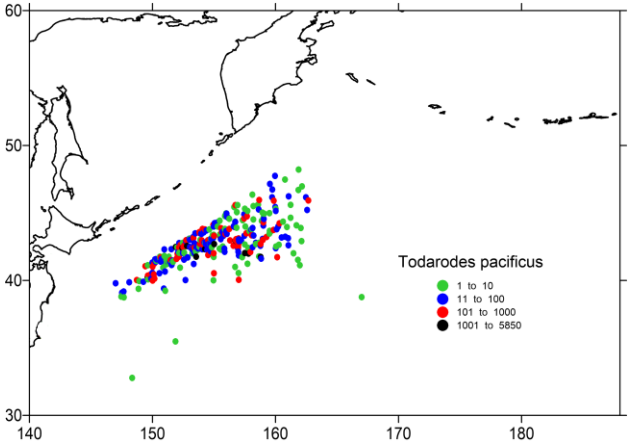
Japanese sardine



Neon flying squid

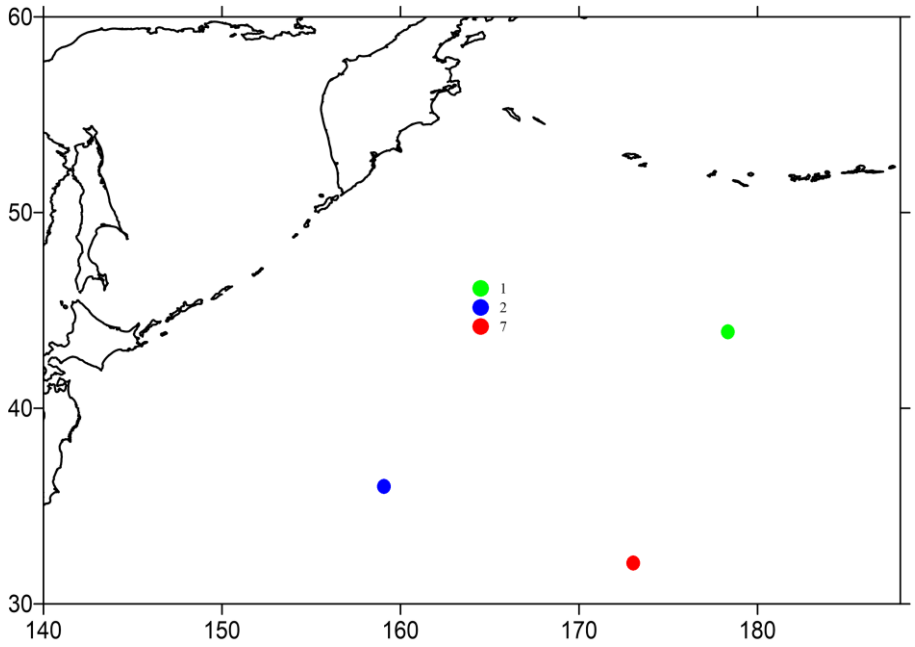


Japanese flying squid

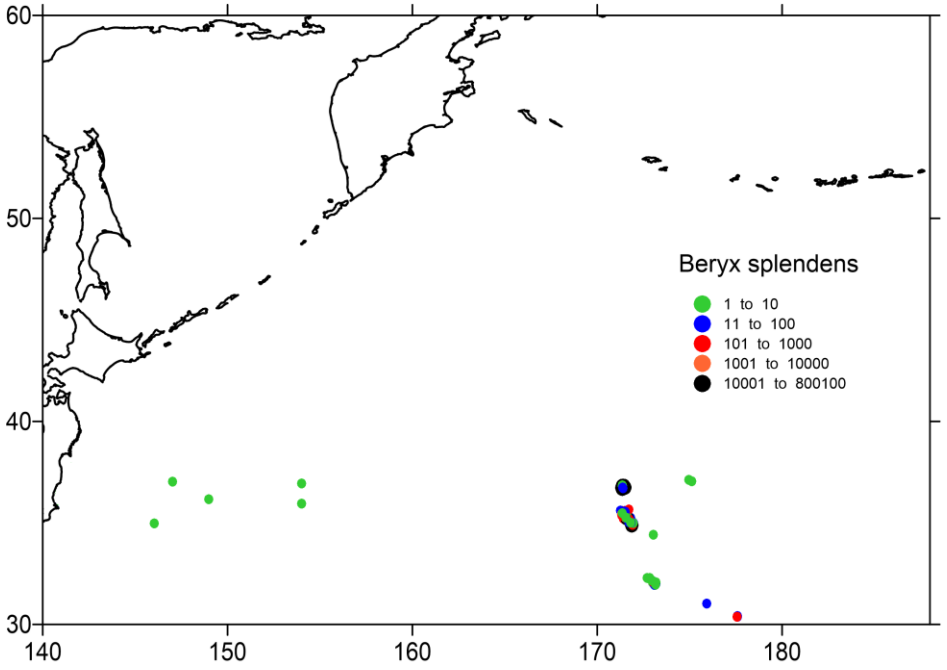


DISTRIBUTION, 1969-2017, ALL SEASONS

Armorhead

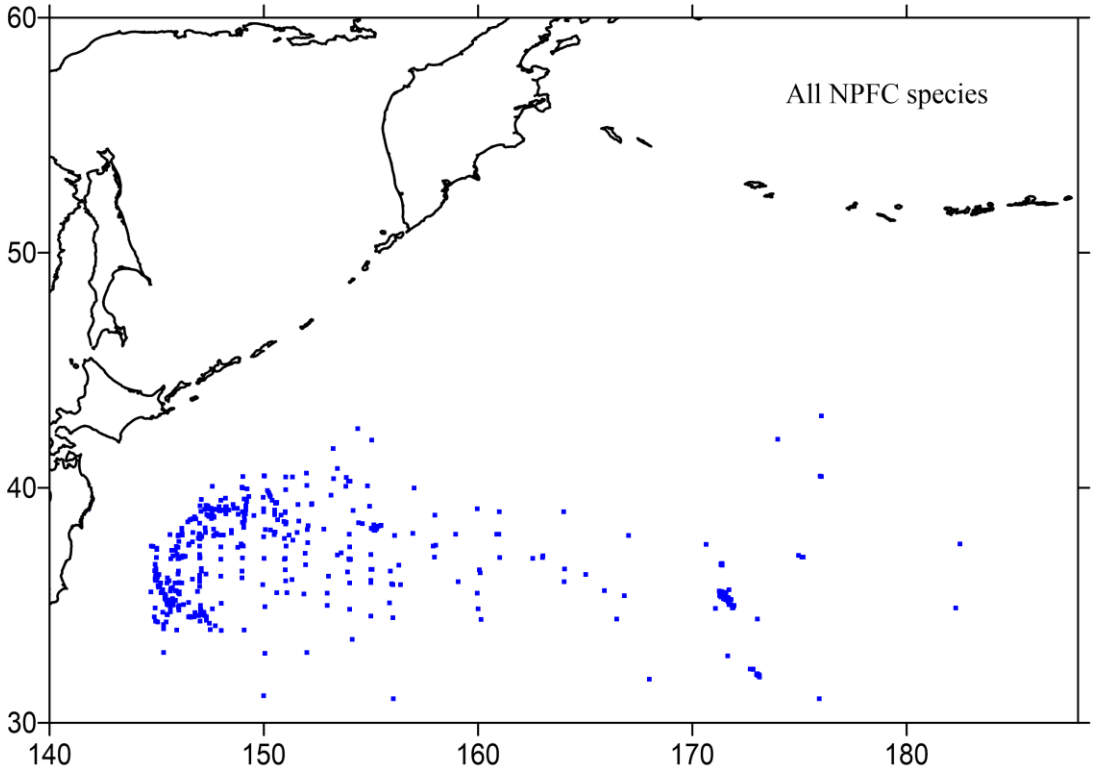


Splendid alfonsino

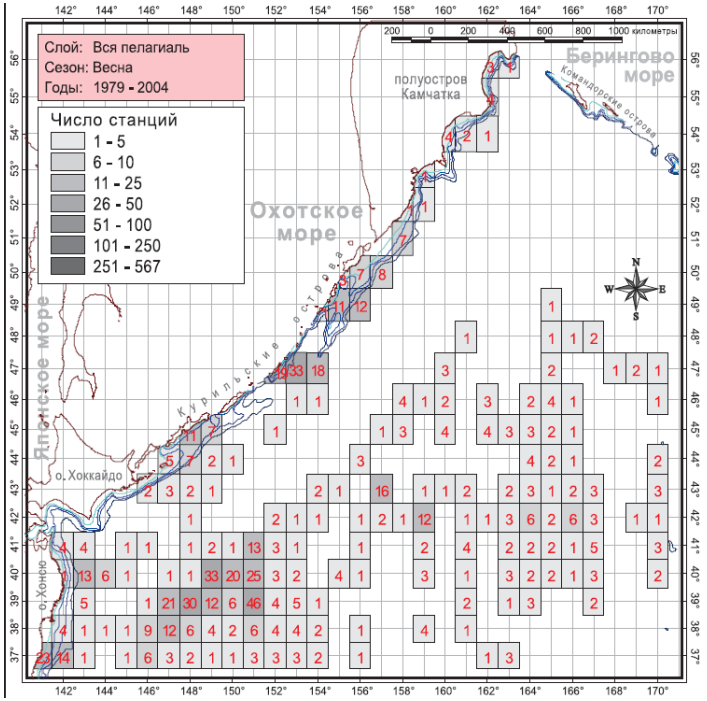


DISTRIBUTION OF THE NPFC's PRIORITY SPECIES

Jan - Mar



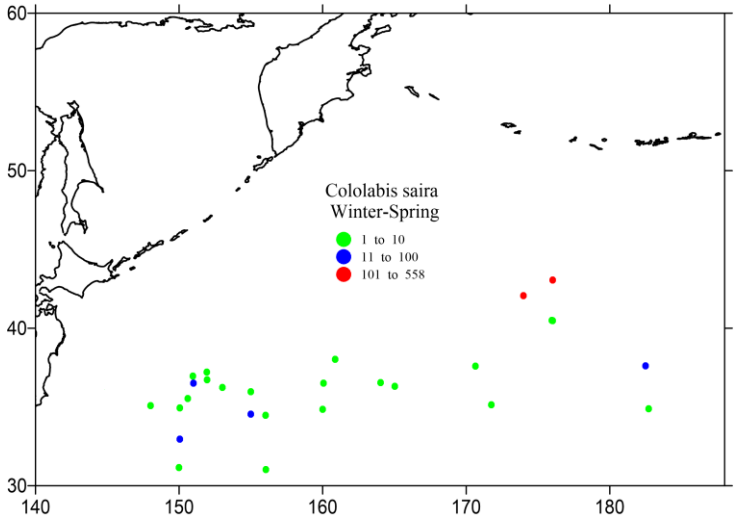
Number of stations



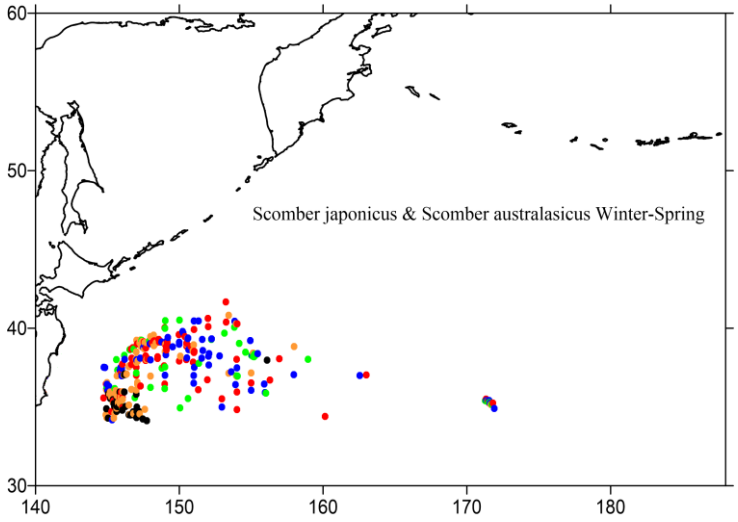
Shuntov V.P.&Bocharov L.N. (eds). Atlas … 2005

DISTRIBUTION, 1969-2017, Jan-Mar

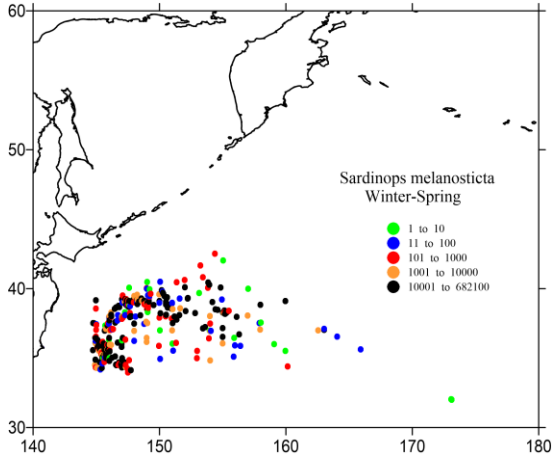
Pacific saury



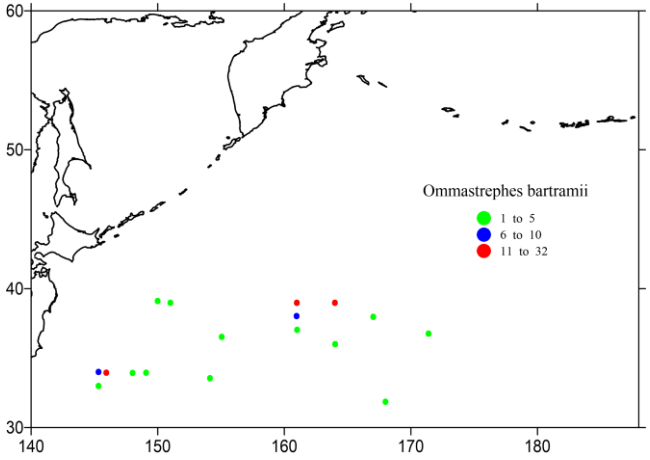
Chub and spotted mackerels



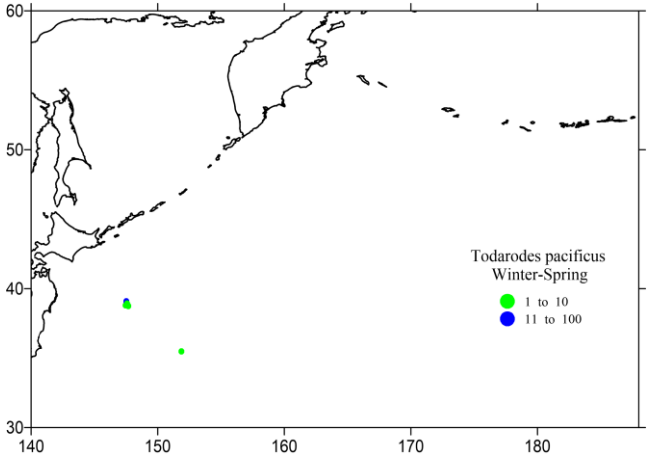
Japanese sardine



Neon flying squid

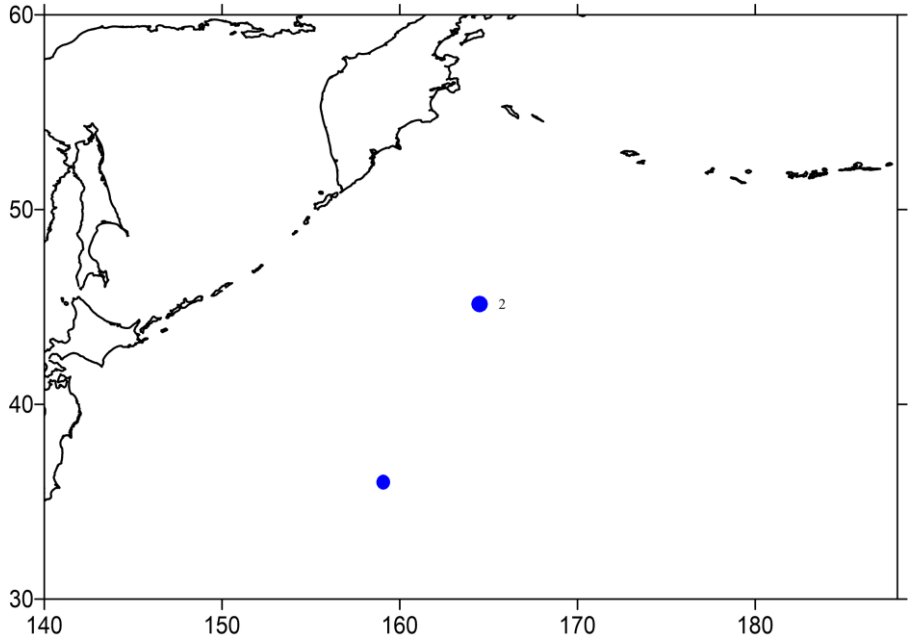


Japanese flying squid

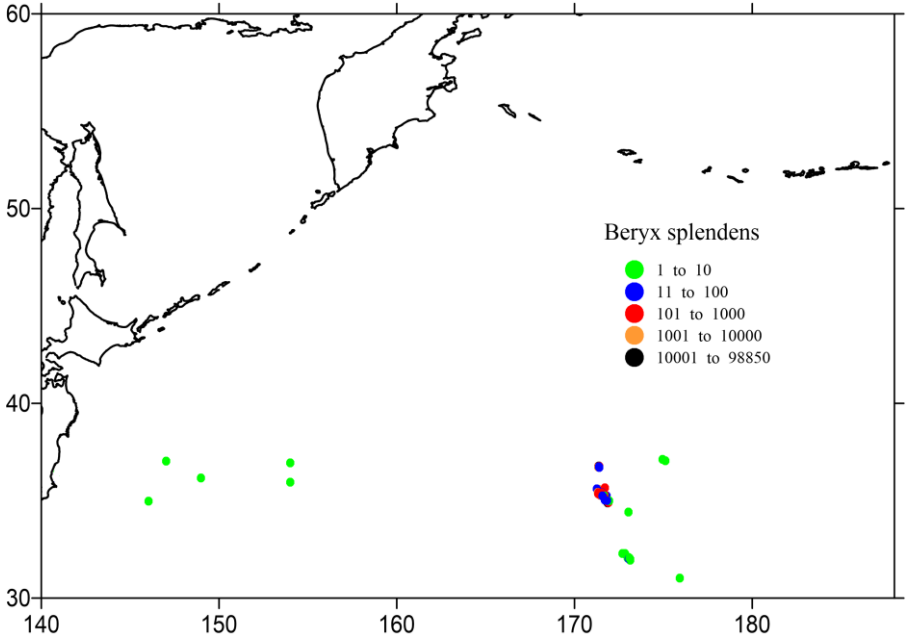


DISTRIBUTION, 1969-2017, Jan-Mar

Armorhead



Splendid alfonsino



3. 2019 INTERNATIONAL EXPEDITION IN THE GULF OF ALASKA

Non-salmon species

FISH – 16 species

Anotopterus nikparini
Aptocyclus ventricosus
Gasterosteus aculeatus
Microstomus pacificus, larv.
Sebastes melanops
Squalus acanthias
Thalassenchelys coheni, larv.
Zaprora silenus
Diaphus theta
Icichthys lockingtoni
Lestidium ringens
Lipolagus ochotensis
Paralepididae gen. sp., juv.
Stenobrachius leucopsarus
Symbolophorus californiensis
Tarletonbeania crenularis

SQUIDS – 13 species

Gonatus madokai
Gonatidae gen. sp.
Abraliopsis felis
Belonella borealis
Boreoteuthis borealis
Chiroteuthis calyx
Gonatus onyx
Gonatus sp.
Japetella diaphana
Moroteuthis robusta
Onychoteuthis borealijaponica

OTHER – 11 species

Aequorea sp.
Aurelia labiata
Aurelia limbata
Corolla calceola
Phacellophora camtshchatica
Calycopsis sp.
Chrysaora melonaster
Hormiphora cucumis
Periphylla periphylla
Salpa sp.
Sergestes similis
Siphonophora gen. sp.
Thysanoessa spinifera

NPAFC Doc. 1858

4. PAST JAPANESE SURVEYS

Taxon	1996	1998	2006
PISCES			
Squalus acanthias			v
Leptocephalus larvae	v	v	
Bathylagidae gen. sp.	v		
Stemoptychinae gen. sp.	v		
Paralepididae gen. sp.	v		
Alepisaurus ferox	v		
Anotopterus pharao	v		
Tarletonbeania taylori	v	v	
Symbolopholus californiensis	v		
Stenobrachius leucopsarus		v	
Diaphus theta		v	
Myctophidae gen. spp.	v		
Gasterosteus aculeatus		v	v
Aptocyclus ventricosus		v	
Zaprora Silenus		v	
Stichaeidae sp.		v	
Engraulis japonicus			v
CEPHALOPODA			
Gonatopsis borealis	v	v	
Gonatopsis makko	v		
Berryteuthis anonychus	v		
Gonatus middendorffi	v	v	
Gonatidae gen. spp.	v	v	v
Onychoteuthis borealijaponica	v		
Unidentified squid larvae	v		
Japetella diaphana	v		
COELENTERATA	v	v	v
APPENDECULARIA	v		

17+ fish species/unidentified taxa

7+ squid species/unidentified taxa

Coelenterata

Appendicularia

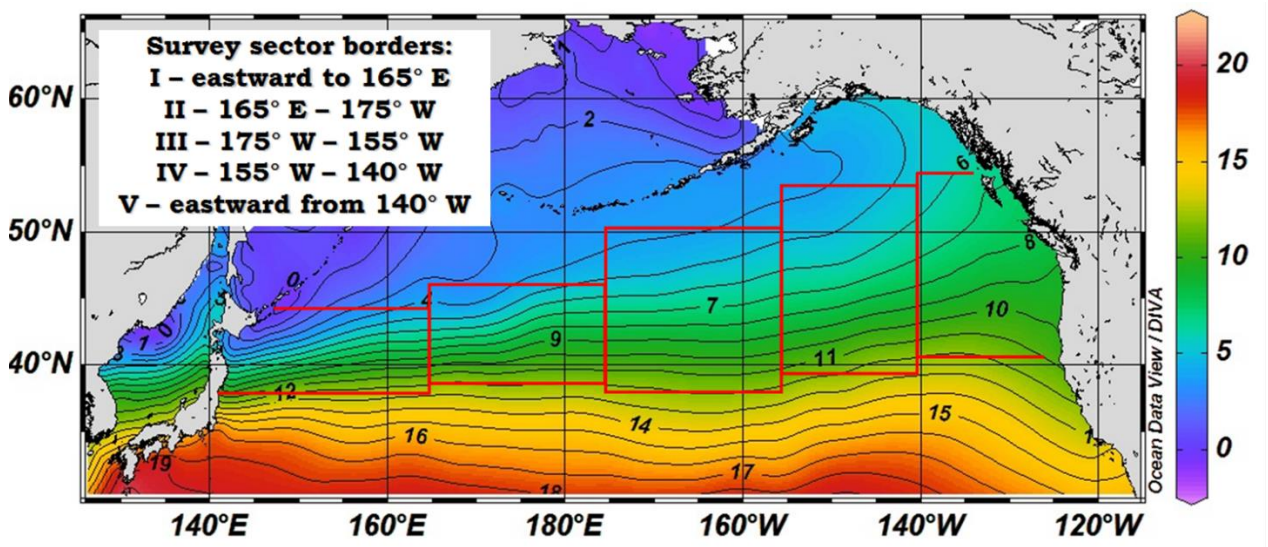
Ueno, Y., Y. Ishida, A. Shiomoto, S. Urawa, K. W. Myers, J. Morris, and M. V. Koval. ***1996****. Summary of 'wintering salmon research aboard the research vessel Kaiyo-maru in January 1996. (NPAFC Doc. 213). 20 p.*

Ishida, Y., Y. Veno, A. Shiomoto, T. Watanabe, T. Azumaya, M.V. Koval, and N. D. Davis. ***1998****. Japan-Russia-U.S. cooperative survey on overwintering salmonids in the western and central North Pacific Ocean and Bering Sea aboard the Kaiyo Maru, 3 February-2 March, 1998. (NPAFC Doc.329). 18 p.*

Fukuwaka, M., S. Sato, S. Takahashi, T. Onuma, N. Davis, J. Moss, A. Volkov, K-B. Seong, O. Sakai, N. Tanimata, and K. Makino. ***2006****. International salmon research aboard the R/V Kaiyo maru in the North Pacific Ocean during the winter of 2006. (NPAFC Doc. 957). 12 p.*

5. 2021 IYS LARGE-SCALE SURVEY

What can we expect to catch in the pan-Pacific high seas ecosystem research survey ?



All NPFC's priority species were caught during the winter salmon surveys in the North Pacific in the past:

● Pacific saury, ● chub mackerel, ● spotted mackerel, ● Japanese sardine, ● neon flying squid, ● Japanese flying squid, ● North Pacific armorhead, ● splendid alfonsino.

Plus several hundreds of other species of the NPFC mandate – fish, squids, invertebrates.

Potential outputs for NPFC from joining the project:

- ✓ Improved knowledge about distribution and migration of the priority species,
- ✓ Development/validation/adjustment of models (ecosystem, suitable habitats etc),
- ✓ New biological information for priority and other species of fish and squids,
- ✓ Other data related to oceanography, fish diets and zooplankton (climate change, food web etc).

6. HOW IYS COULD BENEFIT FROM COOPERATION WITH NPFC

The IYS could benefit from cooperation with NPFC through:

- ✓ increased outreach and higher involvement of regional stakeholders,
- ✓ collaborative studies on marine ecosystems and modelling,
- ✓ development of integrated information systems, and
- ✓ strengthened ties between NPAFC and NPFC.

It could be of direct benefit to Canada, Korea, Japan, Russia and USA as they are members of both NPAFC and NPFC.

Memorandum of Cooperation between NPFC and NPAFC.

SUMMARY

- All priority species of NPFC were caught in the North Pacific in the past (most in western NP)
- Other species of NPFC mandate (~950)
- Improved knowledge about priority species, development/ validation/adjustment of models, “environmental” data
- Increased outreach of the IYS

Thank you!