



North Pacific Fisheries Commission

NPFC-2021-SC06-IP01 (Rev. 1)

NPFC's participation in the NPAFC's multinational IYS survey in the North Pacific Ocean

In accordance with the NPFC/NPAFC Memorandum of Cooperation (MoC) and the Five-Year Work Plan to implement the MoC, the NPFC has made a financial contribution to the IYS 2022 Pan-Pacific Winter High Seas Expedition which will be conducted by the NPAFC and the International Year of the Salmon (IYS) in early 2022. The survey will focus on Pacific salmon however information on non-salmon species and their environment will be collected. The survey details, including the survey area, dates, sampling program, and participants, are attached (Annex). The cruise plan for the expedition will be finalized by the middle of December.

The SC members made suggestions on the survey design, data collection and data sharing. The suggestions were presented by the Science Manager at a monthly meeting of IYS 2022 Expedition Country Leads on 14 October and then revised based on the feedback.

The final suggestions to the research survey program agreed by the SC members and the IYS Expedition Country Leads through correspondence are as follows:

- Encouragement to cover all stations within the agreed survey area, in particular in its southern part, even if there will be no salmon catch on those stations, to catch more species of NPFC interest.
- For non-salmon species, ensure all of them are identified, counted and weighed.
- Conduct additional analyses of the NPFC priority species: Mandatory information - length, weight, sex, stomach content. Optional information/samples (if possible) - maturity stage, fish scale, otolith (or fish heads for otolith analyses)).
- Encouragement to share raw data on priority species with the NPFC.

The NPFC suggestions will be included in the research survey program, and information collected will be presented to the NPFC after completion of the expedition.

* Pacific saury *Cololabis saira*, neon flying squid *Ommastrephes bartramii*, Japanese flying squid *Todarodes pacificus*, chub mackerel *Scomber japonicus*, blue (spotted) mackerel *Scomber australasicus*, Japanese sardine *Sardinops melanostictus*, North Pacific armorhead *Pentaceros wheeleri*, splendid alfonsino *Beryx splendens*.

2022 pan-Pacific ecosystem research survey (as of 7 October 2021)

Survey area and dates

Multinational pan-Pacific survey will be conducted in the Subarctic North Pacific (Fig. 1) in late winter – early spring 2022. It should be supplemented by research surveys in the Bering Sea, Sea of Okhotsk and coastal waters off Canada and USA in order to collect information on salmon, non-salmon species and physical and biological oceanography at different stages of salmon marine period of life. Up to five survey sectors are supposed to be covered by the research vessels (Fig. 2).

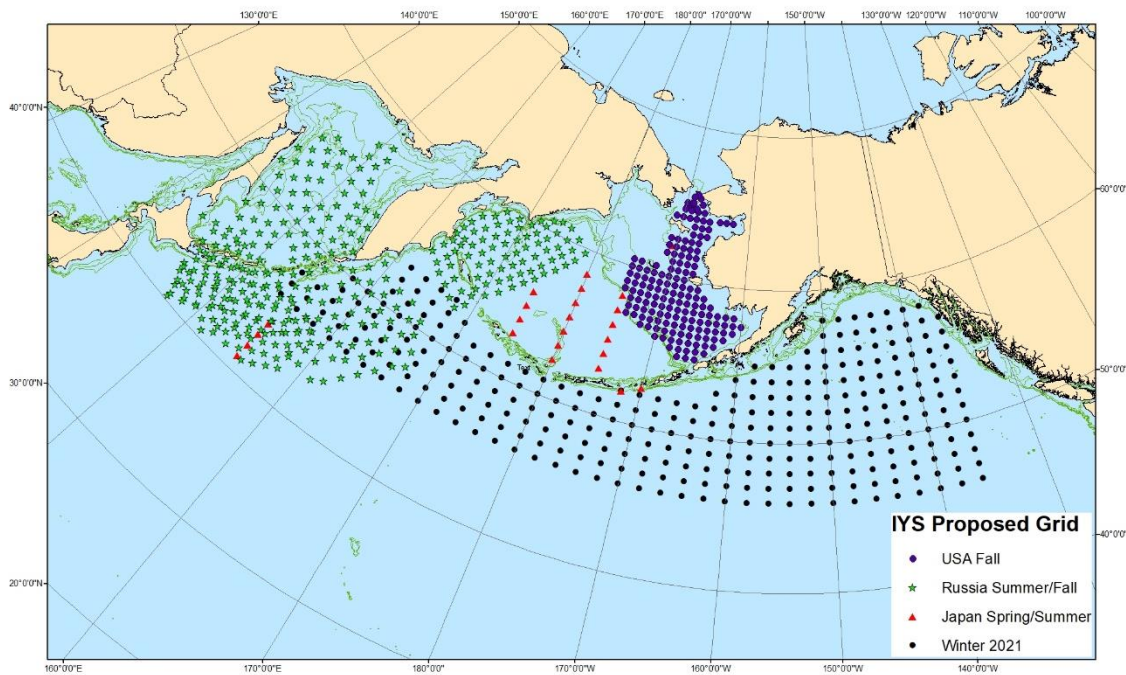


Fig. 1. Proposed research surveys in the North Pacific and adjacent seas in 2021/2022.

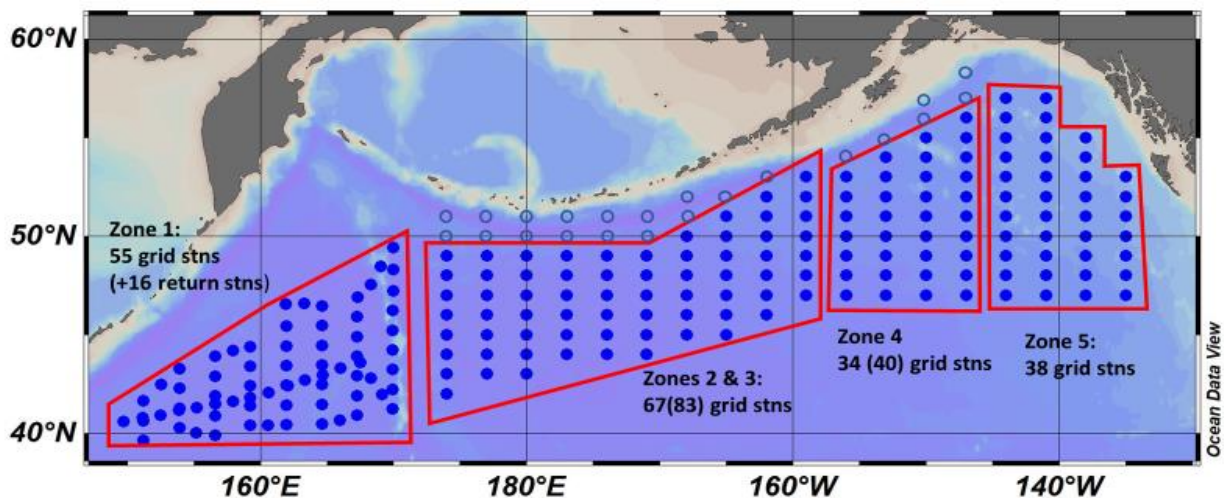


Fig. 2. Sampling zones, demarcated by red boxes. Stations, demarcated by blue circles are spaced 60 nm north-south along longitudinal transects, 120 nm spacing between transects.

Participation

Canada, Russia and USA confirmed their plans to provide ship time for a pan-Pacific survey in winter-spring 2022. One more research vessel will be chartered using the funds raised by the IYS. It was suggested that scientific team of each vessel would comprise of scientists from all NPAFC countries as this was proven to be an efficient way of collaborative research during the past expeditions in the Gulf of Alaska, however, this may not be possible due to the COVID-19 restrictions.

Data collection

Vessels will deploy similar gear and collect similar samples at each station, although it will differ slightly from vessel to vessel, depending on capacity. The general station activities across all vessels are outlined below:

- CTD and rosette cast to at least 300 m and, in some cases, down to 2000 m;
 - Water samples: eDNA, nutrients, oxygen, chlorophyll-a
- Plankton net (Bongo, vertical, 0–250 m);
 - Plankton samples: stable isotopes, fatty acids
- One midwater trawl conducted in the top 50 m water layer (pelagic trawl survey will be conducted using a standard midwater rope trawl, with a horizontal net opening approximately 30–40 m and a vertical opening of approximately 40–50 m width);
 - Salmon samples: stomach content, length/weight, otoliths, scales, genetic stock ID, maturation stage, CWT and adipose fin clips, stable isotopes, fatty acids, energy density
 - Other samples: myctophid ID, squid ID, squid diet and energy density, opportunistic shark sampling, jellyfish sampling, other finfish sampling
- Multi-frequency acoustic observations;
- Marine mammals and bird watching;
- Concurrent satellite data.

Some vessels will be deploying additional gear and taking additional samples, including:

- Methot or Mocness trawl
- Plankton net (Juday, vertical, 200 m)
- Gillnet placed in the surface water layer
- Gliders to take oceanographic measurements

Data exchange and sharing

Data collected during the 2022 research surveys will be available to all members and partners and to the public.