Topic Session (S12)
Understanding the linkages between forage species and top predators and how they may affect resilience in North Pacific ecosystems

Convenors

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Description

Forage species (invertebrate micronekton, squid, small pelagic fish, and juvenile/age-0 piscivorous fish) are a critical linkage between plankton production and upper trophic levels (piscivorous fish, seabirds, and marine mammals). “Bottom-up” processes affecting forage species can affect the distribution, productivity, and survival of upper trophic level species. “Top-down” predation pressure can also affect forage species, and ultimately the structure, function, and resiliency of North Pacific ecosystems. Characterizing and quantifying these linkages is critical to ensuring human food security, conserving robust predator populations, developing innovative approaches to reduce human-predator conflicts, and enacting effective ecosystem-based management. Identifying when these linkages are weakened or broken may allow for early warning of ecosystem state shifts and loss of ecosystem services.

We invite presentations on observational and modeling studies concerning linkages in the dynamics of forage and predator species. These include, but are not limited to:

- observed relationships between forage and predator time-series of biomass, survival, or productivity metrics;
- investigations into top-down controls by predators upon forage species and bottom-up controls by forage species upon predators;
- investigations of the effects of environmental variability, extreme events, and climate change on species distributions, phenologies, habitat compression or expansion, and habitat overlap leading to changes in encounters between predator and forage populations;
- studies of shifts in available forage and diets among predator species and competition between predators; and
- studies of the effects of forage quality on upper trophic level productivity and survival.

The aim of this session is to explore the role of forage/predator linkages on the productivity and dynamics of both forage and top predator communities; how recovery of top predators may influence other ecosystem components, fisheries, and ecosystem services; identifying potential ecosystem carrying capacities for predators; anticipating new human wildlife conflicts such as recent fisheries entanglements of baleen whales; and how management and conservation measures can be improved.