

Agenda: W7: BIO Workshop

Response of Top Predators to Unusual Oceanographic, Climatic and Anthropogenic Events in the North Pacific

Convenors:

Yu Kanaji (Japan), *corresponding*

Rolf Ream (USA)

Patrick O'Hara (Canada)

Motohiro Itoh (Japan)

Kaoru Hattori (Japan)

Invited Speakers:

Vladimir Burkanov (North Pacific Wildlife Consulting LLC, RNGO "Marine Mammal Council", USA/Russia)

Jennifer Provencher (Environment and Climate Change Canada)

Marine top-predators such as marine birds and mammals (MBMs) both respond to and affect entire food-webs through top-down and bottom-up trophic linkages. As well, these organisms tend to be large charismatic organisms that are relatively easy to monitor making them tractable indicators of ecosystem health and change. The detection of biological changes in these animals has proven them to be strong indicators for identifying the effects on long-term (e.g. global warming), mid-term (e.g. basin-scale regime shifts and Kuroshio meandering), and short-term (e.g. marine heat waves) changes in physical and biological oceanography. They have also been used to indicate levels of pollution in regions of their world previously thought to be pristine. S-MBM has focused on the key roles of top-predators in marine ecosystems, and our monitoring data and interdisciplinary collaboration has highlighted the scientific needs to identify changes in ocean ecosystems and to predict those responses in future. In recent years, unprecedented events that can trigger massive die-offs have been observed in MBMs, and because of their ecological roles, these die-offs have ecosystem level implications. One example is Avian influenza viruses (AIVs), which was recently reported to cause rapid mass die-offs for Peruvian pelicans (*Pelecanus thagus*) and South American sea lions (*Otaria flavescens*) in the south Pacific. Also, in the western North Pacific, northern fur seals (*Callorhinus ursinus*) experienced an AIV-caused mass die-off in 2023. Other events such as heat waves and harmful algae blooms (HABs) can also affect an ecosystem widely through trophic linkages. This session will present some case studies of significant health responses by top predators to unusual oceanographic, climatic, or anthropogenic events. We further discuss how we detect, prevent, and address large scale mortality events, and other serious health impacts, that can have wide-reaching ecosystem implications (e.g., impact on fisheries, or agricultural systems).

Welcome and Introduction to the Workshop

13:55-14:05 PM

Speaker: Yu Kanaji

(Invited) Unprecedented Mass Mortality of Marine Mammals and Seabirds on Tuleny Island, Sakhalin, Russia, in 2023

Speaker: Vladimir Burkanov

14:05-14:45 PM

(Invited) Assessing exposure to avian influenza in seabirds in Canada

Speaker: Jennifer Provencher

14:45-15:25 PM

Transition to coffee break

15:25-15:30 PM

Coffee Break

15:30-15:50 PM

Status review for unusual mortality events in the world

Speaker: Kaoru Hattori, Motohiro Itoh, Rolf Ream

15:50-16:10 PM

CANCELLED - Otolith biogeochemistry reveals possible impacts of extreme climate events on population connectivity of a highly migratory fish, Japanese Spanish mackerel *Scomberomorus niphonius*

Speaker: Xindong Pan

16:10-16:30 PM

The Climatic Impacts of Marine Heatwaves (MHWs) on Top Predators in the Tropical Oceans

Speaker: Peng Lian

16:10-16:30 PM

Monitoring of life history parameters of small cetaceans: framework to monitor population dynamics of top-predators

Speaker: Hikari Maeda

16:30-16:50 PM

Discussion

Speaker: Patrick O'Hara

16:50 -17:40 PM