

Arctic Integrated Ecosystem Survey Phase II

Principal Investigators for Oceanography and Lower Trophic Level Productivity:

1. Dr. Carol Ladd, NOAA/PMEL
2. Dr. Phyllis Stabeno, NOAA/PMEL
3. Dr. Janet Duffy-Anderson, NOAA/AFSC
4. Dr. Lisa Eisner, NOAA/AFSC
5. Dr. David Kimmel, NOAA/AFSC
6. Dr. Ryan McCabe, University of Washington
7. Dr. Calvin Mordy, University of Washington
8. Dr. Michael Lomas, Bigelow Laboratory for Ocean Sciences

Principal Investigators for Upper Trophic Levels:

1. Dr. Edward Farley Jr., NOAA/AFSC
2. Dr. Elizabeth Logerwell, NOAA/AFSC
3. Dr. Alex De Robertis, NOAA/AFSC
4. Dr. Jeffrey Guyon, NOAA/AFSC
5. Dr. Franz Mueter, University of Alaska Fairbanks
6. Dr. Louise Copeman, Oregon State University
7. Dr. Kathy Kuletz, U.S. Fish & Wildlife Service
8. Kristin Cieciel, NOAA/AFSC
9. Dr. Chris Wilson, NOAA/AFSC

Summary of Proposed Work: The Chukchi Sea is undergoing dramatic sea ice reductions and temperature increases, but resultant biological and trophic responses are poorly understood. The goal of Arctic IES Phase II (Upper and Lower Trophic Level Teams) is to improve understanding of processes that structure the Arctic ecosystem and influence the distribution, abundance, and life history of lower (phytoplankton, zooplankton) and upper trophic level species (invertebrates, fishes, seabirds, mammals), and their vulnerability to the rapidly changing environment. The Lower Trophic Level component aims to better understand the climatological, physical, chemical, and biological processes that influence energy flow from primary producers to zooplankton and ichthyoplankton, and the Upper Trophic Level component will work to describe and understand how lower trophic processes reverberate through the food web to influence invertebrate, fish, and seabird communities. We will conduct comprehensive ecosystem surveys of Chukchi Sea physics, chemistry, biogeochemistry, and biology using an integrated network of moored arrays (year-round), autonomous vehicles (year-round), and shipboard observations (~65 DAS in each of 2017, 2019 summer and autumn). Our interdisciplinary collaboration will fulfill NPRB's Arctic IERP objectives, with significant leveraged contributions (ship time, facilities, equipment, and/or salary) from Bureau of Ocean Energy Management (BOEM), U.S. Fish and Wildlife Service (USFWS), University of Washington (UW), University of Alaska Fairbanks (UAF), Oregon State University (OSU), Bigelow Laboratory for Ocean Sciences (BLOS), and National Oceanic and Atmospheric Administration (NOAA) through Pacific Marine Environmental Laboratory (PMEL) and Alaska Fisheries Science Center (AFSC). Moreover, our data sharing agreements with colleagues from Russian Federal Research Institute of Fisheries and Oceanography (VNIRO) and Pacific Scientific Fisheries Research Center (TINRO) will link our results from the US Arctic to those from the Russian Arctic to provide a comprehensive understanding of Chukchi ecosystem dynamics. All data and results will be disseminated and made available to scientists, managers, stakeholders, and the public.