Conducting cool summer research in the Arctic

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Mark Barton.

The Arctic Coastal Ecosystems Survey (ACES) is focused on understanding the ecological role of near-shore and lagoon habitats of the Chukchi and Beaufort Seas that surround Alaska and its connectivity with the coastal ocean. These habitats are incredibly important to the local population that subsists on them, yet they are also anticipated to be impacted by both climate change and increasing human interactions

(such as increased traffic, commercial fisheries and oil exploration). FIU researchers aim to establish a baseline to measure impacts of observed ecosystem variability through the continuum of environmental and anthropogenic change in the Arctic.

Scientist and Ph.D. student Mark Barton and Ann Robertson from National Oceanic and Atmospheric Administration (NOAA) went to Barrow, Alaska, for the majority of the summer to collect fish and invertebrates in the nearshore, across 12 sites along the Chukchi and Beaufort coast as well as within the local estuary, Elson Lagoon. These samples were collected with a beach seine, a net that is set in a semicircle from one point on a beach to another, and then dragged ashore.

Throughout this seasonal effort, they collected more than 18,000 fish – approximately 3,000 were retained for further laboratory analysis. More than 90 percent of collected fish were less than 1 year old based on age-length relationships, and a time series of measurements provides evidence that these fish are growing, indicating that the Arctic nearshore zone supports conditions amenable to larval and juvenile fish development.

In addition to the fish collections, Kevin Boswell, an assistant professor in the Department of Biological Sciences and John Moran of NOAA deployed the Autonomous Survey Vessel Nanuq (nanuq is Inupiak for polar bear) to characterize the substrate and bathymetry of the Arctic nearshore, as well as collect fish abundance and distribution data to complement the biological samples.

Professor Chunyan Li of Louisiana State University collected physical oceanographic data on the current dynamics between the Elson Lagoon and the Beaufort Sea using an Acoustic Doppler Current Profiler. These data will be useful to understand the hydrodynamic connectivity between

the lagoon and coastal ocean systems as well as quantify the effects of meteorological forcing on the hydrodynamic processes.

As data emerges, updates will be posted both on the Alaska Observing Ocean System, the NOAA Nearshore Fish Atlas, as well as the team's project blog.

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