

Nate Bickford

Title: *Habitat use and life history of fish in the eastern Bering Sea*

Abstract:

The investigator will assess the life histories of flatfish species in the eastern Bering Sea, specifically the spawning strategies of northern rock sole, flat head sole, and flounder. The objective is to determine whether the downward trend in the biomass of these major commercial species of flatfishes has been affected by alterations to their unique habitat needs and life histories. This research will explore the utility of otolith (fish ear stone) chemistry in the reconstruction of past habitat use, the identification of essential habitat, and the connectivity between flatfish populations within the eastern Bering Sea. The identification of essential spawning habitat and the ability to assess recruitment within major commercial flatfish populations will have profound consequences for these arctic fisheries, and will go well beyond the current methods of identifying spawning habitats and recruitment successes by the presence of spawning adults, and will assist in the prioritization of restoration of essential habitats as well as in the continued management and sustainability of flatfish fisheries. The study will apply analysis techniques of otolith chemistry by laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) developed for fresh water fish to the arctic marine environment, and provides an excellent example of interdisciplinary research in fisheries ecology and oceanography.