National Estuarine Research Reserve System Science Collaborative

Dataset: Nearshore Fish Collections in Kachemak Bay and Monashka Bay, Alaska

This document provides detailed information about a dataset that was generated through a 2020-2022 catalyst project titled *Assessing Research Efforts and Emerging Issues Concerning Forage Fish Exposure to Paralytic Shellfish Toxins in Alaska*. This document also provides information [about the project](#). The project was supported by the National Estuarine Research Reserve System (NERRS) Science Collaborative, which is funded by the National Oceanic and Atmospheric Administration. All Science Collaborative supported projects that collect new data adhere to federal data sharing and archiving requirements.

About the Associated Project

Project title: Assessing Research Efforts and Emerging Issues Concerning Forage Fish Exposure to Paralytic Shellfish Toxins in Alaska

Name of reserve(s) involved in the project: Kachemak Bay, AK

Project Period: March 1, 2021, to February 28, 2022

Project lead and contact information:
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Purpose:
Through a 2020 catalyst project, staff from the Kachemak Bay NERR expanded research collaborations and completed proof of concept activities to catalyze future research on the mechanisms of paralytic shellfish toxin transfer from forage fish to upper trophic populations– an increasing concern after statewide seabird die-offs and marine mammal strandings.

Abstract:
Harmful algal bloom (HAB) events are becoming more common in Alaska as ocean temperatures rise due to climate change. These events carry the risk of producing dangerous levels of HAB-derived toxins in the marine environment, including paralytic shellfish toxins (PSTs). PSTs pose a serious threat to upper-trophic populations (e.g., marine mammals, sea birds, predator fish), where a likely mechanism of delivery is via consumption of forage fish that have themselves been exposed to PSTs. Recent statewide occurrences, such as seabird die-off and marine mammal stranding events, have raised concerns about this pathway, highlighting a need to better understand its mechanisms. The issue is a lack of data-driven information regarding PST exposure levels in forage fish due to field data being difficult to obtain. This project sought to facilitate new collaborative science that addressed this issue by becoming better positioned to pursue future funding opportunities (phase I). Our approach was to conduct 'proof of concept' activities for the husbandry of Alaska forage fish species while simultaneously engaging with

end users. We used these inputs to inform a proposal that would secure funds for continuation of this effort as a multi-year research project (phase II). As the only National Estuarine Research Reserve (NERR) in Alaska, the Kachemak Bay NERR was able to act as a collaborative platform bringing necessary expertise within Alaska and nationally to the planning table, as well as engage with end users to ensure that research findings met user needs at various scales.

About the Project Dataset

Dataset Title: Nearshore Fish Collections in Kachemak Bay and Monashka Bay, Alaska

General description of data:
These data encompass the nearshore fish surveys conducted by the Kachemak Bay NERR during summer months in 2021. The primary purpose of the data collection was to assess nearshore fish community structure tied to local site and environmental information, and secondarily to collect forage fish specimen for aquaculture activities. Data collection was conducted for multiple projects within KBNERR's nearshore fish program. Most of the data were collected using non-selective beach seine methods, but some collection was done by hand. The overall data structure replicates a standard format used by the Nearshore Fish Atlas Database curated by the
NOAA Alaska Fisheries Science Center.

Search keywords:
nearshore fish, community assemblage, beach seine, Alaska, Kachemak Bay, Monashka Bay, Kachemak Bay National Estuarine Research Reserve

More about the data:
- Metadata: project name, descript/purpose, PI's, funding sources, gear description, fish sampling protocols, environmental sampling protocols, and other relevant information
- Site data: Site ID, latitude, longitude, habitat, and comments
- Event data: Site ID, event ID, raw event ID, date, gear type, time, water temperature, salinity, tide, and comments
- Catch data: Event ID, species name, life stage, count, length, length type, comments

Data collection period: May, 2021 to September, 2021

Geographic extent:
Kachemak Bay near Homer, Alaska (59.440748, -151.881251, 60.096214, -151.384120)
Monashka Bay near Kodiak, Alaska (57.810607, -152.452990, 57.857763, -152.357203)

File format:
Data consists of a single excel file (.xlsx) containing separate tab sheets for site, event, and catch related data as well as metadata. Site and event data can be linked with unique lookup code (SiteID). Event and catch data can be linked with unique lookup code (EventID).
File name(s):
2021_kbnerr_nearshore-fish-collections.xlsx

Data access and archival:

Data are available via the Alaska Fisheries Nearshore Fish Atlas Database maintained by NOAA Alaska Fisheries Science Center: https://alaskafisheries.noaa.gov/mapping/sz/index.html?tab=fa&layout=h2.

To find the project data, select 'Guo - KBNERR' under the POC tab and then navigate the map to find specific datasets of interest.

Maps and schematics for data collection