



Join by computer at: <https://noaanmfs-meets.webex.com/noaanmfs-meets/j.php?MTID=mcc18c76bd7dda6407df660fc58b8a65b>

Webex meeting number: 199 949 6661

Meeting Password: fish

Or by phone: 1 (415) 527-5035

Access code: 199 949 6661



**NOAA
FISHERIES**

National Marine Fisheries Service
Alaska Fisheries Science Center

2021 AFSC Seminar Series

Matthew Rogers, AFSC RECA

Tuesday, May 4th @ 10 am Pacific

Hot Tub Time Machine: Using stable isotope analysis of Northeast Pacific humpback whale baleen to infer dynamic foraging habits and evidence of starvation in response to a marine heatwave

From 2014-2016, researchers observed the strongest marine heatwave ever recorded in the North Pacific Ocean. Food web dynamics were disrupted during the marine heatwave, which likely caused nutritional stress in humpback whales. For the first time in this population, we analyzed nitrogen and carbon stable isotopes in humpback whale baleen to investigate whale foraging ecology before, during, and after the marine heatwave. We hypothesized that if a population-level change in foraging ecology occurred during the marine heatwave, it would be reflected in baleen isotopic patterns.



We found that individual baleen plates record 4-5 years of isotopic information in humpback whales ($n=9$) as inferred from annual baleen $\delta^{15}\text{N}$ oscillations. We estimate a baleen growth rate of 16.9 ± 3.9 cm/yr. We determined likely forage types for individual whales (zooplankton vs. forage fish) and observed apparent differences in nearshore vs. offshore feeding among individuals from baleen $\delta^{13}\text{C}$ profiles. We did not find any abrupt population-level foraging shifts after the onset of the marine heatwave. We also found an anomalous, steadily increasing $\delta^{15}\text{N}$ pattern in the most recently grown baleen of multiple whales that died during the marine heatwave, potentially indicating severe nutritional stress or starvation in the weeks or months preceding death.

*For more
information contact:
Mike.Levine@noaa.gov or
Pearl.Rojas@noaa.gov*