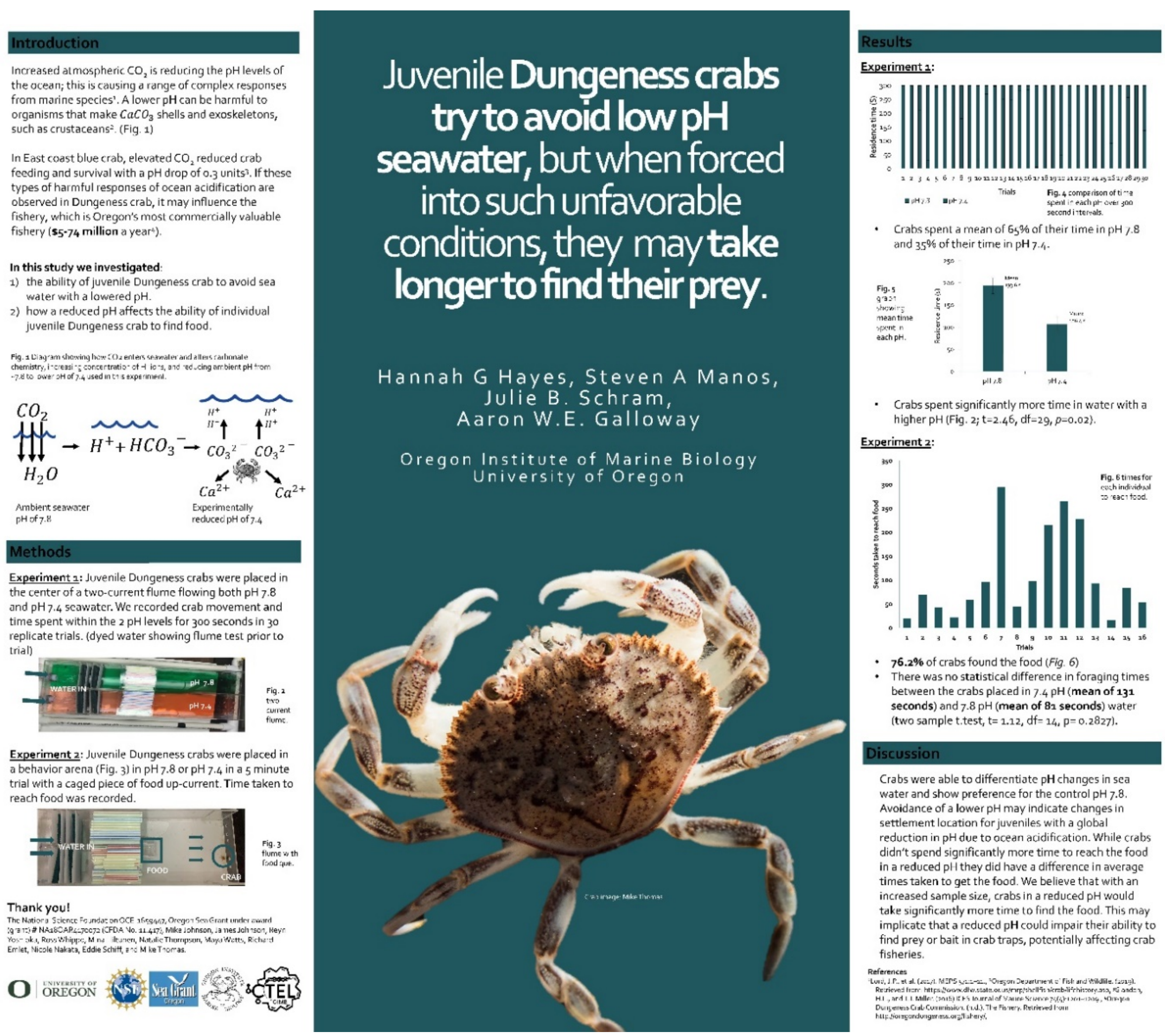
2019 State of the Coast Poster Exhibition First Place

Author: Steven Manos

Title: Juvenile Dungeness crab try to avoid low pH seawater, but when forced into such unfavorable conditions, they may take longer to find their prey.

Abstract: Recent studies have shown that the large increase of anthropogenic carbon is contributing to low pH in the ocean, referred to as ocean acidification, which in turn affects the calcification of crustaceans. Ocean acidification is also known to affect behavior and sensory systems of organisms. Metacarcinus magister (Dungeness crab) are a major contributor to the Oregon fishing communities, and coastal culture of the region. There has been relatively little research on the effects of ocean acidification on post-settlement juvenile life history stage in Dungeness crab. Here, we tested how exposing juvenile Dungeness crab to an ambient pH and a more acidic pH alters their foraging behavior and if they are able to sense and move away from a reduced pH. We captured megalopae using a light trap and settled juvenile crab into ambient lab conditions. We measured crab prey discovery time and handling time in the controlled pH and more acidic pH. We hypothesized that the juveniles in the low pH water would take a longer amount of time to find their food or would not be able to find it. We used a two-current choice flume with an ambient pH and a reduced pH, providing a choice between to the two, and measured the amount of time individuals spent in each pH in 300 second trials. We found that while behavior is highly variable, juvenile Dungeness try to avoid low pH water, and when they are forced into such unfavorable conditions, they may take longer to find their prey.

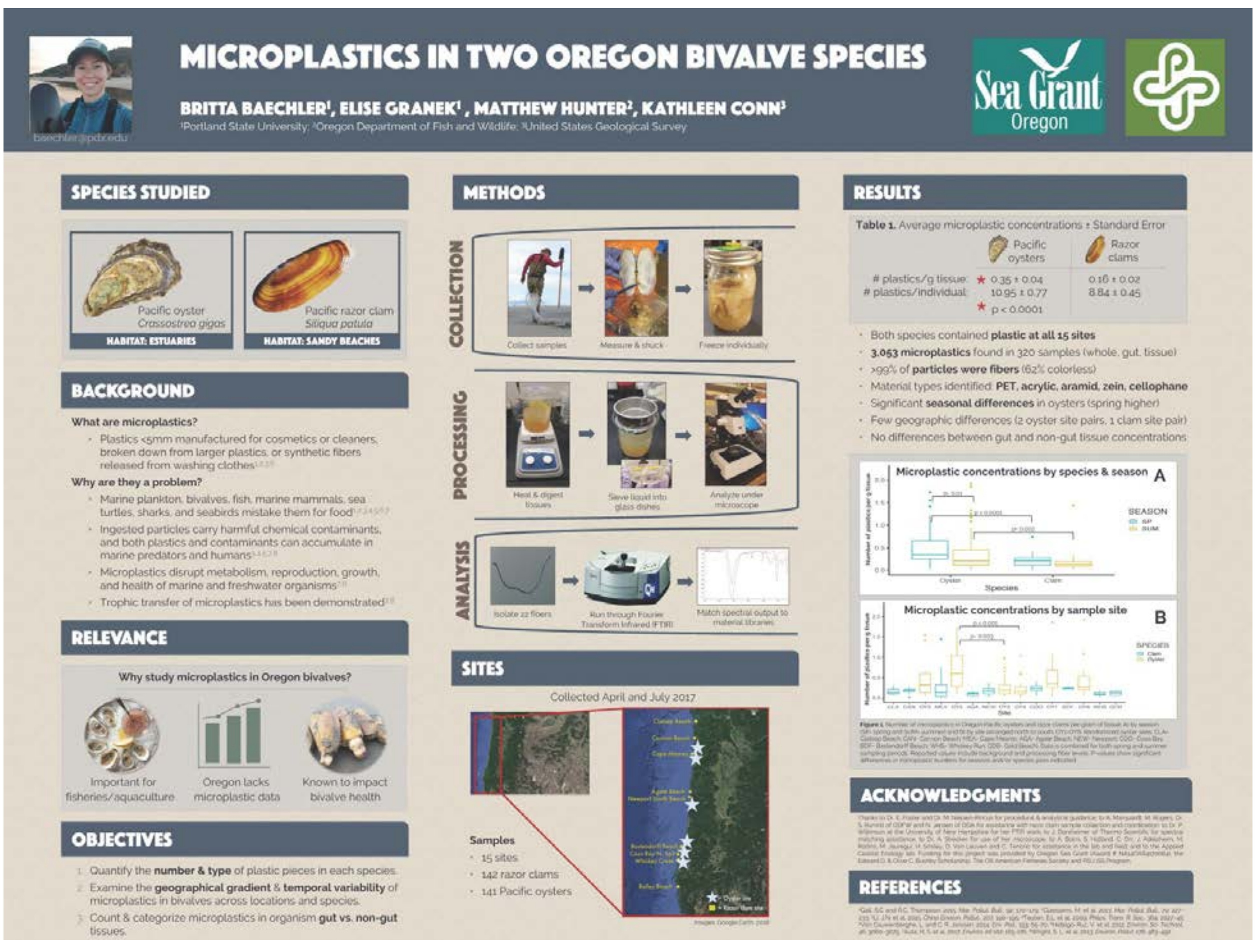


2019 State of the Coast Poster Exhibition Runner Up

Author: Britta Baechler

Title: Microplastic Concentrations in Two Oregon Bivalve Species: Spatial, Temporal, and Species Variability

Abstract: Microplastics are an ecological stressor with implications for ecosystem and human health when found in seafood. We quantified microplastic types, concentrations, anatomical loadings, geographic distribution, and temporal differences in Pacific oysters (Crassostrea gigas) and Pacific razor clams (Siliqua patula) collected from 15 Oregon coast sites. Organisms were chemically digested and visually analyzed for microplastics, and material type was determined in a subset of particles using Fourier Transform Infrared Spectroscopy (FTIR). Microplastics were present in organisms from all sites sampled. On average, whole Pacific oysters and Pacific razor clams contained 10.95 ± 0.77 and 8.84 ± 0.45 microplastics per individual, respectively. Contamination was quantified but not subtracted from averages. Over 99% of identified particles were microfibers. Spring samples contained more anthropogenic debris than summer samples in oysters but not razor clams. This study provides a baseline of microplastics in Oregon bivalves and is the first to determine Pacific razor clam concentrations.



2019 State of the Coast Poster Exhibition People's Choice Award

Author: Keala Pelekai

Title: Evaluation of Pacific Lamprey statoliths and eye lenses as records of age, natal origin, and trophic history patterns

Abstract: The Pacific Lamprey (Entosphenus tridentatus) is an anadromous species native to the North Pacific Ocean and its adjacent freshwater tributaries. Pacific Lamprey are both ecologically and culturally important to the Pacific Northwest of the United States. In that last 50 years, Pacific Lamprey have experienced declines in abundance throughout the Columbia River Basin, USA. More information on the biology and ecology of this species is needed for conservation and management. Anatomical structures have been widely used in fisheries science for biological inference. The Pacific Lamprey is a cartilaginous fish that lacks the common hard structures used in teleosts to elucidate age and life history patterns. Statoliths, analogous to otoliths in function, are calcium-fluorapatite concretions found in the auditory capsules of lampreys. Statoliths have potential for aging and microchemical analysis but require further validation that bands represent annual deposition and are chemically reflective of the individual's environment. Eye lenses are another structure with potential for trace element and stable isotope analysis but remain relatively unexplored for lamprey. The goal of this project is to broaden our understanding of lamprey by evaluating the efficacy of different structures for determining age, natal origin, and trophic history patterns. These objectives will be achieved by evaluating lamprey statoliths and eye lenses taken from known age and origin specimens.