
2019 GF Eastern Bering Sea Shelf

new collection
Biological specimen

Gene expression patterns in *Chionoecetes bairdi*

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Affiliation: AFSC - RACE

Project Funding Source: AFSC operational funds (part of my job, or funded activity plan), Other NOAA funded activity outside AFSC (e.g. another Science Center or line-office (OMAO))

Is this project funding extra sea days? no

Is this project funding fuel costs? no

Project Description and Justification: Changing climate conditions are warming the world's oceans. For most species, the magnitude of the impact, potential for adaptation to future temperatures, and mechanisms for adaptation are unknown. Features of parasite/disease ecology will also change, including host susceptibility to disease, host ability to combat disease once infected, and alterations in pathogen virulence. Recent worldwide spread of *Hematodinium* infections appears to have closely followed warming trends in the Atlantic and Pacific Oceans. ADF&G considers bitter crab disease to be the 'principle threat' to Tanner crab stocks, and warming temperatures are expected to directly and indirectly significantly impact crabs. Increased temperatures will most likely physiologically stress crabs and lead to increased occurrence of *Hematodinium* infections, either of which may lead to increased mortality in Tanner crabs.

I currently have NPRB funding to investigate the effect of warming temperatures and *Hematodinium* on the haemal components of the immunological system of SE Alaskan Tanner crabs. The proposed collection will support a complementary project by a NOAA NERTO-funded intern to investigate the effect of *Hematodinium* on the immunology, growth, and molting systems of Tanner crab. Crabs collected at sea will be processed in Dutch Harbor and blood and hepatopancreas samples evaluated with similar techniques to the NPRB project, allowing comparison of results. This project and my NPRB research will provide insight into the underlying mechanistic linkages between potential effects of climate change and important processes such as recruitment, growth, immunity, and natural mortality on Alaskan Tanner crab stocks from two LMEs.

DETAILED COLLECTION PROCEDURES

Detailed Collection Procedures:

SUBSAMPLE SELECTIVELY: Collect only those specimens that meet the criteria set by you in the next question

Estimated time: Subsample selectively. Within BCS index site 2, 100-200 female and 100-200 male immature *C. bairdi* will be collected, without regard to shell condition. Maturity will be determined by carapace width in males and pleon shape in females. Crabs will be placed in onion bags or cages labeled with the haul number, and kept in the live tanks. The goal is to deliver 100 live crabs of each sex to Dutch Harbor at the end of Leg 2, so if collections are made early in Leg 2, we will collect more crab than if collection is at end of Leg 2. hours

BIOLOGICAL COLLECTION DETAILS

Species To Be Collected: crab - *Chionoecetes bairdi*

Type of specimen to collect: live crabs

Specimen-level data to collect: sex, maturity, haul number

Specimen preservation method: none, live

SAMPLING DESIGN DETAILS

Target Quantity: 200 - 400

Will the request still be useful if the requested amount or frequency of specimens collected is not achieved? yes

What is the sampling protocol: **SUBSAMPLE SELECTIVELY:** Collect only those specimens that meet the criteria set by you in the next question

Criteria for subsampling if selective or stratified subsampling: Subsample selectively. Within BCS index site 2, 100-200 female and 100-200 male immature *C. bairdi* will be collected, without regard to shell condition. Maturity will be determined by carapace width in males and pleon shape in females. Crabs will be placed in onion bags or cages labeled with the haul number, and kept in the live tanks. The goal is to deliver 100 live crabs of each sex to Dutch Harbor at the end of Leg 2, so if collections are made early in Leg 2, we will collect more crab than if collection is at end of Leg 2.

Geographic Region of Collection

Survey: Eastern Bering Sea Shelf

Place keywords: Samples will be collected during Leg2 at bitter crab Index site 2 (Pribs) within the standard EBS survey area.

Bounding coordinates

Northern Boundary:

Southern Boundary:

Eastern Boundary:

Western Boundary:

CHEMICALS, SUPPLIES, EQUIPMENT, & SHIPPING

Project Chemicals:

- **Formaldehyde solutions: none**
- **Ethanol solutions: none**
- **glycerol/thymol: none**
- **DNA buffer (DMSO/EDTA/NaCl): none**
- **none**

Supplies provided by the AFSC: None

Supplies provided by the requester: calipers

datasheets

basket nets

onion bags

cages

tags

burlap

Permits issued or pending: Yes

24/7 Contact Information: Christie Lang 206-554-1755