
2019 GF Eastern Bering Sea Shelf

repeat collection
Biological specimen

Bitter Crab Syndrome in Eastern Bering Sea Mature Chionoecetes spp.

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Affiliation: AFSC - RACE

Project Funding Source: AFSC operational funds (part of my job, or funded activity plan)

Is this project funding extra sea days? no

Is this project funding fuel costs? no

Project Description and Justification: Bitter crab syndrome (BCS) is a potentially fatal disease of commercially important *Chionoecetes* spp. in the eastern Bering Sea (EBS) and is emerging worldwide in other decapod hosts, including king crabs in Russian waters. Efforts to monitor disease incidences and distribution in *Chionoecetes* spp. over the last 25 years have generated data to track possible trends in the North Pacific and may provide insight as to how climate conditions influence disease patterns. Such trends are important to industry as affected crabs possess a bitter flavor, rendering the meat unmarketable. From 2014-2017 infection rates have steadily climbed to an all-time high of 49% and 53% in immature snow and Tanner crabs, respectively. We have very little recent data on infection rates in mature *Chionoecetes* spp., and do not know if infection rates are as high, or increasing annually, as in immature crabs.

The goal of this project is to survey mature *Chionoecetes bairdi* and *C. opilio* for BCS at one designated index site per species within the EBS to determine infection rates. Additionally, our data will be used in a model recently developed to better understand variables involved in bitter crab disease prevalence, and will be used to guide future process studies. Collection from mature crabs will allow us to compare infection rates to those of immature crabs in the index sites and to historic levels. This data will allow us to postulate that different mortality/infection/encounter rates occur in immature and mature crabs – also potentially important information for fisheries modelers.

DETAILED COLLECTION PROCEDURES

Detailed Collection Procedures:

SUBSAMPLE RANDOM STRATIFIED: specimens will be collected randomly from each of the strata you designate in the next question

Estimated time: Subsample random stratified. Two index sites are designated, one for *C. bairdi* and one for *C. opilio*. At the appropriate index site, either mature *C. bairdi* or *C. opilio* will be randomly selected for sampling, without regard to sex or shell condition. Maturity will be determined by carapace width in males and pleon shape in females. Each index site is composed of 10 stations.
hours

BIOLOGICAL COLLECTION DETAILS

Species To Be Collected: crab - *Chionoecetes bairdi*, *Chionoecetes opilio*

Type of specimen to collect: blood

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

Specimen preservation method: 95% Ethanol

SAMPLING DESIGN DETAILS

Target Quantity: 400 - 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 RANDOM STRATIFIED:** specimens will be collected randomly from each of the strata you designate in the next question

Criteria for subsampling if selective or stratified subsampling: Subsample random stratified. Two index sites are designated, one for *C. bairdi* and one for *C. opilio*. At the appropriate index site, either mature *C. bairdi* or *C. opilio* will be randomly selected for sampling, without regard to sex or shell condition. Maturity will be determined by carapace width in males and pleon shape in females. Each index site is composed of 10 stations.

Geographic Region of Collection

Survey: Eastern Bering Sea Shelf

Place keywords: **Samples will be collected at 2 designated index sites 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: >1 L**
- **glycerol/thymol: none**
- **DNA buffer (DMSO/EDTA/NaCl): none**
- **none**

Supplies provided by the AFSC: None

**Supplies provided by the requester: calipers
syringes**

prefilled ethanol plates

needle disposal container

datasheets

basket nets

Permits issued or pending: No

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