
2019 GF Northern Bering Sea, Gulf of Alaska

repeat collection

Biological specimen

Bitter Crab Syndrome in Northern Bering Sea snow crab, Chionoecetes opilio

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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 is a potentially fatal disease of several crab species, including snow crabs and, in Russia, king crabs. Caused by Hematodinium sp., a parasitic dinoflagellate, it's considered an emerging worldwide disease in crab and lobster hosts. Studies on eastern Bering Sea (EBS) snow crab since 2014 have detected steadily climbing annual infection rates. Infection rates also increase spatially from south to north, with an all-time infection high of 49% in snow crab in 2017 in the northernmost areas of the EBS. Based on limited historical data, and the 2017 NBS survey collection, infection rates are thought to be higher in the northern Bering Sea (NBS) than the EBS; in 2017 70% of NBS crabs sampled were infected. The goal of this project is to survey immature female NBS snow crab for Hematodinium infection. Males are currently excluded from consideration due to a lack of data for distinguishing maturity stages of male crab; males will be included in the future. Effort will be focused on immature females to best facilitate comparative study between NBS and EBS populations. Data will be used to better understand disease ecology in snow crabs, including identification of vulnerable crab life history stages, infection levels, disease distribution, associations between disease occurrence and abiotic factors (e.g., temperature, depth) and potential ecosystem impacts due to potentially high numbers of infected, and perhaps mortally diseased, crab. The data gathered also will be used to inform future studies on the effects of this parasite on snow crab in the Bering Sea.

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. At the index site, immature female C. opilio will be randomly selected for sampling, without regard to shell condition. Female maturity will be determined by pleon shape. Each index site is composed of 10 stations. hours

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BIOLOGICAL COLLECTION DETAILS

Species To Be Collected: crab - Chionoecetes opilio, Paralithodes camtschaticus, Paralithodes platypus
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: 200 - 200
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. At the index site, immature female C. opilio will be randomly selected for sampling, without regard to shell condition. Female maturity will be determined by pleon shape. Each index site is composed of 10 stations.

Geographic Region of Collection

Survey: Northern Bering Sea, Gulf of Alaska

Place keywords: **Samples will be collected at 1 designated index site within the standard NBS survey area.**

<u>Bounding coordinates</u>

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
mesh bags

Permits issued or pending: No

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