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**2018 GF SURVEY - SPECIAL COLLECTION REQUEST:**

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**Survey: Eastern Bering Sea Shelf**

**Collection Title: Bitter Crab Syndrome in Eastern Bering Sea Chionoecetes spp.**

**Repeat or New Collection: repeat**

**Requester: Pamela Jensen**

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**206-526-4122**

**AFSC collaboration:**

**Collection Type: Biological specimen---> blood**

**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 from an industry perspective considering affected Tanner crabs possess a bitter flavor, rendering the meat unmarketable. Over the last 4 years infection rates have steadily climbed to an all-time high of 49% & 53% in immature snow & Tanner crabs, respectively.**

**The primary goal of this project is to survey Chionoecetes bairdi and C. opilio for BCS at designated index sites within the Bering Sea. Any changes in intensity of disease within the index sites may provide information as to how the disease is affecting host populations or changing within EBS. To understand BCS trends, it is important to survey the index sites annually and with the same protocols as used in the past. In addition to collecting data on infection rates, our data is being used to develop a model to better understand variables involved in disease prevalence, and our data is used to guide future process studies.**

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## DETAILED COLLECTION PROCEDURES

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### Detailed Collection Procedures:

Sampling will occur at six specific index sites (three for *C. bairdi* and three for *C. opilio*) throughout the Bering Sea and within established EBS Shelf survey stations. Each index site is composed of 10 stations. Sites will include: Bristol Bay, Pribilof Islands, St. Matthew Island and northeast stations. Map sent to [RACE.Surveycollections@noaa.gov](mailto:RACE.Surveycollections@noaa.gov).

At the pre-assigned stations within the index sites for *Chionoecetes bairdi* or *C. opilio*, Kodiak staff will randomly select 20 immature crabs. Crab morphometrics will be documented on a provided datasheet and each crab will be assigned a Pathobiology specimen number. For each crab, species, size, sex, shell condition, biometrics, maturity, haul number and visual BCS status will be recorded. Using a clean syringe, 0.2mL of hemolymph will be extracted from each crab & transferred into a well in a 96-well collection plate of 100% ethanol. The plate will be inverted to mix, & sharps and biological waste disposed. A total of approximately 1200 samples from immature crabs will be collected.

As above, crab morphometrics will be recorded & blood will be withdrawn from an additional 5 Tanner & 5 snow crabs & placed in 5 ml tubes prefilled with ethanol. These 10 crabs should be visually positive for BCS, may be any size or either sex, & may be collected from any EBS station.

Samples from red, blue and golden king crabs will be taken only if a crab appears visually positive for bitter crab syndrome (to date, none have been found in Alaskan waters); possible infected king crabs will be photographed.

Estimated time: Approximately 3 minutes per sample, 60 hr total, or 10 hrs/leg/boat.  
hours

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## BIOLOGICAL COLLECTION DETAILS

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Species To Be Collected: crab - *Chionoecetes bairdi*, *Chionoecetes opilio*, *Paralithodes camtschaticus*, *Paralithodes platypus*, *Lithodes aequispinus*

Type of specimen to collect: blood

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

Specimen preservation method: 95% Ethanol

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## **SAMPLING DESIGN DETAILS**

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**Target Quantity: 1200 - 1200**

**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. Six index sites are designated, three for *C. bairdi* and three for *C. opilio*. At the appropriate index site, either immature *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.**

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## **Geographic Region of Collection**

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**Survey: Eastern Bering Sea Shelf**

**Place keywords: Samples will be collected at 6 designated index sites within the standard EBS survey area.**

### Bounding coordinates

Northern Boundary:

Southern Boundary:

Eastern Boundary:

Western Boundary:

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## **CHEMICALS, SUPPLIES, EQUIPMENT, & SHIPPING**

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### **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**

**Permits issued or pending: No**

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