SPECIAL PROJECT APPLICATION
2006 RACE BOTTOM TRAWL SURVEYS
EBS Bottom Trawl Survey

1. **Project Title:** Bitter Crab Syndrome in North Pacific *Chionoecetes* sp.
Principle Investigator (PI)/Point of Contact: Frank Morado
Affiliation: AFSC/RACE
Address: 7600 Sand Point Way NE, Bldg 4, Seattle, WA 98115
Email: Frank.Morado@noaa.gov **Phone:** 206.526.6572

2. **History of work with AFSC RACE Division**
   a. **Past Special Projects with RACE:** Monitoring of BCS in Bering Sea Tanner crabs, 1987 to present (Meyers, T.R., **Morado**, **J.F.**, Sparks, A.K., Bishop, G.H., Pearson, T., Urban, D. & Jackson, D. 1996. The distribution of bitter crab syndrome in Tanner crabs (*Chionoecetes bairdi*, *C. opilio*) from the Gulf of Alaska and the Bering Sea. Dis. Aquatic Org. 26: 221-227); DNA based identification of EBS fish and invertebrates, 2004 to present; parasite fauna of EBS fish 2004.

   b. Priorities proposed project relates to:

Priority	Project	NMFS Activity	NMFS Program Capability
Species/Population Identification	DNA-based identification of pathogens and parasites	Recovery Implementation & Mangement Actions for Marine Mammals	Protected Species - Recovery Implementation & Mangement Plan
Organism/Ecosystem Health	Parasites as indicators of ecosystem health/change.	Ecosystem Structure & Function Surveys	Ecosystem Monitoring, Assessment & Forecasting
Organism/Ecosystem Health	Emerging diseases in association with global warming, (Bitter Crab Syndrome)	Ecosystem Structure & Function Assessments	Ecosystem Monitoring, Assessment & Forecasting

   c. RACE collaboration: Pathobiology staff will collect and analyze samples.

3. General Description and Justification: Bitter Crab Syndrome (BCS) is a fatal disease of commercially important *Chionoecetes* species of the North Pacific and is emerging worldwide in other decapod hosts. A major decline in the abundance of legal sized snow crabs has been observed in the last three years and the Tanner crab fishery has been closed in the Eastern Bering Sea (EBS) since 1996 due to low abundance. Approximately 175 stations will be pre-selected for sampling as part of an ongoing study on this disease. The sampler will collect hemolymph by syringe from 10-20 crabs of the dominant *Chionoecetes* species at each designated station completed by the vessel with Pathobiology staff (approximately half of the designated stations). Hemolymph will be preserved in 100% ethanol.

COLLECTION PROTOCOL

4. Detailed collection procedures:

What: Crab hemolymph from the following species:
Priority: *Chionoecetes* spp. (*C. opilio, C. bairdi)*
When available: *Lithodes* spp., *Hyas* spp.

Where: Randomly pre-selected EBS stations (approx. half of 175 stations)

When: After routine haul duties at designated stations, all three legs of EBS survey

Collection methodology: Randomly select at least ten but up to twenty specimens of the dominant *Chionoecetes* species. Record crab species, sex, shell condition, morphometry, visual BCS status, plate #, vessel, cruise and haul. Using a syringe draw 0.2mL hemolymph from the arthrodial membrane. Preserve hemolymph sample in 100% ethanol stored in pre-filled 96-well plates.

Quantity: ~1500 hemolymph samples (~500 per survey leg, one boat only)

Time Requirement: 20-30 min per sampled station, after other survey tasks are completed

5. **List of supplies:** We will provide 2000 1mL syringes, calipers, 18 96-well plates, sharps containers, biohazard bags, datasheets, shipping materials
6. **Hazardous materials:** 100% Ethanol (filled into 96-well plates prior to survey).

SHIPPING

7. **24/7 contact:** Vanessa Lowe (206) 526.4107, Frank Morado (206) 526.6572

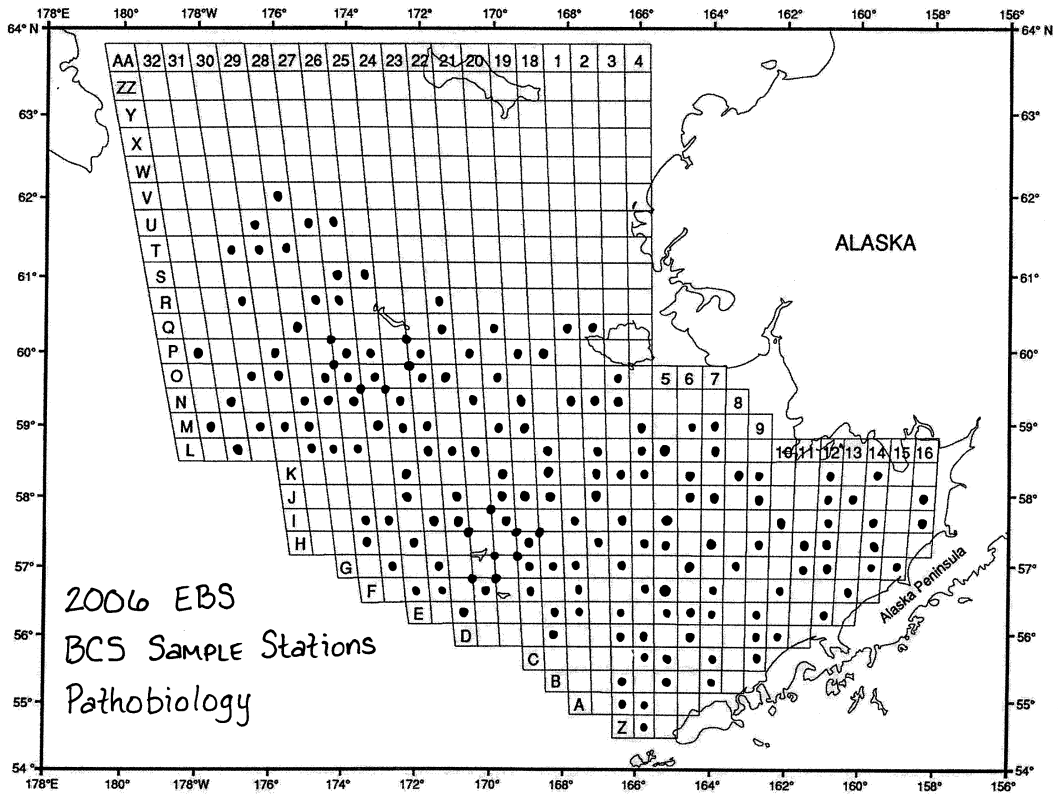
8. **Detailed shipping instructions:**

Shipping: Will use AFSC shipping van to and from Dutch Harbor. Ethanol packaging conforms to small quantity exception 49 CFR 173.4, proper shipping papers not required.

Shipping containers used: Outer container – DOT approved 5-gallon plastic twist top labeled buckets. Inner container - 96-well plates (1.2 ml wells) containing ethanol and sample individually contained in resealable plastic bags with absorbent spill pad. Used syringes will be transported in autoclave bags to be disposed of at AFSC. Used needles will be contained in sharps containers and disposed of at AFSC.

PERMITS

9. **Permits issued:** ADF&G Fish Resource Permit # CF-06-008 Exp. 12/31/2006


2006 EBS
BCS Sample Stations
Pathobiology
ALASKA
Alaska Peninsula
AA 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 1 2 3 4
ZZ
Y
X
W
V
U
T
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5 6 7
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9
10 11 12 13 14 15 16
178°E 180° 178°W 176° 174° 172° 170° 168° 166° 164° 162° 160° 158° 156°
64° N 63° 62° 61° 60° 59° 58° 57° 56° 55° 54°