

PROJECT OPERATIONAL PLAN FOR THE
2001 ST. MATTHEW ISLAND
BLUE KING CRAB TAGGING SURVEY

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Regional Information Report¹ No. 4K01-41

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July 2001

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ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES

PROJECT OPERATIONAL PLAN

Title: St. Matthew Blue King Crab Project

Yellow Book Project No(s): SP-851

Project Leader: Leslie J. Watson PCN: 11-1428
Biometrician: Douglas Pengilly PCN: 11-1202

Date Submitted: July 2001

Region: Westward
Fishery Unit: Bering Sea/Aleutian Islands Crab
Fishery: St. Matthew Island Blue King Crab (Area Q2)
Fishery Management Plan: Fishery Management Plan for the Commercial King and Tanner Crab Fisheries of the Bering Sea/Aleutian Islands

APPROVALS

Level	Signature	Date
Project Leader:	_____	_____
Biometrician:	_____	_____
Research Supervisor:	_____	_____
Regional Supervisor:	_____	_____
Headquarters' Receipt:	_____	_____
Headquarters' Approval	_____	_____
Headquarters' Recommendation:		
Further Review:	_____	_____
Approval:	_____	_____

ABSTRACT

This report describes the project operational plan for the 2001 St. Matthew Island blue king crab *Paralithodes platypus* triennial tagging survey. A description of the objectives, survey area, sampling and tagging methodologies, data analysis and reporting, and inseason commercial fishery tagged crab recovery protocols are given. The survey will be conducted by Alaska Department of Fish and Game biologists aboard the chartered 40.2-m crabber, FV *Billikin* south of St. Matthew Island using pot gear. One hundred twenty-nine primary stations and up to 24 secondary stations of four pots each will be sampled. A relative stock abundance index will be obtained and compared with indexes from the 1995 and 1998 triennial surveys of the St. Matthew Island blue king crab stock. Bottom water temperatures and video camera images will be collected to profile the habitats and behaviors of blue king crabs near and within pots. Collections of male and female snow crabs *Chionoecetes opilio* will be made in support of reproductive and fecundity studies to be conducted by University of Alaska and ADF&G scientists.

FOREWORD

The 2001 St. Matthew Island blue king crab project is funded under a federal grant to the State of Alaska for Bering Sea crab research (grant number NMFS-XXX).

INTRODUCTION

The St. Matthew section of the Bering Sea king crab management area has supported annual commercial fisheries for blue king crabs *Paralithodes platypus* since 1977, with a peak harvest of 9.5 million pounds landed in 1983 (Morrison et al. 1998). In 1978, National Marine Fisheries Service (NMFS) began conducting annual trawl surveys to assess population abundance and distribution of blue king crabs in the St. Matthew section (Otto et al. 1979). Much of the nearshore habitat for blue king crabs near St. Matthew Island is rocky and untrawlable, resulting in imprecise estimates of population abundance (Otto et al. 1984; Stevens and MacIntosh 1989). In an effort to refine and supplement annual trawl survey catch data, ADF&G conducted triennial pot surveys in the St. Matthew section in 1995 and 1998 (Blau 1996; Blau and Watson 1999b). Major objectives of those surveys were to determine the distribution and relative abundance of blue king crabs using pot gear and to tag crabs within the study area for recovery in subsequent commercial fisheries. These surveys used pots instead of trawls to index crabs on soft and rocky bottoms; survey stations were primarily offshore at depths greater than 20 fm. A stock assessment model incorporating multiple years of fishery and eastern Bering Sea (EBS) trawl survey data to improve abundance estimation of legal males has been formulated by Zheng and Kruse (2000).

The St. Matthew Island blue king crab stock was declared overfished in 1999 under guidelines established in the Federal Management Plan (FMP) and was closed to fishing that year (Morrison et al. 2000). This declaration and the depressed stock condition required that the Alaska Board of Fisheries (BOF) and the North Pacific Fishery Management Council (NPFMC) implement a rebuilding plan for the stock. The 2001 triennial St. Matthew blue king crab pot survey is necessary for assessing the stock condition relative to rebuilding from an overfished condition and to sustain the time series of data that is needed for incorporation into multiple-year stock assessment models.

The estimated number of female blue king crabs caught during the 20-year history of NMFS trawl surveys in the St. Matthew area has averaged one-third the number of males (Stevens et al. 1998). Similar results were found on the 1995 and 1998 ADF&G St. Matthew Island pot surveys where female blue king crabs composed about 40% of the total number of blue king crabs captured during those surveys (Blau 1996, Blau and Watson 1999b). In addition, small blue king crabs ≤ 80 mm carapace length (CL) of both sexes were under-represented in these surveys as compared to most of the crabs captured, which were >80 mm CL.

Various aspects of the reproductive biology of female blue kings in the Bering Sea have been defined. The size at 50% maturity for St. Matthew females is 80.6 mm CL (Somerton and MacIntosh 1985). Multiparous females are biennial spawners, whereas primiparous females can spawn in two consecutive years (Somerton and MacIntosh 1985, Jensen and Armstrong 1989). High percentages of females with empty embryo cases rather than ovigerous females have been reported in NMFS and ADF&G surveys and from inseason fishery data collected by observers in offshore regions near St. Matthew Island (Stevens and MacIntosh 1989 and 1993; Tracy 1995; Blau 1996; Blau and Watson 1999b; Boyle et al. 1997). In late summer-early fall during the trawl survey and subsequent fishery periods, ovigerous females are absent from deeper waters, 76% of the females were barren in the August 1998 survey, whereas eggbearing females comprised 70% of the crabs captured in nearshore, shallow waters (<20 fms) (Blau and Watson 1999b).

This operational plan describes the locale, design, methods, and tagging strategies for the third triennial survey of the St. Matthew Island blue king crab stock.

OBJECTIVES

Project objectives are to:

- 1) Obtain a relative stock abundance index (pot survey catch per unit effort) of blue king crab in the waters south of St. Matthew Island between 59°30' and 60°30' N latitude and 172°00' and 173°55' W longitude in July-August 2001.
- 2) Estimate spatial apportionment of fishery mortality, movements of crabs between seasons, and growth by tagging and releasing male blue king crabs during the pot survey and collecting recovery information from the 2001 and 2002 St. Matthew blue king crab fishery seasons (if prosecuted).
- 3) Provide information for assessing roles of habitat and water temperature on the distribution of blue king crabs in the St. Matthew Island area by obtaining underwater video images of bottom characteristics and bottom water temperatures at fished survey stations.
- 4) Collect live snow crabs needed for a cooperative research project with the University of Alaska.

METHODS

Survey Design

The 2001 blue king crab tagging survey will be conducted by the chartered 40.2 m (132 ft) FV *Billikin* from approximately July 21 to August 19, 2001. The *Billikin* will carry a captain, engineer, three crewmen, and four ADF&G biologists. The survey area and station array is based on the survey grid established for the 1995 ADF&G survey, which was designed to cover areas not surveyed by NMFS due to untrawlable substrate (Figure 1). The 1995 survey area was determined from geographic distribution of historic blue king crab fishery effort and the distribution and density of blue king crabs in historic NMFS trawl surveys (Watson et al. 1995). Two geographic strata with different densities of survey stations are defined: a double-station density (Stratum 2) directly south of St. Matthew Island, and a single-station density (Stratum 1) southward and offshore of Stratum 2. Station layout in Stratum 2 is based on a grid in which stations are spaced 5 nautical miles (nmi) north-to-south and east-to-west and overlaid with another 5 nmi x 5 nmi grid offset by 2.5 nmi north-to-south and east-to-west. Station layout in Stratum 1 is based on a single 5 nmi x 5 nmi grid. Stratum 2 has historically produced the highest catches of mature females and legal males and contains the areas of highest fishery effort in historic fisheries. A minimum of 129 stations (stations 1-121, 146-152, and 201) will be fished. If weather and other survey conditions allow, up to 24 additional stations (122-145) will also be fished.

Each station will consist of four rectangular king crab pots set 0.125 nmi apart and arrayed either north-to-south or east-to-west, depending on wind conditions. The king crab pots will be supplied by ADF&G and are those used in the 1995 and 1998 St. Matthew blue king crab surveys. Each pot measures 7' x 7' x 2.8', is fitted with 2 ¾" stretched mesh on all webbing, and has two opposing tunnel eyes measuring 8" x 36". The target soak time for each pot is 30 to 36 hours; each pot will be baited with one gallon of frozen chopped herring.

Catch Sampling

The contents of each pot fished will be enumerated to provide catch per unit effort data for blue king crabs, hair crabs *Erimacrus isenbeckii*, and snow crabs by sex and size. All blue king and hair crabs will be measured and assessed for shell condition. Snow crabs may be subsampled (minimum of 50 crabs per sex per pot) prior to measuring. Carapace length (CL) on blue king and hair crabs will be measured from the posterior margin of the right eye orbit to the midpoint of the rear margin of the carapace as in Wallace et al. (1949). Carapace width (CW) of snow crabs will be measured across the carapace at the widest part perpendicular to the medial line from the anterior to the posterior of the carapace, with the tips of the calipers reaching inside the lateral spines. Legal size of male blue king crabs (5.5" CW), hair crabs (3.25" CW), and snow crabs (3.1" CW) will be recorded. Females will be assessed for clutch condition, percent clutch fullness, egg color, and embryo development. Complete species composition from each pot will be recorded. Complete sampling procedures are in the *2001 Shipboard Instructions* (Appendix A).

Tagging Strategy

Blue king crabs will be tagged in anticipation of their recovery during possible commercial fisheries in fall 2001 and 2002. A maximum of 60 legal and 60 sublegal (≥ 90 mm CL) male blue king crabs will be tagged and released at each station. Each crab will be healthy, with no severe new or old injuries or parasitic infestations. The first 60 crabs of each size class (legal and sublegal) in each station that meet the tagging criteria will be tagged. If 60 eligible crabs are found in the first pot of a station, those 60 will be tagged, regardless of the number available in the remaining three pots of that station. Crabs will be tagged through the isthmus muscle using Floy® poly 'spaghetti' tags as described in Gray (1965).

Live Snow Crab Collection

A total of approximately 1,100 live snow crab specimens will be captured during the survey and held for live delivery to Dutch Harbor for use in five studies to be conducted in cooperation with the University of Alaska Fairbanks (UAF) and the University of Alaska Southeast (UAS). Live snow crab specimens will be held in the circulating seawater tank until the delivery to UAF-UAS scientists at Dutch Harbor is completed. Sample goals by study are as follows.

Reproductive biology study specimens. Four-hundred (400) multiparous females (ovigerous females with second or later egg clutch as judged by clutch fullness and old-shell or very-old shell

condition) will be collected. Those specimens will be shipped live from Dutch Harbor to the UAF laboratory in Juneau by UAF-UAS staff after delivery to Dutch Harbor.

Energetic study specimens. Sixty (60) primiparous females (ovigerous females with first egg clutch as judged by clutch fullness and new-shell condition) will be collected. Those specimens will be shipped live from Dutch Harbor to the UAF laboratory in Juneau by UAF-UAS staff after delivery to Dutch Harbor.

Molting study specimens. A sample of forty (40) male snow crabs, comprising 20 morphometrically immature males and 20 morphometrically mature males, will be collected. Morphometrically mature males are distinguished by larger chela at carapace width; a chela height to carapace width ratio of 0.21 or greater can be used to identify morphometrically mature males and ratio of 0.19 or less can be used to identify morphometrically immature males. Those specimens will be shipped live from Dutch Harbor to the UAF laboratory in Juneau by UAF-UAS staff after delivery to Dutch Harbor.

Fecundity study specimens. An additional 400 ovigerous females will be collected, with 100 each from the following categories: primiparous females, old-shell multiparous females, very-old shell multiparous females, very-very old shell (“graveyard”) multiparous females. Those specimens will be sacrificed for clutch, egg, and hemolymph sample collections by UAF-UAS scientists in Dutch Harbor.

Lipofuscin-aging study specimens. The survey crew may also be notified prior to 30 July to collect a total of 200 additional snow crabs. If collected, that sample will comprise approximately 15 crabs from each sex from the following size-shell categories: 15 very small juveniles, 15 small juveniles, 15 large juveniles, 15 new-shell mature, 15 old-shell mature, 15 very-old shell mature, and 15 very-very-old shell (“graveyard”) mature. Subjective size classes will be developed by survey biologists based on size classes encountered during the survey. If collected during the survey, those specimens will be shipped live from Dutch Harbor to the UAF laboratory in Juneau by UAF-UAS staff after delivery to Dutch Harbor.

These sampling goals may not be achieved under the constraints of the survey schedule, particularly for certain classes, such as very-very-old shell (“graveyard”) specimens. All efforts within the constraints of the survey schedule will be given to achieving sample goals, however. The live specimens should be collected as late in the survey as possible to minimize dead loss. For size-sex-shell classes that are easily obtained, 15% above the sampling goals should be collected to allow for any dead loss prior to delivery.

Underwater Video Camera and Submersible Temperature Recorder Deployment

Video images of bottom habitat will be obtained from the vicinity of one station fished per day using a lighted autonomous underwater video system placed within a king crab pot deployed within 0.25 nmi of the survey station. The camera will also record behavior of crabs approaching and within crab pots. Bottom temperature profiles will be obtained from two stations fished each day by placing a Brancker® model TR-1000 submersible temperature recorder (STR) in a station survey pot to measure hourly bottom temperatures whenever deployed.

Tagged Crab Recovery

An intensive tagged-crab recovery program involving samplers placed at all crab processing locations during fall 2001 and 2002 St. Matthew Island blue king crab fishery seasons will be conducted. Prior to the fishery and during vessel tank inspections, tag samplers will contact vessel crews and processing facilities to explain the tagged crab recovery effort and attendant tag reward program. A news release will be issued to the Bering Sea crab industry outlining the tag recovery effort. ADF&G personnel will be placed at St. Paul, Dutch Harbor, Akutan, King Cove, and all floating processors. At-sea shellfish observers from the ADF&G mandatory observer program will also monitor catches for tagged crabs. All recovered, tagged crabs will be measured and assessed for shell condition, with complete capture location and depth information to be obtained from vessel captains. Tagged sublegal crabs will be sampled, their tags left intact on the crab, and re-released as soon as possible when sampling occurs at sea.

DATA ANALYSIS

Catch per unit effort (crabs per pot) will be summarized by station location and by size-sex categories for blue king crab (sublegal males < 105-mm CL, sublegal males > 104-mm CL, legal males, immature females and mature females), snow crab (males and females), and hair crab (males and females). Size and shell age distribution of blue king crabs will be summarized graphically for each sex. Reproductive condition (clutch fullness, egg color, egg development, and dead embryos) of mature females will be summarized by shell condition. Bottom temperature data at survey stations will be summarized in a temperature profile for the survey area.

Tag recovery rates from the 2001 season, if prosecuted, will be summarized overall and by station of release to determine spatial distribution of fishery mortality relative to preseason distribution. Estimates of harvest rates on male crabs by stratum of release will be estimated using a depletion estimator (Hilborn and Walters 1992). Minimum distance and direction trends in movements of crabs from preseason release site to fishery capture site will also be estimated. Tag recovery rates from the 2002 season, if prosecuted, will be summarized overall and by station of release to determine spatial distribution of fishery mortality relative to 2001 preseason distribution. An adaptation of band recovery models (Brownie et al. 1985) to the differential recovery rates of males tagged as legals and sublegals will be used to provide an independent estimate of the harvest rate for the 2001 fishery. Minimum distance and direction trends in movements of crabs from 2001 preseason release site to 2002 fishery capture site will also be estimated. Size and shell condition data recorded at release and recovery will be used to estimate molting probability and growth per molt by size-shell class of males.

SCHEDULES AND PERSONNEL

Date	Activity	Personnel
1/01-7/01	Project planning, solicit vessel charter bids	Watson, Pengilly
1/01-7/01	Prepare POP, PRs for major purchases, shipboard instructions, survey gear.	Watson, Pengilly
7/21-8/19	Conduct 30-day survey south of St. Matthew Island.	Watson, Gish, Burt, Neufeld
9/1-30	Edit and enter survey data.	Watson, Rogers
10/1-12/31	Compile, analyze, and write survey report.	Watson

REPORTS

Date	Report	Author(s)
7/01	Project operational plan for the 2001 St. Matthew Island blue king crab tagging survey.	Watson, Pengilly
12/01	The 2001 St. Matthew Island blue king crab tagging survey.	Watson
3/02	Recoveries of tagged blue king crab in the 2001 commercial fishery.	Watson

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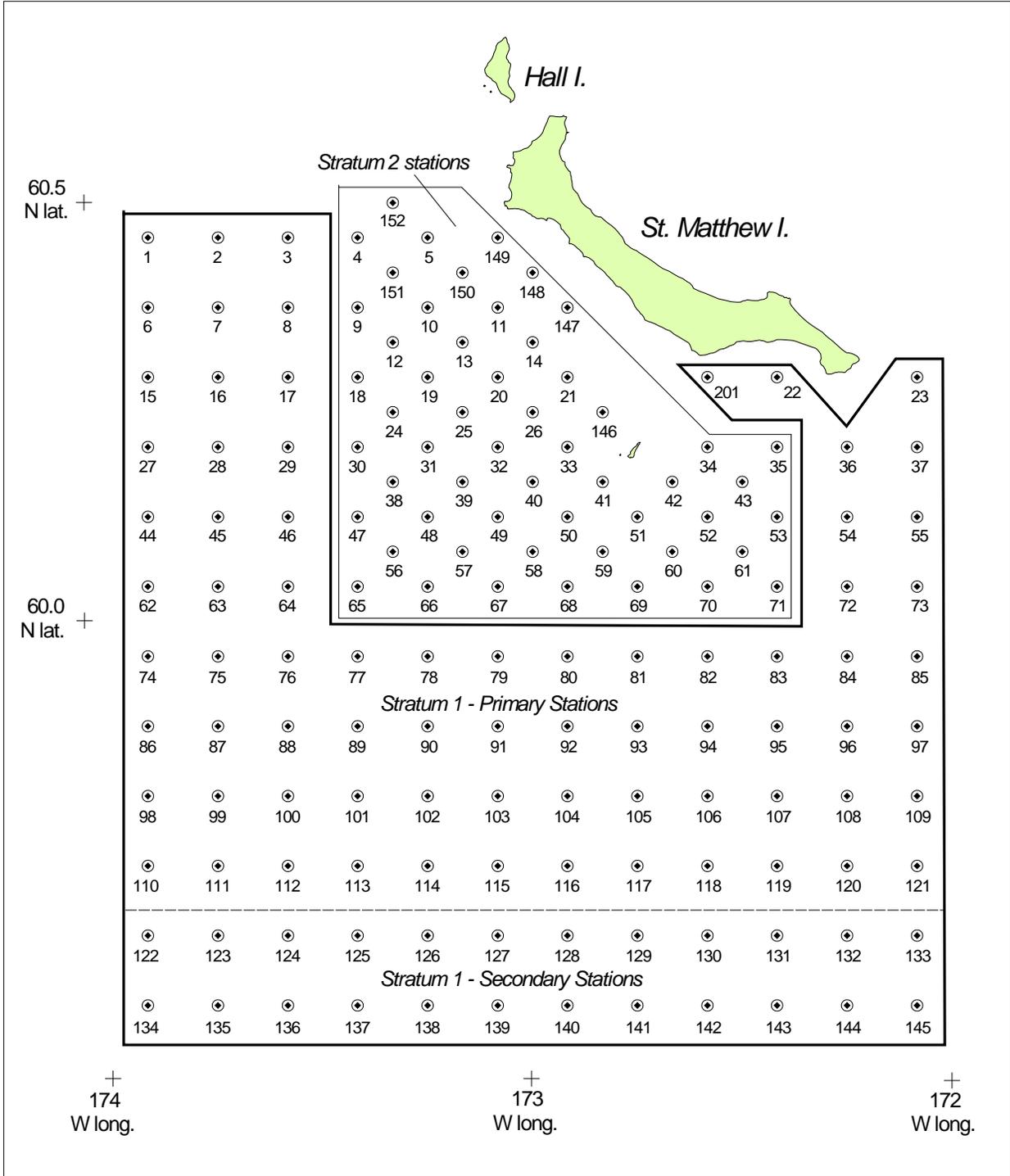


Figure 1. Location of the 54 stations in Stratum 2, the 75 primary and 24 secondary stations in Stratum 1 to be fished on the 2001 St. Matthew Island blue king crab survey.

APPENDIX

Appendix A.

Shipboard Instructions for the 2001
Triennial St. Matthew Island
Blue King Crab Survey

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June 26, 2001

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SURVEY ORIENTATION

Safety Briefing

Prior to departure from Dutch Harbor, both vessel and ADF&G crews are required by contract to go through the following safety briefings on board the vessel lead by the captain:

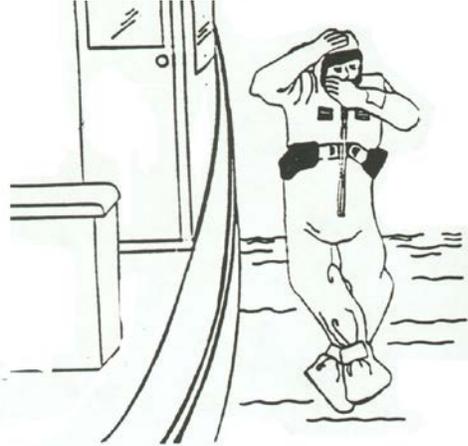
1. Shipboard Safety Drill: What to do in emergency situations including: 1) where personnel should go when the general alarm is pulled; location of life raft(s), skiff(s), survival suits, and EPIRBs; 2) safe locations on deck when gear is being set or pulled; and 3) dangerous locations on deck when gear is being worked. A drill will be held at an unspecified time to test the ability of all crewmembers and ADF&G personnel to don their suits and help others don theirs.
2. General Vessel Orientation: Vessel tour including fire stations, medical supplies, etc.
3. Vessel Rules: Where to hang rain gear, water conservation issues and policies (showers-how often & how long, laundry, dishes, bathroom), galley manners, personnel issues, miscellaneous Dos and Don'ts.

Safety of all personnel and the vessel is the primary concern every day during the charter. Under international law, the captain is responsible for the safety of the vessel and all souls aboard. Obey the captain in regards to your safety and the safety of others. If you have any doubt at all about where you should be at any time, ask the captain. Avoid running, be careful, and watch out for your own safety and the safety of others. Do not go on deck alone or anywhere outside when seas are extremely rough or conditions are otherwise unsafe; no photos or video are worth the risk. Make sure all deck gear is secured so that the temptation to save gear when it gets wicked out can be precluded. When the gear is being worked, pay attention to the location of buoy lines, boom hooks and other flying objects. Stand at safe locations specified by the captain or deck boss when pots are being set, retrieved, moved or stacked.

Prior to departure, preferably several days before the vessel is scheduled to depart, each ADF&G crew member shall check his/her survival suit, wax the zipper, and ensure that it works properly throughout its entire length. Place one large plastic bag at the entrance to each leg hole to ensure a quick donning of your suit if the need arises. Call the US Coast guard in Dutch Harbor (907.581.3466) for rules and times for testing EPIRBs; test the EPIRB and make sure it is securely attached to your suit. Test your strobe and make sure it has fresh batteries, and secure it to your suit. Practice donning your survival suit with a partner with all your rain gear and boots on. It is highly advisable that you also practice getting into the suit at a swimming pool prior to going to sea. Your peace of mind at sea will improve immensely if you have practiced and can get into your suit quickly, either on deck or in the water. If you don't know how to pack your suit or how to put it on, get someone who does to show you. If you must abandon ship, work with a buddy when getting into your survival suit; ensure that you and your buddy's zippers are up. If possible, secure a line between you and your buddy once you are in the water, but do not tie yourselves together prior to leaving the vessel. Generally, do not abandon ship until the last minute, as many boats that appear to be sinking remain afloat. Don't jump into the water unless there is no other option.

Protocol for Jumping Off of Vessels (reprinted from Alaska Marine Safety Education Association)

Immersion suit wearers who jump in the water incorrectly can damage their eardrums when air inside a suit rushes into the hood. In addition, damage to one's neck, back, or the suit's zipper can occur when jumping with an inflated air bladder. The diagram below shows the proper way to jump from a height while wearing an immersion suit.



To avoid injury, place the hand farthest from the vessel being abandoned inside the hood or neck of the suit before jumping. This creates a gap between the hood and face that will allow the air in the suit to escape.

Once the wearer enters the water, the hydrostatic squeeze of water pressure rapidly forces air from the legs and body of the suit into the hood. The more bulky and a loose fitting the suit, the more likely air will rush into the hood. Without a path for the air to escape, the pressure inside the head can be painful and even damaging to ear drums.

This same hand can be used to cover and protect the airway so the jumper does not involuntarily suck in any water through the gasping reflex.

Also, the immersion suit's air bladder should *not* be inflated if a jump is necessary. If it is, the jumper will come to a sudden and stressful stop once the inflated bladder with all its buoyancy hits the surface of the water. This can result in damage to wearer's neck or back. Damage to the suit's zipper and air bladder can also occur. On some suits the bladder is attached to the zipper, and the force of impact can rip the zipper apart. This damage has occurred even when jumping into the water from a standing position on a dock.

In addition to these two precautions, the jumper should place the hand nearest the vessel atop the hood. This does two things. It protects the side of the head near the vessel from hitting the vessel's side. Also, it keeps the hood in place while entering the water. It is easy for the hood to slip off during entry, especially if the immersion suit is large for the wearer. A well-anchored hood is critically important in preventing water from entering the airway, and in keeping the immersion suit wearer warm while in the water.

Enter the water correctly during training or drills. Learning the correct technique during the nonemergency situation can prevent unnecessary injury during an actual emergency.

Miscellaneous Shipboard Rules and Reminders

There will be no unauthorized retention of any animal for any purpose (i.e., home packing) during the survey by vessel or ADF&G crewmembers. However, Pacific cod may be retained as needed for video camera or snow crab collection pots only. Collection of crabs for display or other purposes will be authorized through the crew leader. L. Watson holds the scientific collecting permit for the survey; all requests for specimens to be collected will be itemized by the individual requesting the specimen.

Be considerate of others, maintain a sense of humor, and be patient while onboard the vessel. Keep your living quarters, work areas, and common areas neat. Please wash up thoroughly before meals. Extend offers to assist in meal preparation and dish washing. Vessel and ADF&G crews will work as a team particularly when sorting the catch and tagging crabs. We are all on the same boat with the objective of completing the charter goals; hence we are all on the same team, but our tasks will differ. Any personality conflicts will be resolved by the captain and crew leader; should situations arise that could escalate, notify them immediately. The crew leader has the authority to delay or halt the charter at any time (if conditions are unsafe, or so unworkable that necessary at-sea duties cannot be carried out) and has the authority to delay or halt the charter due to insubordination by any person on board. ADF&G crew must maintain all sampling equipment and ensure that calipers are cleaned daily. Store calipers, clipboards, etc., inside the vessel at the end of each sampling day. All sampling gear should be in a designated area out of the mainstream traffic pattern. Ensure that laptop computer(s) and the printer are secured at all times. Prior to end of each work day, ADF&G crewmembers will check with the crew leader to see if anything else needs to be done. When lifting anything, no matter how light it is, bend at the knees, keep your back straight and lift the object using your legs.

Instructions to the Captain

Consult with the crew leader prior to planning the fishing order of the stations and when pots are first picked in the morning and when setting should begin for the following day's pick. The approximate spacing between stations is 5 nmi (Figure 1). Each station consists of 4 king crab pots. The target soak time for each pot is 30 to 36 hours. Departures from the soak time goal may occur, but those less than 24 hours or greater than 42 hours are considered unacceptable unless unexpected high winds occur. The primary goal when planning gear setting strategies is to adhere to the 30 to 36 hour soak time goal for each pot. The itinerary for completing the primary stations is given in Table 1. Changes can be made if bad weather slows or prohibits setting or picking gear, or if crab catches are great.

Radio Schedule

A daily radio schedule or telex will be maintained between the vessel captain and the Dutch Harbor ADF&G office (WIM 76) or the vessel's regular processor. The daily catch log will be reported via email through Stratos. Station number, lift date, and the number of male and female blue king crabs caught by subclass (Figure 2).

Setting and Retrieving Gear

When setting or retrieving gear, you must use the pilothouse log to report all required data for each pot (Figure 3). Unique, sequential pot numbers will be assigned for each pot in successive stations. Temperature recorders will be placed in two different flagged pots and will be noted as either T1 (flagged with green) or T2 (flagged with pink or red) on the pilothouse log. The STRs will be switched regularly to sample the range of depths fished. The video camera will be deployed in a pot separate from station sampling pots. Note the location date, time, etc. for the camera pot wherever it is deployed in the comment section at the bottom of that day's pilothouse log.

We will try to stay on a schedule of retrieving the first pot by 0700 each day. Notify the ADF&G crew at least 30 minutes before the first pot is pulled in the morning so that we are ready for sampling. When each pot comes aboard, you must tell the ADF&G crew on deck what the sequential pot number is for each pot as they come aboard. If a pot is lost, was set without bait, or otherwise did not fish properly, note that on the Pilot House Log, and inform the ADF&G deck crew. Do not erase the sequential pot number of any lost pot or pot that had a poor performance.

SURVEY DESIGN

Area and Coverage Goals

The survey area and station array is shown in Figure 1. Each station will consist of four rectangular king crab pots set 0.125 nmi apart and arrayed either north-to-south or east-to-west, depending on prevailing wind conditions. There are two strata: a double-station density (Stratum 2) directly south of St. Matthew Island, and a single-station density (Stratum 1) southward and offshore of Stratum 2. A minimum of 129 stations (stations 1-121, 146-152, and 201) will be fished. If weather and other survey conditions allow, up to 24 additional stations (122-145) will also be fished. Mid-point station locations of the 129 primary and 24 secondary stations are listed in Table 2; individual pot locations for north-to south array within those stations are in Table 3.

Gear Description

ADF&G will supply the pots and are those used in the 1995 and 1998 St. Matthew surveys. Each pot measures 7' x 7' 2.8", is fitted with 2 ¾" stretched mesh on all webbing, and has two opposing tunnel eyes each measuring 8" x 36". The target soak time for each pot is 30 to 36 hours; each pot will be baited with one gallon of frozen, chopped herring.

POT SAMPLING AND TAGGING PROCEDURES

Pilot House Logs

The captain of the FV *Billikin* will complete the pilot house log for each pot fished (Figure 3). Each pot fished is assigned a unique sequential pot number beginning with the number one. When each pot is retrieved, the vessel captain will relay to the ADF&G crew the sequential pot number of that pot. Lost pots will keep their assigned sequential pot number; the ADF&G crew will note 'LOST POT' on the crab survey data form (Figure 4). If a pot is retrieved with no bait, the sequential pot number will also be recorded on the crab survey data form with the notation 'NO BAIT'.

Sorting and Subsampling the Catch

Commercial crab species (blue king, hair, and snow crabs) from each pot will be enumerated, measured, and tagged if applicable and released. Crabs will be sampled and data recorded *a priori* as follows: 1) blue king crabs, 2) hair crabs, and 3) snow crabs. All crabs will be handled carefully during sorting and measuring, and will be released immediately following sampling out the chute located near the measuring tables. Blue king, hair, and snow crabs will be measured, shell condition assessed and female reproductive conditions noted. All data will be recorded on the crab survey data form (Figure 4).

Biological Size

Biological size for blue king crabs and hair crabs (carapace length or CL) will be measured from the posterior margin of the right eye socket to the midpoint of the rear margin of the carapace, to the nearest millimeter (Wallace et al. 1949). Biological size for snow crabs (carapace width or CW) will be measured across the carapace at the widest part, between the spines, and perpendicular to a medial line that extends from the front of the carapace to the rear, to the nearest millimeter (Jadamec et al. 1999)

Legal Size

Legal size for male blue king, snow, and hair crabs is measured at the widest part of the carapace, including the lateral spines, at the limits outlined below. Blue king crab minimum legal width is 5.5" (≥ 139.7 mm CW); for snow crabs it is 3.1" (≥ 78.7 mm CW), and male hair crabs it is 3.25" (≥ 82.5 mm CW). Leave the 'legal' column blank for female blue king and hair crabs; note female snow crabs as 3-juvenile or 4-adult.

Shell Condition

The best place to estimate shell age for blue king crabs is on the ventral side of the coxa of the walking legs (pereopods) and meri. Soft-shell crabs are rarely captured in pots since they would have had to molt in the pot; hence, no soft-shell crabs (noted as '0') should be recorded. Refer to Jadamec et al. (1999) for assessing shell condition of snow crabs.

Blue King Crab

Refer to Table 4 for shell characteristics for male blue king crabs.

Soft-shell: Crab has molted within weeks. Exoskeleton is still soft and pliable from recent molt.

New-shell-pliable: Coxa and ventral surface of exoskeleton shiny, not scratched or pitted. Legs easily compressed when pinched (legs contain little meat at this time). Exoskeleton is fragile and subject to breakage when handled or dumped from the pot. If carapace is removed, the gills will be translucent-cream in color. Crabs estimated to have had new-pliable exoskeletons for approximately two weeks to 3 months after molting.

New-shell-hard: Coxa and ventral surface of exoskeleton dull white. Legs mostly full of meat, meri not easily compressed by pinching. If carapace is removed, the gills will be a light cream color. During August, this category includes most ovigerous females and those with matted setae.

Old-shell: Distal portion of the ventral coxa is partially or totally covered with brown scratches or dots. Legs are full of meat, meri are not easily compressed when pinched. If carapace is removed, gills will be tan in color due to fouling by microorganisms. Rarely are females assessed in this category.

Very old-shell: Distal portion of ventral coxa densely covered with black scratches or dots. Legs full of meat, meri not easily compressed when pinched. Carapace is darkened by black spots at the base of spines. Tips of dactyls are worn, rounded, and black. If carapace is removed, gills will be dark gray or gray-black in color due to fouling by microorganisms.

Snow Crab

Soft-shell: Crab has molted within weeks. Exoskeleton is still soft and pliable from recent molt. Dorsal part of exoskeleton pink.

New-shell-pliable: Coxa and ventral surface of exoskeleton shiny, not scratched or pitted. Legs easily compressed when pinched (legs contain little meat at this time). Exoskeleton light pink, fragile and subject to breakage when handled or dumped from the pot. If carapace is removed, the gills will be translucent-cream in color. Crabs estimated to have had new-pliable exoskeletons for approximately two weeks to 3 months after molting.

New-shell-hard: Crabs estimated to have had their exoskeletons ≤ 12 months. Dorsal side of the exoskeleton pinkish, ventral surfaces whitish-translucent. No visible scratches on ventral surface. Carapace spines sharp, unworn.

Old-shell: Crabs estimated to have had their exoskeletons for 13-24 months. Dorsal and ventral surfaces tan to light brown. Ventral surface marked frequently with scratches. Carapace spines worn.

Very old-shell: Crabs estimated to have had their exoskeletons 24-36 months. Dorsal and ventral surfaces dark tan to brown. Ventral surface heavily marked with scratches. Carapace spines worn and rounded.

Graveyard: Crabs estimated to have had their exoskeletons more than 36 months. Shell is soft and spongy, with decay at joints. Spines and dactyls are worn heavily. Epibionts are present and both the dorsum and ventrum of the shell appears brown to black.

Hair Crab

New-shell-pliable: Exoskeleton pink. Coxa and ventral surface of exoskeleton shiny, not scratched or pitted. Legs easily compressed when pinched (legs contain little meat at this time). Exoskeleton is fragile and subject to breakage when handled or dumped from the pot. Crabs estimated to have had new-pliable exoskeletons for approximately two weeks to 3 months after molting.

New-shell-hard: Exoskeleton pink. Legs mostly full of meat, meri not easily compressed by pinching.

Old-shell: Crabs with gray or tan cast to exoskeleton, sometimes fouled with marine life, e.g., barnacles.

Female Hair Crab

The presence of spermathecal plugs in female hair crabs will be recorded. Codes will be: 0-no spermathecal plugs in gonopores; 1-white plugs present; and 2-black plug present. Female hair crab will be collected for evaluating size at maturity. Female hair crabs that are carrying a full clutch of embryos will also be collected to assess fecundity of this species. Specimens will be preserved in a mix of formalin and seawater in 5-gallon buckets or frozen for later analysis. Each specimen will be bagged, identified by sequential pot number, with the carapace width (mm) and shell condition noted on the tag.

Incidental Species Data

All incidental fish and invertebrate species caught in pots will be enumerated and noted on the incidental species form (Figure 5).

Tagging Strategy

Blue king crabs will be tagged in anticipation of their recovery during possible commercial fisheries in fall 2001 and 2002. A maximum of 60 legal and 60 sublegal (≥ 90 mm CL) male blue king crabs will be tagged and released at each station. Each crab will be healthy, with no severe new or old injuries or parasitic infestations. The first 60 legal and first 60 sublegal (≥ 90 mm CL) crabs caught in each station that meet the tagging criteria will be tagged. If the maximum goal is captured in the first pot of a station, those crabs will be tagged, regardless of the number available in the remaining three pots of that station. Crabs will be tagged through the isthmus muscle using Floy® poly 'spaghetti' tags as described in Gray (1965). The tags are fluorescent pink, with

fluorescent green discs and are marked with the series letter 'C' followed by a 5-digit number (06,001-09,955; 10,001-13,000).

Tagged Crab Recovery

In the event previously tagged blue king crabs are captured, record all required information (size, shell condition, location, and reproductive data) on the tag recovery form (Figure 6). The 1995 tags are yellow; the 1998 tags are fluorescent pink. Sample tagged crabs as soon as possible, then release them with the tag intact as close to the capture location as possible. If the vessel moves off-station by more than 0.5 NMI, record the release location.

Ancillary Data Collections

Temperature Profiles

Bottom temperatures will be obtained by placing Brancker Model TR-1000 submersible temperature recorders (STRs) in pots to measure hourly bottom temperatures whenever deployed. One pot from two different stations will be selected to carry a STR; each has its own protective rubber tubing housing and attachment carabiners. Data may be downloaded from each STR during the survey, but it is not necessary to do so.

Underwater Video Camera

Video images of bottom habitat will be obtained from the vicinity of one station fished per day using a lighted autonomous underwater video system placed inside a pot within 0.25 nmi of a survey station. The camera will also record behavior of crabs approaching and within pots. A worksheet to record settings (periodicity of recording, start and stop times, etc.) is in Figure 7.

Daily Data Checking

Each day data is collected it will be checked for accuracy by crosschecking what was recorded, by a person other than the recorder. This includes all forms used that have been used that day (pilothouse log, crab survey data form, incidental species form, radio log). In addition, the male and female blue king crab catch by station form (Figure 8) should be completed and data recorded on the radio log (Figure 2) that is transmitted daily to ADF&G in Dutch Harbor.

EQUIPMENT LIST

EQUIPMENT FOR ADF&G PERSONNEL

1. Survival suit with attached EPIRB, strobe and water-activated light
2. Rain gear, boots, gloves
3. Stormy Seas jacket

DECK/SAMPLING EQUIPMENT

1. One 4'x8' aluminum sorting table with 4 stands
2. (2) wood dividers for sorting table
3. (2) aluminum measuring tables with adjustable legs
4. (12) thin, 3" hex head bolts and appropriate-sized socket wrench for table assembly
5. (8) clipboards (6 legal size, 2 regular size)
6. (4) covered clipboards (aluminum or plastic)
7. Variety of wood screws (1 pound each of 1", 2", and 3")
8. (4) pair calipers, large size with millimeter scale
9. (6) 5.5# measuring sticks
10. (2) cans WD-40
11. (3) sets of #11-20 wood clip-on number tags
12. (4) dump totes
13. (10) bushel baskets (5 orange, 5 black)
14. (4) garbage cans
15. (5) plastic Rubbermaid totes with lids
16. Assorted plastic bags: (20) Hefty large trash, (30) 1-gallon Zip-locks; (50) 1-quart Zip-locks.
17. (3) rolls flagging tape, each a different color, to include green
18. (40) rolls electrical tape
19. (3) liters of 100% formalin
20. (2) syringes
21. (5) assorted specimen jars
22. (1) roll 3/8" yellow buoy line
23. (2) rolls biodegradable cotton twine
24. (4) rolls twine (2 orange, 2 black)
25. Bag of halibut snaps
26. Germicide

FORMS

1. 50 pilot house log forms
2. 2000 crab survey data forms
3. 250 incidental species forms
4. 20 tagged crab recovery forms
5. 10 blue king crab catch by station forms
6. 10 radio log forms
7. 5 underwater video camera set-up forms

CHARTS AND BOOKS

1. (2) NOAA St. Matthew NOS NP-2-7 charts
2. (1) Alaska's Saltwater Fishes and Other Sea Life (Kessler)
3. (1) Pacific Fishes of Canada (Hart)
4. (1) NMFS Species Code book
5. (2) Biol, field tech. Chion. Crabs (Jadamec et al.)
6. (1) 1995 St. Matthew BKC survey report

7. (1) 1998 St. Matthew BKC survey report
8. (1) 2000 NMFS EBS survey report

OFFICE AND MISCELLANEOUS SUPPLIES

1. (2) crew leader notebooks (3-ring binders)
2. (2) hand-held calculators
3. (10) mechanical pencils
4. (5) ink pens
5. (100) sheets plain paper
6. (50) sheets Rite-in-the-Rain paper
7. Rite-in-the-Rain notebooks:
(5) pocket size (3 1/4"x5 3/4")
(5) field notebooks (4 5/8"x7")
8. North Star medical kit
9. 25-ft power cord
10. Buss bar
11. 2 Micron 486 notebook computer with cables and connectors
12. Cannon BubbleJet printer with cables, connectors, and spare ink cartridge
13. (10) 3.5" diskettes
14. (20) pair earplugs
15. Permanent markers
16. Highlighting markers
17. 3-ring hole punch
18. (50) rubber bands, assorted, including large to fit clipboards
19. (2) rolls each: Scotch tape, 3" 3M-tpe clear tape, and duct tape
20. Paper clips
21. Envelopes

CAMERA EQUIPMENT

1. Sea and Sea camera
2. Minolta 8-mm camcorder
3. (4) 8-mm tapes
4. (5) rolls 35-mm print film
5. (5) rolls 35-mm slide film

UNDERWATER VIDEO CAMERA EQUIPMENT

1. frame assembly
2. toolkit
3. lenses (1 color, 1 B&W)
4. battery cable, plus spare
5. strobe lights, spares
6. strobe cable, spares
7. "pumpkin" housing
8. 8-mm tapes
9. battery, spare
10. instruction manual

SUBMERSIBLE TEMPERATURE RECORDER EQUIPMENT

1. 2 STRs, with housings and pot clips
2. fresh 'D' cell batteries
3. software
4. instruction manual
5. RS232-R12 cables

LITERATURE CITED

- Gray, G.W., Jr. 1965. Tags for marking red king crabs. *Progr. Fish. -Cult.* 27:221-227.
- Jadamec, L.S., W.E. Donaldson, and P. Cullenberg. 1999. Biological field techniques for Chionoecetes Crabs. University of Alaska Sea Grant College Program, AK-SG-99-02, Fairbanks.
- Wallace, M.M., C.J. Pertuit, and A.R. Hvatum. 1949. Contribution to the biology of the king crab (*Paralithodes camtschatica*) Tilesius. U. S. Department of the Interior, Fish and Wildlife Service, Fishery Leaflet No. 340.

Table 1. Survey itinerary for the 2001 St. Matthew Island blue king crab tagging survey.

JULY	ACTIVITY	
23	Depart Dutch Harbor 12:01 am. Travel to St. Matthew survey area.	
24	Travel to first station.	
25	Set Block 1 stations 1-3, 6-9.	
26	Set Block 2 stations 4-5, 10, 149-150, 152.	Pick Block 1 stations.
27	Set Block 3 stations 11, 13-14, 20-21, 147-148.	Pick Block 2 stations.
28	Set Block 4 stations 12, 18-19, 24-25, 30-31.	Pick Block 3 stations.
29	Set Block 5 stations 15-17, 27-29, 44.	Pick Block 4 stations.
30	Set Block 6 stations 45-47, 62-65.	Pick Block 5 stations.
31	Set Block 7 stations 38-39, 48, 56-57, 66-67.	Pick Block 6 stations.
AUGUST		
1	Set Block 8 stations 26, 32-33, 40-41, 49, 146.	Pick Block 7 stations.
2	Set Block 9 stations 50-51, 58-60, 68-69.	Pick Block 8 stations.
3	Set Block 10 stations 42-43, 52-53, 61, 70-71.	Pick Block 9 stations.
4	Set Block 11 stations 22-23, 34-37, 201.	Pick Block 10 stations.
5	Set Block 12 stations 54-55, 72-73, 83-85.	Pick Block 11 stations.
6	Set Block 13 stations 80-82, 91-94.	Pick Block 12 stations.
7	Set Block 14 stations 76-79, 88-90.	Pick Block 13 stations.
8	Set Block 15 stations 74-75, 86-87, 98-100.	Pick Block 14 stations.
9	Set Block 16 stations 101-104, 113-115.	Pick Block 15 stations.
10	Set Block 17 stations 95, 105-107, 116-118.	Pick Block 16 stations.
11	Set Block 18 stations 96-97, 108-109, 119-121.	Pick Block 17 stations.
12	Set Block 19 stations 131-133, 142-145.	Pick Block 18 stations.
13	Set Block 20 stations 127-130, 139-141.	Pick Block 19 stations.
14	Set Block 21 stations 112, 124-126, 136-148.	Pick Block 20 stations.
15	Set Block 22 stations 110-111, 122-123, 134-135.	Pick Block 21 stations.
16	Pick Block 22 stations. Travel to snow crab grounds; set gear.	
17	Pick and set snow crab gear.	
18	Pick and set snow crab gear.	
19	Allocated weather day.	
20	Travel to Dutch Harbor.	
21	Travel to Dutch Harbor; offload gear.	
22	Sample and pack snow crab specimens; travel to Kodiak.	

Table 2. Midpoint locations of 129 primary stations in Strata 1 and 2 and the 24 secondary stations in Stratum 1 to be fished during the 2001 St. Matthew blue king crab survey.

Station	N. Latitude		W. Longitude	
	Degrees	Minutes	Degrees	Minutes
1	60	27.5	173	55
2	60	27.5	173	45
3	60	27.5	173	35
4	60	27.5	173	25
5	60	27.5	173	15
6	60	22.5	173	55
7	60	22.5	173	45
8	60	22.5	173	35
9	60	22.5	173	25
10	60	22.5	173	15
11	60	22.5	173	5
12	60	20.0	173	20
13	60	20.0	173	10
14	60	20.0	173	0
15	60	17.5	173	55
16	60	17.5	173	45
17	60	17.5	173	35
18	60	17.5	173	25
19	60	17.5	173	15
20	60	17.5	173	5
21	60	17.5	172	55
22	60	17.5	172	25
23	60	17.5	172	5
24	60	15.0	173	20
25	60	15.0	173	10
26	60	15.0	173	0
27	60	12.5	173	55
28	60	12.5	173	45
29	60	12.5	173	35
30	60	12.5	173	25
31	60	12.5	173	15
32	60	12.5	173	5
33	60	12.5	172	55
34	60	12.5	172	35
35	60	12.5	172	25
36	60	12.5	172	15
37	60	12.5	172	5
38	60	10.0	173	20

-Continued-

Table 2. (page 2 of 4)

Station	N. Latitude		W. Longitude	
	Degrees	Minutes	Degrees	Minutes
39	60	10.0	173	10
40	60	10.0	173	0
41	60	10.0	172	50
42	60	10.0	172	40
43	60	10.0	172	30
44	60	7.5	173	55
45	60	7.5	173	45
46	60	7.5	173	35
47	60	7.5	173	25
48	60	7.5	173	15
49	60	7.5	173	5
50	60	7.5	172	55
51	60	7.5	172	45
52	60	7.5	172	35
53	60	7.5	172	25
54	60	7.5	172	15
55	60	7.5	172	5
56	60	5.0	173	20
57	60	5.0	173	10
58	60	5.0	173	0
59	60	5.0	172	50
60	60	5.0	172	40
61	60	5.0	172	30
62	60	2.5	173	55
63	60	2.5	173	45
64	60	2.5	173	35
65	60	2.5	173	25
66	60	2.5	173	15
67	60	2.5	173	5
68	60	2.5	172	55
69	60	2.5	172	45
70	60	2.5	172	35
71	60	2.5	172	25
72	60	2.5	172	15
73	60	2.5	172	5
74	59	57.5	173	55
75	59	57.5	173	45
76	59	57.5	173	35
77	59	57.5	173	25

-Continued-

Table 2. (page 3 of 4)

Station	N. Latitude		W. Longitude	
	Degrees	Minutes	Degrees	Minutes
78	59	57.5	173	15
79	59	57.5	173	5
80	59	57.5	172	55
81	59	57.5	172	45
82	59	57.5	172	35
83	59	57.5	172	25
84	59	57.5	172	15
85	59	57.5	172	5
86	59	52.5	173	55
87	59	52.5	173	45
88	59	52.5	173	35
89	59	52.5	173	25
90	59	52.5	173	15
91	59	52.5	173	5
92	59	52.5	172	55
93	59	52.5	172	45
94	59	52.5	172	35
95	59	52.5	172	25
96	59	52.5	172	15
97	59	52.5	172	5
98	59	47.5	173	55
99	59	47.5	173	45
100	59	47.5	173	35
101	59	47.5	173	25
102	59	47.5	173	15
103	59	47.5	173	5
104	59	47.5	172	55
105	59	47.5	172	45
106	59	47.5	172	35
107	59	47.5	172	25
108	59	47.5	172	15
109	59	47.5	172	5
110	59	42.5	173	55
111	59	42.5	173	45
112	59	42.5	173	35
113	59	42.5	173	25
114	59	42.5	173	15
115	59	42.5	173	5

-Continued-

Table 2. (page 4 of 4)

Station	N. Latitude		W. Longitude	
	Degrees	Minutes	Degrees	Minutes
116	59	42.5	172	55
117	59	42.5	172	45
118	59	42.5	172	35
119	59	42.5	172	25
120	59	42.5	172	15
121	59	42.5	172	5
122	59	37.5	173	55
123	59	37.5	173	45
124	59	37.5	173	35
125	59	37.5	173	25
126	59	37.5	173	15
127	59	37.5	173	5
128	59	37.5	172	55
129	59	37.5	172	45
130	59	37.5	172	35
131	59	37.5	172	25
132	59	37.5	172	15
133	59	37.5	172	5
134	59	32.5	173	55
135	59	32.5	173	45
136	59	32.5	173	35
137	59	32.5	173	25
138	59	32.5	173	15
139	59	32.5	173	5
140	59	32.5	172	55
141	59	32.5	172	45
142	59	32.5	172	35
143	59	32.5	172	25
144	59	32.5	172	15
145	59	32.5	172	5
146	60	15.0	172	50
147	60	22.5	172	55
148	60	25.0	173	0
149	60	27.5	173	5
150	60	25.0	173	10
151	60	25.0	173	20
152	60	30.0	173	20
201	60	17.5	172	35

Table 3. Pot location within each station to be fished during the 2001 St. Matthew blue king crab survey.

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
1	1	60	27.69	173	55
1	2	60	27.56	173	55
1	3	60	27.44	173	55
1	4	60	27.31	173	55
2	1	60	27.69	173	45
2	2	60	27.56	173	45
2	3	60	27.44	173	45
2	4	60	27.31	173	45
3	1	60	27.69	173	35
3	2	60	27.56	173	35
3	3	60	27.44	173	35
3	4	60	27.31	173	35
4	1	60	27.69	173	25
4	2	60	27.56	173	25
4	3	60	27.44	173	25
4	4	60	27.31	173	25
5	1	60	27.69	173	15
5	2	60	27.56	173	15
5	3	60	27.44	173	15
5	4	60	27.31	173	15
6	1	60	22.69	173	55
6	2	60	22.56	173	55
6	3	60	22.44	173	55
6	4	60	22.31	173	55
7	1	60	22.69	173	45
7	2	60	22.56	173	45
7	3	60	22.44	173	45
7	4	60	22.31	173	45
8	1	60	22.69	173	35
8	2	60	22.56	173	35
8	3	60	22.44	173	35
8	4	60	22.31	173	35
9	1	60	22.69	173	25
9	2	60	22.56	173	25
9	3	60	22.44	173	25
9	4	60	22.31	173	25
10	1	60	22.69	173	15
10	2	60	22.56	173	15
10	3	60	22.44	173	15
10	4	60	22.31	173	15
11	1	60	22.69	173	5
11	2	60	22.56	173	5
11	3	60	22.44	173	5
11	4	60	22.31	173	5

-Continued-

Table 3. (page 2 of 14)

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
12	1	60	20.19	173	20
12	2	60	20.06	173	20
12	3	60	19.94	173	20
12	4	60	19.81	173	20
13	1	60	20.19	173	10
13	2	60	20.06	173	10
13	3	60	19.94	173	10
13	4	60	19.81	173	10
14	1	60	20.19	173	0
14	2	60	20.06	173	0
14	3	60	19.94	173	0
14	4	60	19.81	173	0
15	1	60	17.69	173	55
15	2	60	17.56	173	55
15	3	60	17.44	173	55
15	4	60	17.31	173	55
16	1	60	17.69	173	45
16	2	60	17.56	173	45
16	3	60	17.44	173	45
16	4	60	17.31	173	45
17	1	60	17.69	173	35
17	2	60	17.56	173	35
17	3	60	17.44	173	35
17	4	60	17.31	173	35
18	1	60	17.69	173	25
18	2	60	17.56	173	25
18	3	60	17.44	173	25
18	4	60	17.31	173	25
19	1	60	17.69	173	15
19	2	60	17.56	173	15
19	3	60	17.44	173	15
19	4	60	17.31	173	15
20	1	60	17.69	173	5
20	2	60	17.56	173	5
20	3	60	17.44	173	5
20	4	60	17.31	173	5
21	1	60	17.69	172	55
21	2	60	17.56	172	55
21	3	60	17.44	172	55
21	4	60	17.31	172	55
22	1	60	17.69	172	25
22	2	60	17.56	172	25
22	3	60	17.44	172	25
22	4	60	17.31	172	25

-Continued-

Table 3. (page 3 of 14)

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
23	1	60	17.69	172	5
23	2	60	17.56	172	5
23	3	60	17.44	172	5
23	4	60	17.31	172	5
24	1	60	15.19	173	20
24	2	60	15.06	173	20
24	3	60	14.94	173	20
24	4	60	14.81	173	20
25	1	60	15.19	173	10
25	2	60	15.06	173	10
25	3	60	14.94	173	10
25	4	60	14.81	173	10
26	1	60	15.19	173	0
26	2	60	15.06	173	0
26	3	60	14.94	173	0
26	4	60	14.81	173	0
27	1	60	12.69	173	55
27	2	60	12.56	173	55
27	3	60	12.44	173	55
27	4	60	12.31	173	55
28	1	60	12.69	173	45
28	2	60	12.56	173	45
28	3	60	12.44	173	45
28	4	60	12.31	173	45
29	1	60	12.69	173	35
29	2	60	12.56	173	35
29	3	60	12.44	173	35
29	4	60	12.31	173	35
30	1	60	12.69	173	25
30	2	60	12.56	173	25
30	3	60	12.44	173	25
30	4	60	12.31	173	25
31	1	60	12.69	173	15
31	2	60	12.56	173	15
31	3	60	12.44	173	15
31	4	60	12.31	173	15
32	1	60	12.69	173	5
32	2	60	12.56	173	5
32	3	60	12.44	173	5
32	4	60	12.31	173	5
33	1	60	12.69	172	55
33	2	60	12.56	172	55
33	3	60	12.44	172	55
33	4	60	12.31	172	55

-Continued-

Table 3. (page 4 of 14)

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
34	1	60	12.69	172	35
34	2	60	12.56	172	35
34	3	60	12.44	172	35
34	4	60	12.31	172	35
35	1	60	12.69	172	25
35	2	60	12.56	172	25
35	3	60	12.44	172	25
35	4	60	12.31	172	25
36	1	60	12.69	172	15
36	2	60	12.56	172	15
36	3	60	12.44	172	15
36	4	60	12.31	172	15
37	1	60	12.69	172	5
37	2	60	12.56	172	5
37	3	60	12.44	172	5
37	4	60	12.31	172	5
38	1	60	10.19	173	20
38	2	60	10.06	173	20
38	3	60	9.94	173	20
38	4	60	9.81	173	20
39	1	60	10.19	173	10
39	2	60	10.06	173	10
39	3	60	9.94	173	10
39	4	60	9.81	173	10
40	1	60	10.19	173	0
40	2	60	10.06	173	0
40	3	60	9.94	173	0
40	4	60	9.81	173	0
41	1	60	10.19	172	50
41	2	60	10.06	172	50
41	3	60	9.94	172	50
41	4	60	9.81	172	50
42	1	60	10.19	172	40
42	2	60	10.06	172	40
42	3	60	9.94	172	40
42	4	60	9.81	172	40
43	1	60	10.19	172	30
43	2	60	10.06	172	30
43	3	60	9.94	172	30
43	4	60	9.81	172	30
44	1	60	7.69	173	55
44	2	60	7.56	173	55
44	3	60	7.44	173	55
44	4	60	7.31	173	55

-Continued-

Table 3. (page 5 of 14)

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
45	1	60	7.69	173	45
45	2	60	7.56	173	45
45	3	60	7.44	173	45
45	4	60	7.31	173	45
46	1	60	7.69	173	35
46	2	60	7.56	173	35
46	3	60	7.44	173	35
46	4	60	7.31	173	35
47	1	60	7.69	173	25
47	2	60	7.56	173	25
47	3	60	7.44	173	25
47	4	60	7.31	173	25
48	1	60	7.69	173	15
48	2	60	7.56	173	15
48	3	60	7.44	173	15
48	4	60	7.31	173	15
49	1	60	7.69	173	5
49	2	60	7.56	173	5
49	3	60	7.44	173	5
49	4	60	7.31	173	5
50	1	60	7.69	172	55
50	2	60	7.56	172	55
50	3	60	7.44	172	55
50	4	60	7.31	172	55
51	1	60	7.69	172	45
51	2	60	7.56	172	45
51	3	60	7.44	172	45
51	4	60	7.31	172	45
52	1	60	7.69	172	35
52	2	60	7.56	172	35
52	3	60	7.44	172	35
52	4	60	7.31	172	35
53	1	60	7.69	172	25
53	2	60	7.56	172	25
53	3	60	7.44	172	25
53	4	60	7.31	172	25
54	1	60	7.69	172	15
54	2	60	7.56	172	15
54	3	60	7.44	172	15
54	4	60	7.31	172	15
55	1	60	7.69	172	5
55	2	60	7.56	172	5
55	3	60	7.44	172	5
55	4	60	7.31	172	5

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Table 3. (page 6 of 14)

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
56	1	60	5.19	173	20
56	2	60	5.06	173	20
56	3	60	4.94	173	20
56	4	60	4.81	173	20
57	1	60	5.19	173	10
57	2	60	5.06	173	10
57	3	60	4.94	173	10
57	4	60	4.81	173	10
58	1	60	5.19	173	0
58	2	60	5.06	173	0
58	3	60	4.94	173	0
58	4	60	4.81	173	0
59	1	60	5.19	172	50
59	2	60	5.06	172	50
59	3	60	4.94	172	50
59	4	60	4.81	172	50
60	1	60	5.19	172	40
60	2	60	5.06	172	40
60	3	60	4.94	172	40
60	4	60	4.81	172	40
61	1	60	5.19	172	30
61	2	60	5.06	172	30
61	3	60	4.94	172	30
61	4	60	4.81	172	30
62	1	60	2.69	173	55
62	2	60	2.56	173	55
62	3	60	2.44	173	55
62	4	60	2.31	173	55
63	1	60	2.69	173	45
63	2	60	2.56	173	45
63	3	60	2.44	173	45
63	4	60	2.31	173	45
64	1	60	2.69	173	35
64	2	60	2.56	173	35
64	3	60	2.44	173	35
64	4	60	2.31	173	35
65	1	60	2.69	173	25
65	2	60	2.56	173	25
65	3	60	2.44	173	25
65	4	60	2.31	173	25
66	1	60	2.69	173	15
66	2	60	2.56	173	15
66	3	60	2.44	173	15
66	4	60	2.31	173	15

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Table 3. (page 7 of 14)

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
67	1	60	2.69	173	5
67	2	60	2.56	173	5
67	3	60	2.44	173	5
67	4	60	2.31	173	5
68	1	60	2.69	172	55
68	2	60	2.56	172	55
68	3	60	2.44	172	55
68	4	60	2.31	172	55
69	1	60	2.69	172	45
69	2	60	2.56	172	45
69	3	60	2.44	172	45
69	4	60	2.31	172	45
70	1	60	2.69	172	35
70	2	60	2.56	172	35
70	3	60	2.44	172	35
70	4	60	2.31	172	35
71	1	60	2.69	172	25
71	2	60	2.56	172	25
71	3	60	2.44	172	25
71	4	60	2.31	172	25
72	1	60	2.69	172	15
72	2	60	2.56	172	15
72	3	60	2.44	172	15
72	4	60	2.31	172	15
73	1	60	2.69	172	5
73	2	60	2.56	172	5
73	3	60	2.44	172	5
73	4	60	2.31	172	5
74	1	59	57.69	173	55
74	2	59	57.56	173	55
74	3	59	57.44	173	55
74	4	59	57.31	173	55
75	1	59	57.69	173	45
75	2	59	57.56	173	45
75	3	59	57.44	173	45
75	4	59	57.31	173	45
76	1	59	57.69	173	35
76	2	59	57.56	173	35
76	3	59	57.44	173	35
76	4	59	57.31	173	35
77	1	59	57.69	173	25
77	2	59	57.56	173	25
77	3	59	57.44	173	25
77	4	59	57.31	173	25

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Table 3. (page 8 of 14)

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
78	1	59	57.69	173	15
78	2	59	57.56	173	15
78	3	59	57.44	173	15
78	4	59	57.31	173	15
79	1	59	57.69	173	5
79	2	59	57.56	173	5
79	3	59	57.44	173	5
79	4	59	57.31	173	5
80	1	59	57.69	172	55
80	2	59	57.56	172	55
80	3	59	57.44	172	55
80	4	59	57.31	172	55
81	1	59	57.69	172	45
81	2	59	57.56	172	45
81	3	59	57.44	172	45
81	4	59	57.31	172	45
82	1	59	57.69	172	35
82	2	59	57.56	172	35
82	3	59	57.44	172	35
82	4	59	57.31	172	35
83	1	59	57.69	172	25
83	2	59	57.56	172	25
83	3	59	57.44	172	25
83	4	59	57.31	172	25
84	1	59	57.69	172	15
84	2	59	57.56	172	15
84	3	59	57.44	172	15
84	4	59	57.31	172	15
85	1	59	57.69	172	5
85	2	59	57.56	172	5
85	3	59	57.44	172	5
85	4	59	57.31	172	5
86	1	59	52.69	173	55
86	2	59	52.56	173	55
86	3	59	52.44	173	55
86	4	59	52.31	173	55
87	1	59	52.69	173	45
87	2	59	52.56	173	45
87	3	59	52.44	173	45
87	4	59	52.31	173	45
88	1	59	52.69	173	35
88	2	59	52.56	173	35
88	3	59	52.44	173	35
88	4	59	52.31	173	35

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Table 3. (page 9 of 14)

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
89	1	59	52.69	173	25
89	2	59	52.56	173	25
89	3	59	52.44	173	25
89	4	59	52.31	173	25
90	1	59	52.69	173	15
90	2	59	52.56	173	15
90	3	59	52.44	173	15
90	4	59	52.31	173	15
91	1	59	52.69	173	5
91	2	59	52.56	173	5
91	3	59	52.44	173	5
91	4	59	52.31	173	5
92	1	59	52.69	172	55
92	2	59	52.56	172	55
92	3	59	52.44	172	55
92	4	59	52.31	172	55
93	1	59	52.69	172	45
93	2	59	52.56	172	45
93	3	59	52.44	172	45
93	4	59	52.31	172	45
94	1	59	52.69	172	35
94	2	59	52.56	172	35
94	3	59	52.44	172	35
94	4	59	52.31	172	35
95	1	59	52.69	172	25
95	2	59	52.56	172	25
95	3	59	52.44	172	25
95	4	59	52.31	172	25
96	1	59	52.69	172	15
96	2	59	52.56	172	15
96	3	59	52.44	172	15
96	4	59	52.31	172	15
97	1	59	52.69	172	5
97	2	59	52.56	172	5
97	3	59	52.44	172	5
97	4	59	52.31	172	5
98	1	59	47.69	173	55
98	2	59	47.56	173	55
98	3	59	47.44	173	55
98	4	59	47.31	173	55
99	1	59	47.69	173	45
99	2	59	47.56	173	45
99	3	59	47.44	173	45
99	4	59	47.31	173	45

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Table 3. (page 10 of 14)

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
100	1	59	47.69	173	35
100	2	59	47.56	173	35
100	3	59	47.44	173	35
100	4	59	47.31	173	35
101	1	59	47.69	173	25
101	2	59	47.56	173	25
101	3	59	47.44	173	25
101	4	59	47.31	173	25
102	1	59	47.69	173	15
102	2	59	47.56	173	15
102	3	59	47.44	173	15
102	4	59	47.31	173	15
103	1	59	47.69	173	5
103	2	59	47.56	173	5
103	3	59	47.44	173	5
103	4	59	47.31	173	5
104	1	59	47.69	172	55
104	2	59	47.56	172	55
104	3	59	47.44	172	55
104	4	59	47.31	172	55
105	1	59	47.69	172	45
105	2	59	47.56	172	45
105	3	59	47.44	172	45
105	4	59	47.31	172	45
106	1	59	47.69	172	35
106	2	59	47.56	172	35
106	3	59	47.44	172	35
106	4	59	47.31	172	35
107	1	59	47.69	172	25
107	2	59	47.56	172	25
107	3	59	47.44	172	25
107	4	59	47.31	172	25
108	1	59	47.69	172	15
108	2	59	47.56	172	15
108	3	59	47.44	172	15
108	4	59	47.31	172	15
109	1	59	47.69	172	5
109	2	59	47.56	172	5
109	3	59	47.44	172	5
109	4	59	47.31	172	5
110	1	59	42.69	173	55
110	2	59	42.56	173	55
110	3	59	42.44	173	55
110	4	59	42.31	173	55

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Table 3. (page 11 of 14)

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
111	1	59	42.69	173	45
111	2	59	42.56	173	45
111	3	59	42.44	173	45
111	4	59	42.31	173	45
112	1	59	42.69	173	35
112	2	59	42.56	173	35
112	3	59	42.44	173	35
112	4	59	42.31	173	35
113	1	59	42.69	173	25
113	2	59	42.56	173	25
113	3	59	42.44	173	25
113	4	59	42.31	173	25
114	1	59	42.69	173	15
114	2	59	42.56	173	15
114	3	59	42.44	173	15
114	4	59	42.31	173	15
115	1	59	42.69	173	5
115	2	59	42.56	173	5
115	3	59	42.44	173	5
115	4	59	42.31	173	5
116	1	59	42.69	172	55
116	2	59	42.56	172	55
116	3	59	42.44	172	55
116	4	59	42.31	172	55
117	1	59	42.69	172	45
117	2	59	42.56	172	45
117	3	59	42.44	172	45
117	4	59	42.31	172	45
118	1	59	42.69	172	35
118	2	59	42.56	172	35
118	3	59	42.44	172	35
118	4	59	42.31	172	35
119	1	59	42.69	172	25
119	2	59	42.56	172	25
119	3	59	42.44	172	25
119	4	59	42.31	172	25
120	1	59	42.69	172	15
120	2	59	42.56	172	15
120	3	59	42.44	172	15
120	4	59	42.31	172	15
121	1	59	42.69	172	5
121	2	59	42.56	172	5
121	3	59	42.44	172	5
121	4	59	42.31	172	5

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Table 3. (page 12 of 14)

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
122	1	59	37.69	173	55
122	2	59	37.56	173	55
122	3	59	37.44	173	55
122	4	59	37.31	173	55
123	1	59	37.69	173	45
123	2	59	37.56	173	45
123	3	59	37.44	173	45
123	4	59	37.31	173	45
124	1	59	37.69	173	35
124	2	59	37.56	173	35
124	3	59	37.44	173	35
124	4	59	37.31	173	35
125	1	59	37.69	173	25
125	2	59	37.56	173	25
125	3	59	37.44	173	25
125	4	59	37.31	173	25
126	1	59	37.69	173	15
126	2	59	37.56	173	15
126	3	59	37.44	173	15
126	4	59	37.31	173	15
127	1	59	37.69	173	5
127	2	59	37.56	173	5
127	3	59	37.44	173	5
127	4	59	37.31	173	5
128	1	59	37.69	172	55
128	2	59	37.56	172	55
128	3	59	37.44	172	55
128	4	59	37.31	172	55
129	1	59	37.69	172	45
129	2	59	37.56	172	45
129	3	59	37.44	172	45
129	4	59	37.31	172	45
130	1	59	37.69	172	35
130	2	59	37.56	172	35
130	3	59	37.44	172	35
130	4	59	37.31	172	35
131	1	59	37.69	172	25
131	2	59	37.56	172	25
131	3	59	37.44	172	25
131	4	59	37.31	172	25
132	1	59	37.69	172	15
132	2	59	37.56	172	15
132	3	59	37.44	172	15
132	4	59	37.31	172	15

-Continued-

Table 3. (page 13 of 14)

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
133	1	59	37.69	172	5
133	2	59	37.56	172	5
133	3	59	37.44	172	5
133	4	59	37.31	172	5
134	1	59	32.69	173	55
134	2	59	32.56	173	55
134	3	59	32.44	173	55
134	4	59	32.31	173	55
135	1	59	32.69	173	45
135	2	59	32.56	173	45
135	3	59	32.44	173	45
135	4	59	32.31	173	45
136	1	59	32.69	173	35
136	2	59	32.56	173	35
136	3	59	32.44	173	35
136	4	59	32.31	173	35
137	1	59	32.69	173	25
137	2	59	32.56	173	25
137	3	59	32.44	173	25
137	4	59	32.31	173	25
138	1	59	32.69	173	15
138	2	59	32.56	173	15
138	3	59	32.44	173	15
138	4	59	32.31	173	15
139	1	59	32.69	173	5
139	2	59	32.56	173	5
139	3	59	32.44	173	5
139	4	59	32.31	173	5
140	1	59	32.69	172	55
140	2	59	32.56	172	55
140	3	59	32.44	172	55
140	4	59	32.31	172	55
141	1	59	32.69	172	45
141	2	59	32.56	172	45
141	3	59	32.44	172	45
141	4	59	32.31	172	45
142	1	59	32.69	172	35
142	2	59	32.56	172	35
142	3	59	32.44	172	35
142	4	59	32.31	172	35
143	1	59	32.69	172	25
143	2	59	32.56	172	25
143	3	59	32.44	172	25
143	4	59	32.31	172	25

-Continued-

Table 3. (page 14 of 14)

Station	Pot in Station	N. Latitude		W. Longitude	
		Degrees	Minutes	Degrees	Minutes
144	1	59	32.69	172	15
144	2	59	32.56	172	15
144	3	59	32.44	172	15
144	4	59	32.31	172	15
145	1	59	32.69	172	5
145	2	59	32.56	172	5
145	3	59	32.44	172	5
145	4	59	32.31	172	5
146	1	60	15.19	172	50
146	2	60	15.06	172	50
146	3	60	14.94	172	50
146	4	60	14.81	172	50
147	1	60	22.69	172	55
147	2	60	22.56	172	55
147	3	60	22.44	172	55
147	4	60	22.31	172	55
148	1	60	25.69	173	00
148	2	60	25.56	173	00
148	3	60	25.44	173	00
148	4	60	25.31	173	00
149	1	60	27.69	173	5
149	2	60	27.56	173	5
149	3	60	27.44	173	5
149	4	60	27.31	173	5
150	1	60	25.69	173	10
150	2	60	25.56	173	10
150	3	60	25.44	173	10
150	4	60	25.31	173	10
151	1	60	25.69	173	20
151	2	60	25.56	173	20
151	3	60	25.44	173	20
151	4	60	25.31	173	20
152	1	60	29.69	173	20
152	2	60	29.56	173	20
152	3	60	29.44	173	20
152	4	60	29.31	173	20
201	1	60	17.69	172	35
201	2	60	17.56	172	35
201	3	60	17.44	172	35
201	4	60	17.31	172	35

Table 4. Shell condition classification scheme for St. Matthew Island male blue king crabs.

Shell Condition Categories	Estimated Shell Age	Ventral Surface of Walking Legs, Coxa and Merus	Carapace Spines	Walking Leg Spines	Dactyls	Exoskeleton	Leg Meat Fullness	Gills
Soft-Shell	0-2 weeks	White, supple.	Base reddish	Predominately white.	Pliable, sharp tips; white band above tips.	Soft, shell not formed.	None.	Translucent.
New -Shell Pliable	2 wks-3 mo.	White, shiny not scratched.	Base reddish	Approx. ½ white above and ½ orange at base.	Hard, sharp tips; white band above tips.	Pliable; cracks and punctures easily.	<30 % full.	Light yellow.
New-Shell Hard	4 –18 mo.	White or slightly off white. Coxa and merus generally devoid of scratches. May have brown or black scratches on distal rim but not in a continuous band.	Base reddish	Approx. ½ white above and ½ orange at base.	Hard, sharp tips; white band above tips.	Firm.	Firm-hard.	Light gray.
Old-Shell	19-36 mo.	Off-white. Distal portion of coxa rimmed with brown or black scratches. Merus may have brown areas from spine abrasion.	Base of spines darker than above. Reddish-brown.	Mostly reddish - brown.	Tips worn, angled. Brown to black above tips.	Firm.	Full.	Dark gray.
Very Old-Shell	>36 mo.	Light cream color. Distal portion of coxa rimmed with scratches that are black. Middle of coxa and portions of merus often scratched, and may have brown areas.	Base of spines black.	Mostly black.	Tips angled and rounded, black above tips.	Firm but more pliable than new -hard or old-shell. Carapace on some pliable.	Full, but exoskeleton may be pliable.	Dark gray to black.

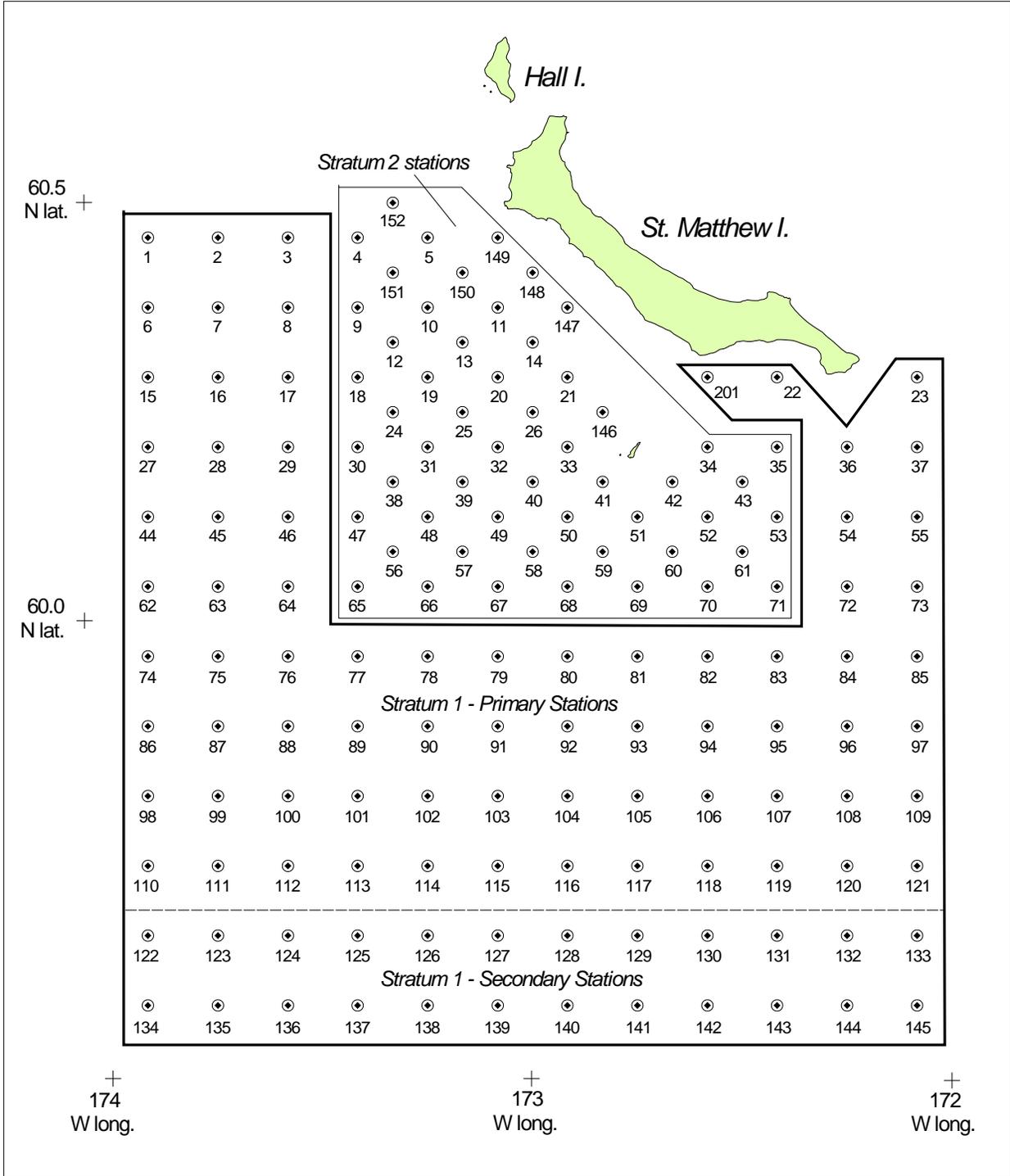


Figure 1. Location of the 54 stations in Stratum 2 and the 75 primary and 24 secondary stations in Stratum 1 to be fished on the 2001 St. Matthew Island blue king crab survey.

SAMPLING DATE:		ADF&G 2001 ST. MATTHEW ISLAND BLUE KING CRAB										PG ____ OF ____	
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		SURVEY DATA FORM											
STATION NUMBER:		SAMPLING FRACTION:				STRATUM:		1-SINGLE STATION 2-DOUBLE STATION		MEASURER:		RECORDER:	
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>				<input type="text"/>							
SEQUENTIAL POT NUMBER	SPECIES	SEX	SIZE (MM)	LEGAL	SHELL	EMBRYOS				OTHER	SERIES	TAG NUMBER	COMMENTS
						COLOR	DEVEL.	COND.	CLUTCH				
1											C		
2											C		
3											C		
4											C		
5											C		
6											C		
7											C		
8											C		
9											C		
10											C		
11											C		
12											C		
13											C		
14											C		
15											C		
16											C		
17											C		
18											C		
19											C		
20											C		
21											C		
22											C		
23											C		
24											C		
25											C		

Crab Species	Shell	Live Embryo Color	Embryo Development	Clutch Condition	Other
1-L.aegispinus	0-soft	1-tan	1-uneved	1-dead embryos not apparent	1-dead
2-P.camtschaticus	1-new/pliable	2-purple	2-eyed	2-dead embryos <20%	3-nemertean in clutch
3-P.platypus	2-new/hard	3-brown	3-hatching(1-29% clutch w/matted setae)	3-dead embryos >20%	4-turbellarians in clutch
4-E.isenbeckii	3-old	4-orange			5-black mat
6-C.bairdi	4-very old	5-purple/brown			6-bitter crab disease
7-C.opilio		6-pink			7-"cottage cheese" disease
Sex	Legal	7-reddish		Percent Clutch	8-shell disease (torch/trust)
1-male	1-subleg. 3-juv. Fem.	0-other (describe)	1-barren, clean pleopods	4-clutch 30-59% full	9-Briarosaccus callosus
2-female	2-legal 4-adult fem.		2-barren, matted pleopods	5-clutch 60-89% full	0-leatherback
			empty embryo cases	6-clutch 90-100% full	
			3-clutch 1-29% full		

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Figure 4. Crab survey data form.

ADF&G WESTWARD REGION TAGGED CRAB RECOVERY FORM

SPECIES _____ FISHERY CODE _____ OBSERVER/DOCKSIDE SAMPLER _____

SEQ. POT. NO.	FLOY TAG		SIZE (mm)		LEGAL	SEX	SHELL	FATE	CAPTURE DATE			CAPTURE LOCATION <small>(Note: "E." longitude if applicable)</small>				DEPTH	STATISTICAL	ADF&G	
	SERIES & NUMBER		KING - CL	TANNER - CW	(a)	(b)	(c)	(d)	MO.	DAY	YEAR	N. LATITUDE		W. LONGITUDE		(FM)	AREA	VESSEL NO.	
1																			
2																			
3																			
4																			
5																			

(a) **LEGAL:** 1=Sublegal; 2=Legal. (b) **SEX:** 1=Male; 2=Female. (c) **SHELL AGE:** 0=Soft; 1=New; 2=Old; 3= Very Old.
 (d) **FATE:** 1=Retained for sale; 2=Released alive; 3=Dead (not retained for sale; found in deadloss pile or frozen whole for ADF&G/Observer sampling).
NOTE: If a tagged female crab, record additional information on the back of this form. Record comments for males and females on the back of this form.

	Received Tag or Tagged Crab From: Name, Address & Phone	Received Recovery Location Data From: Name, Address & Phone	Vessel Name	Processor Name	Sampling Date		
					Mo.	Day	Year
1	Needs hat <input type="checkbox"/> Issued hat <input type="checkbox"/>						
2	Needs hat <input type="checkbox"/> Issued hat <input type="checkbox"/>						
3	Needs hat <input type="checkbox"/> Issued hat <input type="checkbox"/>						
4	Needs hat <input type="checkbox"/> Issued hat <input type="checkbox"/>						
5	Needs hat <input type="checkbox"/> Issued hat <input type="checkbox"/>						

Edited by: _____ Date: _____ Entered by: _____ Date: _____ C:\FBSTM\STM98TR.XLS - SHEET <TAGLOC> 7/98

Figure 6. Tagged crab recovery form.

ADF&G WESTWARD REGION TAGGED CRAB RECOVERY FORM
(REVERSE SIDE)

* SEQ. POT NO.	EMBRYOS					COMMENTS
	COLOR	DEVELOPMENT	CONDITION	% CLUTCH	OTHER	
1						
2						
3						
4						
5						

- | | | | |
|--------------------------------|-----------------------------|---|---|
| LIVE EMBRYO | EMBRYO | PERCENT CLUTCH | OTHER |
| COLOR | DEVELOPMENT | | |
| 1-Tan | 1-Uneyed | 1-Barren, clean pleopods | 3-Nemerteans in clutch |
| 2-Purple | 2-Eyed | 2-Barren, with empty embryo cases and/or stalks | 4-Turbellarians in clutch |
| 3-Brown | CLUTCH | 3-Clutch 1-29% full | 5-Black mat syndrome |
| 4-Orange | CONDITION | 4-Clutch 30-59% full | 6-Bitter crab syndrome |
| 5-Purple-brown | 1-Dead embryos not apparent | 5-Clutch 60-89% full | 7-"Cottage cheese" disease |
| 6-Pink | 2-Dead embryos <20 % | 6-Clutch 90-100% full | 8-Shell rust |
| 7-Reddish | 3-Dead embryos >20% | | 9- <i>Briarosaccus callosus</i> (sac-like parasitic barnacle on king crab abdomens) |
| 0-Other; describe in Comments. | | | 0-Leatherback: male brown king crab w/soft carapace & is old or very old shell |

SPECIES	CHANGES IN EMBRYO COLOR		COMMENTS
	UNEYED	EYED-WELL DEVELOPED	
Red King	Purple	Reddish	Occasionally brown or gray intermediate.
Blue King	Purple	Pinkish-reddish	
Golden (brown) king	Orange	Tan	
Tanner (<i>C. bairdi</i>)	Orange	Brown or purple brown	
Snow (<i>C. opilio</i>)	Orange	Brown or purple brown	

Note: If other species are tagged, update this form before use.

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Figure 6. (page 2 of 2).

