

STATEMENT OF SIMEON SWETZOF
CITY OF ST. PAUL
TO THE
NORTH PACIFIC FISHERIES MANAGEMENT COUNCIL
October 17, 1999

Mr. Chairman, members of the Council; thank you for this opportunity to speak to you today. My name is Simeon Swetzof and I am the Mayor of the City of St. Paul as well as a local fisherman and subsistence hunter. I am speaking with the support of the Pribilof communities; the cities of St. Paul and St. George, the tribal councils and the village corporations.

Unlike most communities in the Bering Sea, St. Paul is almost entirely economically dependent on the opilio crab fishery. The recent and sudden collapse of this and other crab stocks has catastrophic economic implications for our communities.

Over the last ten years, the federal, state and local governments, as well as the industry, have invested heavily to develop harbors and fisheries related infrastructure to take advantage of the Pribilof's strategic location. The federal and state governments' commitment to the Pribilof Islands is demonstrated by Congress' authorization of improvements to harbor facilities.

Our communities' continued participation, expansion, and diversification into the commercial fishing industry are dependent on the development of a sustainable, multispecies processing economy. This is consistent with the goals of the American Fisheries Act, the Sustainable Fisheries Act and the Steller Sea Lion Recovery Plan. These acts and regulations seek to develop localized, on-shore fisheries, and disperse the fishing effort throughout the Bering Sea.

As the council determines its actions on opilio crab, we urge you to consider the following:

1. The Pribilof Islands as well as similar coastal communities must be provided the opportunity to participate in a diversified, sustainable, and environmentally responsible fisheries which allow for the continued economic and cultural survival;
2. The Council should support funding for studies to determine the need for: a) habitat protection areas that will allow the various crab stocks to recover, b) bycatch reductions programs, as the various crab fisheries generally overlap, and c) a review of crab management policies;

3. Provisions must be made to ensure that the Pribilof Islands that have historically benefited from crab processing and landings continue to share the benefit of the industry, and
4. Provisions are made for residents like myself who do not presently have historical commercial catch records to enter into and participate in the commercial fishing industry;

I and other Pribilof Island fishermen are new entrants into commercial fishing. For years, federal policies precluded us from participating. In the last decade, we have worked very hard to acquire the skills, vessels, and equipment to become fishermen. We have graduated from small 14-16 foot skiffs to larger vessels in the 20 to 30 foot range. However, even these vessels are not adequate to allow us to fish for crab, pollock, cod, yellow fin sole, etc.

We ask that your actions do not foreclose the future for the more than 100 residents, in St. Paul, who are becoming commercial fishermen and striving to participate fully in the local fisheries.

As we speak, St. Paul and St. George are focusing on economic survival. Our goal is to develop a diversified and sustainable economy that is capable of withstanding biological fluctuations in the various tocks of crab and fish.

We have reached out to the industry to ask what we can do to optimize the benefit to everyone from the 2000 opilio season and explore fisheries economic diversification.

We ask the council to support our efforts.

Thank you very much.

Gordon Blue
Box 1064
Sitka, Alaska 99835

Gordon Blue 10/18/99

Richard Lauber
North Pacific Fishery Management Council
605 W. Fourth Ave., Suite 306
Anchorage, Alaska 99501

RE: Bairdi Rebuilding Plan

Dear Rick:

The crab plan team recommends that the NPFMC move ahead with analysis of IFQs for the crab fisheries. The plan team also recommends that the revised harvest strategy for Bairdi approved by the Alaska Board of Fish be seconded by the NPFMC. Also, the plan team recommends that the NPFMC request the Board of Fish to continue to explore ways to reduce bycatch of Bairdi in the directed crab fisheries. I second these recommendations.

The plan team then notes that rebuilding must be composed of three components:

- A. A revised harvest strategy
- B. Identification and protection of critical habitat
- C. Reduction of bycatch in other fisheries.

The rebuilding plan fails to adequately address the second and third of these components, and therefore, must be accepted by the NPFMC as incomplete, and requiring further development. Mr. Pengilly has testified that there are inadequate financial resources to even deal with the data that are already present, concerning the habitat requirements of this species. Please see that the necessary resources are found to at least research the materials which are already available.

The collapse of the major fishery remaining to Bering Sea crabbers, the *ch. Opilio* fishery, makes it imperative that the *ch. Bairdi* rebuilding plan has been properly developed. This is the result of the very similar reproductive biology that the two species possess- so similar, that they hybridize, and that there are reports that some hybrid females have been observed to have viable eggs. Bairdi rebuilding will provide a template for the rebuilding of *Opilio*.

Unfortunately, the rebuilding plan that has been presented to the Council, falls far short of the necessary elements of an effective plan. The recommendation to the Board of Fish to reduce bycatch in the directed fisheries is an empty gesture, because the question of further protections in the directed crab fisheries must evolve from area closures which can only properly derive from an understanding of habitat that the rebuilding plan fails to address. Of course, the whole question of harvest strategy and reduction of bycatch in the directed crab fisheries has become moot: There are only likely to be ten to fourteen days of fishing for crab in all of the directed fisheries in the Bering Sea in 2000, and in 2001, there may be none whatever - even in the Bristol Bay red king crab fishery.

In addition, it is past time for the NPFMC to review the whole protocol of bycatch accounting in the trawl fisheries. This structure relies on a nearly twenty-year-old assumption that counting bycaught individuals is a sufficient method of tracking impacts. In those years, the technology utilized for fishing has changed dramatically. Most of the bycatch reductions have evolved according to the rule of the "Bart Simpson" defense:

"You didn't see me-
"You can't prove it-
"- I didn't do it!"

This is not a precautionary approach to fisheries management, and is not an acceptable bycatch reduction strategy. Failure of the bycatch management methodology of the NPFMC to properly assess impacts of trawl fisheries can lead only to further area closures in order to protect overfished stocks.



Alaska Marine Conservation Council

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October 12, 1999

Richard Lauber, Chair
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, Alaska 99501

Re: Agenda Item D-4 - Bairdi Rebuilding Plan

Dear Chairman Lauber,

The Alaska Department of Fish & Game made a substantial effort in developing a harvest strategy that should be an important component of the bairdi tanner crab rebuilding program. This harvest strategy includes several components that contribute to a more conservative mode of harvest than previously practiced in tanner crab management. However, constraining directed harvest of an overfished species is but one element of a program to return a species to a healthy sized population. The Board of Fish adopted the revised harvest strategy is but one component of an overall rebuilding plan. The other two essential components include bycatch reduction and habitat protection.

Inadequacy of Depending on a Revised Harvest Strategy Alone for Rebuilding

The proposed rebuilding plan focuses on a revised harvest strategy. It is worth noting that the modeling for recovery is highly dependent upon recruitment. The EA states that the "expected rebuilding time in the absence of fishing depends on the prospects for strong year classes that *"are very difficult to predict"* (p. 41). It goes on to say that models show that there is a 50% probability of rebuilding within 10 years. If one chooses a 90% probability of rebuilding, then the timeframe lengthens to 26 to 34 years. Essentially, this harvest strategy is presented as a rebuilding plan though it depends on predicting what the scientists themselves call unpredictable.

Furthermore, in relying on new recruitment for stock recovery, we must acknowledge that a single year class doesn't "rebuild" the stock. So while the 1999 survey results indicate high numbers of small males and females, this group of young tanner crab isn't enough to assure us that we have a healthy, viable stock structure upon which to base a fishery.

Unpredictable recruitment is one of the many aspects of the natural world. Maximizing the possibility for a recovered population then ought to mean that we minimize any potential human disruption to recruitment when it does occur. That tanner crab likely has existed for thousands of years proves that it capably returns from population cycle "troughs". This shows that it is human behavior that must adapt to its cycles.

Application of a Precautionary Approach to Fisheries Management for an Overfished Stock, Its Habitat, and Its Very Vulnerable Life Stages:

The NMFS Technical Guidance on the Use of the Precautionary Approaches to Implementing National Standard 1 of the MSFCMA (NMFS, 1998) affirms the imperative to act very carefully in the face of scientific uncertainty:

From the Rio Declaration, p.8:

"...Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

From the FAO Code of Conduct, p. 8:

...the absence of adequate scientific information is not a reason for postponing or failing to take conservation and management measures.

From the FAO Technical Guidelines on the Precautionary Approach, p. 10:

Under Fisheries Management, these guidelines call for "prudent foresight" and "taking into account unknown uncertainty by being more conservative".

The NMFS document explains how a precautionary approach should fit into a rebuilding plan for an overfished stock. While most of it focuses on developing an appropriate harvest strategy, it lists some "other precautionary tactics" (p. 43). These include allowing a species to spawn at least once before becoming vulnerable to fishing gear, establishment of marine reserves or "biomass reserves", and modifying fishing gear or fishery characteristics in order to minimize impacts of fisheries on habitat. All of these should be considered for application in the design of a rebuilding program. For bairdi rebuilding, they should be considered in the context of uncertainties such as:

- The effects of bycatch on a species in decline, and the timing of this bycatch during sensitive life stages including juvenile, molting, and mating
- The effects of habitat destruction or disturbance on a benthic species in decline

- The effects of disturbance or disruption of complex mating behaviors from fishing gear
- Importance of particular habitats to sensitive life stages such as molting and mating

Overfished status demands that we apply a precautionary approach that goes beyond a single species approach in management. Tanner crab have certain habitat and food requirements that we cannot claim to fully understand. That we haven't been able to quantify the areas of essential habitat at this time does not excuse us from the responsibility in recognizing that such areas exist and are important. Nor should it prevent us from looking for a finer resolution of the existing data to help illuminate the importance of such areas.

The cry for strong measures to protect an overfished stock only grows louder where there is direct interaction between the overfished species and other existing fisheries through bycatch and habitat alteration. There is an ever-growing body of information that shows that bottom trawling can destroy important benthic habitat that provides for both protection and food sources for crab. It's fair to say that we don't fully understand the effects of this. It is this uncertainty that demands precaution in the management of other fisheries.

In the EA, the analysts looked at observed bycatch rates by month in the trawl fisheries (p. 31) and concluded: "Bycatch rates are very dispersed, and it was difficult to identify any specific spatial patterns either across years within a month or across months." We suggest that a deeper analysis using the observed bycatch rates as an index overlaid on known tanner crab concentrations (males/females/matures/immatures) based on both observer data and crab fishery data during months of molting and mating might begin to give us a picture of habitat critical to a recovering crab population. Looking deeper might elucidate that the impact can grow during particular sensitive life stages, especially when a crab stock has been reduced to a very low level.

Conclusion

So is a reduced or eliminated harvest all that is needed in a rebuilding plan? Absolutely not! If we look to other collapsed crab fisheries, we might see that closing the directed fishery doesn't necessarily eventually get us a fishery in return. Note the Kodiak red king crab fishery, now closed for 16 years, has shown no signs of recovery.

We reiterate our concern for this overfished, depressed stock of tanner crab whose vulnerable life stages of molting and mating remain without further protection from the impacts of bycatch and habitat disruption and disturbance.

The decline of the tanner and other crab species provides us with a great opportunity, and tremendous responsibility to apply the precautionary approach in fisheries management. For crab and other bottom dwelling creatures, this must translate

into protecting the brood stock for population recovery along with the habitat they rely on for food and protection. If ever there was a time for this - including an in-depth analysis of habitat requirements during particularly sensitive life stages, it is now. AMCC respectfully requests that the NPFMC engage in further work to include habitat protection and bycatch reduction measures as part of the tanner crab rebuilding plan.

Sincerely,



Francine J. Bennis
Project Coordinator

Reference:

NMFS, "Technical Guidance On the Precautionary Approaches to Implementing National Standard 1 of the Magnuson-Stevens Fishery Conservation and Management Act", NOAA Technical Memorandum NMFS-F/SPO, July 1998.

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N.P.F.M.C

October 5, 1999

Rick Lauber, Chairman
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TOTAL PAGES: 9

**RE: AGENDA ITEM D-3(d) CRAB MANAGEMENT, OPILIO
REBUILDING PLAN, THE NEED FOR IMMEDIATE LEGISLATIVE
DEVELOPMENT OF BSAI CRAB COOPERATIVES**

Following the shocking September 8th announcement of a 28 million pound GHL for the 2000 opilio crab fishery and the possibility of no fishery in 2001, the ACC held a well-attended special meeting of the membership on September 14th. The devastating news of a possible failure of the opilio resource followed on the heels of the announcement of the totally unanticipated 50% reduction in the Bristol Bay king crab GHL and closure of the Pribilof Islands and St. Matthew Island king crab fisheries.

The members reconfirmed their concern for the needless waste of resources and lives that are integrally related to the olympic race for fish. They once again expressed their hopes for a change in the management system to eliminate the olympic system and to move to a system that will allow enough soak time for the pots to sort on the bottom (allowing the juvenile crabs time to escape through the meshes). Reference: Critical Elements for Sustainable Harvests of King and Tanner Crabs in the Eastern Bering Sea, with a Focus on Bycatch Regulations, A. Thomson, 1995.

The members adopted a resolution endorsing the immediate development of an industry forum to negotiate an acceptable framework for statutorily authorized catch history-based cooperatives coupled with a license buyback program to be enabled by emergency legislation. See the attached Report on the ACC Special Membership Meeting.

An Open Meeting for the Bering Sea/Aleutian Islands Crab Industry followed on September 17th to discuss cooperatives. It was attended by 80 representatives from the industry. There was broad consensus at this meeting to set up an industry task force to move ahead, carefully, to develop a consensus proposal for Bering Sea crab cooperatives by the first of the year. See the attached agenda and the draft industry discussion paper.

Sincerely,



Arni Thomson
Executive Director

Attachments 4

ALASKA CRAB COALITION

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Email: acc-crabak@msn.com**REPORT ON ACC SPECIAL MEMBERSHIP MEETING****September 14, 1999**

A special ACC meeting took place today to look at options to deal with the crisis facing the Bering Sea crab industry. The meeting was well attended by representatives and owners of almost 40 crab vessels, a few crab processing companies and some gear and service suppliers.

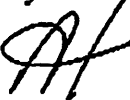
Following reports, the membership delved into a frank dialogue, based on the discussion paper, of BSAI crab cooperatives. During the discussion, more than two-thirds of the members expressed a preference for ITQs and a few expressed a preference for an industry funded buyback without quota-based programs. ACC Board members urged the members to authorize a resolution for the ACC Board to move ahead with industry-wide discussions to framework a coop structure acceptable to the industry. They explained there was a slim opportunity for Congressional legislation this fall, now dramatically heightened by the crisis in our opilio fishery, that may not be available for another two to three years.

At the conclusion of an informative two hour discussion and debate on coops, the membership moved to adopt the following motion :

The ACC recognizes there is a resource and financial crisis facing the BSAI crab industry. Resolution of the crisis will require a change in our fishing practices to encourage rebuilding of crab stocks, and to improve safety. The focus of the remedial action should be the elimination of the olympic system and a reduction in fishing capacity. To achieve these goals, the ACC recommends an industry forum be created immediately to negotiate an acceptable framework for catch history-based cooperatives, coupled to an emergency legislatively established license buyback program.

The membership approved the motion with one dissenting vote and two abstentions. The membership also approved Gordon Blue and Arni Thomson, taking the ACC position to an industry meeting of AFA and non-AFA processors with Senator Gorton on September 18th, where legislation may be discussed.

Arni Thomson, Executive Director



Open Meeting for Bering Sea/Aleutian Islands Crab Industry

Agenda For the September 17, Industry Meeting to Discuss Possibilities of Cooperatives, Buybacks, or Other Proposals to Reduce the Inevitable Economic Disaster Within the Crab Industry

Date: Friday, September 17th

Location: Leif Erickson Hall, 2245 NW 57th St., Seattle

Time: 9:00- 12:00

Moderator: David Fluharty, NPFMC Council Member and Professor at School of Marine Affairs, University of Washington

Agenda

- | | | |
|-------------|----------------------------------------------------------------------------------|--------------------|
| I. | Opening Remarks/ Introductions | 9:00- 9:15 |
| II. | State of Industry | 9:15-9:30 |
| III. | Introductory Remarks/Concerns by Industry Members on Possible Solutions | 9:30-10:00 |
| IV. | Break | 10:00-10:15 |
| V. | Roundtable Regarding Draft Industry Discussion Paper on Co-ops (attached) | 10:15-11:30 |
| VI. | Conclusion and Determination of Common Ground | 11:30-12:00 |

Contact Person: Ed Poulsen (206) 783-6708 or (206) 650-0743

DISCUSSION PAPER
DRAFT LEGISLATIVE PROPOSAL FOR BSAI CRAB COOPERATIVES

OPTIONS FOR CRAB FISHING VESSELS: (ALTERNATIVES SOLICITED)

1. Co-ops in Bering Sea crab fisheries would be comprised of fishing vessels that fish BSAI FMP crab fisheries. Co-ops can be combined with an industry/government funded license buyback program.
2. Co-op fishing shares to be based on catch history from crab LLP qualified vessels, on a fishery-by-fishery basis. The catch history should include a minimum of three years. The cutoff date is December 31, 1998, in accordance with the intent of the NPFMC/NMFS 1999 notice to industry. Catch history examples: Opilio and Bristol Bay king crab, Pribilofs and St. Matthew Is. king crab —1996-1998; but 1994-1996 for bairdi, since the fishery closed in 1997. Additional options should be considered.
3. Vessels will be able to move between processors of their choice, (multi-market co-ops). Processors will be allowed to co-op with the vessels that they own and any other vessels. Changing processors will be done at the beginning of the fishing year, either September first, or January first, when co-op agreements are negotiated. Vessels will deliver crab to the same processor for the entire fishing year, but can change to a different processor in any succeeding year.

OPTIONS FOR CRAB PROCESSORS: (ALTERNATIVES SOLICITED)

1. Individual excessive market share caps: Caps could be implemented on an entity by entity basis and based on historic processing average, with an allowance for growth to minimize impacts to fishermen and processors, while maintaining market competition.
 - 1.b No excessive market share caps.
2. Limited number of processors: Each processing company could be given a license to process crab. If a crab processing company is sold to an existing crab processing company, the former company's license to process would be placed on the market. The intent is to accommodate resource cycles, the fluctuating economics of the industry and to preserve market competition.
 - 2.b No entry limit on processors.
3. Vessels owned by crab processing companies would be included in the co-ops as above.
 - 3.b Processor owned vessels would not be included in co-ops.

Critical Elements for Sustainable Harvests of King and Tanner Crabs in the Eastern Bering Sea, with a Focus on Bycatch Regulations

Arni Thomson

Alaska Crab Coalition, 3901 Leary Way NW, #6, Seattle, WA 98107

Bycatch and associated waste in fisheries have become a priority conservation issue for the major fishing nations, including the United States. Fisheries managers are eager to develop and implement management measures that will have the effect of reducing bycatch. Such measures are of particular urgency for fisheries in which growing numbers of vessels and increasing efficiency of gear are escalating fishing pressure on declining and often depleted stocks. The productivity of the fisheries resources and viability of the fishing industry are at stake.

In the fisheries off the coast of Alaska, fishermen and fisheries biologists and managers have sought solutions to the bycatch problem since the early 1960s. The record shows that determined leadership and a firm commitment to resource conservation on the part of industry and government have been essential to the development and enforcement of effective bycatch reduction measures. Recent experience has also demonstrated that intelligently engineered individual transferable quota programs for target species can lead to substantial reductions in bycatch waste. Although traditional management measures, such as time and area closures and bycatch caps, have had beneficial effects on nontarget resources in past years, the escalating pressures of excessive fishing capacity and increased harvesting efficiency have made it impossible for fisheries managers to apply such measures with sufficient timeliness and precision to ensure that conservation goals will be achieved. Individual quotas hold the promise of reducing capacity and slowing the pace of harvests in a way that will assure the public and the industry of sustainable fisheries for the indefinite future.

Looking back 10 years to 1986, the Alaska Crab Coalition (ACC) started with the issue of king crab bycatch. Upon its formation, the ACC Board of Directors established two parallel goals: (1) to work with the North Pacific Fishery Management Council (NPFMC) to restore the Crab Pot Sanctuary in the eastern Bering Sea, and (2) to work with the Alaska Department of Fish and Game (ADF&G) to develop management measures that would encourage sustainable harvests of king and Tanner crabs. After 10 years it is appropriate to identify and evaluate the

methods the NPFMC has employed to reduce bycatch. At the same time, it is appropriate to review and evaluate the management actions ADF&G has taken to reduce the bycatch of crabs (regulatory discards) in the directed crab fisheries. Under a special delegation of authority in a federal fisheries management plan developed in 1989, the Bering Sea and Aleutian Islands King and Tanner Crab FMP, the state of Alaska has management jurisdiction over Bering Sea/Aleutian Islands king and Tanner crabs. However, the NPFMC manages prohibited species bycatch

under the groundfish management plans for the Gulf of Alaska and the Bering Sea/Aleutian Islands. This has created a bifurcation in the overall management of the crab fisheries, that has been an impediment to the rebuilding of the stocks.

Fishermen and fisheries managers involved in the crab, halibut, salmon, herring, and groundfish fisheries in the Gulf of Alaska and the Bering Sea have been aggressively pursuing bycatch reduction solutions since the early 1960s. Reduction of the bycatches of prohibited species in the foreign groundfish fisheries was a major stimulus for the development of a series of bilateral treaties between the United States and the U.S.S.R., and the United States and Japan, that were ongoing throughout the 1970s.

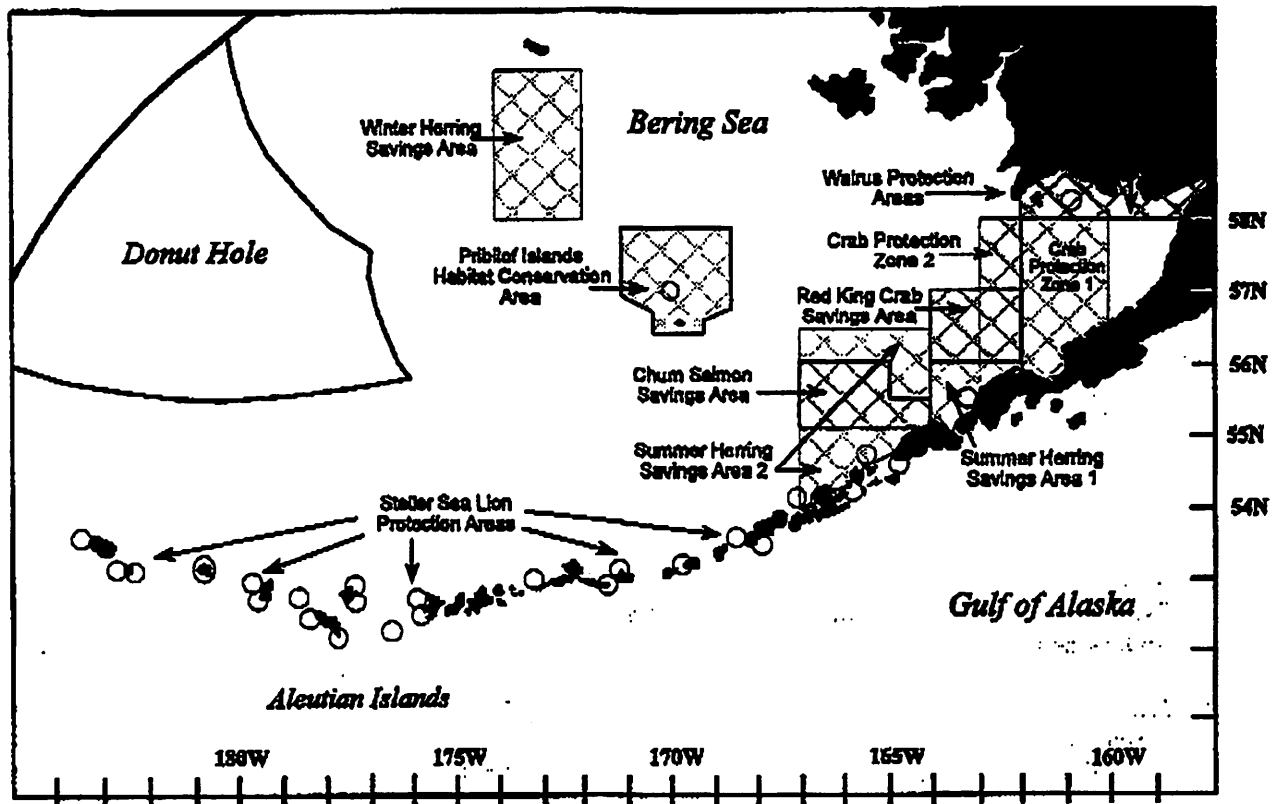
Methods of accounting for groundfish tonnage and bycatch of prohibited species, and later the reduction of prohibited species bycatch mortality were developed during the period of foreign fishing in the exclusive economic zone (EEZ) off the coast of Alaska. Substantial closed areas, both seasonal and year-round were adopted as a primary mechanism for reducing bycatches. In some areas, all trawl gear was prohibited and in other areas, non-pelagic trawl gear was prohibited. After the passage of the Magnuson Fishery Conservation and Management Act (MFCMA) in 1976 establishing the 200-mile EEZ, the U.S. government was successful in imposing 100% onboard observer coverage on the foreign fleets (1986), under the direction of the NMFS. Payment for the program was extracted from tonnage fees. In addition, a ratchet down system of bycatch rates and a company-by-company individual bycatch accountability program (IBQ) was enacted. Vessels that could not maintain standardized bycatch rates were sent back to their home port by the their companies, and penalized by the lost fishing quotas that were reassigned to other company boats. These methods were highly successful in dealing with the foreign fleets, and they provided a model bycatch reduction plan for curtailing prohibited species bycatch in groundfish fisheries.

Despite the lessons learned during the foreign fishing period, the fledgling NPFMC, when developing its preliminary Fishery Management Plans in 1980-1981, relaxed the bycatch regulations developed for foreign fleets. This included opening the protection zones to encourage the Americanization of the bottomfish fisheries in the Bering Sea and the Gulf of Alaska.

By 1986, in response to demands from crab and halibut fishermen critical of uncontrolled bycatches of prohibited species in domestic groundfish fisheries, the NPFMC channeled industry protagonists into negotiations, then took decisive action to begin reinstating a matrix of bycatch reduction measures that are still being revised and improved today (Fig. 1).

NPFMC ACTIONS TO REDUCE BYCATCH MORTALITY IN GROUND FISH FISHERIES

1. Crab, halibut, herring, and salmon: non-trawl, time and area closures, and year-round protection areas.
2. Use of aggregate prohibited species caps (tonnage or number of animals).
3. Use of bycatch rates and bycatch mortality rates for both prohibited species and nontarget groundfish species.
4. Allocation to selective gears with lower bycatch mortality (Bering Sea Pacific cod fishery).
5. Thirty to 100% pay-as-you-go domestic onboard observer programs for groundfish and crab fisheries.
6. NMFS comprehensive system of catch and bycatch data production and analysis and computerized electronic bulletin board reports available to the public on a timely basis.
7. Publication of vessel-by-vessel bycatch rates, which identify the "dirty dozen," a peer pressure mechanism that is effective.
8. Performance trawl definition (20 crabs per tow).
9. For groundfish pots: minimum size tunnel height openings and halibut excluder devices, exemption from halibut prohibited species cap (PSC) (incentive for clean gear type), reduction from 100% to 30% observer coverage for vessels 125 feet and over, mandatory use of #30 cotton thread sewn into 18-inch strip of



Proposed Northern Bristol Bay Area: closed year-round to all trawling (proposed).

Chum Salmon Savings Area: closed to all trawling August 1-31 with provisional extension to October 5.

Bristol Bay Red King Crab Area: closed seasonally to non-pelagic trawling.

Pribilof Islands Habitat Conservation Area: closed year-round to all trawling.

Crab Protection Zones: Zone 1 closed to trawling year-round.
Zone 2 closed to trawling March 15 - June 15.

Wolverine Protection Areas: closed to all fishing April 1 - September 30.

Steller Sea Lion Protection Areas: closed to all trawling year-round with some extended seasonally on January 20.

Herring Savings Areas: closed to all trawling when trigger reached.
Summer Area 1 closed June 15 - July 1
Summer Area 2 closed July 1 - August 15.
Winter Area closed September 1 - March 1.

Figure 1. Bering Sea species protection areas. Source: North Pacific Fishery Management Council, March 3, 1995.

mesh on the bottom of pots to minimize ghost fishing in lost pots.

10. For longline hook and line: observed careful release of halibut has resulted in the reduction of the halibut bycatch mortality rate from 18% to 11%, allowing the longline fleet to optimize their catch.

ADF&G MANAGEMENT ACTIONS TO REDUCE BYCATCHES OF UNDERSIZED CRABS (REGULATORY DISCARDS)

1. Minimum mesh size restrictions for king crab fisheries to encourage escape of females and undersize recruits and pre-recruit crabs.
2. Mandatory use of 18-inch strip of #30 cotton thread sewn into the bottom of all crab pots to minimize ghost fishing in lost pots.
3. King crab excluder devices that reduce tunnel height openings in Tanner crab fisheries.
4. Combining of Bristol Bay king and *C. bairdi* Tanner crab season to reduce handling mortality.
5. Establishment of a female and juvenile king crab protection zone, closed to directed *C. bairdi* fishing when king crab are below threshold levels.
6. Fisheries pot limits to reduce gear concentrations, lost pots, and ghost fishing.
7. The state of Alaska is conducting laboratory and field research on crab stock dynamics; evaluating crab harvesting strategies relative to minimum threshold limits; and the impacts of minimum size limits on reproduction, sex restrictions, and seasons (Kruse, Murphy, Zheng, et al. 1993, 1994, 1995).

CONCLUSIONS

North Pacific Fishery Management Council

The bycatch methods employed have been successful to the extent they can be, given the constraints of the NPFMC/ NMFS/ADF&G manage-

ment framework. However, Bristol Bay king and *C. bairdi* crab stocks are still depressed and in need of improved coordination between the NPFMC and ADF&G.

1. It is recommended that the Bristol Bay king crab protection area be enlarged in accordance with the findings of Armstrong et al. (1993) and Witherell (1995) with relevance to the original crab pot sanctuary and the need to protect larvae settlement areas and juvenile habitat. Recently, scientific and regulatory information on management of the king crab stocks off the west coast of Kamchatka (Sea of Okhotsk) has been provided to an ACC member, that supports Armstrong's focus on the significance of habitat and the need for crab refuges. This information has been provided to the NPFMC. The ACC member has also produced papers for the NPFMC focusing on the impacts of the rock sole fishery to king crab stocks. Another ACC member, a fisherman with more than 20 years experience in Bering Sea crab fisheries, has long advocated the need for restoration of adequate protection zones as a key management measure to encourage crab stock rebuilding in the eastern Bering Sea. He has produced a number of papers for the NPFMC suggesting necessary changes in bycatch management of groundfish and management of the directed crab fisheries to stimulate sustainable harvests.
2. The *C. bairdi* PSC needs to be reduced, the overall cap has been non-constraining for 10 years and a cap also needs to be established for *C. opilio* crabs.
3. The need to move to a PSC framework that creates incentives for groundfish fishermen that reward clean fishermen and modify behavior, i.e., vessel bycatch accounts (IBQs) that will promote individual vessel accountability on bycatch and individual vessel quotas for target groundfish species. Gear development is only a small part of the solution (Pers. comm., Steve Pennoyer, RD, NMFS, AK Region, Juneau, AK, August 1995).

Alaska Department of Fish and Game

1. The need to accelerate research on life history, harvest strategies, discard mortality, and size limits, and to encourage dual species fisheries, where possible, to maximize retention.

2. Use of pot limits, particularly the restrictive limits of 40 to 75 pots in the Pribilofs and St. Matthews king crab fisheries is leading to rapid cycling of pots and increased handling mortality and the overall number of discards. These pot limits need to be re-evaluated as soon as possible as they are likely having an adverse impact on the stocks.
3. Encourage the development of individual vessel quota crab management framework for the Bering Sea/Aleutian Islands king and Tanner crab fisheries. This will slow down the race for crab and relieve the pressure on rapid cycling of pot lifts to maximize CPUE. With individual vessel quotas, pot limits will become a minimal factor in the management of the fisheries. Gear selectivity can be optimized under long soak conditions to allow for escape of small animals at the point of capture, prior to the pots being retrieved. Reference is hereby made to the case history of the IFQ management of the Southern Gulf of St. Lawrence *C. opilio* crab fishery (Atlantic coast of Canada).

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KRIS POULSEN & ASSOCIATES

COMMERCIAL FISHING VESSELS • M/V BERING SEA • M/V ARCTIC SEA • M/V NORTH SEA

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October 5, 1999

Mr. Richard Lauber, Chairman
North Pacific Fishery Management Council
605 West 4th Avenue
Anchorage, AK 99501-2252

Re: Crab Management

Dear Rick,

The current collapsed or depressed status of every commercial Bering Sea crab species leads one to believe the current management scheme for crab is not working. The other papers submitted with this letter show that problems with crab management are not recent events. Crab fishermen have consistently been managed and not the crab resource itself. What has resulted is Kodiak style crab management with very low resources, which are unsustainable for the current fleet size.

It is likely that climatic factors hindered the populations of some of these crab resources. However, climatic factors alone are not the largest contributor to the decline in crab resources. I feel certain that management has allowed over-harvesting and has implemented regulations which exacerbate the problem of crab bycatch. Unfortunately, there is no accountability for crab management.

Finally, it is a waste of time to develop a rebuilding plan for Bairdi, or other crab resources, unless the underlying problems are dealt with. The resource may bounce back somewhat after an extended period of closure, but will soon be hammered back to closed status with no changes in management. The only way this pattern will be broken is if cooperatives are implemented for crab which do away with the current pot limits and olympic style fishing and instead require full retention of all crab, with longer soak time.

Sincerely,



Kris Poulsen
F/V Arctic Sea, F/V North Sea, F/V Bering Sea

RECEIVED

OCT - 5 1999

N.P.F.M.C

November 4, 1998

Rick Lauber, Chairman
North Pacific Fishery Management Council

RE: C-2, Steller Sea Lions

Dear Rick,

I am concerned with the implications of the recently passed American Fisheries Act (S. 1221) on both King and Bairdi crab within the Catcher Vessel Operational Area (CVOA). The CVOA is a critical area for the success of both King and Bairdi crab. Unfortunately, the passage of 1221 will increase effort by trawlers within this sensitive area. All pollock gear is now mid-water trawl gear. However, this gear is still towed across the bottom and disturbs the benthic environment as well as catching and crushing an unknown amount of crab. Even though the CVOA is relatively small in comparison to the Bering Sea, it is very significant in its importance to all life stages of Bristol Bay Red King and Bairdi crab.

It has been well documented by Gregory McMurray and David Armstrong that the area just North of Unimak Island is critical to King Crab. This area is a premier hatching area for eggs carried by female King Crab. King Crab hatched just North of Unimak Island are in close proximity to nutrients flowing through Unimak Pass, and into Bristol Bay. Therefore, the more females which inhabit this area North of Unimak Island, the greater the chance of a true recovery in the Biomass of Red King Crab.

In addition, McMurray and Armstrong theorize that the area just North of Unimak Island (the CVOA) is ideal for larval hatch of King Crab due to the direction of sea currents. They theorize crab larvae hatched from this location have the highest probability of encountering an ideal environment to settle upon. Unfortunately, excessive trawling over the years has devastated this zone, since it is within the CVOA. Female King Crabs have moved on to less disturbed areas probably East of 162 degrees where they are not caught in trawl gear and the benthic environment is not disturbed. As a result, very few King Crab larvae are surveyed in this area, as they were prior to the explosion of King Crab during the 1970's.

The trawl impacts upon Bairdi in the CVOA have not been investigated or analyzed, but could be much more significant than those impacts on King Crab. I have recently completed research estimating the amount of Bairdi within the CVOA to that outside the

CVOA (please see attachments). Very significant amounts of Bairdi reside within the CVOA. *For such a relatively small area, the CVOA has great importance for the success of all life stages of Bairdi crabs, especially when one considers that up to 57% of small female Bairdi reside within the CVOA, as was the case in 1997 (see attachment).*

According to the 1998 NMFS Survey, Bairdi are at historic low levels, and the population of legal males and large females have never been lower since surveys have been conducted. Given that the Bairdi stock is currently listed as overfished according to National Standard 1, it seems prudent to reduce effort within the CVOA, not to increase effort in this critical habitat area.

Unfortunately, S.1221 does increase effort within the CVOA. How much this effort is increased depends upon whether proposed season changes are enacted. However, either way, effort within the CVOA will increase a substantial amount, to the detriment of an already devastated crab stock.

I ask the Council to consider closing the CVOA to all trawling as it was when the pot sanctuary was in place. This protection will lay the foundation for a rebuilding of Bairdi crab as well as King crab in the near future.

Sincerely,

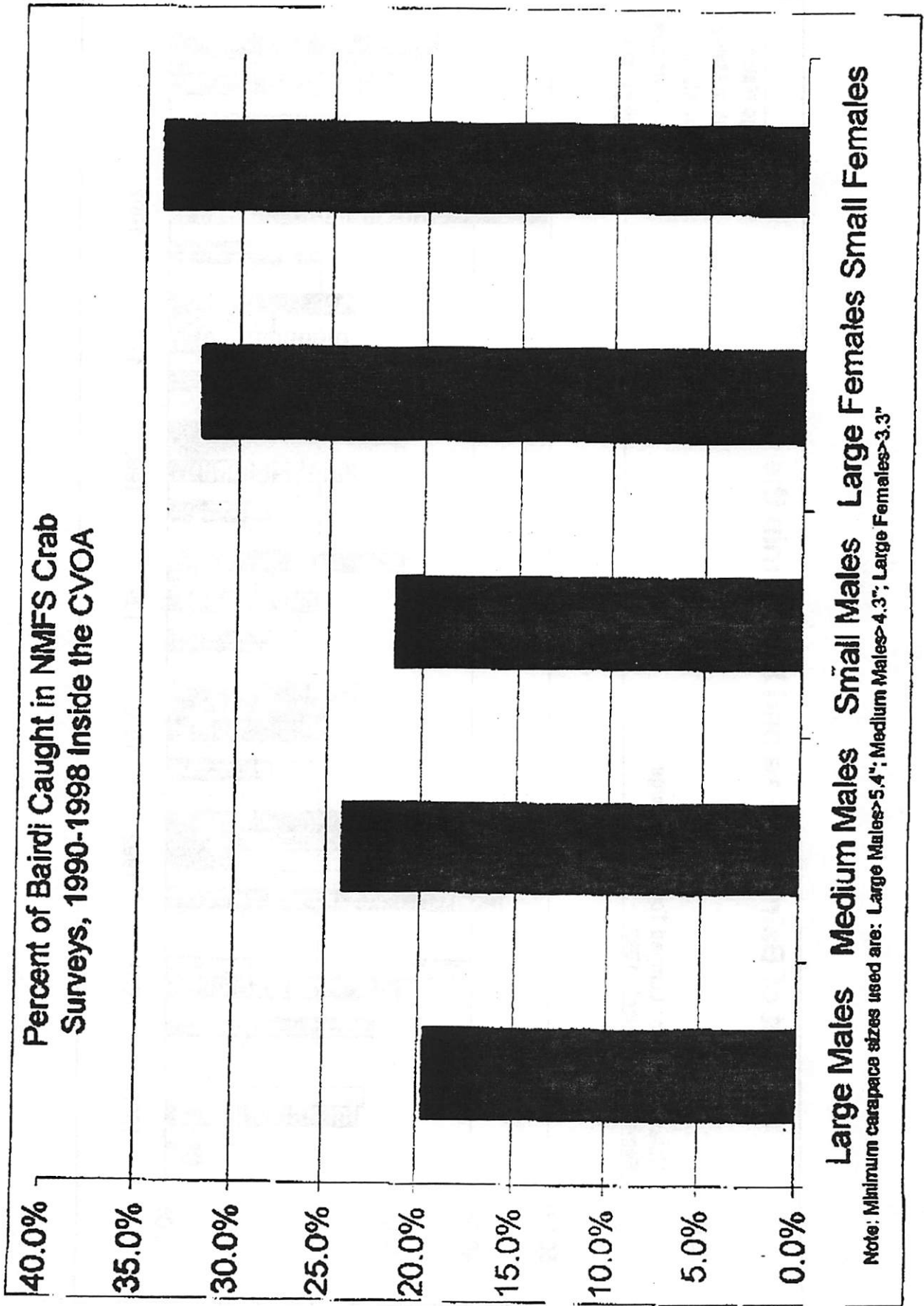


Edward Poulsen

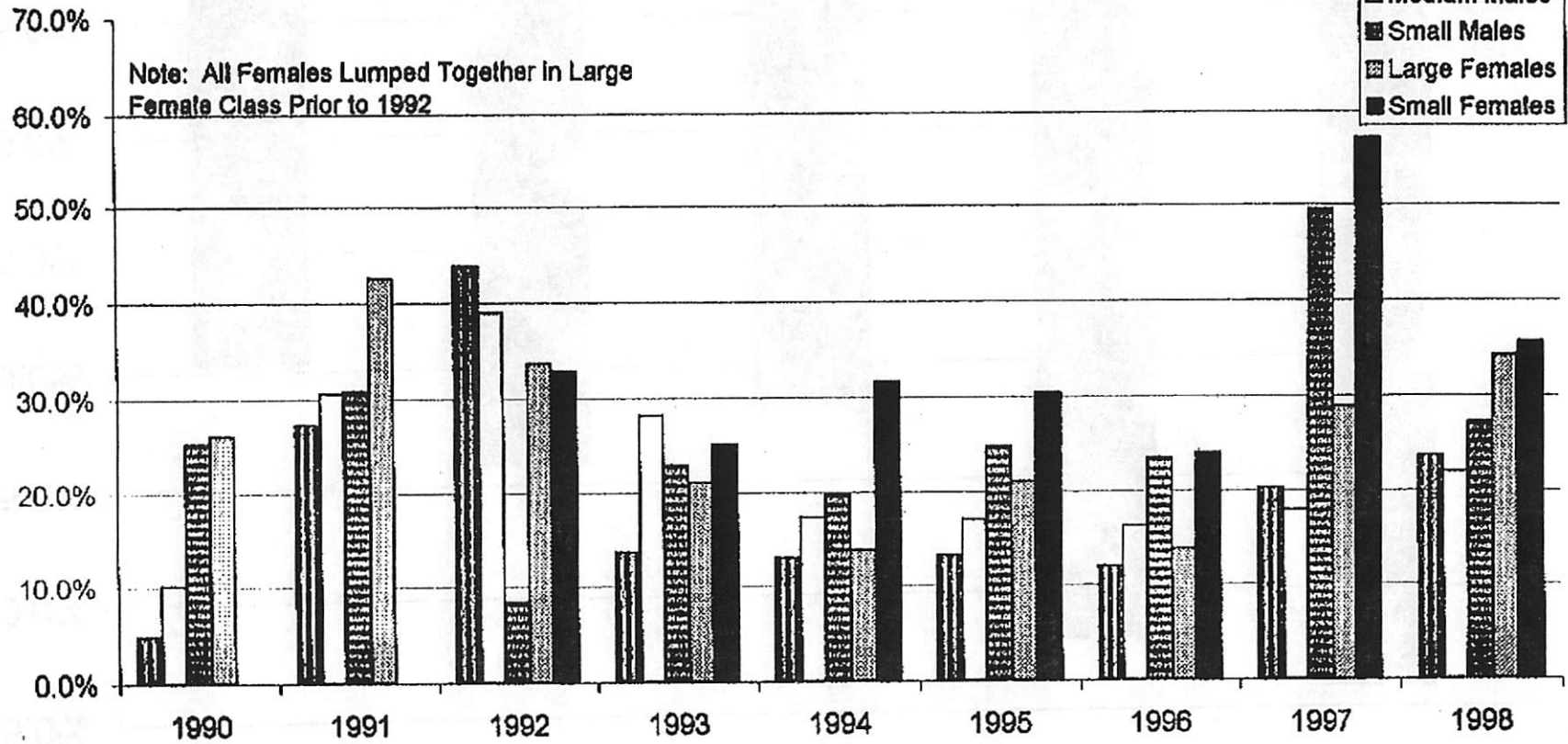
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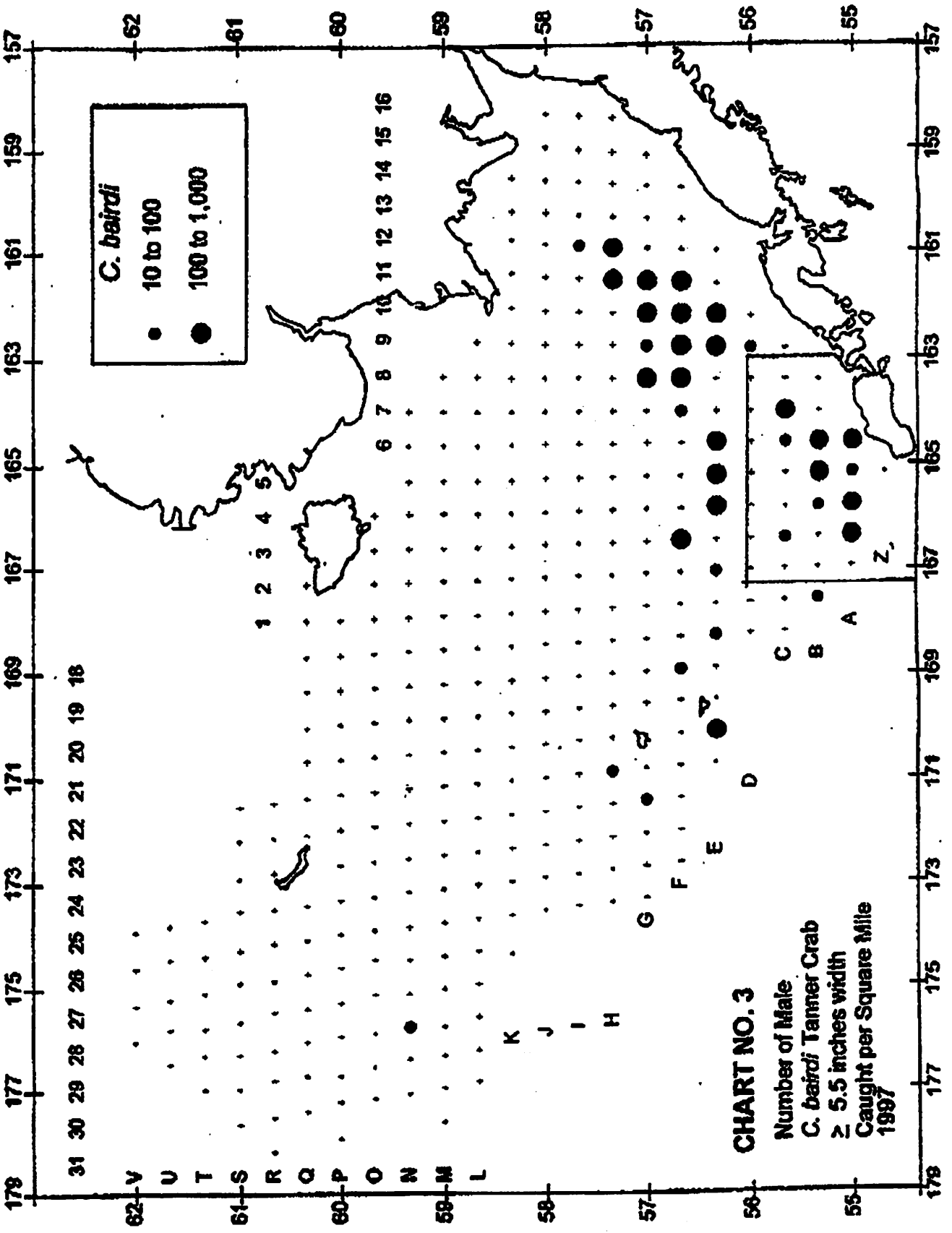
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Attachments: 4

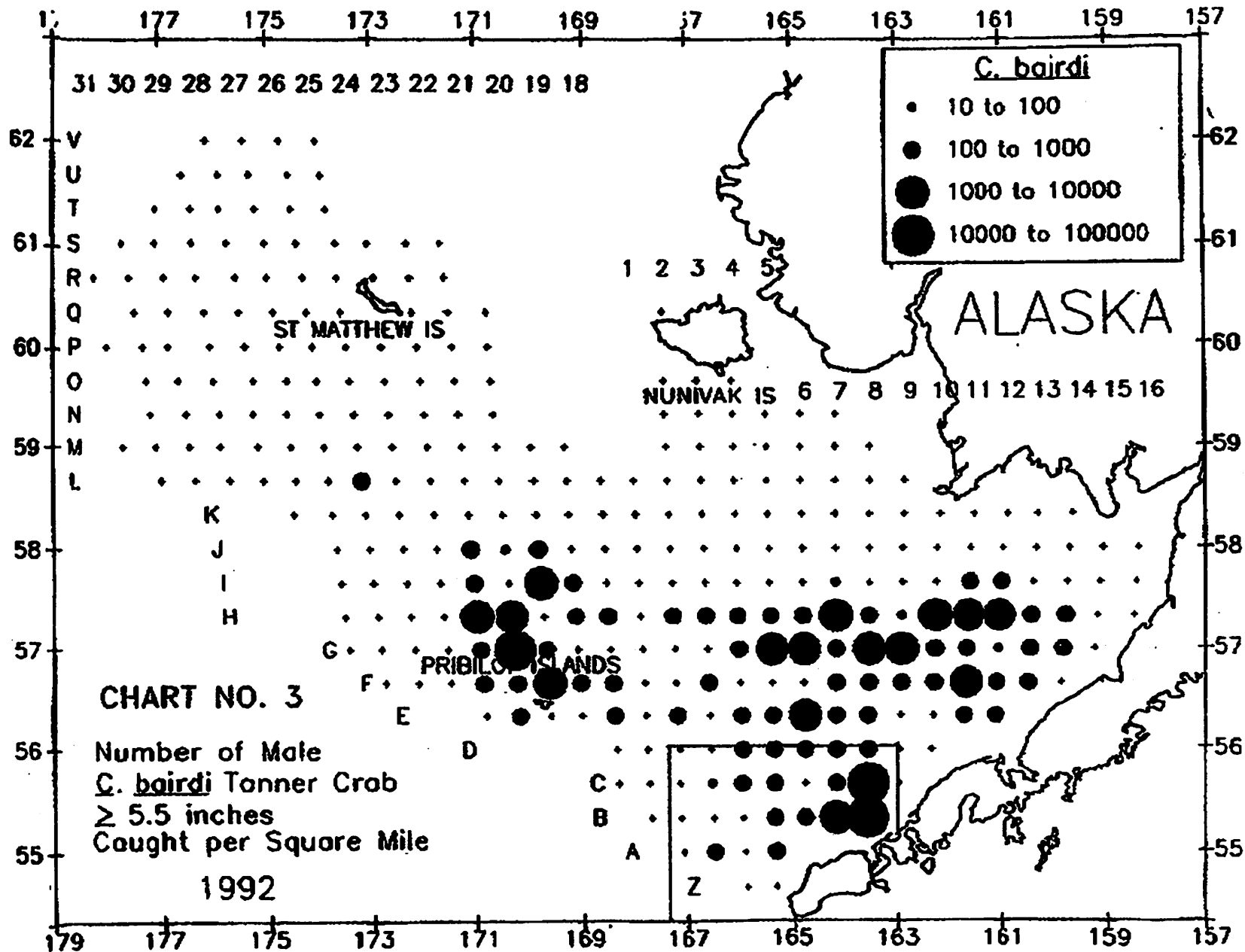


Percent of Bairdi By Size and Sex Within the CVOA





18



Bering Sea Red King Crab: Resolving Bycatch Equals Stock Rebuilding?

Kris Poulsen

Kris Poulsen & Associates, 1143 NW 45th St., Seattle, WA 98107

Bristol Bay red king crab (*Paralithodes camtschaticus*) was Alaska's premier fishery in the late 1970s. It subsequently crashed in 1981 and was closed in 1984. The red king crab stocks failed to rebound and the fishery was shut down in 1994 and again in 1995. Has bycatch played a role in the diminishing abundance of king crab, and is it even possible to control it? In examining these issues, first-hand personal knowledge of the fishery was incorporated with scientific facts presented in various research papers. The result is a firm belief that Bristol Bay red king crab has been plagued by bycatch and management's inability to accept this reality. Difficult decisions need to be made in the trawl industry as well as the crab industry to reduce the amount of crab bycatch produced by these two groups. Bycatch may be the downfall of all commercial crab fishermen if fishermen and managers alike continue to ignore the importance of the long-term health of the crab stock itself.

In commercial fishing, bycatch is inevitable much like death and taxes; it cannot be avoided. However, just as managing your money wisely can reduce your taxes, or living healthfully can increase your life span, bycatch can be reduced. We are just now beginning to understand the great significance of bycatch and how to prevent it.

Bycatch is the most critical issue facing world fisheries today. The immediate results of bycatch can be arduous to ascertain due to natural swings in the populations of stocks as a result of climatic effects. As an example, a fishery with a high rate of discarding of its own species may not detect any noticeable decline in the legal population of a stock for over five years if the climate is advantageous to the stock. But when the natural climatic cycle is no longer advantageous to the stock, the legal population of the species may collapse. This may have occurred to Bristol Bay red king crab in 1981.

Over 20 years experience fishing in Alaskan waters has taught me that nearly all fisheries have bycatch of one sort or another. This position

paper will focus on bycatch issues with regard to the commercial crab industry. Bycatch of crab in the trawl and crab industries, as well as the future implications of crab bycatch, will be discussed.

RESULTS

Trawlers pose a real and substantial risk to crab stocks. During the early 1970s, Japanese trawlers caught more *Chionoecetes bairdi* crab as bycatch than the crabbers did in their directed fishery. *C. bairdi* stocks subsequently collapsed. Also, in 1983 the Bristol Bay red king crab fishery was shut down, but trawlers were allowed into the crab grounds which damaged the already depleted stock. More recently, the Bristol Bay red king crab fishery has been shut down for two years while trawlers are allocated a king crab bycatch.

Prior to 1981, a pot sanctuary was in place in the Bristol Bay area which protected the vast majority of crab stocks, including the nearshore juvenile habitat. According to Armstrong et al.

(1993) the current refuge does not protect successful spawning grounds north of Unimak Island nor nearshore juvenile habitat from trawling. This may account for the long-term depressed status of king crab stocks since the early 1980s. Reintroduction of the original pot sanctuary might be required for a full recovery of the red king crab population.

Trawlers should not take the full blame for crab bycatch. Most crab fishermen do not recognize the fact that they contribute to the problem of crab bycatch as well. Many scientists do not believe that discard mortality is a problem in the crab industry. However, the best scientific knowledge appears to tell us that this is not true. Tagging studies demonstrate that alarmingly few tagged crab are returning. Many discarding studies have been conducted to demonstrate survivability of discarded crab. However, all of these studies occurred under controlled conditions. This results in information which is misleading and essentially meaningless. It is my belief that under normal fishing conditions in the Bering Sea, which includes extreme weather, handling conditions, and the presence of predatory fish, the majority of these crab do not survive being discarded. This would explain why so few tagged crab are found.

Another reason bycatch is a problem in the crab industry, is that the escapement of nontargeted crabs is not easily achieved. Large pot mesh size in conjunction with sufficient soak time would allow nontargeted crabs to crawl out and escape being discarded. The recently introduced pot limit (in most crab fisheries in the Bering Sea/Aleutian Islands region) would certainly seem a great step backward in the management of these fisheries. The worthwhile intent to reduce the effort on crab stocks, which the pot limit was designed to do, has actually backfired. Even with a license limitation, gear is being hauled much more often than it was prior to the pot limit. Fishermen now haul their pots as often as twice each day. This further intensifies the pressure applied to crab stocks.

The bottom line crab fishermen must face is that the crab they throw overboard may not be surviving.

DISCUSSION

There are solutions for the problems crabbers are facing in relation to bycatch. Most prominent is the introduction of an individual transferable

quota (ITQ) based management system. Under an ITQ system, pot mesh sizes could be increased along with increased soak time in order to sort crab while on the bottom of the ocean. Small males and females would be able to escape before being harvested. ITQs would also allow for the retention of multiple species of crab to be harvested at the same time. Instead of fishing for *C. bairdi* and discarding *C. opilio*, and then fishing for *C. opilio* and discarding *C. bairdi*, it should be legal to target one species while keeping the bycatch and allowing it to go against the GHL.

As it is now, the Bristol Bay red king crab GHL is based on the population of crabs greater than 6 in. However, the legal size limit is 6.5 in. Why are the crab between 6 in. and 6.5 in. factored in while they are not legal? The legal size limit for red king crab should be reduced from 6.5 in. to 6 in. while the GHL is held constant. This will lower the amount of discards while allowing more crabs to be counted against the GHL. Crab populations will benefit from this since the formerly discarded crabs, which may have died anyway, are now being counted against the quota. This results in a net reduction of fishing pressure on the crab stocks, and results in more large male crab on the crab grounds. Incidentally, it is these large male crab which have the highest chance of successful breeding with large females.

Crab management must be changed to lower the effects of bycatch on the crab stocks. Threshold levels should be enacted for male king crab, and raised to a conservative level for females. This will give a solid base for the king crab population to build upon. Bycatch of king crab would not be as significant if stocks were healthy as seen in the *opilio* fishery.

One positive note on bycatch in crab management is the enactment of regulations specifying crab pots must contain an area of cotton twine which will disintegrate within months. This allows crab to escape from lost pots and eliminates the problem of ghost fishing, or pots fishing for years to come after they are lost. However, enforcement of this issue has been very light and, thus, this regulation is often not adhered to.

Of course bycatch will never be eliminated, but it can be manipulated. Bycatch should be diminished by closing certain areas to trawlers, implementing ITQs, and lowering the size limit.

One much needed step forward with regard to crab bycatch is to have the state of Alaska manage crab stocks instead of crab fishermen.

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**Crab Management in the Bering Sea
and the Aleutian Islands?**

By

Kristian E. Poulsen

&

Edward H. Poulsen

June 10, 1993

The concepts and philosophy of crab management in the Bering Sea and the Aleutian Islands has been unchanging over the last 25 years. The philosophical emphasis of management has been that of census taking and management initiatives have come primarily from industry. Examples of this include crab fishermen demanding a season and management relenting regardless of the health of the crab population. Processors desiring to harvest large crab to increase profits thus promoting management to implement large legal size limits. Processor influence has resulted in the harvest of single crab species in areas with multiple species of crab. Other examples abound.

What is believed to be management of crab is in reality management of industry with low emphasis on the resulting impact on various crab stocks.

In the last 25 years, the various crab stocks have undergone a dramatic change. A change from healthy crab stocks in most areas, to a situation that now places most stocks in depressed or severely depressed status throughout waters around Alaska. A major factor which has contributed to this effect is a change in the climate.

Climatic fluctuations have been recorded for many years: Average temperatures have ranged from a low in 1885 to a high around 1940. The period from 1940 to mid 1970's experienced a cooling trend. Since the mid 1970's, we have been experiencing a gradual warming trend. As a result, British researchers' analysis shows that worldwide 1990 "was the warmest year in their 140 -year-long record" (Fackelmann 37). The warming climate has had substantial effects on fisheries in Alaskan waters, and throughout the world.

Cod, Yellowfin Sole, Halibut, and other predatory type fish of crab proliferate in

above average water temperatures producing large increases in the population of these stocks. This in turn has resulted in a general decline in the population of crab in Alaskan waters.

Russia is experiencing the same climatic conditions as those being experienced in Alaskan waters, but with very different results with respect to crab. Even with a large predatory fish population, crab stocks have remained healthy and sizable in Russian waters. So why have Russian crab resources remained healthy while Alaskan crab resources have been steadily declining? The answer seems to be the difference between the two management styles in regards to the issue of discarding.

Although very little information has been revealed about the nature of Russian crab management, it has been documented that Russia has a much smaller legal size limit. As an example, the legal size limit for Red King Crab in Russia is 120mm (4 3/4"). This policy allows for the minimization of discarding of crab. Discard mortality has been recognized as a problem in many other shellfish fisheries: Rock Lobster in Australia and South Africa, Spiny Lobster in Hawaii, and Stone Crab in Florida.

Tagging studies of Red King Crab in the Eastern Bering Sea conducted by NMFS and ADF&G have revealed a major decline in the percentage of tagged crabs being recovered. In 1976, 43.8% of the tagged, discarded crabs were recovered. This percentage has dwindled to an alarming 1.5% in 1987. It would appear that the great majority of tagged crabs are not surviving due largely to the increase in the stock of predatory fish. It is likely that the discards in the commercial fleet have experienced a similar survival trend as that recorded by the NMFS tagging studies. Management

principles must be altered to compensate for this fact.

During the Red King Crab season in the Eastern Bering Sea, Bairdi are discarded. When the Red King Crab season is finished, Bairdi fishing begins and Red King Crab are discarded. As a result, alarming amounts of Bairdi and Red King Crab are killed due to discarding, based on tagging studies which indicate decreasing survival trends since 1976. Management principles must be altered to reduce discarding by conducting the two fisheries at the same time. Areas with large populations of females and immature males should be made off-limits to all fishing efforts, such as the area East of 163' W in the Eastern Bering Sea.

On the main Opilio fishing grounds around the Pribiloff Islands, another discard fishery was created when the Bairdi season opening was changed to early November in 1990. Large scale discarding of Opilio occurs during this time until the Opilio season opens on January 15. The Opilio stocks, which have been the mainstay of the industry since the collapse of the Red King Crab and Bairdi stocks, have been very healthy until this recent development. Again, management principles must be altered to reduce discarding by conducting the two fisheries at the same time in this area.

The success of the Opilio stocks can be credited to the lowest legal size limit of all crab stocks relative to the age of maturity. In essence, Opilio Crab can be harvested at a younger age than other species.

Discarded crab should be considered harvested crab. Assumptions that discarded crab live should not be made as can be seen by the tagging studies. If the mortality rate of discarded crab is factored in to the amount of legal and discarded crab harvested, all

crab resources are being over harvested.

Conservative harvest guidelines must be set and followed and harvest guideline levels should be reexamined. During 1980, the harvest guideline for Red King Crab was set well above a reasonable level due to industry pressure. This, along with intense discarding of Red King Crab in the early 1980's during Bairdi and Red King Crab seasons, accelerated the decline of the Red King Crab stocks. Francis Fukuhara states that "as many as 152 million sublegals and 20.8 million females may have been caught and returned to the sea in the 1980 Eastern Bering Sea King Crab fishery" (Fukuhara 131). He also states that for every legal Tanner Crab caught, 1.6 King Crab were discarded.

Management Principles which must be adopted as a result of changing climatic conditions are:

1. **Combine the harvesting of species which are fished in the same location.**
2. **Constrict, or reduce, the legal size limit of all crab species, except Opilio Crab in order to harvest from a wider age group. This does not mean increasing the harvest guideline.**
3. **Close areas with high populations of females and immature males to all fishing.**
4. **Conservative harvest guidelines should be implemented that count discards as harvested crab.**

Healthy and abundant crab stocks will result in the future if these management practices are followed.

With no change to the current management scheme, all waters around Alaska will soon be like those found in Kodiak Island waters, with no commercial populations of crab available.

I do not intend to cause hard feelings or point a finger at any person or organization by this paper. Instead, my sole purpose for writing this paper is to see to it that the crab resources in Alaskan waters are managed in a way which will benefit the resource, industry, and ultimately the consumers as a result of a more plentiful and less expensive product.

Pinatubo and El Niño fight tug of war

January is a month made for breaking New Year's vows and for assessing how the climate behaved over the previous year. According to analyses presented last week by two research teams, Earth's average temperature in 1991 ranks as the second highest on record, continuing a pattern of global warming that emerged during the 1980s.

"Although it is still too early to link the recent concentration of warm years with the influence of increasing greenhouse gases, international scientific opinion strongly supports the reality of the greenhouse effect, and it is likely that this has played some role in contributing to the recent warmth," con-

cludes a group of climate researchers from the United Kingdom Meteorological Office in Bracknell and the University of East Anglia in Norwich.

The U.K. group analyzed both land and sea-surface temperatures measured around the globe, while a separate team from NASA's Goddard Institute for Space Studies in New York City focused on measurements from land stations.

The British researchers' analysis shows 1991 finishing 0.05°C cooler than 1990, which was the warmest year in their 140-year-long record. The NASA investigators found last year 0.08°C below 1990, which holds top position in their 111-year-long record.

Balloon measurements taken in the lower atmosphere at 63 sites around the world also show 1991 as a warm year. In this 33-year-long record, 1991 qualifies as the fourth warmest, coming in close to 1988 and 1983, the second and third top years, says James K. Angell of the National Oceanic and Atmospheric Administration (NOAA) in

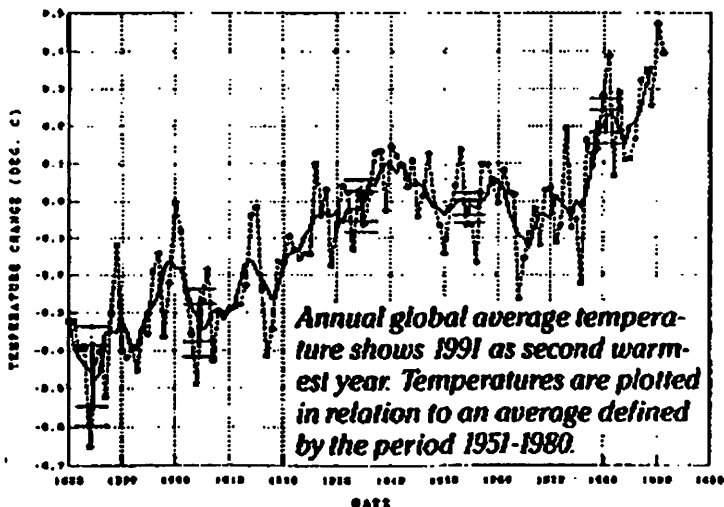
Silver Spring, Md.

In all three data sets, 1991 started off very warm in comparison to other years, and then cooled in the second half of the year, in part, perhaps, because of the eruption of Mt. Pinatubo in the Philippines last May. After the eruption, researchers predicted that sulfur gases from the volcano would block out sunlight, cooling the climate for a few years (SN: 8/31/91, p.132). James Hansen of the Goddard Institute says the volcanic cooling should reach its maximum strength later this year and next year.

Global temperatures may not drop excessively in 1992, however, because an El Niño warming in the Pacific Ocean will mitigate the cooling, says Hansen. The El Niño has been growing in the equatorial Pacific since last summer (SN: 12/14/91, p.389), and NOAA scientists formally announced its existence this week.

Caused by oscillations in the ocean and atmosphere, El Niño events push warm water from the West Pacific toward the East Pacific, raising temperatures across the ocean. In December, the patch of abnormally warm water had spread along the equator one-quarter of the way around the globe. The El Niño may intensify over the next few months, but should run its course by the end of the year, says Vernon E. Kousky of NOAA in Camp Springs, Md.

— R. Monastersky



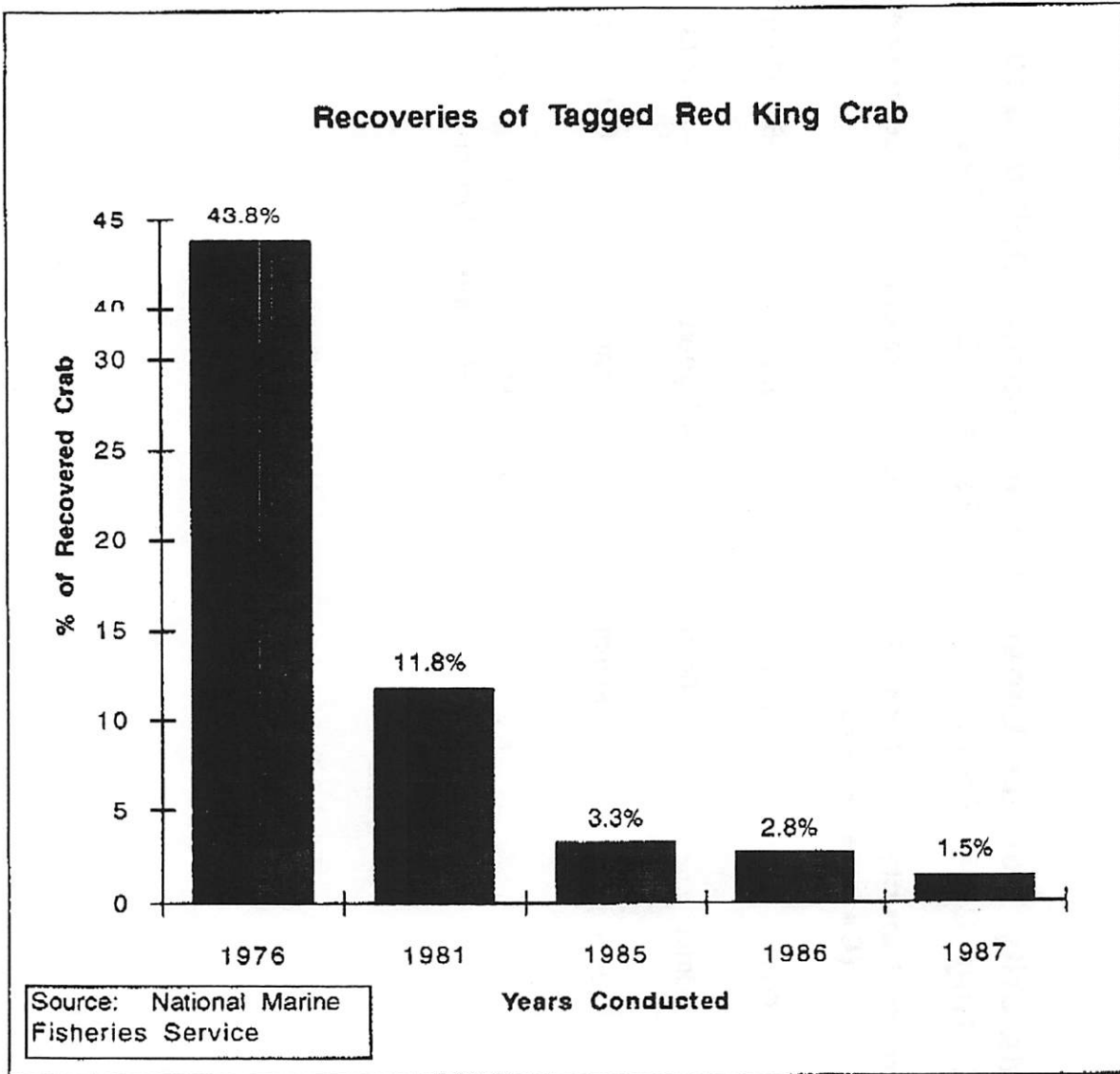
NASA

Size at Maturity Versus Legal Size in Bairdi, Opilio, and Red King Crab Stocks in the Eastern Bering Sea

Species	Size at Maturity (Carapace Width)	Legal Size	Age at Maturity	Legal Age
Opilio*	60mm	78mm	4 years	5.5 years
Bairdi*	80mm	140mm	4.5 years	8 years
Red King Crab*#	104.5	165mm	5 years	8-9 years

Source: *Paul, A.J., and J.M. Paul
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tag study



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September 14, 1999

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SEP 16 1999

N.P.F.M.C

Dr. John R. White, Chairman
Alaska Board of Fisheries
Alaska Department of Fish and Game
Division of Administration
Boards Support Section
PO Box 25526
Juneau, AK 99802-5526

Dear Chairman White:

I am again writing to ask that the Board of Fisheries examine changing the legal size limit of opilio crab. A growing percentage of small opilio crab is being retained by the industry¹ and there is a significant dead loss for the small crab that are sorted on deck². Increasing the legal size requirement to a level that more reflects the market requirements would provide the incentive for the fleet to change fishing patterns and mesh size to avoid capture of undersized crab.

Because the Guideline Harvest Level for the 2000 opilio fishery is based on the abundance of four inch crab, changing the legal size would not change the GHL.

¹ Reduced average weights are thought to be caused by a larger percentage of retained crab less than 4 inches in carapace width during the 1995 fishery. Based on size frequency data collected dockside, 17% of legal C. Opilio crab landed were under 4 inches in carapace width. In 1994, crab less than 4 inches in carapace width made up approximately 12% of the harvest. SAFE Report for the King and Tanner Crab Fisheries of the Bering Sea and Aleutian Islands Regions, Jan. 1997, p. 12.

² Crabs exposed to extreme wind chill values suffered 90% mortality, while even modes exposures had pronounced effects upon the ability of the crabs to right themselves. Shirley, T.C. 1998. Crab handling mortality and bycatch reduction. Appendix D. pp. 1-11.

Attached is a copy of the letter I wrote in 1993 initially making this proposal. To quote from that letter, "[w]hile we have time, the industry must not miss the opportunity to prevent any chance of recruitment failure occurring because of the potential harvest of immature opilio crab." With the drastic decline in the opilio fishery, I believe more strongly than ever that we must act on this proposal to protect the fishery.

Sincerely,

A handwritten signature in black ink, appearing to read "Bart Eaton". The signature is fluid and cursive, with the first name "Bart" being more prominent than the last name "Eaton".

Bart Eaton

Enclosure

Cc: Frank Rue
David Benton
Earl Krygier
Penny Dalton
Steve Pennoyer
Rick Lauber



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October 8, 1993

Richard C. White, Chairman
 Pacific Northwest Crab Industry Advisory Committee
 Post Office Box 97019
 Redmond, Washington 98073-9719

Dear Rich:

I am writing as a follow-up to the meeting between the Pacific Northwest Crab Industry Advisory Committee (PNCIAC) and staff from the Alaska Department of Fish and Game and National Marine Fisheries Service. After hearing Bob Otto and Brad Stevens express some uncertainty whether the current legal size limit on opilio crab adequately protects the resource from recruitment over-exploitation, I believe that PNCIAC should urge there be an immediate study undertaken to determine what the optimum minimum size should be to assure protection of the opilio crab resource.

Current Alaska regulations set the legal size limit for male opilio crab at a carapace width of 78 millimeters (mm). As you know, Trident and others in the industry have unilaterally determined that the market is best able to efficiently utilize opilio crab which have a carapace width of at least 4 inches (or approximately 101 mm). In practice, therefore, the actual harvest of opilio crab has been limited to males with a carapace width of 101 mm or more. With the reduction in the opilio crab quota, however, there will be production pressure to utilize smaller crab. Assuming that the declining quotas goads the industry to begin harvesting male opilio crab towards the legal minimum size, the taking of these smaller crab will result in suboptimal economic utilization of crab stocks, and more importantly, the increased harvest of immature crab may be detrimental to future stock recruitment.

The State of Alaska has established the minimum carapace width at 78 mm for stock conservation purposes. It is assumed that male crab have an opportunity to mate before they reach the minimum legal size. However, there is a 1986 study entitled Functional Maturity and Terminal Molt of Male Snow Crab published in the Canadian Journal of Fisheries and Aquatic Science, which indicates that, although male opilio crab can physically be sexually mature at 78 millimeters, they are not functionally able to mate until they reach a much larger size. To quote from the article, "we suggest that production of spermatophores is already initiated for most males when they reach 60 mm, but that the true *functional maturity* is eventually reached much later." In fact, the authors report that "the smallest male in copulating pairs found in Bonne Bay had a carapace width of 96 mm." As an aside, the minimum legal size for opilio crab harvested in Atlantic Canada is 95 mm carapace width, 17 mm larger than the minimum size in North Pacific, and nearly identical to the size of opilio crab that has been used by Alaskan processors for market reasons.

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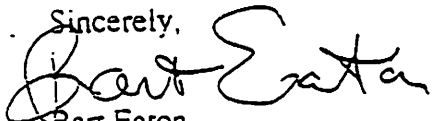
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There may be a difference in growth patterns between North Pacific and Atlantic opilio crab, however, I think it would be appropriate to ask management biologists from the Department of Fish and Game and the National Marine Fisheries Service to undertake an immediate study of the potential stock recruitment impacts of the 78 mm size limit on opilio crab off Alaska. In addition to biological concerns, there are valid economic reasons to optimize the value of the catch by harvesting crab larger than the current legal minimum size. Further, because the guideline harvest levels are based on the industry practice of taking 101 mm crab, at this time the harvest quotas would likely not be impacted by a decision to raise the legal minimum size of male opilio crab from its current level.

I do not know what the appropriate size limit for opilio crab should be. Given the biologists' uncertainty that the current minimum size restriction adequately protects future stock recruitment, and the possibility the industry will begin utilizing crab closer to the minimum legal size, I believe PNCFAC should strongly urge that the issue be carefully studied. While we have time, the industry must not miss the opportunity to prevent any chance of recruitment failure occurring because of the potential harvest of immature opilio crab. This study should be undertaken as soon as possible. If the study determines that the legal size limit on opilio crab ought to be increased for economic or biological reasons, the modification should be made quickly. The longer it takes to make these changes, the more difficult it will be to reach an industry consensus on the issue.

Sincerely,


Bart Eaton
Trident Seafoods Corporation

cc: Carl Rosier, Commissioner, Alaska Department of Fish and Game
Rick Lauber, Chairman, North Pacific Fishery Management Council

Eric Johnson - ACC
Earl Kuyguel - ADF&G

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Clarence G. Pautzke
Executive Director



ESTIMATED TIME
4 HOURS

DATE: October 4, 1999

SUBJECT: Crab Management

ACTION REQUIRED

- (a) Receive plan team report and review the Crab SAFE.
- (b) Take final action on *C. bairdi* rebuilding plan. (Includes Board of Fisheries comments.)
- (c) Development of rebuilding plans for opilio and St. Matthew blue king crab: Council direction.
- (d) Review joint committee recommendations on standdown alternatives.
- (e) Discuss possible amendments to clarify Category 1 and 3 measures in the Crab FMP.

BACKGROUND

(a) BSAI Crab SAFE

The Crab Plan Team recently met to assemble the Stock Assessment and Fishery Evaluation (SAFE) report for king and Tanner crab stocks of the Bering Sea and Aleutian Islands. The SAFE details the current biological and economic status of fisheries, guideline harvest levels (GHL), and support for different management decisions or changes in harvest strategies. Copies of the SAFE were distributed last week.

The status of BSAI crab stocks is mixed. Some stocks are stable (e.g., Bristol Bay red king crab), whereas other stocks are declining (e.g., *C. opilio*). Most importantly, it appears that the Bering Sea opilio stock and St. Matthew blue king crab stock have fallen below their minimum stock size thresholds, and will require development of rebuilding plans within the year. A summary of the 1999 survey results is attached as Item D-3(a).

(b) C. bairdi Rebuilding Plan

The Bering Sea Tanner crab (*C. bairdi*) was declared "overfished" on March 3, 1999, because survey data indicated that spawning biomass was below the minimum stock size threshold established for this stock. The Magnuson-Stevens Act requires development of a rebuilding plan within one year. The Council reviewed a draft rebuilding plan in June, and released it for public review with several additions suggested by the SSC and AP. The revised analysis was distributed for public review on September 1. The executive summary is attached as Item D-3(b)(1).

At this meeting, the Council will make a final review of the analysis, and adopt a preferred alternative. Plan Team minutes, including their recommendations on the tanner crab rebuilding plan, are attached as Item D-3(b)(2). Additionally, a representative of the Board of Fisheries will comment on this issue.

(c) Rebuilding plans for opilio and St. Matthew blue king crab

On September 24, 1999, NMFS informed the Council that the Bering Sea opilio stock and the St. Matthew blue king crab stocks were below minimum stock size thresholds (MSST), and thus were declared "overfished" pursuant to the Magnuson Act guidelines (Item D-3(c)). We are thus required to prepare and submit a rebuilding plan for these crab stocks within one year. To meet this time frame, a plan will need to be ready for initial review in April, 2000, with final action at the June meeting. The crab plan team has suggested that the bairdi rebuilding plan be used as a template; therefore, harvest strategy, bycatch controls, and habitat protection would be examined as possible components of the rebuilding plans. The Council may provide staff with additional direction on these rebuilding plans.

(d) Preseason Gear Restrictions

The draft committee report is under item C-10(a). Here is the part dealing with preseason gear restrictions:

"The joint committee was tasked to develop alternative solutions for the prospecting and fair start issues in the crab fisheries. A tentative list of alternatives, and a problem statement, were provided by Mr. Austin after meeting with industry. The committee forwarded the list below of alternatives and the accompanying problem statement to the full Council and Board for their consideration and revision as appropriate in October.

Alternatives may include, but are not limited to, the following:

1. 100% observer coverage - consider exception for vessels that deliver unsorted codends directly to catcher processors or motherships.
2. Modify western boundary of exclusion area based on historical catch information (exclude areas where there are few crab; 164 W was suggested in earlier correspondence from the appellants).
3. Consider an exclusion period of less than 30 days (e.g., 15 days).
4. Consider effects of AFA sideboards since the combination vessels would have a lid on their fishery and prospecting would not effect the rest of the fleet.
5. Revise definition of pelagic trawls.

The suggested problem statement is as follows:

word change X
"It is the goal of the Council and Board to achieve a fair and equitable start for all fishers engaged in the Bristol Bay red king crab (BBRKC) fishery. The opportunity currently exists for prospecting to occur prior to the BBRKC fishery. Prospecting occurs when gear targeted to harvest other species is used to catch crab and thus determine the distribution of the population prior to the fishery opening. It is the desire of the Council and Board to reduce/eliminate the opportunity to prospect."

Council or Board final action may be required, depending on the alternatives chosen from the above list. It is the committee's expectation that the parallel processes for consideration by both bodies will come together at the full joint Board-Council meeting in February 2000, after public review. Both bodies can then discuss final actions that might be taken at the ensuing Council meeting in February and the Board meeting in March."

The staff needs direction on how to proceed in further development and analysis of the preseason standdown issue. We will report your recommendations to the Board at their late October work session.

(e) Crab FMP category 1 and 3 measures

Council member Dennis Austin has requested that the Council consider amending the Crab FMP to move category 3 "other" measures to a category 1 measure, and to clarify the jurisdiction of the Alaska Board of Fisheries. A copy of his letter is attached as Item D-3(e)(1). An executive summary of the Crab FMP is attached as Item D-3(e)(2).

**RESULTS OF THE 1999 NMFS BERING SEA CRAB SURVEY
EXECUTIVE SUMMARY**

This document summarizes data from the Report to Industry on the 1999 Eastern Bering Sea Crab Survey. Numbers presented are trawl survey indices of abundance, not necessarily absolute abundance. For further information, contact Dr. Bradley Stevens or Dr. Robert Otto, NMFS, P.O. Box 1638, Kodiak, AK 99615. Phone (907) 481-1700. (GHL = Guideline Harvest Level.)

Red king crab (*Paralithodes camtschaticus*) Bristol Bay.

Legal males: 11.0 million crabs; 49% increase.
Pre-recruits: 7.1 million crabs; 57% decrease.
Large Females: 14.5 million crabs; 59% decrease.
Outlook: Abundance of mature males has increased due to growth of a recruiting cohort. However, decreased abundance of mature females requires use of a 10% exploitation rate.
GHL: 10.66 million lbs (4840 metric tons, mt). Fishery opens October 15 .

Red king crab (*Paralithodes camtschaticus*) Pribilofs District.

Legal males: 1.1 million crabs; 154% increase.
Pre-recruits: 0.6 million crabs; no change.
Large Females: 3.0 million crabs; 200% increase.
Outlook: Crabs were highly concentrated, and index has very low precision. Despite an increase this year, survey and fishery data indicate a long term decline.
GHL: Combined red and blue king crab fishery will not open in 1999.

Pribilof Islands blue king crab (*P. platypus*) Pribilof District.

Legal males: 0.45 million crabs; 46% decrease.
Pre-recruits: 0.22 million crabs; 47% decrease.
Large Females: 2.5 million crabs; 24% increase.
Outlook: Population is low and long-term trend is declining.
GHL: Combined red and blue king crab fishery will not open in 1999.

St. Matthew blue king crab (*P. platypus*) Northern District.

Legal males: .0.6 million crabs; 80% decrease.
Pre-recruits: 0.2 million crabs; 88% decrease.
Large Females: Not well estimated.
Outlook: Dramatic population decline requires this stock to be defined as overfished.
GHL: Fishery will not be opened in 1999.

Tanner crab (*Chionoecetes bairdi*) Eastern District.

Legal males: 2.0 million crabs; no change.
Pre-recruits: 14.5 million crabs; 20% increase.
Large Females: 16.1 million crabs; 147% increase.
Outlook: Legal males are at an historic low, but some recruitment is occurring.
GHL: Fishery was closed in 1997 and 1998, and will not open in 1999.

Snow crab (C. opilio) All districts combined.

Large males: 94 million crabs; 63% decrease.

Small males: 517 million crabs; 49% decrease.

Large Females: 474 million crabs; 59% decrease.

Outlook: Abundance has declined precipitously to below threshold and is now defined as overfished. Exploitation rate has been reduced to 22%. Little recruitment is apparent, and fishery may be closed next year..

GHL: 28.5 million lbs (12,940 mt). Fishery opens January 15, 1999.

Hair crab (Erimacrus isenbeckii)

Total males: 3.7 million crabs; no change.

Large Females: Not well estimated.

Outlook: Population is declining, and recruitment is not apparent.

GHL: 283,000 lbs (128 mt) Pribilof District only. Fishery opens November 1.

Executive Summary

The commercial fishery for Bering Sea Tanner crab (*C. bairdi*) has been closed since 1997 due to low stock abundance. Spawning biomass has been estimated to be below the minimum stock size threshold established for this stock. On March 3, 1999, the stock was deemed "overfished", which requires a rebuilding plan to be developed within one year. This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) addresses alternatives for rebuilding the overfished stock of Tanner crab (*C. bairdi*) in the Eastern Bering Sea. Two alternatives were developed by the Council at their October, 1998 meeting, and the options finalized in June 1999. The alternatives examined were the following:

Alternative 1: Status Quo. No rebuilding plan would be adopted for Bering Sea Tanner crab.

Alternative 2: Establish a rebuilding plan for Bering Sea Tanner crab. The rebuilding plan may have three components: a harvest strategy, bycatch control measures, and habitat protection. Note that more than one option can be adopted for each component.

A. Harvest Strategy: In previous years when there was a directed fishery, harvest rates for Bering Sea Tanner crab were established at 40% of the mature male abundance. This harvest strategy could be modified to reduce mortality on legal males, females, and juvenile crabs.

Option 1: Status quo. Continue to establish harvest rates for Bering Sea Tanner crab at 40% of the mature male abundance.

Option 2: Endorse the new harvest strategy for Bering Sea Tanner crabs as adopted by the Board of Fisheries. ADF&G has recently developed a stairstep harvest strategy for Tanner crabs, which was adopted by the Board of Fisheries in March 1999. The strategy, as detailed in Section 1.6.1 and Appendix 2, includes lower harvest rates at low biomass levels, and incorporates a threshold female biomass.

B. Bycatch Controls: Bycatch control measures have previously been implemented in the crab, scallop, and groundfish fisheries. These measures could be adjusted to reduce mortality on unharvested crabs.

Option 1: Status quo. Maintain existing Tanner crab bycatch control measures in all fisheries.

Option 2: Reduce the Zone 2 PSC limit.

Suboption A. The Zone 2 PSC limit would be set equal to 0.75% of the total *C. bairdi* population as estimated by the NMFS annual bottom trawl surveys, with a maximum PSC limit of 3,000,000 Tanner crabs.

Suboption B. The Zone 2 PSC limit would be set equal to 0.5% of the total *C. bairdi* population as estimated by the NMFS annual bottom trawl surveys, with a maximum PSC limit of 2,000,000 Tanner crabs.

Option 3: Request the Board of Fisheries and the Alaska Department of Fish and Game to consider additional measures (such as gear modifications and area closures) to reduce bycatch of *C. bairdi* in crab fisheries.

C. Habitat protection: Adequate habitat is essential for maintaining the productivity of fishery resources. Measures previously implemented that protect Tanner crab habitat from fishing impacts include several areas where trawling and dredging is prohibited. Essential fish habitat (EFH) has been defined and potential threats have been identified. Additional measures could be implemented to further protect habitat.

Option 1: Status quo. Maintain existing habitat protection measures.

Option 2: For agency consultation purposes, highlight the importance of Tanner crab EFH in maintaining stock productivity. To the extent feasible and practicable, this area should be protected from adverse impacts due to non-fishing activities.

Option 3: Refine existing EFH information to identify discrete areas important to mating, pre-mating/molting adults and juvenile Tanner crab. Conduct thorough analysis of important Tanner crab habitat by using existing observer database and survey information in a comprehensive spatial analysis. This analysis should be completed within one year and be incorporated into the Tanner crab rebuilding plan for habitat protection.

The proposed actions contained in this amendment are timely to rebuild the Bering Sea Tanner crab stock. Although the near-term outlook for this stock is bleak, the 1998 and 1999 surveys encountered a fair number of small crab (30-50 mm CW). These small crabs may represent the cornerstone of stock rebuilding, as protection of these crabs through maturity may pay off in terms of increased spawning and recruitment in future years. Clearly the stock is capable of rebounding in a relatively short time period when conditions are favorable, as was the case in the late 1980's.

Adoption of Alternative 2 (particularly Part A, Option 2) is expected to allow the Bering Sea Tanner crab stock to rebuild, with a 50% probability, to the Bmsy level in 10 years. Adoption of the revised harvest strategy should result in more spawning biomass as more larger male crab would be conserved and fewer juveniles and females would die due to discarding. This higher spawning biomass would be expected to produce good year-classes when environmental conditions are favorable. Protection of habitat and/or reduction of bycatch may reduce mortality on juvenile crabs, thus allowing a higher percentage of each year-class to contribute to spawning (and future landings). Any or all of these actions proposed under Alternative 2 would be expected to improve the status of this stock. No rebuilding benefits are provided by Alternative 1.

Alternative 2B, Option 2, could impact the groundfish trawl fisheries (the flatfish trawl fisheries in particular) depending on the suboption chosen. The crab bycatch limits are apportioned among fisheries pre-season, and reaching one of these limits shuts down a fishery for the remainder of the season. A bycatch limit established at 0.5% of abundance may result in Zone 2 groundfish catch reductions of 24%, equating to about \$ 4.75 million exvessel. A bycatch limit established at 0.75% of abundance would have less impacts, depending on how accurately the PSC limits are apportioned among fisheries. The analysis estimates that a PSC mis-apportionment of 10% may cost the flatfish fleet \$ 1.9 million exvessel if the catch could not be made up outside Zone 2. Additional costs to the groundfish trawl fisheries would be incurred if additional areas were closed to trawling to protect crab habitat.

Alternative 2C, Option 3, would require a significant amount of additional analysis to identify discrete areas important to mating, pre-mating/molting adults and juvenile Tanner crab. It is not known at this time whether or not current survey and observer data information would be adequate for identification of these areas.

None of the alternatives is expected to result in a "significant regulatory action" as defined in E.O. 12866. None of the alternatives are likely to significantly affect the quality of the human environment, and the preparation of

an environmental impact statement for the proposed action is not required by Section 102(2)(C) of the National Environmental Policy Act or its implementing regulations, fisheries, regulations, gear used, revenues generated, etc.

**DRAFT Minutes of the
Bering Sea/Aleutian Islands Crab Plan Team
Meeting, September 27-28, 1999**

Members Present:

Doug Pengilly (ADF&G, chair)
Gretchen Harrington (NMFS, vice chair)
Wayne Donaldson (ADF&G)
Rance Morrison (ADF&G)

Bob Otto (NMFS)
Jack Turnock (NMFS)
Tom Shirley (UAF)
Dave Witherell (NPFMC)

The Bering Sea/Aleutian Islands (BSAI) Crab Plan Team met on September 27-28 in Anchorage. The Team meeting was conducted based on the following agenda:

Introductions, Agenda, Meeting Minutes
Review Tanner Crab Rebuilding Plan and make recommendations (if any) to Council
Review survey information and GHLS
Review and discuss management of AI red king crab fishery
Prepare and review SAFE report
Review Category 2 and 3 proposals, and FMP amendment proposals received
Other issues for discussion.

Review of Tanner Crab Rebuilding Plan

The Team has been working on the rebuilding plan over the past year. At this meeting, the team reviewed additions to the analysis since the last draft, and provided some recommendations to the Council. The Team recommended that the Council endorse a rebuilding plan as provided under Alternative 2. The Team also recommended specific options under this alternative, and they are as follows:

Harvest strategy: The team supports Option 2 (endorse the new harvest strategy).

Bycatch Controls: The team supports Option 1 (status quo) and Option 3 (consider additional measures for crab fisheries). The team feels that the current level of crab bycatch in trawl fisheries is acceptable ($\leq 1\%$ of abundance). The team is concerned about unintended consequences (unobserved mortality, economic effects) of lowering the Bairdi PSC limit. However, the team urges continued monitoring of trawl bycatch, and would have concerns necessitating a revisiting of the PSC limit if the bycatch levels increase. For crab fisheries, the team noted that research is being done reducing bycatch by modifying pot gear, and other management options (such as changing season dates) may reduce bycatch. The team encourages ADF&G, NMFS, and the Board of Fisheries to continue to research and consider the means to reduce bycatch in the crab fisheries.

Habitat: The team supports Option 2 (highlight importance of essential fish habitat, EFH, in consultations). The team wants to make it clear that its lack of support for Option 3 does not reflect a lack of concern for the importance of habitat considerations in the rebuilding and maintenance of crab stocks. The team believes that habitat considerations are, in fact, very important and that additional analyses are needed to

improve our understanding of bairdi EFH. However, the team is concerned about the lack of personnel resources, temporal and spatial resolution of existing data, other priorities, and limited time frame provided under this alternative. The team instead strongly urges that the EFH research review body should give high priority to proposals that research questions proposed under Option 3 by reviewing existing data from multiple sources and conducting new research directed at establishing EFH for bairdi and other overfished crab stocks.

Survey Information and GHLS

The team reviewed preliminary survey information and reviewed guideline harvest levels (GHLS) established for this years crab fisheries. A more detailed summary of survey information and establishment of GHLS is provided in the Stock Assessment and Fishery Evaluation (SAFE) report. The section below provides additional observations not captured in the SAFE.

Tanner crab: The survey showed a slight increase in Tanner crab (*Chionoecetes bairdi*) spawning biomass and a showing of some pre-recruits (80-90 mm). Dr. Otto noted that a 2001 fishery was possible if these crab recruited in large numbers, but this situation was not probable. An unknown amount of recruitment may come from deeper areas than generally surveyed. Another factor to consider is that bairdi crabs north and west of the Pribilof Islands generally wont reach legal size in their lifetime. A mode of small bairdi crabs in the 30 mm size range also showed up in the survey, but it is too early to tell whether or not this can be classified as a good year-class. This mode is 3-4 years from recruitment. The spawning biomass (SB = 70.1 million pounds) remains below the minimum stock size threshold (MSST = 94.8 million pounds) and the stock is still considered overfished. The fishery will remain closed in the 1999/2000 season.

Snow crab: As projected in 1988, abundance of snow crab (*C. opilio*) declined sharply this year. The decline was even more than expected however, and the survey found relatively few opilio of all sizes. Severe declines resulted in a spawning biomass value (283.3 million pounds) that falls below the MSST (460.8 million pounds) and hence precipitated a severe curtailment of the fishery in the 2000 season. The GHLS (28.5 million pounds) represents approximately 50% if the fishing mortality rate (F) of recent years. The plan team anticipates preparing a rebuilding plan in the coming year. Few signs of small (< 50 mm width) opilio were observed, so the near-term future for this fishery looks bleak.

King crabs: Survey data for Bristol Bay red king crab (*Paralithodes camtschaticus*) showed an increase in legal males this year, but a decrease in large females. Dr. Otto expects that the stock and GHLS should stay pretty much the same next year, but a decline is expected thereafter. The Pribilof Islands red king crab stock appears to be way up, but there is a lot of uncertainty about these estimates. Although this stock has harvestable numbers of male crabs, no fishery will be allowed this year because of the low and declining abundance of Pribilof Islands blue king crabs (*P. platypus*). Additionally, the closure of St Matthew due to an apparent stock collapse, would increase effort in a Pribilof Islands red king crab fishery to the point it would be unmanageable, so it remained closed. The St Matthew Island blue king crab stock declined sharply and the current estimate of spawning biomass (4.8 million pounds) is considerably below the MSST (11.0 million pounds), so a rebuilding plan will need to be prepared.

Aleutian Islands Red King Crab Management

The Aleutian Islands red king crab stock once supported large fisheries (e.g., 18.7 million pounds in 1972). The last significant harvest in this fishery occurred in 1993 (700,000 lbs) and the fishery was closed in 1996. CPUE and limited survey data indicated that this stock had crashed and no recruitment was forthcoming. Subsequent

small scale tagging projects in 1996 and 1997 and a limited commercial fishery in 1999 indicated that this stock remains at very low levels.

The Crab Plan Team discussed the current status of the Aleutian Islands red king crab stock and problems associated with determining population abundance estimates in the absence of any type of abundance index survey. Recent fisheries statistics and results of a small scale tagging project, by commercial vessels participating in the commercial golden king crab fishery, suggest the Aleutian red king crab population is at extremely low levels. The team generally agreed that recent fishery based assessments were not providing adequate data for fishery management and there is concern with serial depletion at very low stock levels.

Unfortunately, ADF&G does not have funding for additional survey work in the western Aleutian Islands area. In an attempt to gain much needed survey data on population abundance, the team suggested development of a survey plan which would allow industry participation in both survey design and implementation. It was suggested that test fish authority be secured which would allow for an index survey. The test fish vessel would be allowed to retain and sell legal red king crab captured to help pay for survey costs. Under this plan, the vessel conducting the survey would assume financial risk, since catches may not cover the cost of the survey. The vessel will need to agree to fish all survey stations, including those stations where few if any legal size red crabs would be encountered. The department will also have to commit staff time to prioritize the survey design and help conduct the survey.

The department will need to develop criteria to determine if the fishery would be reopened once the survey data is collected. To help interpret the survey results, past fishery cpue, size frequency and prerecruit levels will be used. For the coming winter the department will keep the commercial fishery closed. As time permits, Gordon Kruse's shop should work on a length based model and past harvest rates. Once the survey is completed, the results should provide direction for the next 4 – 5 years.

SAFE Report

The Team prepared the annual SAFE report, which was revised somewhat to address SSC's concerns. Notably, a summary section was added to the SAFE that includes information necessary to quickly evaluate stock status and whether or not the stock is below minimum stock size threshold (MSST), along with other assessment information. Additionally, details of the modeling methodology for assessments (where applicable) are included. The team views this year's SAFE as a first step and further revisions are planned for the next report. The next SAFE report will include chapters on ADF&G trawl survey results for Norton Sound and Eastern Aleutian Islands, subsistence and personal use catch of crabs, social and economic data for the crab fisheries, and a chapter on bycatch in groundfish, crab, and other fisheries.

Review of Proposals

The team reviewed federal and state proposals for crab management. Team comments are provided for each proposal.

Federal proposal #3: This plan amendment proposal would begin analysis of an IFQ program for groundfish and crab fisheries. The team noted that the Board of Fisheries and ADF&G have management difficulties due to high fishing effort on crab stocks. As noted in previous team minutes, analysis should examine other options (such as individual pot quotas, co-ops, restrictive LLP) to address overcapacity, the race for fish, and associated problems.

Federal Proposal #5: This proposal would establish a PSC limit for the Bering Sea pollock pelagic trawl fishery. The team noted that this fishery generally catches very few crabs. The team would like more research on unobserved mortality of crabs due to pelagic and bottom trawl gear.

Federal proposal #7: This proposal would allow PSC trawl apportionments to be made inseason, thus giving some flexibility to adjust to unforeseen market and fishery conditions. The team noted that flexibility could potentially result in crab bycatch limits reaching the caps. The team was particularly concerned that the bairdi caps not allowed to be adjusted between zones. It was noted that the flexibility may be more important for halibut than crab, and the team suggested that this first be tried with halibut only, if the proposal moves forward.

State proposal # 12: This is the old 299 proposal from the March 1999 Board of Fisheries meeting to change the bairdi season. *It is a Category 2 proposal.* The intent of this is to reduce bycatch and handling mortality by allowing for bairdi retention in the opilio fishery. ADF&G has several issues to be resolved, and one major concern is the potential for disproportional catches of bairdi by area based on opilio fishery distribution. The team noted that there likely won't be an opilio fishery for at least the next year (more likely several years), changing an important assumption under which this proposal was developed.

State ACR #2: This agenda change request from the Council is to revisit the 30 stand-down period (gear exclusion). ADF&G filed a similar ACR. The team noted that in the coming year, the Council and Board of Fisheries will be examining options to prevent prospecting.

State ACR #11: The agenda change request is administrative in nature, dealing with replacement of buoy tags in crab fisheries managed under pot limits. The team was unsure if this would be a category 2 measure, as it deals with pot limits, or would fall under some other category.

State ACR #?: The Council recently took action on sideboards as required under the American Fisheries Act (AFA). The intent of sideboards is to prevent disruption of non-pollock fisheries caused by AFA provisions. One sideboard adopted limits catch of AFA qualified vessels to a certain proportion of the Bristol Bay red king crab GHL. The BOF will need to deal with management of this particular fishery at its March meeting. Questions remain as to whether is a category 1 measure (limited access) or category 2 (GHLs).

State ACR #?: In order to complete rebuilding plans for both St. Matthew Island blue king crab and eastern Bering Sea snow crab, the Alaska Board of Fisheries will need to review at their March 2000 meeting proposals from ADF&G for new harvest strategies for each of the St. Matthew blue king crab stock and the eastern Bering Sea opilio. *Although the harvest strategies have not been developed, many of the important components of harvest strategies are Category 2 measures; e.g., guideline harvest level determination, size limits, and season dates.*

Other Issues

The team discussed development of rebuilding plans for snow crab and St. Matthew Island blue king crab. The plans will need to be ready for initial review by the Council at its April meeting for final action in June 2000. Additionally, the Board of Fisheries will need to adopt a new harvest strategy at its March meeting. So time is limited. The team felt that the bairdi rebuilding plan could serve as a template for the other crab rebuilding plans; that is, harvest strategy, bycatch controls, and habitat protection would all be examined as possible components of the plans. Dave Witherell will prepare a draft tasking plan by the end of October and distribute to all potential contributors and their supervisors. Significant efforts will be required of ADF&G, NMFS, and Council staff to get this all done in the limited time frame.

Dave Witherell gave a brief overview of the preliminary Habitat Areas of Particular Concern (HAPC) analysis. It is proposed Amendment 12 to the crab FMP. There is one management action being considered that would effect crab fisheries, and that is prohibiting all bottom fishing in areas of gorgonian coral abundance. The AI golden king crab (*Lithodes aequispina*) fishery occurs in the vicinity of coral areas, so there was some concern about potential impacts to the fishery. The team will provide recommendations to the Council prior to final action.

Others in attendance were: John Gauvin, John Zuck, Linda Kozak, Dick Powell, Francine Bennis, and Arni Thomson.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

National Marine Fisheries Service
P.O. Box 21668

AGENDA D-3(c)
OCTOBER 1999

Juneau, Alaska 99802-1668

September 24, 1999

Mr. Richard B. Lauber, Chairman
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, Alaska 99501-2252

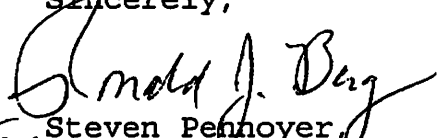
Dear Mr. Lauber:

Amendment 7 to the Fishery Management Plan for the Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) revised the definitions of overfishing for the FMP crab species. This action was necessary for compliance with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and will advance the Council's ability to achieve, on a continuing basis, the optimum yield from fisheries under its jurisdiction.

Based on an analysis of the 1999 NMFS Eastern Bering Sea trawl survey data, we determine Bering Sea snow crab (Chionoecetes opilio) and St. Matthew blue king crab (Paralithodes platypus) to be overfished because the total spawning biomass of each stock is below the minimum stock size threshold specified in the new overfishing definitions. A copy of this analysis is attached.

This letter serves as your official notification that snow crab and St. Matthew blue king crab are overfished. Section 304(e) of the Magnuson-Stevens Act states that a council will have one year from notification of the overfished status of a stock to prepare and submit conservation and management measures to end overfishing and rebuild the affected stock. The rebuilding program must be as short as possible, but not exceed 10 years, except if the biology of the stock or other environmental conditions dictate otherwise.

Sincerely,


For Steven Pennoyer,
Administrator, Alaska Region

Attachment





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
 NATIONAL MARINE FISHERIES SERVICE
 Alaska Fisheries Science Center
 301 Research Court
 P.O. Box 1638
 Kodiak AK 99615-1638

September 17, 1999

Memorandum For : F/AKR - Mr. Steven Pennoyer
 Through F/AKC - Dr. James W. Balsiger
 From : F/AKC21 - Dr. Robert S. Otto
 Subject : Status of Eastern Bering Sea Crabs Relative
 To M-S FCMA Requirements

According to the July 1998 FMP for Bering Sea/Aleutians Islands king and Tanner Crabs, a stock is considered over fished if the stock size falls below the minimum stock size threshold (MSST). The MSST is 50% of the mean total (male and female) spawning biomass (SB) for the period upon which the maximum sustainable yield (MSY) was based (50% B MSY). The sustainable yield (SY) in a given year is the MSY rule applied to the current SB ($F = 0.2$ for king crabs and $F = 0.30$ for Tanner and snow crabs). Over fishing also occurs if the SY is exceeded for a period exceeding one year. An MSST is defined in the plan for six stocks in the Bering Sea that are surveyed annually by the NMFS. Pertinent statistics and Guideline Harvest Levels (GHLs) resulting from joint NMFS and ADF&G assessment of stock conditions and management planning documents follow:

Stock	MSST	1998/1999 Season			1999/2000 Season		
		SB	SY	Catch	SB	SY	GHL
----- millions of pounds -----							
Red King Crab:							
Bristol Bay	44.8	163.6	32.6	14.8	117.7	23.6	10.7
Pribilof Is.	3.3	7.4	1.5	0.5	12.8	2.6	0.0
Blue King Crab:							
Pribilof Is.	6.6	10.7	2.1	0.5	9.2	1.8	0.0
St. Matthew Is.	11.0	24.1	4.8	3.0	4.8	0.8	0.0
EBS Tanner crab	94.8	36.9	11.1	0.0	70.1	21.1	0.0
EBS snow crab	460.8	720.9	216.3	193.6	283.5	85.1	28.5



As shown in the table, three of six stocks are considered over fished at this time. The FMP requires that the Secretary of Commerce be informed when a stock is over fished and that "the Secretary will notify the Council to take action to rebuild the stock or stock complex". This occurred with respect to Tanner crab (*Chionoecetes bairdi*) approximately one year ago and a rebuilding plan is now under public review. Severe declines in the St. Matthew Island Blue king crab (*Paralithodes platypus*) stock and the EBS snow crab (*C. opilio*) stock resulted in the SB values that fall below MSST and will hence require Secretarial notification requiring rebuilding plans. I have attached graphs showing the history of each surveyed stock relative to over fishing for your use. Red king crab (*P. camtschaticus*) stocks and the Pribilof Islands blue king crab stock are not considered over fished at this time.

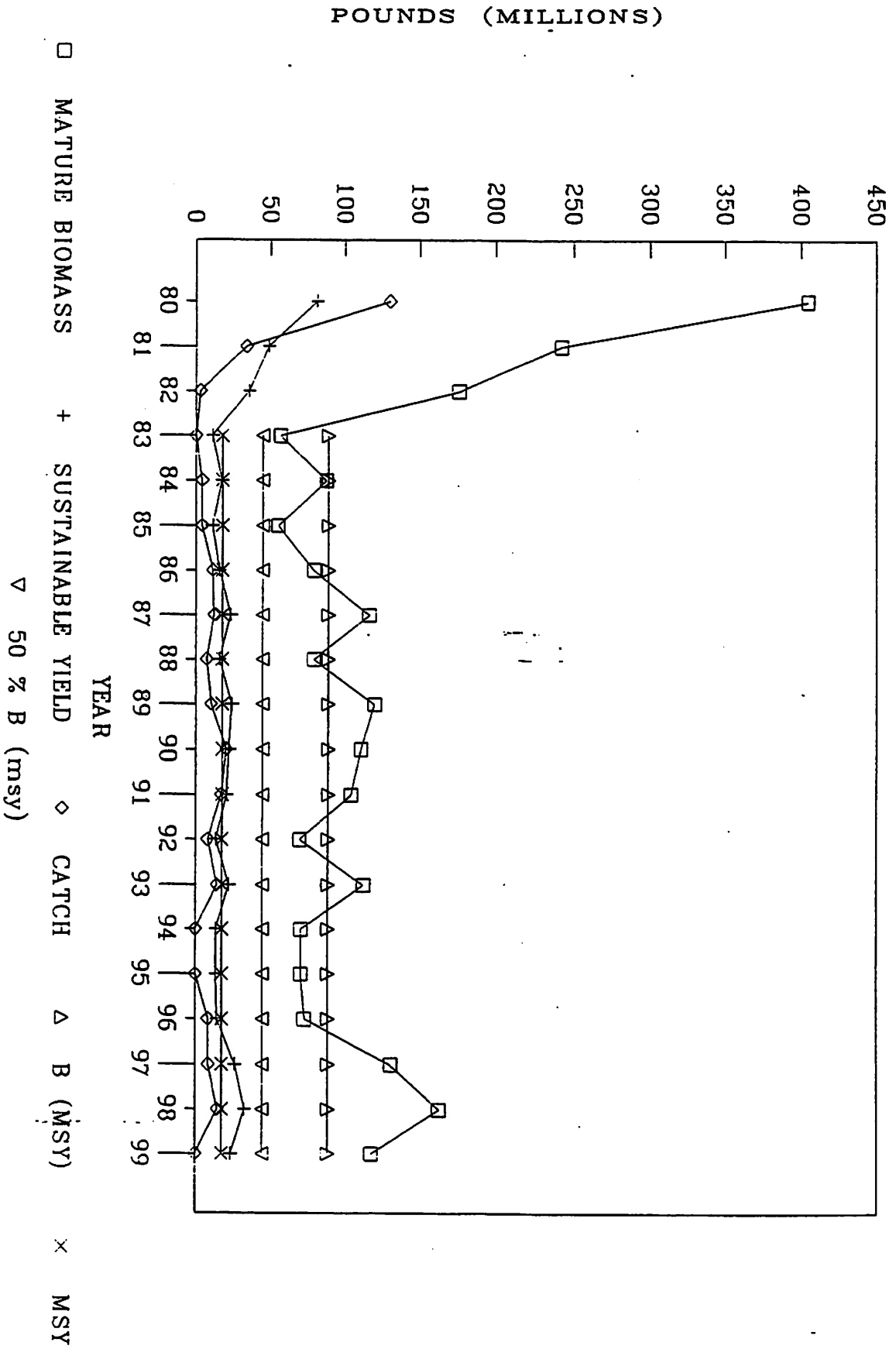
Attachments

cc: Crab Plan Team

Dr. Gordon Kruse ADF&G
Dr. Gary Stauffer, RACE
Mr. David Witherell
Dr. Clarence Pautzke
Mr. Pete Probasco

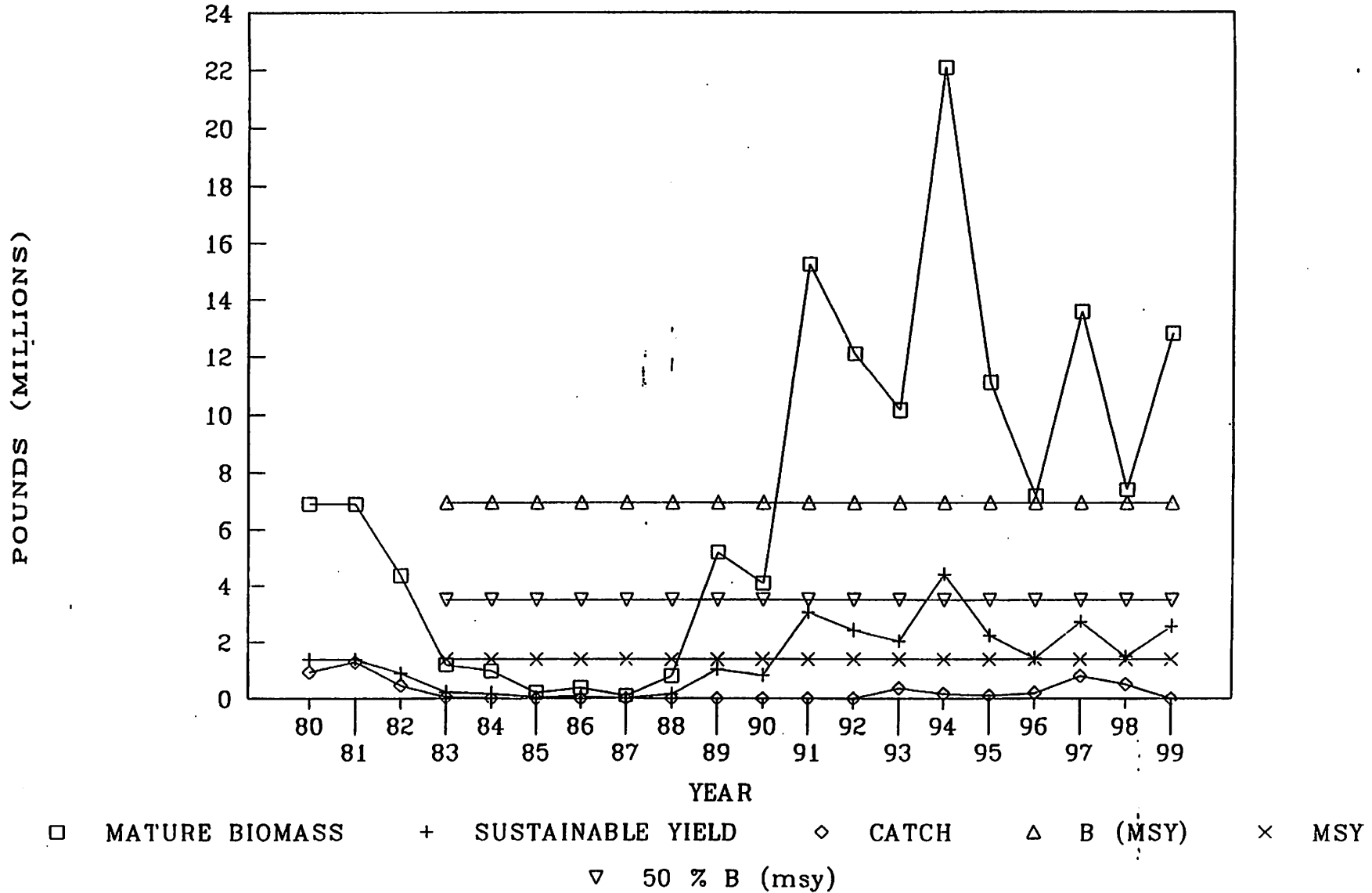
BRISTOL BAY RED KING CRAB

HISTORY RELATIVE TO OVERFISHING



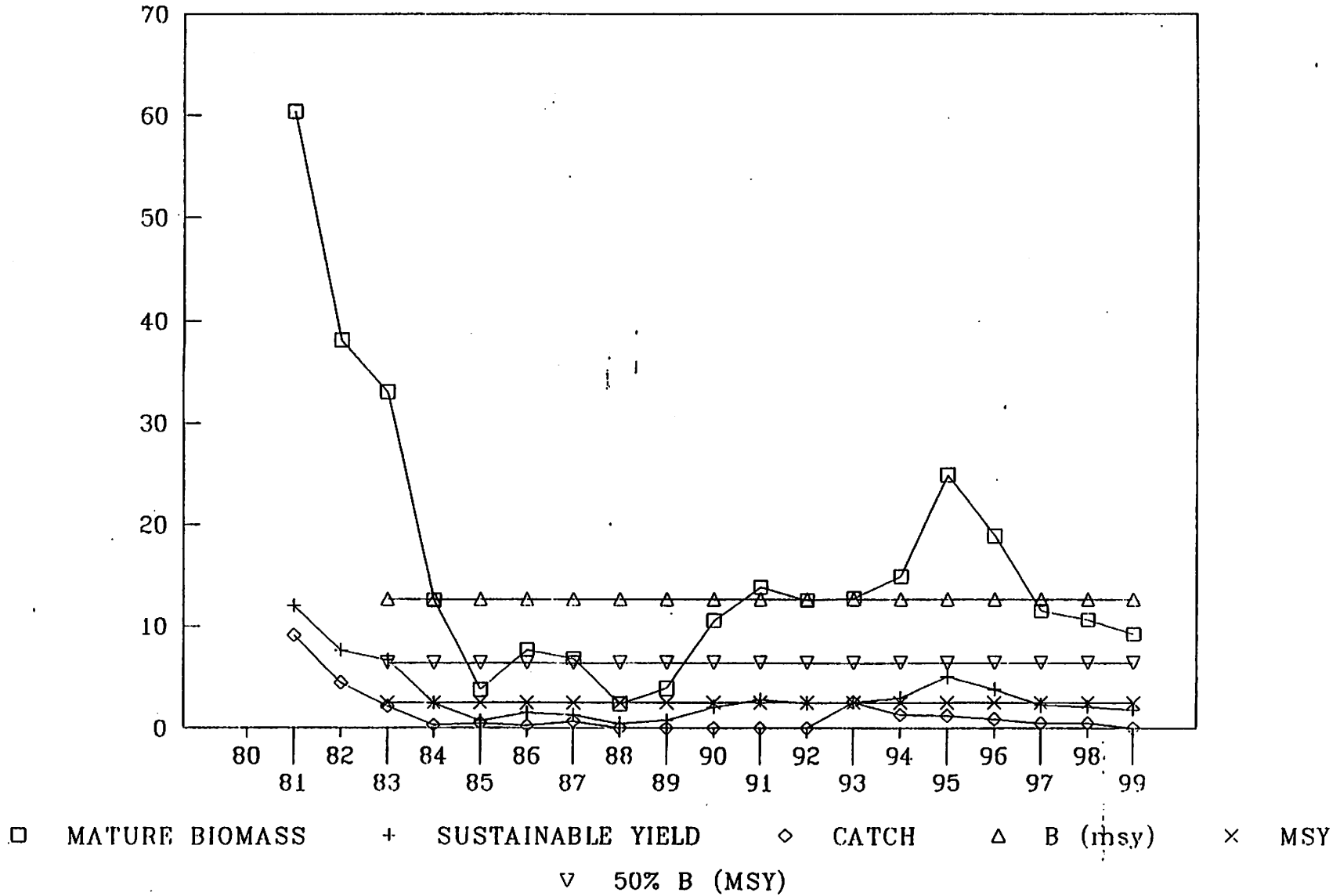
PRIBILOF ISLAND RED KING CRAB

HISTORY RELATIVE TO OVERFISHING



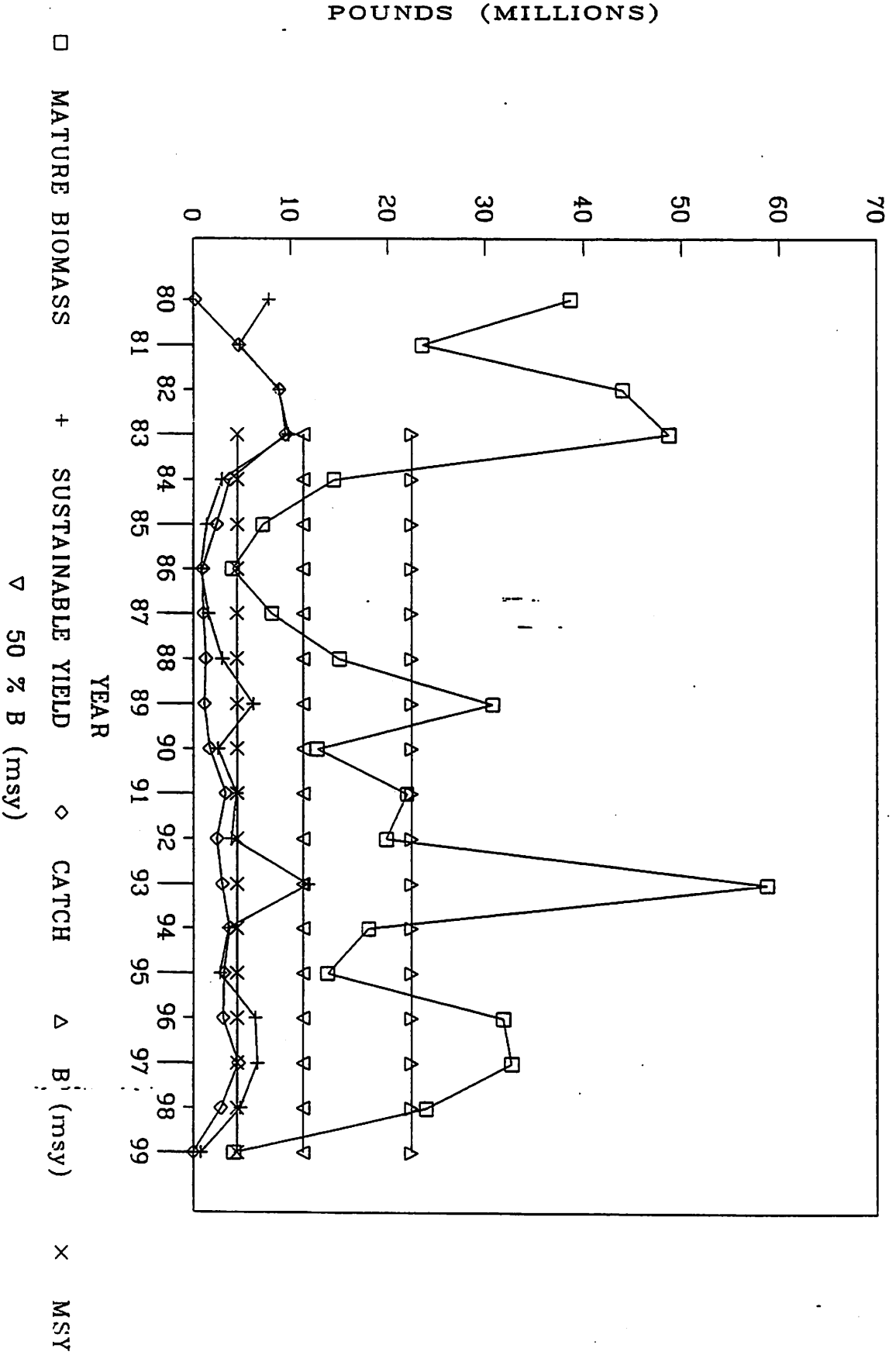
PRIBILOF ISLANDS BLUE KING CRAB

HISTORY RELATIVE TO OVERFISHING



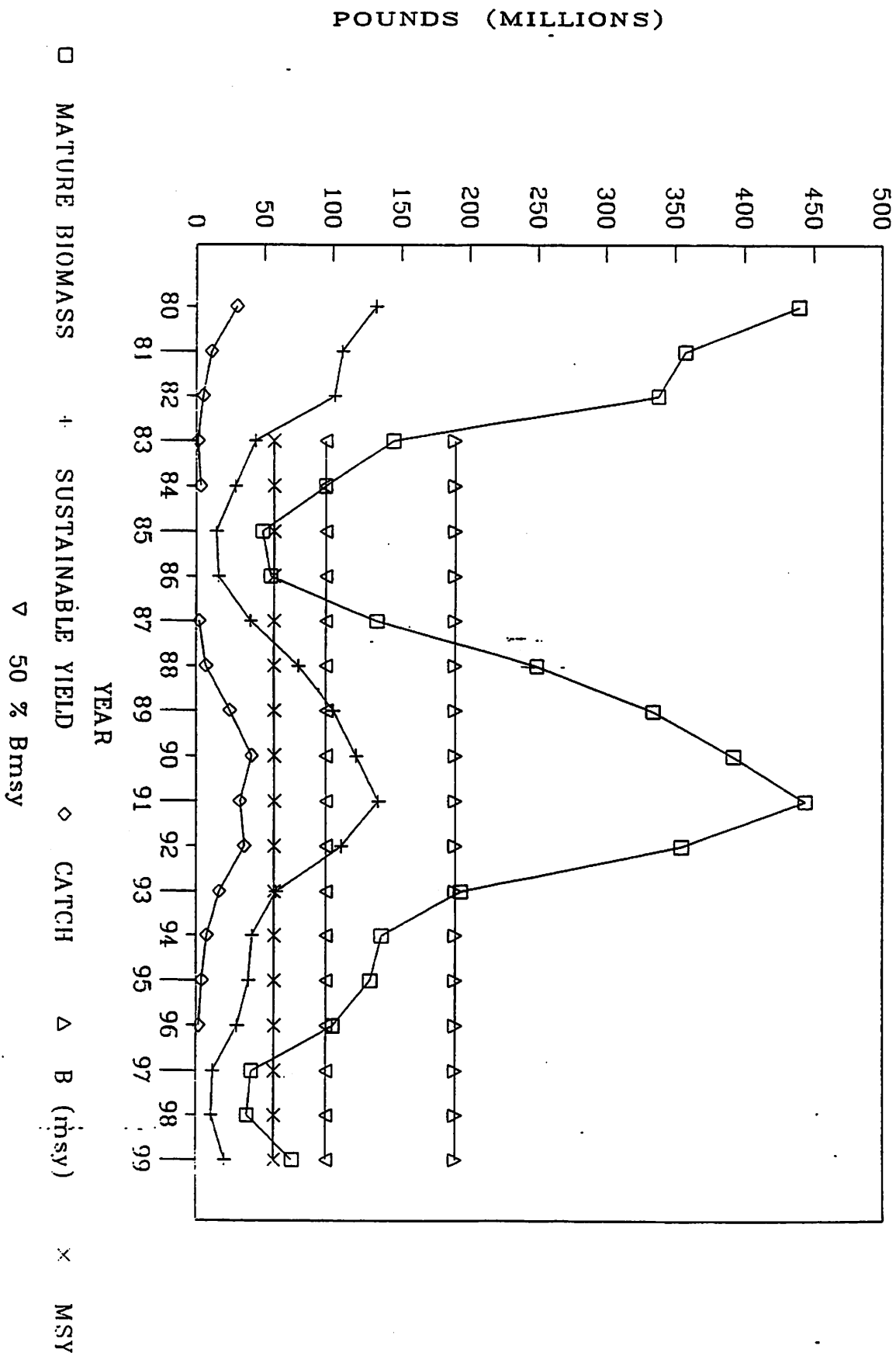
ST. MATTHEW ISLAND BLUE KING CRAB

HISTORY RELATIVE TO OVERFISHING



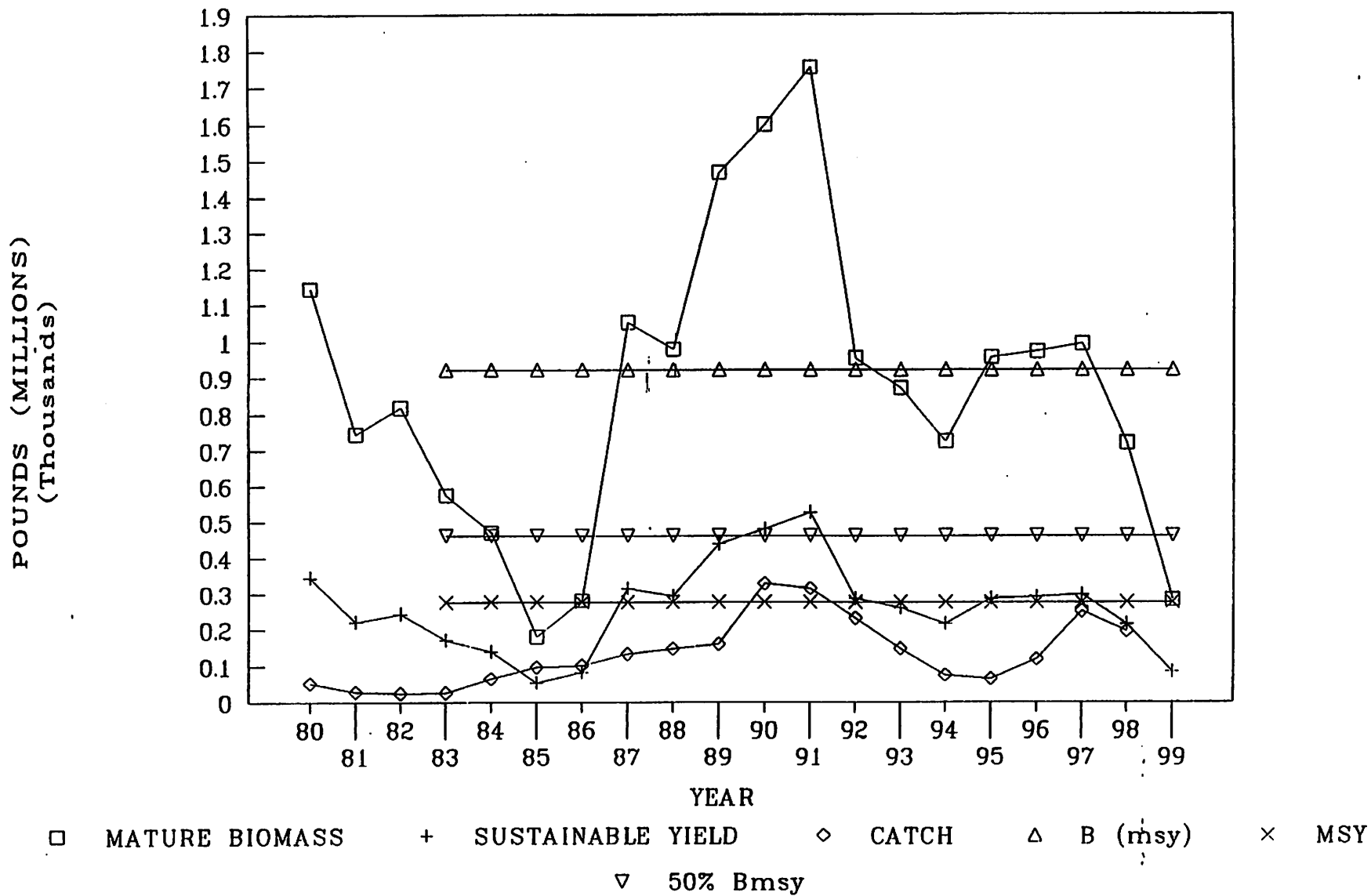
WHOLE EBS TANNER CRAB

HISTORY RELATIVE TO OVERFISHING



WHOLE EBS SNOW CRAB

HISTORY RELATIVE TO OVERFISHING





State of Washington
DEPARTMENT OF FISH AND WILDLIFE

Mailing Address: 600 Capitol Way N • Olympia, WA 98501-1091 • (360) 902-2200, TDD (360) 902-2207
Main Office Location: Natural Resources Building • 1111 Washington Street SE • Olympia, WA

September 8, 1999

Richard B. Lauber, Chair
North Pacific Fishery Management Council
605 West 4th Avenue, #306
Anchorage, Alaska 99501

RECEIVED

SEP 13 1999

N.P.F.M.C

Dear Rick:

As a result of the last few months of interactions with the Alaska Board of Fisheries, I believe it is timely to review the Fishery Management Plan for the Commercial King and Tanner Crab Fisheries in the Bering Sea/Aleutian Island (Crab FMP) and clarify the management intent and role of the Council. Specifically, I propose the Category 3 "other" rule change characterization be moved to Category 1 and any regulation which limits entry into the crab fishery be classified as a Category 1 rule change regardless of the expressed management intent and characterization of the rule. In addition, I would expect the review of the Crab FMP to clarify the jurisdiction of the Alaska Board of Fisheries which authorizes them to adopt rules impacting fisheries and fishers outside the bounds of the seasons and areas identified for the harvesting of crab.

The original Crab FMP was approved by the Secretary of Commerce over a decade ago (June 2, 1989). There have been six amendments to the FMP since 1989 and there are two pending now. Management has evolved and, hopefully, improved since the original FMP was adopted. The recent misunderstanding between the Board, the fishers, the processors, and the Council signal to me that the Council's (and possibly NMFS's?) management intent has been lost or also evolved during the decade since the Crab FMP was originally adopted. The resulting ambiguity is not helpful in our desire to establish a stable and thus, predictable relationship with the Board of Fisheries. I believe it is now timely for the Council's management intent to be clarified by the two proposals I have suggested.

Sincerely,

A handwritten signature in cursive script that reads "A. Dennis Austin".

A. Dennis Austin

ADA:ada

cc: Fish and Wildlife Commission
Jeff Koenings, Director

EXECUTIVE SUMMARY

The Fishery Management Plan (FMP) for the Commercial King and Tanner Crab Fisheries in the Bering Sea/Aleutian Islands (BSAI) was approved by the Secretary of Commerce on June 2, 1989. The FMP establishes a State/Federal cooperative management regime that defers crab management to the State of Alaska with Federal oversight. State regulations are subject to the provisions of the FMP, including its goals and objectives, the Magnuson-Stevens Act national standards, and other applicable federal laws. The FMP has been amended several times since its implementation.

Amendments to the BSAI king and Tanner crab FMP.

1. Defined overfishing
2. Established Norton Sound superexclusive area registration
3. Established a Research Plan
4. Established a moratorium on new vessels
5. Established a vessel License Limitation Program
6. Repealed the Research Plan
7. Revised overfishing definition and updated FMP (proposed)
8. Defined essential fish habitat (proposed)

The king and Tanner crab FMP is a "framework" plan, allowing for long-term management of the fishery without needing frequent amendments. Therefore, the plan is more general than other FMPs, and establishes objectives and alternative solutions instead of selecting specific management measures. Within the scope of the management goal, the FMP identifies seven management objectives and a number of relevant management measures used to meet these objectives. Several management measures may contribute to more than one objective, and several objectives may mesh in any given decision on a case-by-case basis.

FMP Management Goal

The management goal in the FMP is to maximize the overall long-term benefit to the nation of Bering Sea Aleutian Islands (BSAI) king and Tanner crab stocks by coordinated federal and state management, consistent with responsible stewardship for conservation of the crab resources and their habitats.

FMP Management Objectives

1. **Biological Conservation Objective.** *Ensure the long-term reproductive viability of king and Tanner crab populations.*
2. **Economic and Social Objective.** *Maximize economic and social benefits to the nation over time.*
3. **Gear Conflict Objective.** *Minimize gear conflict among fisheries.*
4. **Habitat Objective.** *Preserve the quality and extent of suitable habitat.*
5. **Vessel Safety Objective.** *Provide public access to the regulatory process for vessel safety considerations.*
6. **Due Process Objective.** *Ensure that access to the regulatory process and opportunity for redress are available to interested parties.*
7. **Research and Management Objective.** *Provide fisheries research, data collection, and analysis to ensure a sound information base for management decisions.*

FMP Management Measures

The FMP defers much of the management of the BSAI crab fisheries to the State of Alaska using the following three categories of management measures:

1. Those that are fixed in the FMP and require a FMP amendment to change;
2. Those that are framework-type measures that the state can change following criteria set out in the FMP; and
3. Those measures that are neither rigidly specified nor frameworked in the FMP.

Management measures in category 1 may be addressed through submission of a proposal to the North Pacific Fishery Management Council (NPFMC). Management measures in categories 2 and 3 may be adopted under state laws subject to the appeals process provided for in the FMP.

Management measures implemented for the BSAI king and Tanner crab fisheries, as defined by the federal crab FMP, by category.

Category 1 (Fixed in FMP)	Category 2 (Frameworked in FMP)	Category 3 (Discretion of State)
<ul style="list-style-type: none">* Legal Gear* Permit Requirements* Federal Observer Requirements* Limited Access* Norton Sound Superexclusive Registration Area	<ul style="list-style-type: none">* Minimum Size Limits* Guideline Harvest Levels* Inseason Adjustments* Districts, Subdistricts and Sections* Fishing Seasons* Sex Restrictions* Closed Waters* Pot Limits* Registration Areas	<ul style="list-style-type: none">* Reporting Requirements* Gear Placement and Removal* Gear Storage* Gear Modifications* Vessel Tank Inspections* State Observer Requirements* Bycatch Limits (in crab fisheries)* Other

Category 1 Management Measures

Legal Gear-The FMP specifically prohibits the use of trawls and tanglenet gear for catching king and Tanner crab because of the high mortality rates that could be inflicted on nonlegal crab.

Permit Requirements-The FMP assumes that all crab fishermen are licenced and vessels are licensed and registered under the laws of the State, and as such, while fishing in the EEZ are subject to all State regulations that are consistent with the FMP, Magnuson-Stevens Act, and other applicable law. Hence, no fishing permits are required for harvesting vessels, except as required by the Moratorium and, in the future, the License Limitation Program.

Federal Observer Requirements - Any vessel fishing for or processing king and Tanner crab in the BSAI shall be required to carry an observer if requested so by the NMFS Regional Administrator.

Limited Access - A system of limited access is a type of allocation of fishing privileges that may be used to promote economic efficiency or conservation. Beginning in 1996, a moratorium on vessels entering the BSAI crab fisheries was implemented. This moratorium will be in effect until superseded by implementation of the License Limitation System that was approved by the Secretary in 1997.

Norton Sound Superexclusive Area Registration - The FMP establishes the Norton Sound section of the Norther District king crab fishery as a superexclusive registration area. Any vessel registered and participating in this fishery would not be able to participate in other BSAI king crab fisheries.

Category 2 Management Measures

Minimum Size Limits-Under the FMP, the state can adjust size limits within the constraints of available information. Biological considerations are used to establish minimum legal size limits to ensure that conservation needs are served. Preference for larger crabs based upon market and other economic considerations is accommodated by industry rather than through regulation.

Guideline Harvest Levels - The FMP authorizes the state to set preseason guideline harvest levels (GHLs), which limit the total annual harvest of crab. Seasons or areas may be closed when the GHL is reached, or earlier or later based on current inseason information.

Inseason Adjustments - When an event occurs inseason that affects preseason predictions, or a preseason prediction proves to be incorrect, compensatory inseason adjustments must be made to keep the management system on track toward meeting the biological and economic objectives of the FMP. The FMP authorizes the state to make inseason adjustments to GHLs, to fishing period lengths, and to close areas under state regulations.

District, Subdistrict, and Section Boundaries - The FMP authorizes the state to adjust district, subdistrict, and section boundaries to manage reasonably distinct stock of crab.

Fishing Seasons- Under the FMP, fisheries should be closed during sensitive biological periods to protect crab from mortality caused by handling and stress when shells are soft, and to maximize meat recovery by delaying harvest until the shells have filled out. Fisheries conducted during sensitive biological periods should prevent any irreparable damage to the stocks.

Sex Restrictions - The FMP authorizes an experimental harvest and processing of females when a surplus is determined to be available; otherwise female crabs may not be taken. The surplus would be dependent on the number of crabs above the threshold amount used in the spawning stock calculation of optimum yield. When a surplus of crabs exists, harvest is by state permit if fishermen provide accurate documentation of harvest rates and location, and processing and marketing results are made available to the management agency.

Pot Limits - The FMP authorizes the state to use pot limits to attain the biological conservation objective and the economic and social objective of the FMP. Pot limits must be designed in a nondiscriminatory manner. Pot limits are warranted to restrict deployment of excessive amounts of gear to attain the biological conservation objective in the event of pot loss to advancing ice cover that may result in wastage. Pot limits may also be warranted to restrict excessive amounts of gear to allow a small guideline harvest level from a depressed stock to attain the economic and social objective within biological conservation constraints.

Registration Areas - The FMP adopts existing state registration areas within the BSAI fishery management unit. The management unit is divided by the state into three king crab registration areas - Bering Sea, Bristol Bay, and Aleutian Islands and one Tanner crab registration area - Westward. Registration areas may be further divided into fishing districts, subdistricts, and sections for purposes of management and reporting. State regulations require vessels to register for fishing in these areas, and may require vessels to register for specific districts within a registration area. Registration areas may be designated as either exclusive or nonexclusive. Vessels can register for any one exclusive area but cannot fish in any other exclusive area during the registration year. Vessels can fish any or all nonexclusive areas.

Closed Waters - The FMP recognizes the current state regulations that prohibit commercial fishing for king crab in waters within 10 miles of mean lower low water around St. Lawrence, King, and Little Diomed Islands. The FMP also recognizes the state closure to protect the Norton Sound subsistence king crab fishery.

fishery. The state may designate new closed water areas or expand or reduce existing state closed water areas in order to meet state subsistence requirements.

Category 3 Management Measures

Reporting Requirements - Reporting requirements for catchers and processors are important component in achieving the biological conservation, economic, social, research, and management objectives of the FMP.

Gear Placement and Removal - Placement of unbaited gear, with doors secured open on the fishing grounds before and after a season, has been allowed within certain limits.

Gear Storage - Crab pots are generally stored on land or in designated storage areas at sea.

Vessel Tank Inspections - Vessel tank (or live-hold) and freezer inspections are required before the opening of a king or Tanner crab fishing season to meet the legal requirements of the states landing laws, provide effort information, and provide for a fair start to the fishery.

Gear Modifications - Pots are the specified legal commercial gear for capturing crab in the BSAI area. An escape mechanism is required on all pots. This mechanism will terminate a pots catching and holding ability in case the pot is lost. Escape areas may be incorporated or mesh size adjusted to allow the escape of nonlegal crabs. Various devices may be added to pots to prevent capture of other species.

Bycatch Limits - The state may implement bycatch limits of crab in crab fisheries managed under the FMP.

State Observer Requirements - The state may place observers aboard crab fishing or processing vessels to obtain catch, effort, and biological data. The state currently has a mandatory observer requirement on all catcher/processors and floating processors participating in the king, Tanner, and snow crab fisheries as a condition of obtaining a processing permit. It is important that the state observer program and any future federal observer program be coordinated.

Other - State government is not limited to only the management measures described in the FMP. Implementation of other management measures not described in the FMP must be consistent with the FMP, the Magnuson-Stevens Act, and other applicable federal laws, and may occur only after consultation with the NPFMC. Other management measures the state may implement are subject to the review and appeals procedures described in the FMP.