

HJR

26

<TARGET><BILL>HJR 26</BILL><SUBJECT>HJR
26</SUBJECT><COMM>HRES27</COMM></TARGET>

27-LS0717M
Bullard
2/6/12

CS FOR HOUSE JOINT RESOLUTION NO. 26()
IN THE LEGISLATURE OF THE STATE OF ALASKA
TWENTY-SEVENTH LEGISLATURE - SECOND SESSION

BY

Offered:
Referred:

Sponsor(s): REPRESENTATIVES PEGGY WILSON, Thomas, Austerman, Dick

A RESOLUTION

1 **Urging federal agencies to work with the Alaska Department of Fish and Game,**
2 **Southeast Alaska Native leaders, and other interested parties to establish strategies and**
3 **plans for the sustainable management of the reintroduced sea otter population of**
4 **Southeast Alaska.**

5 **BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:**

6 **WHEREAS**, in the late 1960s, in the absence of a long-term management plan, the
7 Alaska Department of Fish and Game reintroduced approximately 400 sea otters to nearshore
8 waters in six different locations around Southeast Alaska; and

9 **WHEREAS**, without proper management, the sea otter population in southern
10 Southeast Alaska has grown at an alarming rate; and

11 **WHEREAS** more than 10,560 sea otters were observed in 2003, and a 2010-2011
12 aerial survey by the United States Fish and Wildlife Service revealed 20,000 sea otters, for an
13 approximate annual growth rate of 12 percent in southern Southeast Alaska and four percent
14 in northern Southeast Alaska; and

15 **WHEREAS** the federal government, which has responsibility for managing sea otter

1 populations under the Marine Mammal Protection Act of 1972, has not established an
2 effective management plan for protecting the ecosystems affected by sea otters; and

3 **WHEREAS**, in 1994, the United States Fish and Wildlife Service issued the
4 "Conservation Plan for the Sea Otter in Alaska," which stated that, while the optimum
5 sustainable population range had not been numerically defined for sea otters in Alaska, the
6 stock was believed to be in the optimum sustainable population range; and

7 **WHEREAS** the preface to the 1994 plan states that the plan "will be reviewed
8 annually and revised at least every three to five years"; and

9 **WHEREAS** male sea otters in Alaska can weigh up to 100 pounds and average
10 between 60 and 85 pounds, and large females can weigh up to 72 pounds and average
11 between 35 and 60 pounds; and

12 **WHEREAS** unmanaged high numbers of reintroduced sea otters consume up to 23
13 percent of their body weight each day of crab, abalone, sea urchins, sea cucumbers, clams,
14 and other shellfish that the region's human residents rely on for subsistence and commercial
15 uses and appear to be contributing to degradation of the ecological balance in many areas,
16 leading to diminished human harvests of those important subsistence and commercial
17 resources; and

18 **WHEREAS** the dramatically increasing and currently high number of reintroduced
19 sea otters has, in some areas, depleted shellfish stocks to a degree that subsistence, personal
20 use, sport, and commercial fishing have been halted because of unsustainable lack of
21 abundance; and

22 **WHEREAS** many residents in the state's coastal communities directly or indirectly
23 depend on the fishery resources of the state's coastal waters; and

24 **WHEREAS** money derived from the harvest of the state's sustainably managed
25 aquatic resources forms a major component of the economies of the state's coastal
26 communities, causing those communities to be particularly vulnerable to situations that
27 negatively affect yields from local resources; and

28 **WHEREAS** Southeast Alaska's municipalities, towns, and villages face substantial
29 challenges in developing broader economic opportunities for their residents; and

30 **WHEREAS** Southeast Alaska's indigenous inhabitants have hunted sea otters since
31 time immemorial; and

1 **WHEREAS**, under the Marine Mammal Protection Act of 1972 and the regulations
2 adopted under the Act, Alaska Natives are limited to selling only "authentic" and "traditional"
3 Native handicrafts; and

4 **WHEREAS** sec. 101 of the Marine Mammal Protection Act of 1972 provides for
5 exemptions for Alaska Natives to harvest marine mammals, as long as the taking is for
6 subsistence purposes and not accomplished in a wasteful manner; and

7 **WHEREAS** sec. 101 of the Marine Mammal Protection Act of 1972 allows for the
8 use of marine mammal pelts for authentic Native articles, including handicrafts and clothing;
9 and

10 **WHEREAS**, under the Marine Mammal Protection Act of 1972, sale of value-added
11 fur products is allowed in both intrastate and interstate commerce; and

12 **WHEREAS** the state serves as a model for the management of harvestable resources
13 for sustained yield and sustainable use; and

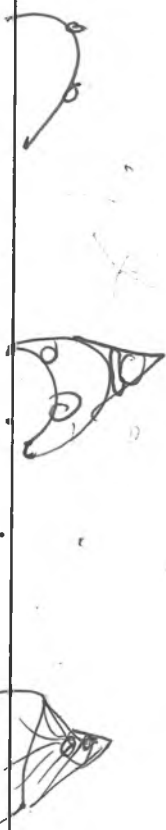
14 **WHEREAS** implementation of a sustainable harvest management regime for sea
15 otters will serve the dual purposes of maintaining sea otter populations at a level suitable for
16 continued ecological balance and expanding economic opportunity; and

17 **WHEREAS** sec. 119 of the Marine Mammal Protection Act of 1972 allows the
18 United States Secretary of the Interior to enter into cooperative agreements with Alaska
19 Native organizations for the conservation of marine mammals and the development of marine
20 mammal cooperative management structures with federal and state agencies, including the
21 creation of local management plans for the harvest of marine mammals for subsistence use;

22 **BE IT RESOLVED** that the Alaska State Legislature urges the United States
23 Secretary of the Interior and appropriate federal agencies to work with the Alaska Department
24 of Fish and Game, Southeast Alaska's Native leaders, and other interested parties in the state
25 to establish strategies and plans for sustainable ^{harvest} management of the reintroduced sea otter
26 population of Southeast Alaska; and be it

27 **FURTHER RESOLVED** that the Alaska State Legislature urges state and federal
28 government authorities, in developing those management plans, actively to consider means of
29 expanding and enhancing small business and broader economic opportunities for residents of
30 Southeast Alaska; and be it

31 **FURTHER RESOLVED** that the Alaska State Legislature urges federal authorities



1 to consider broadening the scope of allowable uses for sea otters taken for subsistence
2 purposes by replacing the references to "authentic" and "traditional" handicrafts in the Marine
3 Mammal Protection Act of 1972 and the regulations adopted under the Act with the phrase
4 "Alaska Native articles of handicraft" and continuing the sale of sea otter pelts consistent with
5 all other provisions of the Marine Mammal Protection Act of 1972.

6 **COPIES** of this resolution shall be sent to the Honorable Ken Salazar, United States
7 Secretary of the Interior; and the Honorable Lisa Murkowski and the Honorable Mark Begich,
8 U.S. Senators, and the Honorable Don Young, U.S. Representative, members of the Alaska
9 delegation in Congress.

ALASKA STATE LEGISLATURE

Interim:
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Session:
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Juneau, AK 99801-1182
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1-800-686-3824
Fax: (907) 465-3175

REPRESENTATIVE PEGGY WILSON
HOUSE DISTRICT 2

MEMO

From: Arthur Martin, Legislative Intern for Representative Peggy Wilson

To: House Resources Committee

Date: 2/7/12

Subject: CS for HJR 26\B Sea Otter Management

During the initial hearing of HJR 26 in the Resources Committee on Friday February 3, a concern was raised on the ambiguity of language in the resolution involving the "sale of intact sea otter pelts." The CS change clears up this issue. See the following for the exact change (*italicized is the new wording*):

The CS change for HJR 26\B replaced the whereas clause on page three line one to read: "Whereas, under the Marine Mammal Protection Act of 1972 *and the regulations adopted under the Act, Alaska Natives are limited to selling only 'authentic' and 'traditional' Native handicrafts...*"

The CS also replaced the third resolved clause of the original draft starting on page three line 31 to read: "Further Resolved that the Alaska State Legislature urges federal authorities to *consider broadening the scope of allowable uses for sea otters taken for subsistence purposes by replacing the references to 'authentic' and 'traditional' handicrafts in the Marine Mammal Protection Act of 1972 and the regulations adopted under the Act with the phrase 'Alaska Native articles of handicraft' and continuing the sale of sea otter pelts consistent with all other provisions of the Marine Mammal Protection Act of 1972.*"

27-LS0717\B
Bullard
1/27/12

CS FOR HOUSE JOINT RESOLUTION NO. 26()
IN THE LEGISLATURE OF THE STATE OF ALASKA
TWENTY-SEVENTH LEGISLATURE - SECOND SESSION

BY

Offered:
Referred:

Sponsor(s): REPRESENTATIVES PEGGY WILSON, Thomas, Austerman

A RESOLUTION

1 **Urging federal agencies to work with the Alaska Department of Fish and Game,**
2 **Southeast Alaska Native leaders, and other interested parties to establish strategies and**
3 **plans for the sustainable management of the reintroduced sea otter population of**
4 **Southeast Alaska.**

5 **BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:**

6 **WHEREAS**, in the late 1960s, in the absence of a long-term management plan, the
7 Alaska Department of Fish and Game reintroduced approximately 400 sea otters to nearshore
8 waters in six different locations around Southeast Alaska; and

9 **WHEREAS**, without proper management, the sea otter population in southern
10 Southeast Alaska has grown at an alarming rate; and

11 **WHEREAS** more than 10,560 sea otters were observed in 2003, and a 2010-2011
12 aerial survey by the United States Fish and Wildlife Service revealed 20,000 sea otters, for an
13 approximate annual growth rate of 12 percent in southern Southeast Alaska and four percent
14 in northern Southeast Alaska; and

15 **WHEREAS** the federal government, which has responsibility for managing sea otter

1 populations under the Marine Mammal Protection Act of 1972, has not established an
2 effective management plan for protecting the ecosystems affected by sea otters; and

3 **WHEREAS**, in 1994, the United States Fish and Wildlife Service issued the
4 "Conservation Plan for the Sea Otter in Alaska," which stated that, while the optimum
5 sustainable population range had not been numerically defined for sea otters in Alaska, the
6 stock was believed to be in the optimum sustainable population range; and

7 **WHEREAS** the preface to the 1994 plan states that the plan "will be reviewed
8 annually and revised at least every three to five years"; and

9 **WHEREAS** male sea otters in Alaska can weigh up to 100 pounds and average
10 between 60 and 85 pounds, and large females can weigh up to 72 pounds and average
11 between 35 and 60 pounds; and

12 **WHEREAS** unmanaged high numbers of reintroduced sea otters consume up to 23
13 percent of their body weight each day of crab, abalone, sea urchins, sea cucumbers, clams,
14 and other shellfish that the region's human residents rely on for subsistence and commercial
15 uses and appear to be contributing to degradation of the ecological balance in many areas,
16 leading to diminished human harvests of those important subsistence and commercial
17 resources; and

18 **WHEREAS** the dramatically increasing and currently high number of reintroduced
19 sea otters has, in some areas, depleted shellfish stocks to a degree that subsistence, personal
20 use, sport, and commercial fishing have been halted because of unsustainable lack of
21 abundance; and

22 **WHEREAS** many residents in the state's coastal communities directly or indirectly
23 depend on the fishery resources of the state's coastal waters; and

24 **WHEREAS** money derived from the harvest of the state's sustainably managed
25 aquatic resources forms a major component of the economies of the state's coastal
26 communities, causing those communities to be particularly vulnerable to situations that
27 negatively affect yields from local resources; and

28 **WHEREAS** Southeast Alaska's municipalities, towns, and villages face substantial
29 challenges in developing broader economic opportunities for their residents; and

30 **WHEREAS** Southeast Alaska's indigenous inhabitants have hunted sea otters since
31 time immemorial; and

1 **WHEREAS**, under the Marine Mammal Protection Act of 1972, Alaska Natives are
2 denied the customary and traditional ability to sell intact sea otter pelts; and

3 **WHEREAS** sec. 101 of the Marine Mammal Protection Act of 1972 provides for
4 exemptions for Alaska Natives to harvest marine mammals, as long as the taking is for
5 subsistence purposes and not accomplished in a wasteful manner; and

6 **WHEREAS** sec. 101 of the Marine Mammal Protection Act of 1972 allows for the
7 use of marine mammal pelts for authentic Native articles, including handicrafts and clothing;
8 and

9 **WHEREAS**, under the Marine Mammal Protection Act of 1972, sale of value-added
10 fur products is allowed in both intrastate and interstate commerce; and

11 **WHEREAS** the state serves as a model for the management of harvestable resources
12 for sustained yield and sustainable use; and

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14 otters will serve the dual purposes of maintaining sea otter populations at a level suitable for
15 continued ecological balance and expanding economic opportunity; and

16 **WHEREAS** sec. 119 of the Marine Mammal Protection Act of 1972 allows the
17 United States Secretary of the Interior to enter into cooperative agreements with Alaska
18 Native organizations for the conservation of marine mammals and the development of marine
19 mammal cooperative management structures with federal and state agencies, including the
20 creation of local management plans for the harvest of marine mammals for subsistence use;

21 **BE IT RESOLVED** that the Alaska State Legislature urges the United States
22 Secretary of the Interior and appropriate federal agencies to work with the Alaska Department
23 of Fish and Game, Southeast Alaska's Native leaders, and other interested parties in the state
24 to establish strategies and plans for sustainable management of the reintroduced sea otter
25 population of Southeast Alaska; and be it

26 **FURTHER RESOLVED** that the Alaska State Legislature urges state and federal
27 government authorities, in developing those management plans, actively to consider means of
28 expanding and enhancing small business and broader economic opportunities for residents of
29 Southeast Alaska; and be it

30 **FURTHER RESOLVED** that the Alaska State Legislature urges federal authorities
31 to consider broadening the scope of allowable uses for sea otters taken for subsistence

*insert
for
contemporary items and designs*

1 purposes to include the use, ~~transfer~~, and sale of intact sea otter pelts ~~in~~ order to restore to the
2 state's Native people the right to make full use of sea otters harvested for subsistence while
3 expanding and enhancing economic opportunities for residents of Southeast Alaska.

4 **COPIES** of this resolution shall be sent to the Honorable Ken Salazar, United States
5 Secretary of the Interior; and the Honorable Lisa Murkowski and the Honorable Mark Begich,
6 U.S. Senators, and the Honorable Don Young, U.S. Representative, members of the Alaska
7 delegation in Congress.

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REPRESENTATIVE PEGGY WILSON HOUSE DISTRICT 2

SPONSOR STATEMENT House Joint Resolution 26

"Urging federal agencies to work with the Alaska Department of Fish and Game, Southeast Alaska Native leaders, and other interested parties to establish strategies and plans for the sustainable management of the reintroduced sea otter population of Southeast Alaska."

In 1965-69 sea otters were reintroduced in SE with no management plan for an eventual overabundance.

Since 1972 the federal government who has the sole responsibility for managing the sea otter population has focused on a general harvesting moratorium, with few exceptions. Regulations allow a single group of people to sell sea otter pelts for purposes of authentic native articles of handicrafts and clothing. Even though they have the right to hunt the sea otter, the Alaska Natives have been denied the customary and traditional ability to sell intact sea otter pelts.

The 1994 Conservation Plan for the Sea Otter in Alaska states that although the optimum sustainable population range has not been numerically defined for sea otters in Alaska, the stock is believed to be within that range. That was sixteen years ago. The preface states, this plan will be reviewed annually and revised at least every three to five years.

The Southeast sea otters have flourished, with a growth rate of 13% a year. There is a known population of some 11,000 sea otters in Southeast. These sea otters could eat up to 253,000 lbs of food in a single day. This demonstrates how sea otters have been implicated in the demise of the recreational and commercial crab, geoduck and abalone fisheries. Their preferred foods are also some of our preferred foods, crab, clams, abalone, mollusks and other shellfish.

Good management calls for a new management plan now, not waiting for years more of study, while the sea otter overpopulation continues and the shell fisheries suffer loss. More assessing will not restore to Southeast Alaska tribes the right to make full use of sea otters for subsistence, nor to fishermen the commercial and sport fisheries that are being lost. A plan revision is needed now. There is an urgent need to diminish the sea otter depletion of shell fish and to facilitate the means by which all Southeast Alaska people can share in a more robust sport, subsistence, and economic base.

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**REPRESENTATIVE PEGGY WILSON
HOUSE DISTRICT 2**

INTEROFFICE MEMO

From: Arthur Martin, Legislative Intern for Representative Peggy Wilson

To: Representative Eric Feige and Representative Paul Seaton

Date: 1/17/12

Message:

The CS change for HJR 26 update the third Whereas clause to read "10,560 sea otters observed in 2003, and a 2010-2011 aerial survey by the United States Fish and Wildlife Service revealed 20,000 sea otters..." instead of the previous numbers of "5,800" and "11,000" sea otters respectively in the original version.

The CS also changed/added the "approximate annual growth rate of 12 percent in southern Southeast Alaska and four percent in northern Southeast Alaska..."

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version HJR 26
 Fiscal Note Number _____
 () Publish Date _____

Identifier (file name) HJR26-LEG-COU-1-26-12 Dept. Affected Legislature
 Title "Urging federal agencies to work with the ADFG, etc for sustainable mgmt of the reintroduced sea otter..." Appropriation Legislative Council
 Allocation Council and Subcommittees
 Sponsor Reps Peggy Wilson, Thomas, and Austerman
 Requester House Resources OMB Component Number 783

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
			FY14	FY15	FY16	FY17	FY18
OPERATING EXPENDITURES	FY13	FY13	FY14	FY15	FY16	FY17	FY18
Personal Services							
Travel							
Services							
Commodities							
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0	0.0

FUND SOURCE		(Thousands of Dollars)					
1002	Federal Receipts						
1003	GF Match						
1004	GF						
1005	GF/Prgm (DGF)						
1037	GF/MH (UGF)						
1178	temp code (UGF)						
TOTAL		0.0	0.0	0.0	0.0	0.0	0.0

POSITIONS							
Full-time							
Part-time							
Temporary							

CHANGE IN REVENUES							
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Estimated SUPPLEMENTAL (FY12) operating costs _____ (separate supplemental appropriation required)
 (discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs _____ (separate capital appropriation required)
 (discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

Initial Version

Prepared by Jessica Geary, Finance Manager
 Division Legislative Affairs Agency
 Approved by Pamela Varni, Executive Director
Legislative Affairs Agency

Phone 465-6626
 Date/Time 1/26/12 1:11 PM
 Date 1/26/2012

FISCAL NOTE

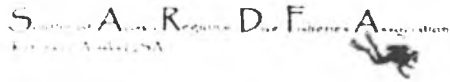
STATE OF ALASKA
2012 LEGISLATIVE SESSION

BILL NO. HJR 26

Analysis

This Legislation has zero fiscal impact on the Legislative Affairs Agency.

Recolonization, prey selection and resource competition by sea otters, *Enhydra lutris*, in southern southeast Alaska.



PETERSBURG MARINE MAMMAL CENTER



PVOA



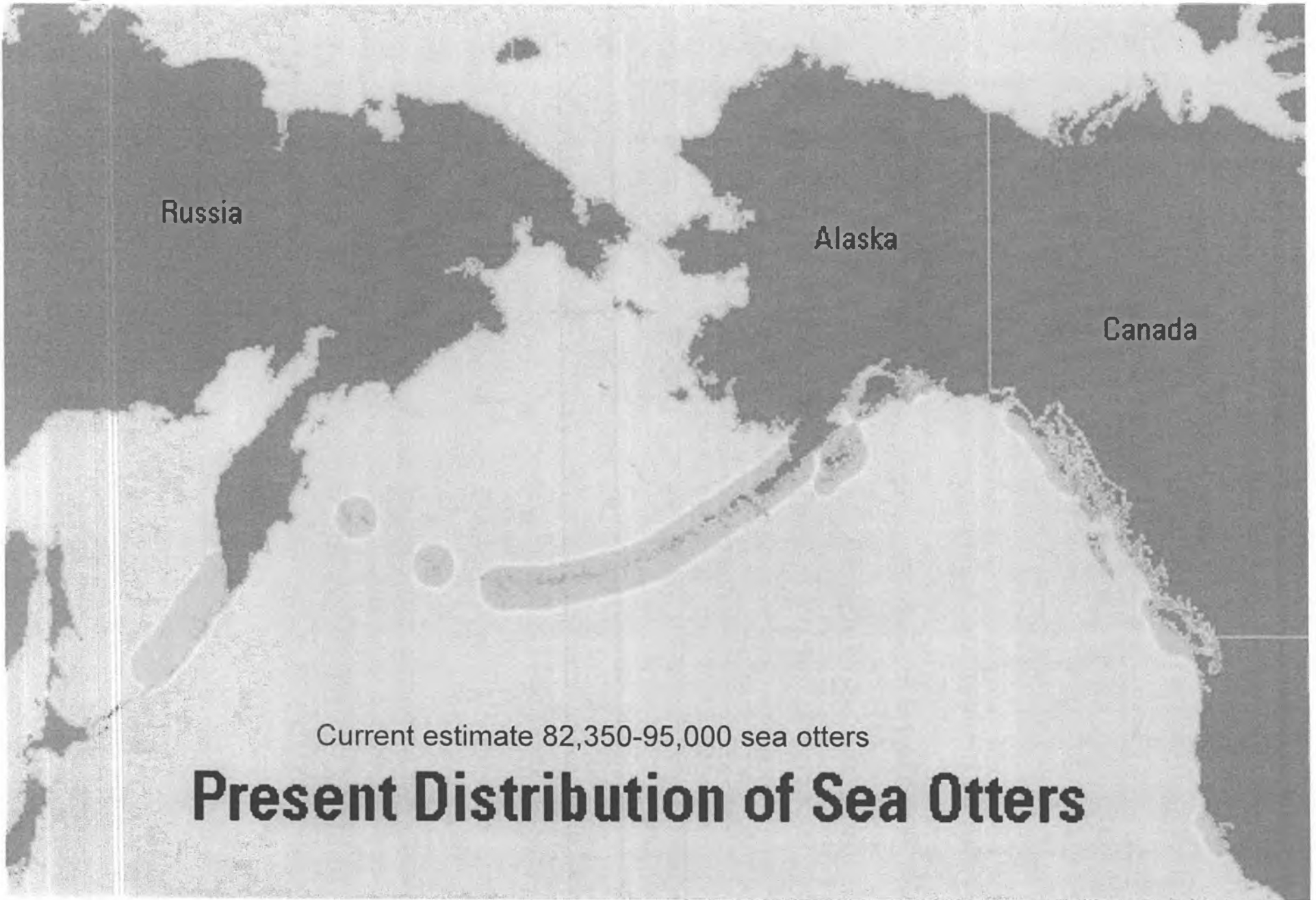
Zac Hoyt, PhD student, UAF

Verena Gill, Wildlife Biologist, USFWS

Ginny Eckert, Professor, UAF

Sunny Rice, Marine Advisory Agent, UAF

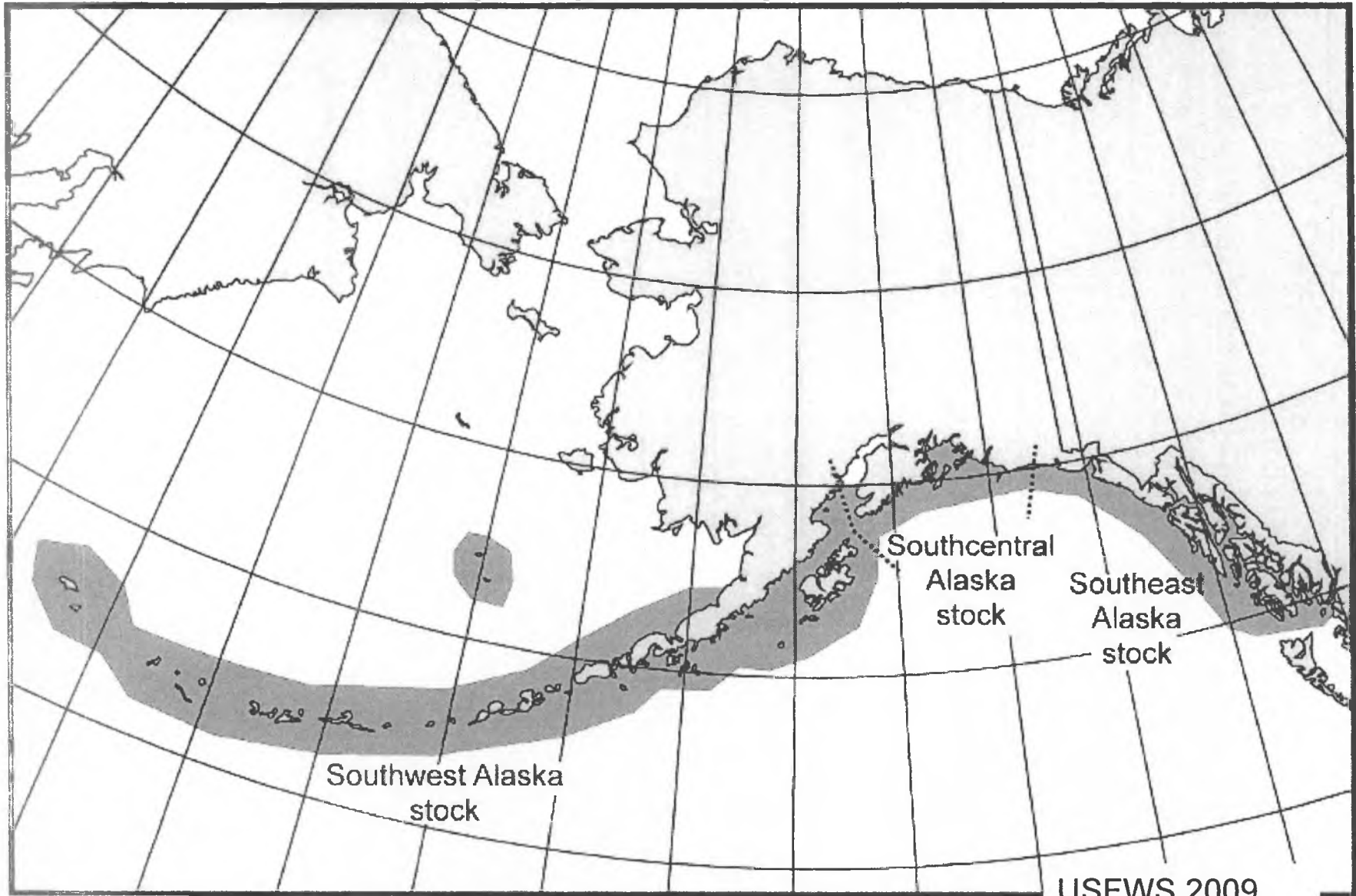




Current estimate 82,350-95,000 sea otters

Present Distribution of Sea Otters

Alaska (73,000+) in 3 stocks



1960's Release

Maurelle Islands

51 otters

Barrier Islands

55 otters

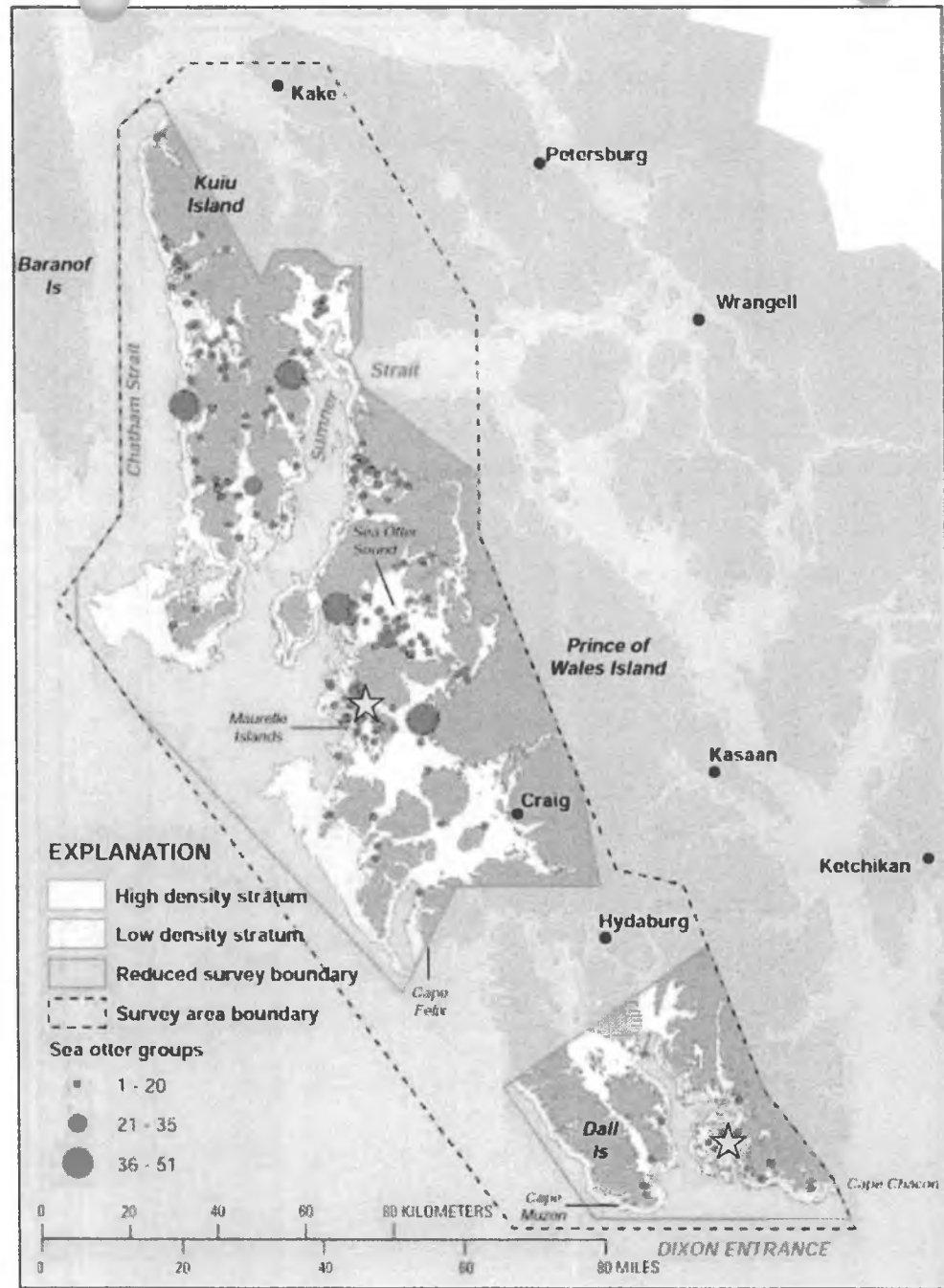
2003 Population

- Southern portion (2003) estimated at 5,845 otters

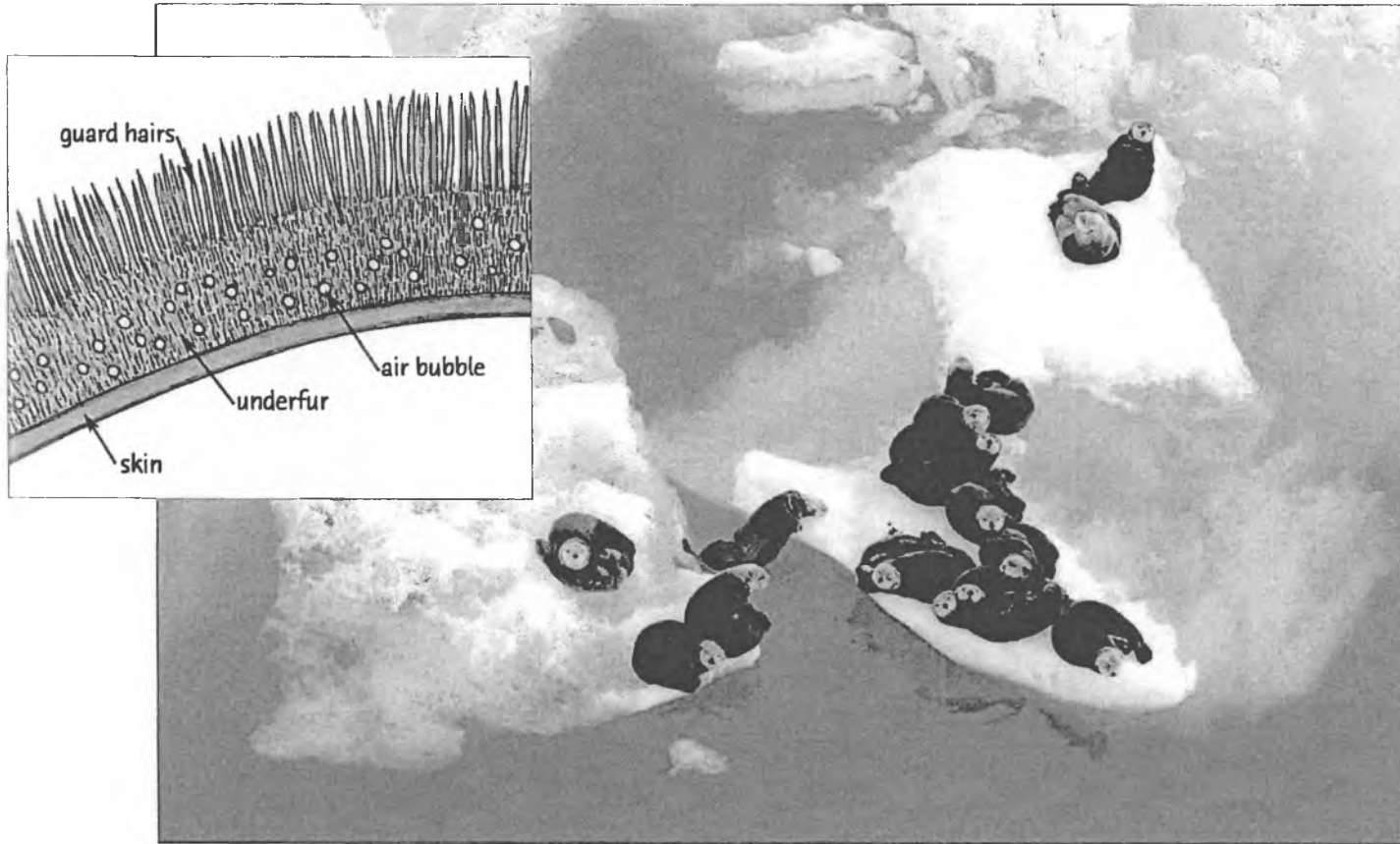
▪ SE = 821

- SE AK

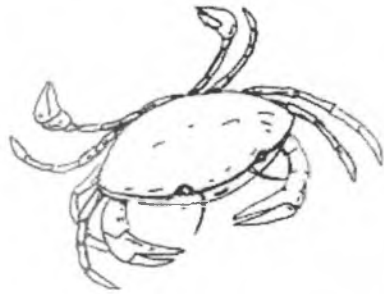
Esslinger and Bodkin 2009



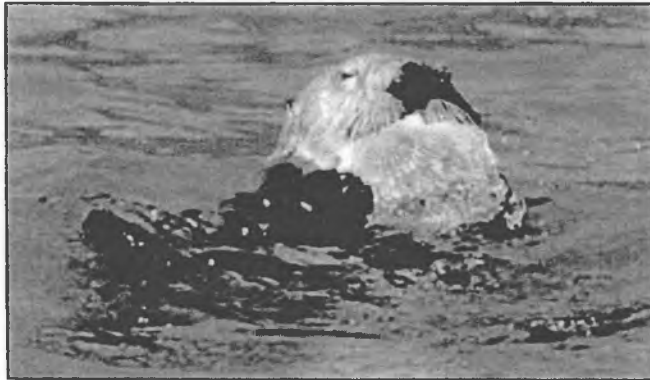
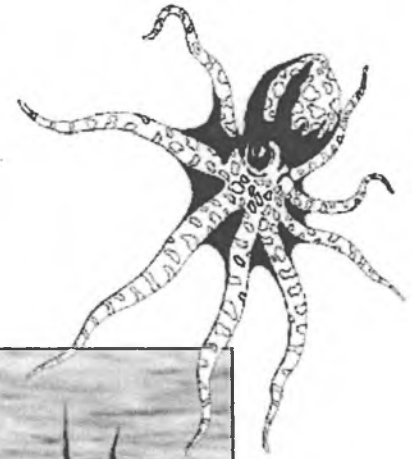
The only marine mammals without blubber



Sea otters have a high metabolism



The sea otter diet is extremely diverse

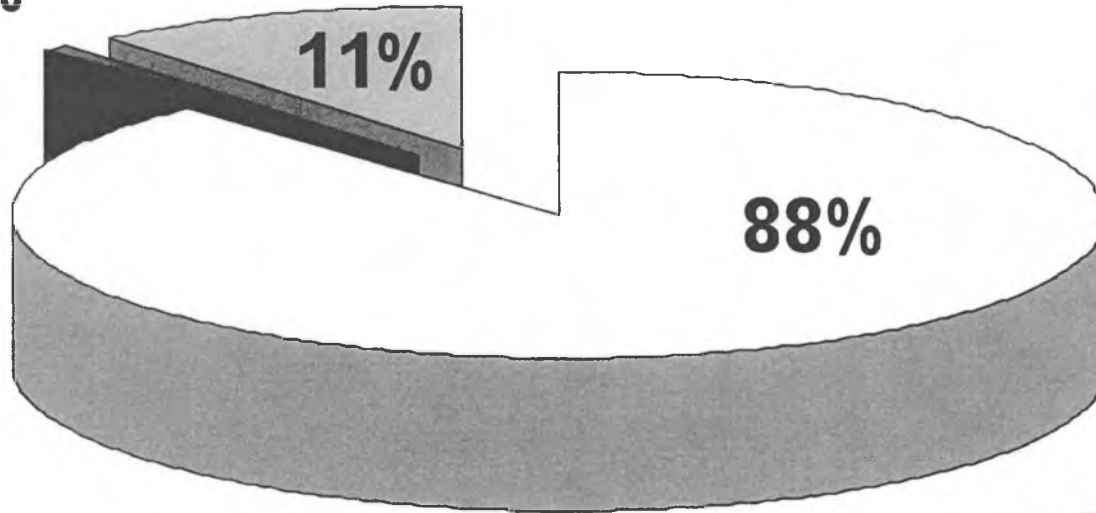


Specialists and generalists. High metabolic rate so can eat up to 23% of body weight

Results

Otter foraging success

1%



Successful

Unknown

Unsuccessful

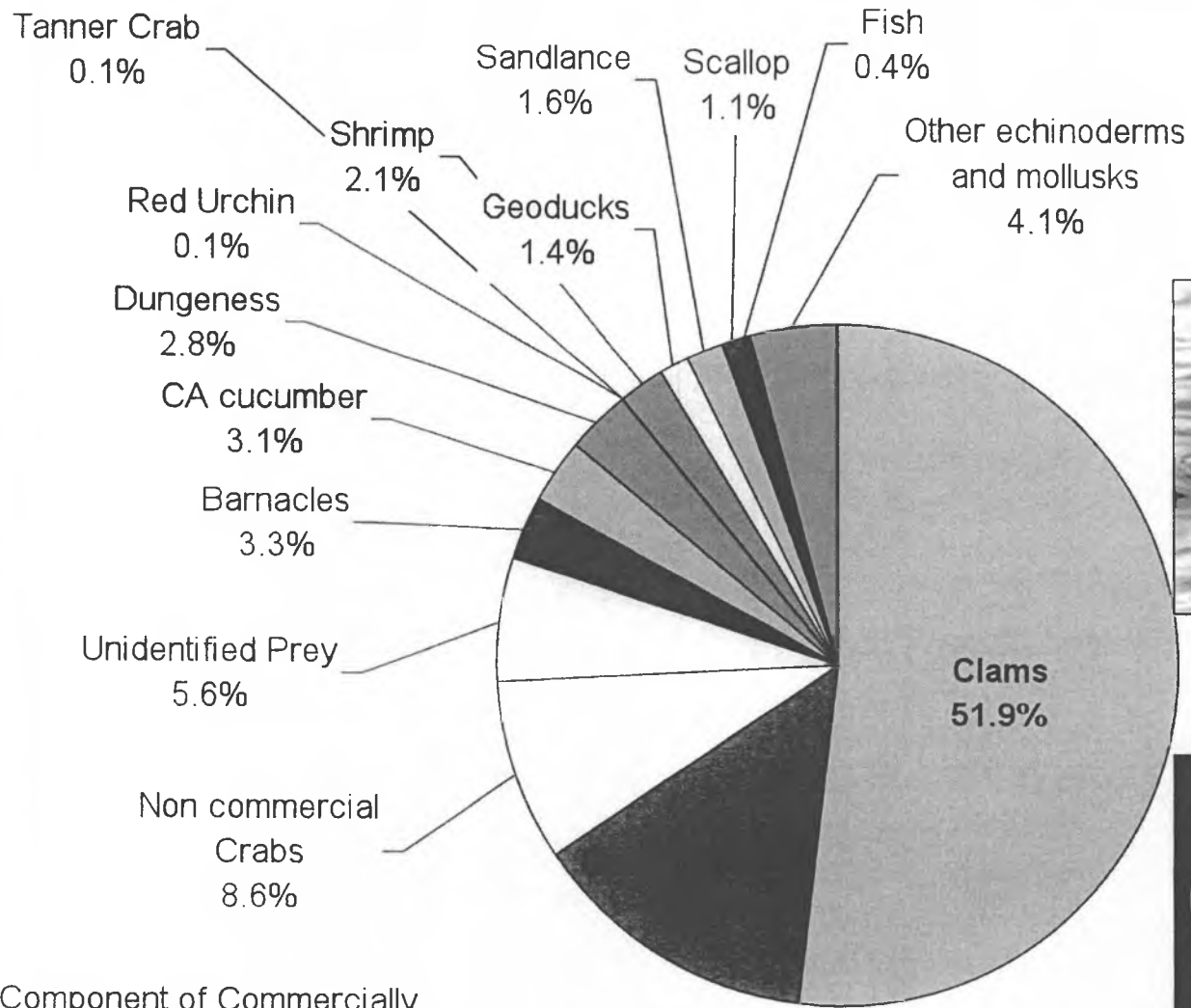
116 bouts recorded

1500 dives recorded

1332 successful



Diet composition by taxonomic group



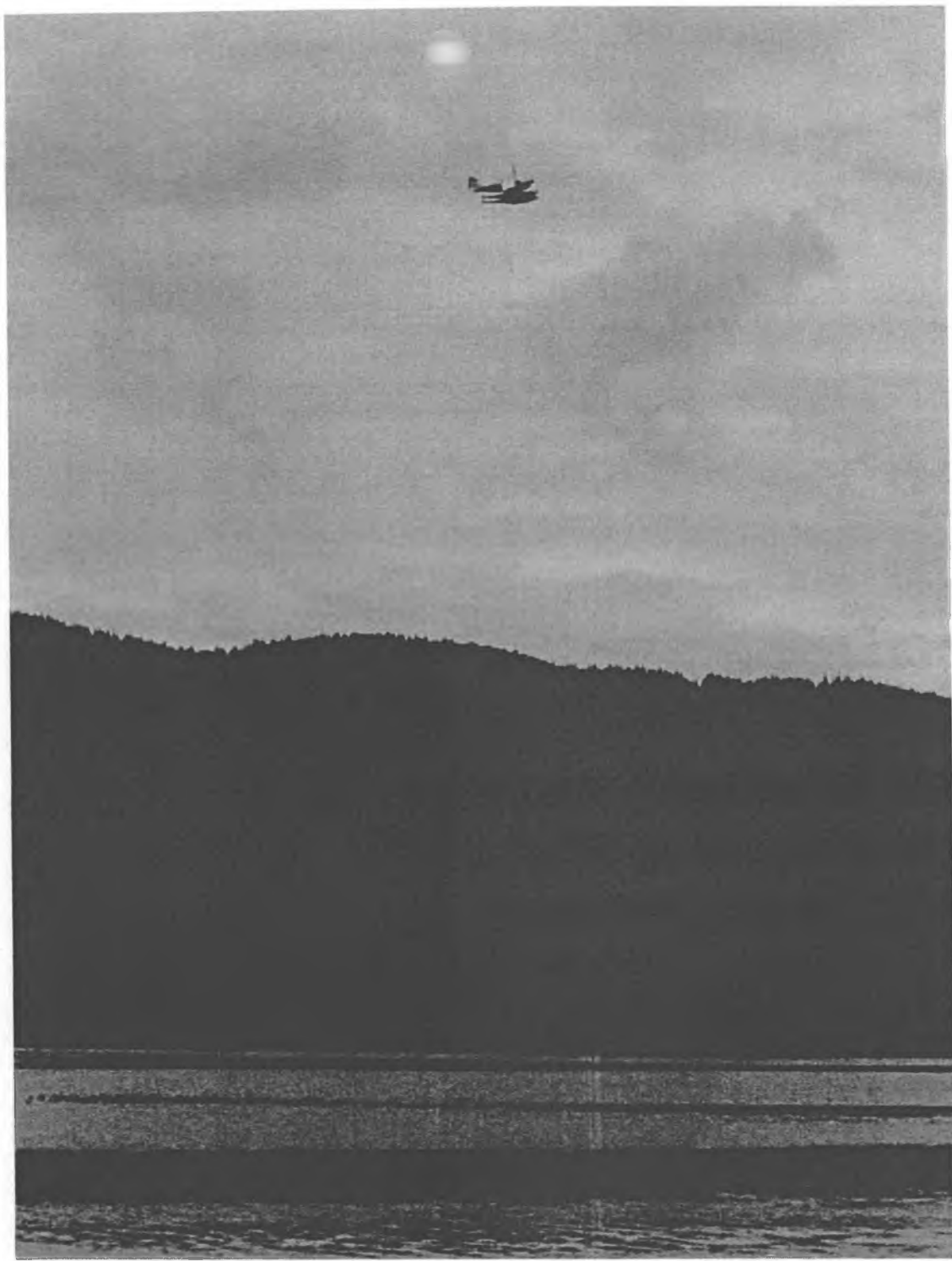
Component of Commercially important = 9.6%



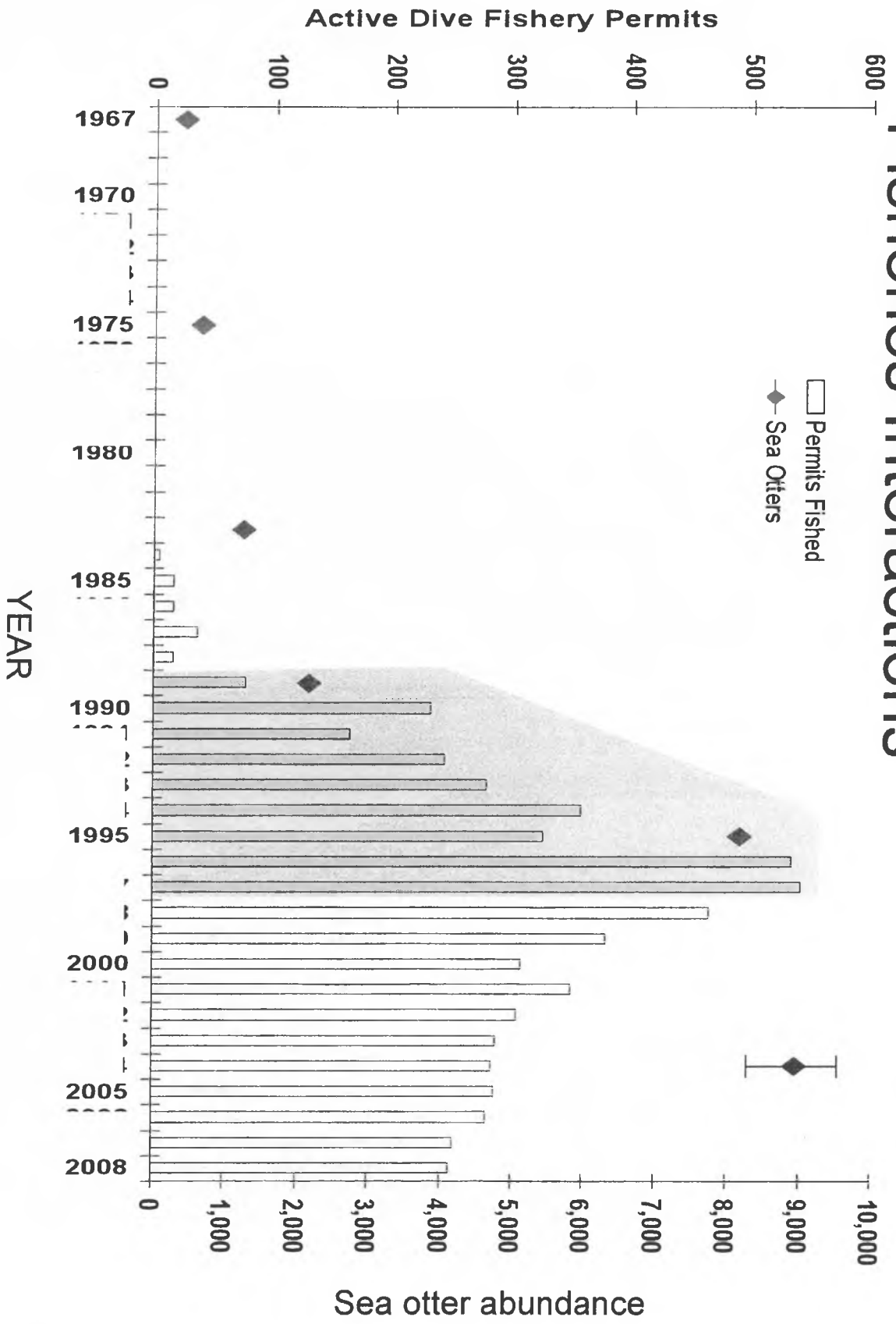
Conclusion

- Results confirm what we have been hearing anecdotally from the commercial fleet.
- Otters are having a significantly greater effect on commercial macro invertebrates on the frontal boundaries of their current distribution especially relating to California Sea Cucumbers and Dungeness Crab.
- More foraging data is needed from the region to address conflict of the other commercially important species.





Fisheries Interactions





www.alaskaseagrant.org/seaotters

Special Thanks

Icicle Seafood's

Kake Tribal

USFS - Petersburg
Ranger District

Bonnie Greenwood

Tory Wilson

Marlene Wagner

Crew of the F/V's:

Kuprenof

Kamalar

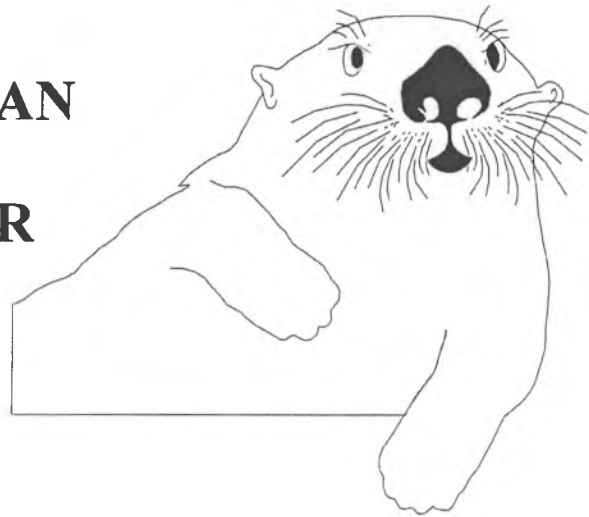
Westerly

Deco Bay

PERMITS : MMPA permit #041309

IACUC 164017-1

**CONSERVATION PLAN
FOR THE SEA OTTER
IN ALASKA**



June 1994

**U.S. FISH AND WILDLIFE SERVICE
Marine Mammals Management
Anchorage, Alaska**



PREFACE

This conservation plan for sea otters in Alaska has been approved by the U.S. Fish and Wildlife Service. It will be used by the U.S. Fish and Wildlife Service in the ongoing management and conservation of sea otters. It was prepared by staff of the Marine Mammals Management office, U.S. Fish and Wildlife Service, with the assistance of the Marine Mammal Commission and the Sea Otter Management Plan Advisory Team. While many of the contributions and recommendations made by participating individuals and organizations have been incorporated into this plan, it does not necessarily represent the views of these individuals and organizations. Parts of this conservation plan solely represent the views of the U.S. Fish and Wildlife Service.

This plan will be reviewed annually and revised at least every three to five years. It will be modified subject to new findings, changes in species status, completion of tasks, legal interpretations, policy changes or Congressional direction. Completion of most tasks is dependent on obtaining new funds.

Literature Citation should read as follows:

U. S. Fish and Wildlife Service. 1993. Conservation Plan for the Sea Otter in Alaska. Marine Mammals Management, USFWS, Anchorage, AK. 47pp.

Approved: _____ Date: _____
Regional Director

I. INTRODUCTION

Sea otters (*Enhydra lutris*) are conspicuous members of ice-free but cold temperate and sub-arctic nearshore ecosystems of the North Pacific. The Marine Mammal Protection Act (MMPA) of 1972, as amended, transferred management authority for sea otters in Alaska from the State to the U.S. Fish and Wildlife Service (FWS). Since passage of the MMPA, the FWS's management approach has been conservative, allowing populations of sea otters to increase in number and re-occupy most of their historic range. In some regions, populations of sea otters have reached equilibrium densities.

The return of sea otters from near extinction, and the re-occupation of most of their historic range is one of the great wildlife conservation stories of the century. However, the species' recovery has not come without controversy. The conflict between sea otters and humans over shellfish resources is probably the most serious problem that has arisen. With healthy populations of sea otters firmly established in most of their historic range in coastal Alaska, now is an appropriate juncture to examine existing and potential management problems and resource conflicts, and consider potential solutions to those management problems and conflicts.

Preparation of this plan follows a recommendation from Congress in a report accompanying the 1988 amendments to the MMPA which calls upon the Secretary of the Interior to consider whether non-depleted species of marine mammals would benefit from preparation of conservation plans, as well as a 1989 recommendation from the Marine Mammal Commission that the FWS prepare a conservation plan for sea otters in Alaska. This plan is a vehicle for guiding ongoing conservation and management activities for sea otters in Alaska.

This plan was developed with the assistance and input of many individuals and groups. The planning process was initiated in 1991 with the establishment of a Planning Advisory Team. Members of the planning team included representatives from most organizations with a major interest in sea otters, including: Alaska Natives, conservationists, environmentalists, sport hunters, commercial fishermen, scientists, oil and gas industry, Alaska Department of Fish and Game (ADF&G), Minerals Management Service (MMS), and the Marine Mammal Commission (MMC). A Draft Management Plan was completed after input and review by the MMC, Alaska Native representatives and other members of the Planning Team and released for public comment on January 15, 1993, following a Federal Register Notice. The Draft Management Plan also incorporated proposed legislative amendments to the Marine Mammal Protection Act.

The public comment period on the draft sea otter management plan began on January 15, 1993, and ended on February 28, 1993. Comments continued to be received and evaluated until mid-March. Public meetings during the comment period were held in Anchorage, Cordova, Homer, Hoonah, Kodiak, Larsen Bay, Nanwalek, Seward, and Valdez. Public meetings also were held prior to the formal comment period in various Southeast Alaska towns and villages, including: Angoon, Hoonah, Hydaburg, Juneau, Kake, Ketchikan, Sitka, and Yakutat. A draft final plan was published in April 1993. Additional comments were received on that plan and have been considered in the preparation of this document.

During the comment period or after the comment period had closed, 195 written comments were received. These comments were from a variety of sources, including: five organizations representing Alaska Natives, four Federal or State government offices, two tourism/marine recreation organizations, four conservation/environmental organizations, and numerous individuals. Seventy-six of the responses were the tear-off portions of the Executive Summary. Ninety-one of the responses were duplicated letters originally signed by citizens of Kodiak Island. In addition to comments on the plan, three resolutions from Alaska Native organizations were received. With the exceptions of written responses from three conservation organizations and three individuals, all written responses were from Alaska. Appendix B contains a summary of the public comments.

The Sea Otter Conservation Plan is divided into two parts: 1) a conservation plan, prepared with the assistance of the Marine Mammal Commission; and 2) an implementation plan which details how the FWS will implement the conservation plan. This plan is not intended as a primary reference on sea otter natural history and ecology. For more information on these subjects, readers are referred to other sources, including: Kenyon (1969), Estes (1980), VanBlaricom and Estes (1988), Rotterman and Simon-Jackson (1988), Garshelis (1990) and Riedman and Estes (1990).

II. GOALS AND OBJECTIVES OF THE CONSERVATION PLAN

In order to fulfill the requirements of the MMPA and continue to ensure the conservation of sea otters in Alaska, several specific goals and objectives were identified to guide the development and implementation of this plan. Additionally, the April 30, 1994 amendments to the MMPA allow for co-management of subsistence use by Alaska Natives and the FWS which will require participation by both organizations to implement the goals and objectives of this plan. Section V. of this document provides additional detail on each of the objectives presented here.

Goal A. Maintain the Alaska sea otter population within its optimum sustainable population range

In the MMPA, Congress found that marine mammal species and population stocks should not be permitted to diminish beyond the point at which they cease to be a significant functioning element in the ecosystem of which they are a part, and should not be permitted to diminish below their optimum sustainable population (OSP) level. The term OSP is defined in the MMPA as "...the number of animals which will result in the maximum productivity of the population or the species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element." This statutory definition has been interpreted by both the FWS and the National Marine Fisheries Service (NMFS) for application in the management context as follows: "Optimum sustainable population is a population size which falls within a range from the population level of a given species or stock which is the largest supportable within the ecosystem to the population level that results in maximum net productivity. Maximum net productivity is the



Fish Factor

Danger posed to fisheries in Southeast by sea otters

By LAINE WELCH

August 31, 2009
Monday

Several things pose dangers to various fisheries in Alaska, but there is one big threat in the Panhandle that is seldom mentioned: sea otters.

Sea otters in Southeast Alaska were hunted almost to extinction by Russian fur traders in the 18th and 19th centuries, and estimates peg the population at just 2,000 in 1911. Sea otters were re-introduced to the region by ADF&G in the 1960s; within a decade their numbers reached 160,000 animals, and otter counts have grown exponentially ever since.

Sea otters can grow larger than four feet and weigh up to 90 pounds. They are voracious feeders and eat 25% of their body weight each day. Sea otters are blamed in part for the collapse of the lucrative abalone fishery, which ended in 1995.

"It is clear that abalone cannot co-exist in commercial quantities with sea otters," said a 1999 fishery report to the state Board of Fisheries.

Now, their appetites are starting to take a bite out of other commercially important species.

"We've closed many fisheries now - sea cucumbers, urchins, and just this last year we closed the first geoduck fishery due to presumed sea otter predation," said Zac Hoyt, a diver and research biologist at ADF&G in Petersburg.

"When you're under water in a geoduck bed, it's pretty amazing how efficient otters are at getting these big clams that burrow two or three feet under the substrate," he added. "It's literally like a back hoe has been on the bottom in those sandy areas."

No one knows how many sea otters have set up housekeeping in Southeast or

how much shellfish they're feasting upon. Hoyt and Sunny Rice, the local Sea Grant marine advisor, aim to start finding out.

"The first step of our proposed project is to get an estimate of how many otters are in southern Southeast before we can move forward with anything else," Rice said, adding that concerns by fishermen and subsistence users prompted the study.

More fishermen, especially Dungeness crabbers, are telling her they are being forced out of traditional areas by sea otters, Rice said. Should they be holding on to their dungie permits?

"The reason we're tackling this whole thing is due to a lack of scientific information," Rice said. "It would be nice to verify what we're hearing from commercial fishermen - they'll go into a bay and see evidence of otter predation all along the shore, and at the same time, they're not catching any crab in their pots."

"We want to try and estimate the take of four commercially important species by sea otters - Dungeness crab, geoduck clams, urchins and sea cucumbers," Hoyt added.

The project also aims to learn how far the otters are foraging.

"Is there some reason why they haven't come all the way into the far inside waters of Southeast Alaska, or have they just not gotten here yet? That's an important question for fishing fleets," Rice said. How fishermen and otters might co-exist remains a big question. Complicating the problem -- sea otters are listed as a protected species by the federal government and cannot be harassed in any way. The U.S. Fish & Wildlife Service will collaborate with the two year project.



UNITED FISHERMEN OF ALASKA

211 Fourth Street, Suite 110
Juneau, Alaska 99801-1172
(907) 586-2820
(907) 463-2545 Fax
E-Mail: ufa@ufa-fish.org
www.ufa-fish.org

February 2, 2012

Representative Paul Seaton, Co-Chair
Representative Eric Feige, Co-Chair
House Resources Committee
Alaska State Legislature
120 4th St, State Capitol, Room 3
Juneau, AK 99801-1182

RE: Support for HJR 26 regarding Re-introduced Sea Otters

Dear Co-Chairmen Seaton & Feige, and Committee Members,

United Fishermen of Alaska (UFA) is the largest statewide commercial fishing trade association, representing 37 commercial fishing organizations participating in fisheries throughout the state and its offshore federal waters. Fishermen in Southeast Alaska and UFA member groups for years have been alarmed by the rapid increase in sea otter populations, and noticeable impacts on shellfish and fishery resources throughout the region.

In 2009, UFA unanimously adopted Resolution 2009-1 (attached) supporting:

- research on sea otter populations and their effects;
- decreasing hurdles to Alaska Natives in their utilization of this resource;
- requesting the Alaska Dept of Fish and Game to become more actively involved with USFWS in the management of sea otters and documenting their effect.
- requesting the Federal and State agencies, Tribal community organizations and other entities affected by sea otters in the area to meet regionally and develop ecosystem-based sea otter management plans benefiting all users of these resources and protecting the fishery resources from depletion by sea otters, and providing for access to resources in areas of sea otter depletion.

This December, the McDowell Group released a report sponsored by UFA member group Southeast Alaska Regional Dive Fisheries Association (SARDFA), titled Sea Otter Impacts on Commercial Fisheries in Southeast Alaska, which can be found online at:

<http://www.scribd.com/doc/74857876/MCDOWELL-GROUP-2011-Sea-Otter-Impacts-Report>

This report estimates a direct loss of \$12.8 million in ex-vessel value, and \$22.4 million in first wholesale value to the Southeast Alaska economy attributable to increased sea otter

Alaska Scallop Association

PO Box 8989
Kodiak, AK 99615
(907) 512-7018
Jim@AlaskaScallop.net



January 29, 2012

Representative Paul Seaton, Co-Chairman
Representative Eric Feige, Co-Chairman
House Resources Committee
Alaska State Legislature
State Capitol, 120 Fourth Street
Juneau, AK 99801-1182

RE; House Joint Resolution No. 26

Dear Co-Chairmen Seaton and Feige

I am writing on behalf of the Alaska Scallop Association. The Alaska Scallop Association (ASA) represents the majority of the Scallop boats in the State. We are a member in good standing in the United Fishermen of Alaska (UFA). Our organization is in support of this resolution. We also voted in favor of a similar UFA resolution in 2009.

For good sound management purposes ADFG does not allow the Commercial Scallop fishery to be prosecuted in the same areas inhabited by the Sea Otters. The Commercial Scallop beds are offshore in deep waters, out of the otters range. There are however large populations of Scallop in these areas of high Sea Otter densities. The Scallop Statewide population is dependent on a reproductive system involving 30 days and longer free floating larvae and water mixing with the wind and tidal currents. It is the Scallop fishermen's belief that these scallop populations within the Sea Otters reach play an important role in rejuvenating the off shore commercial scallop beds in the rest of the state, as their larvae free floats with the currents. Our concern is that the Sea Otter's unchecked expansion and appetite for all shellfish could have a large negative impact on this important reproductive component of the Scallops in Alaska.

ASA is also concerned about other State shellfish fishermen losing their livelihoods as the Sea Otter populations explode and their voracious appetites are turned loose on South East's shellfish. We have been told these animals eat on average about 15 pounds a day. With population estimates between 11,000 and 20,000 animals, that is 165,000 to 300,000 pounds a day, times 365 days, that's as much as 50 to 100 million pounds out of SE, of mostly Shellfish consumed annually by these Sea Otters. These shellfish stocks cannot take this for long, before all the fisheries, the jobs and the small family businesses collapse.

For the good of the State, her coastal communities and commercial, subsistence and sport fishermen, it seems reasonable to find a way to control the unchecked population boom of the Sea Otter. The high value of Sea Otter pelts creates an added opportunity to assist local communities, while keeping the Sea Otter/Shellfish populations in balance.

A well thought out and well managed sea otter harvesting plan could offer some residents of SE a good income and be done responsibly so as not to endanger the Sea Otter population or the existing shellfish fisheries.

Regards, Jim Stone,
President Alaska Scallop Association.

A handwritten signature in black ink, appearing to read 'Jim Stone', written over a horizontal line.

***Southeast Alaska Subsistence
Regional Advisory Council***

Bertrand Adams Sr., Chair

kaadashan@alaska.net

April 7, 2010

Mr. Geoffrey L. Haskett
Alaska Regional Director
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, Alaska 99503

Dear Mr. Haskett:

The Council appreciates the effort you and Mr. Burns made to attend the Council meeting in Saxman on March 16, 2010. We are encouraged by your commitment to form a new partnership with the Central Council of Tlingit and Haida Indian Tribes and the Sitka Tribe of Alaska for addressing sea otter concerns. The Alaska Native Sea Otter Co-management Committee (ANSOCC) appears to be well suited to address issues associated with sea otter management in the Southeast Alaska Region. The Council also welcomes the commitment by the U. S. Fish and Wildlife Service (USFWS) to engage in an outreach program to educate users of sea otters, as mentioned in your letter to the Council on January 19, 2010.

In a March 24, 2009 letter, the Council expressed its unanimous support for a proposed study, "Ecological, economic and social changes as a result of sea otter recolonization in southern Southeast Alaska." The Council was pleased to hear the USFWS was supportive and instrumental in obtaining this funding. Thank you; completion of this study will be necessary to determine the true impact of sea otters to the communities and subsistence users we represent.

The Council continues to receive testimony on reasons for the underutilization of sea otters and the devastating affects the expanding sea otter population is having on shellfish stocks important to subsistence users and the economies of local communities. In previous correspondence, we recommended joint management plus an education program to familiarize users with current rules and are encouraged that progress is being made along those lines. The Council has several additional recommendations for consideration by the ANSOCC and the USFWS to further facilitate the subsistence use of sea otters.

Council Recommendations:

1. The Council recommends a thorough review of current regulations. Regulations appropriate to protect a small fragile population are likely too restrictive to encourage harvest of a robust and rapidly increasing population.

Geoffrey L. Haskett

2 of 2

April 7, 2010

2. Regulations need to be amended to encourage harvest when and where there is a significant level of harvest opportunity commonly referred to as potential biological removal. The use of Alaska Department of Fish and Game fishing Districts may be well suited to define area boundaries.
3. The process of tanning sea otter pelts results in a product that is certainly "significantly altered." That concept should be clearly described in regulation by amending Section 18.3 "Definitions" in the code of Federal regulations to include tanned hides as significantly altered.
4. Requiring the use of registered agents inhibits the potential utilization of sea otters. Section 18.23 (b) 1 (i) (ii) and 2 (i) (ii) "Native exemptions" should be amended to remove the requirement to utilize registered agents and allow the direct sale and transportation of sea otters by qualified users. Current language in these paragraphs is exceedingly confusing and unnecessarily restrictive.
5. There is no need for tags to remain affixed to the skin through the tanning process. Section 18.23 (f) 9 (iii) (E) should be deleted in its entirety.

Please address any questions regarding this request either directly to me or through Mr. Robert Larson, Council Coordinator, U. S. Forest Service, Box 1328, Petersburg, AK 99833, 1-907-772-5930, robertlarson@fs.fed.us.

Sincerely,



Bertrand Adams Sr., Chair

cc: Peter J. Probasco, Office of Subsistence Management
Beth Pendleton, Forest Service Regional Forester
Ralph E. Lohse, Chair Southcentral Subsistence Regional Advisory Council
Speridon M. Simeonoff Sr., Chair Kodiak/Aleutians Subsistence Regional Advisory Council
Molly Chythlook, Chair, Bristol Bay Subsistence Regional Advisory Council
Lawrence Widmark, Chairman Sitka Tribe of Alaska
William E. Martin, President Central Council of Tlingit and Haida Indian Tribes

Rebecca Rooney

From: WEATHERS [northerngirl@starband.net]
Sent: Monday, March 09, 2009 8:16 PM
To: Sen. Albert Kookesh; Rep. Bill Thomas
Cc: Rep. Cathy Munoz; Rep. Beth Kerttula; Rep. Kyle Johansen; Rep. Peggy Wilson; Sen. Bert Stedman
Subject: RE: South East Dungeness Fishing v's Sea Otters

Dear Senator Kookesh & Representative Thomas,

I live in Prince William Sound near Cordova but I now fish out of Petersburg, Alaska which is in Representative Peggy Wilson's district #2. My fishing area is located within the Southeastern Alaska Area A which includes all waters between Cape Fairweather & Dixon Entrance which are located in Senate District A, B & C. That is why I have carbon copied this email to all area legislators.

I have been a crab fisherman for over 40 years. I started fishing Crab in the 60's with my father in Prince William Sound. In 1979 or 1980 the Dungeness fishery in Orca Inlet (a half a million pound fishery) was wiped out in three months after a herd of sea otter moved in from the Western & Southern portion of Prince William Sound after having devastated the western portion of the sound. Once Orca Inlet was closed I started Fishing Dungeness crab in the Copper River district of Area E. Do to over fishing of illegal gear & Sea Otter predation the Copper River District was closed in 1992. With no Dungeness crab fisheries open in Area E I & my son's moved south to Area D (Yakutat district) to fish Dungeness crab. Due to low abundance the Board of Fisheries closed the fishery (against the recommendations of the Fish & Game) in 1999. Leaving it open to Sea Otter predation. Where I use to be able to dig up to a 11, 5 gallon buckets of clams per tide I now cannot find a clam since the Sea Otter have moved through the area. In my 40 years of fishing I have been watching the Sea Otters slowly move South devastating ALL shellfish (i.e. crabs, clams, abalone, sea cucumbers, Sea Urchins, mussels & even barnacles off the piling) as they travel. After the Dungeness crab was closed in Area D I fished King crab in the Bering Sea but at 53 years old I was displaced by the Crab Rationalization program.

So in 2006 I bought a Southeast Dungeness crab permit & started fishing. I immediately noticed the Sea Otter predation. After doing some checking with ADF&G I found that the Sea Otters had been introduced to the area in the 1960's. The State & or federal government trapped live Sea Otters in Prince William Sound & transported them to the Southeast. There is even a report by the ADF&G that states that the Sea Otter would destroy the shellfish in Southeast & the fishermen may need to be compensated over the loss. If we continue to allow the Sea Otter to propagate we will have a total loss of the shellfish eco system for generations to come. In Prince William Sound the Sea Otters have been seen eating halibut, red snapper, salmon, star fish & even a seagull.

During the 2009 Board of Fishery meeting in Petersburg the fishermen brought up the issue of the Sea Otter predation but no proposals were made because the Sea Otters are a federal issue. After talking with Congressman Don Young today he said that we need to ask the State of Alaska to petition the Department of Commerce to transfer control & management of the Sea Otter to the State of Alaska. Could you please tell me how do we proceed from here & how to get the State of Alaska to petition the federal government? Please contact me with any questions. Thank you for your help & time. Your Constituent, ERIC J WEATHERS, c/o P.O. Box 1791, Cordova, Alaska, 907-424-3745 or northerngirl@starband.net

CITY AND BOROUGH OF WRANGELL, ALASKA

RESOLUTION NO. 02-11-1217

A RESOLUTION OF THE ASSEMBLY OF THE CITY AND BOROUGH OF WRANGELL, ALASKA, REQUESTING THAT STATE AND FEDERAL AUTHORITIES BECOME MORE ACTIVELY INVOLVED IN MANAGING THE SEA OTTER POPULATION AND FIND WAYS TO REVIVE LOST ECONOMIES DUE TO THE RELOCATION AND RE-COLONIZATION OF SEA OTTERS IN SOUTHEAST ALASKA

WHEREAS, the City and Borough of Wrangell, Alaska is a small island fishing community located in Southeast Alaska with a population of approximately 2,000 citizens; and

WHEREAS, residents of the Wrangell community are dependent on abundant, sustainable resources from the coastal waters of Southeast Alaska; and

WHEREAS, in the last 1960's the Alaska Department of Fish and Game reintroduced approximately 400 sea otters in six different locations to near shore waters of Southeast Alaska with no management plan; and

WHEREAS, the federal government has jurisdiction under the Marine Mammal Protection Act (MMPA) and has to active management plan protecting the ecosystems affected by sea otters; and

WHEREAS, without proper management, the sea otter population in southern Southeast Alaska is growing at an alarming rate (5,000 observed in 2003 and a 2010 aerial survey by the United States Fish and Wildlife Service revealed an estimate of over 10,000 otters); and

WHEREAS, this drastic increase in sea otters is threatening the population of many shellfish species, such as crab, abalone, urchins, sea cucumbers, geoducks and others, to a point that subsistence, sport and commercial fishing has been stopped in many areas due to the low abundance; and

WHEREAS, a degradation in the ecological balance of a diversity of species has taken place in many areas; and

WHEREAS, residents of Wrangell and many other communities throughout Southeast Alaska rely on shellfish not only for their livelihood, but for survival in a subsistence way of life; and

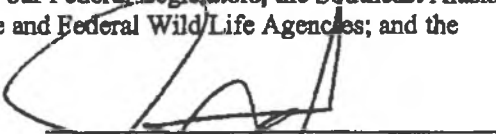
WHEREAS, the loss of commercial harvests have resulted in negative economic impacts to the seafood industry. Fisherman, processors and seafood dependent communities have experienced a loss in employment wages and associated economic activities.

NOW, THEREFORE, BE IT RESOLVED THAT THE ASSEMBLY OF THE CITY AND BOROUGH OF WRANGELL, ALASKA, requests that State and Federal agencies work with tribal leaders in Southeast Alaska to become more actively involved in management of the sea otter population and look to remedy the problems already created.

LET IT BE RESOLVED FURTHER, the State and Federal government managing authorities are requested to find ways to revive the lost economies from the Southeast Alaska region due to the relocation and re-colonization of sea otters in southern Southeast Alaska.

ADOPTED: February 8, 2011.

A copy of this Resolution is to be sent to our Federal Legislators; the Southeast Alaska State Senators and Representatives; State and Federal Wild Life Agencies; and the Coastal Communities of Southeast.


Jeremy Maxand, Mayor

ATTEST: 
Christie L. Jamieson, Borough Clerk



CITY OF PETERSBURG, ALASKA

RESOLUTION # 1958

A RESOLUTION REQUESTING THAT STATE AND FEDERAL AUTHORITIES BECOME MORE ACTIVELY INVOLVED IN MANAGING THE SEA OTTER POPULATION AND FIND WAYS TO REVIVE LOST ECONOMIES DUE TO THE RELOCATION AND RE-COLONIZATION OF SEA OTTERS IN SOUTHEAST ALASKA

WHEREAS, the City of Petersburg, Alaska is a small island fishing community located in Southeast Alaska with a population of approximately 3,000 citizens; and

WHEREAS, residents of the Petersburg community are dependent on abundant, sustainable resources from the coastal waters of Southeast Alaska; and

WHEREAS, in the late 1960's the Alaska Department of Fish and Game reintroduced approximately 400 sea otters in six different locations to near shore waters of Southeast Alaska with no management plan; and

WHEREAS, the federal government has jurisdiction under the Marine Mammal Protection Act (MMPA) and has no active management plan protecting the ecosystems affected by sea otters; and

WHEREAS, without proper management, the sea otter population in southern Southeast Alaska is growing at an alarming rate (5,000 observed in 2003 and a 2010 aerial survey by the United States Fish and Wildlife Service revealed an estimate of over 10,000 otters); and

WHEREAS, this drastic increase in sea otters is threatening the population of many shellfish species, such as crab, abalone, urchins, sea cucumbers, geoducks and others, to a point that subsistence, sport and commercial fishing has been stopped in many areas due to the low abundance; and

WHEREAS, a degradation in the ecological balance of a diversity of species has taken place in many areas; and

WHEREAS, residents of Petersburg and many other communities throughout Southeast Alaska rely on shellfish not only for their livelihood, but for survival in a subsistence way of life; and

WHEREAS, the loss of commercial harvests have resulted in negative economic impacts to the seafood industry. Fisherman, processors and seafood dependent communities have experienced a loss in employment wages and associated economic activities.

THEREFORE BE IT RESOLVED, the Petersburg City Council requests that State and Federal agencies work with tribal leaders in Southeast Alaska to become more actively involved in management of the sea otter population and look to remedy the problems already created.

RESOLVED FURTHER, the State and Federal government managing authorities are requested to find ways to revive the lost economies from the Southeast Alaska region due to the relocation and re-colonization of sea otters in southern Southeast Alaska

PASSED and **APPROVED** by the City Council of the City of Petersburg, Alaska this 18th day of January, 2011.

A copy of this Resolution is to be sent to our Federal Legislators; the Southeast Alaska State Senators and Representatives; State and Federal Wild Life Agencies; and the Coastal Communities of Southeast.



Al Dwyer, Mayor

ATTEST:



Kathy O'Rear, City Clerk

resolved



*Grand Camp
Alaska Native Brotherhood*

RESOLUTION #29-09

Title: Sea Otter Management

WHEREAS, tribal residents of Southeast Alaska have hunted for sea otters since time immemorial; and

WHEREAS, Section 119 of the US Marine Mammal Protection Act (MMPA) allows for tribally authorized local harvest management plans with US Fish and Wildlife Service; and

WHEREAS, tribal residents of Southeast, Alaska have reported diminished harvest of important traditional foods such as abalone, crab, clams and other foods that are consumed by sea otters; and

WHEREAS, due to depressed rural economies, local tribal governments and tribal entities must continue to face the responsibility of developing economic opportunities such as value added fur products in a manner consistent with our uses of marine mammals since time immemorial; and


WHEREAS, with education regarding the traditional hunting practices coupled with the entry into co-management with the Federal government a balance could be achieved between healthy sea otter populations and the availability of healthy traditional foods for residents of Southeast, Alaska; and

WHEREAS, recent Federal enforcement actions have highlighted a need for education and outreach to provide clear and consistent guidance to tribal hunters and artists regarding federal regulations governing the take and use of sea otter; and

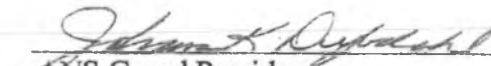
WHEREAS, the Sitka Marine Mammal Commission spent many years planning for the establishment of a tannery in Sitka, Alaska which has now been in operation for five years, providing for full-utilization of marine mammals and other animals hunted for food so that artists would be able to use those skins to create handicrafts that could be sold to create additional economic opportunities in our community; and

NOW THEREFORE BE IT RESOLVED, that the Alaska Native Brotherhood's Grand Camp increased education, outreach regarding Federal regulations governing the take and use of sea otter and support in developing local harvest management plans and small business opportunities for tribal residents of Southeast Alaska.

NOW THEREOFRE BE IT FURTHER RESOLVED, the Alaska Native Brotherhood's Grand Camp respectfully requests a region-wide meeting with the US Fish and Wildlife, representation from Southeast tribal communities, USDA Rural Development, and the US Economic Development Administration address the concerns regarding sea otter management as outlined in this resolution.



ANB Grand President



ANS Grand President

ATTEST: I certify that this resolution was adopted by the ANB/ANS Grand Camp in convention at Juneau, Alaska, during the week of October 6-10, 2009.



ANB Grand Secretary

**Petersburg Legislative
Information Office**

**St of AK Legislative Affairs Agency
Information & Teleconference Network**

11B Gjoa Street
PO Box 1470
Petersburg, AK 99833
907.772.3741/Fax 907.772.3779
Petersburg_lio@legis.state.ak.us

FAX TRANSMISSION

TO: House Resources

Pages: 2 (Incl. cover)

FAX: (907)465-3799

PHONE:

DATE: 02/06/12

Please provide a copy of this to all Committee Members
and enter this testimony into the file for HJR26: SEA
OTTER MANAGMENT

Thank you very much.

2-7-12

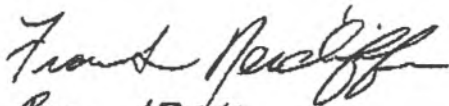
House Resource Committee:
Re: House Initiative Resolution 26

House Resource Committee,

First I would like to start by applauding Rep. Peggy Wilson for getting something on the table. My name is Frank W. Neidiffer, my background information begins with logging in S.E. Alaska in the 70's. In the mid 80's I started commercial fishing, trolling, crabbing, and long lining. For the last 25 years I have spent a substantial amount of time in lower Chatam, Sumner, and Fredrick Sound. I would like to testify to the "march of the otter" and their scorched earth policy they adhere to.

It's well past time to take action. I do believe Proposition 26 is a start. I think it's very important to revisit the M.M.P.A., and read our Alaska State Constitution. Please make note that we have a viable resource that is destroying resources along with lifestyles and employment opportunities, which also affects the Alaska State economy. Thank You for your time.

Frank W. Neidiffer
518-0188



Box 1746

PSG. AK 99833

neidiffer@gci.net

FEB 13 2012

2/13/2012

Derek Knudsen
401 Haugen Dr. #201
Petersburg AK, 99833

House Resource Committee

To the Resource Committee-

My name is Derek Knudson. I am 24 years old and I work as a commercial fishing crew member in Petersburg. I am a native of the village of Kake. I grew up there, and would prefer to live there, but lack of economic opportunity there and a young family to fend for has made me relocate.

I support HJR 26, as originally written, to promote harvest and sales of whole, raw, pelts. As a commercial fisherman, I have long periods throughout the year I do not have a paycheck coming in. Harvesting otters would give me an opportunity to make a few bucks in the months I have nothing else going on, adding stability to my home life. I feel that the artisans opposed to this are watching out for their own pocket books, and are not speaking for all natives. To adjust this resolution to protect such a small part of the native population's business interests, would exclude me and others like me from the resource. I am a very good hunter, but my sewing skills suck.

Rural villages like Kake have very little opportunity for young people, even the young people who wish to live the village lifestyle. This would be a great resource for these villages, bring in much needed cash, and allow young families the opportunity to live in their home towns.

The last few years, many sea otters have moved into the Kake area. Already, we have seen the impact of them on our crab stocks. I think if I moved back, I would have some pretty good hunting.

Thank you,

Derek Knudsen



Feb. 13th 2012

Jon Randrup
P.O. Box 44
Petersburg, AK
99833
(907) 518-1553

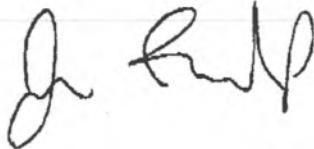
House Resource Committee

Dear Resource Committee;

My name is Jon Randrup. I am an Alaska native. I am 26 years old and make my living commercial fishing. I support HJR 26, calling for the federal government, native communities, and the State of Alaska to move forward with a management plan for sea otters. I support the original language that would allow sales of whole pelts. Sea otter predation is effecting the Dungeness crab fishery, and the dive fisheries. Although I do not participate in these fisheries, many of my friends do, and I have heard the anecdotal evidence of areas being left economically nonviable after the otters move in. I have also seen the rapid population growth of the otters in the fisheries I am involved in, seeing more every year. They are obviously thriving. Whole pelt sales would allow many more natives to participate in the harvesting of otters. I feel amendments limiting sales of raw pelts is exclusive and this resource should be inclusive, allowing as many natives as possible to benefit from the resource, not just a few with an established business model. It would also have the greatest quickest impact on otter populations in shell fish areas. I am not an artisan, nor do I want to be one. I am a fisherman and a native who would like to augment my fishing income with some off season hunting. Thank you for the consideration of my opinion.

Sincerely,

Jon Randrup



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BILL# or SUBJECT: HSR-210

COMMITTEE: House Resources

Do not change the
law pertaining to the
harvesting of sea otters.

Delores Churchill

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Sea Otter Impacts on Commercial Fisheries in Southeast Alaska

Prepared for:
**Southeast Alaska Regional
Dive Fisheries Association**



Research-Based Consulting

Juneau
Anchorage

November 2011

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Table of Contents

Executive Summary	1
Introduction	7
Sea Otters in Southeast Alaska.....	8
Southeast Alaska Dive Fisheries	12
Geoduck Clams	12
Sea Cucumbers.....	13
Red Sea Urchins.....	14
Economic Impacts of Sea Otter Predation.....	15
Sea Cucumbers	16
Geoducks	18
Red Sea Urchins	20
Dungeness Crab.....	22
Quantifying the Impact of Sea Otter Predation.....	24
Sea Otter Predation Impacts on Communities.....	26
Literature Referenced.....	27
Appendix 1: Map of Otters in Southeast Alaska	29
Appendix 2: Impact of Sea Otters on Dive Fishery Areas	30
Sea Cucumbers	30
Geoduck Clams.....	31
Red Sea Urchins	32

Executive Summary

Purpose

The purpose of this report is to estimate the economic loss to Southeast Alaska commercial fisheries due to growing sea otter predation. The sea cucumber, geoduck, red sea urchin, and Dungeness crab fisheries are examined. This current document is an update of a similar economic loss assessment conducted by McDowell Group at the end of 2005. The 2005 study was, in turn, based on estimated loss of commercial species volume and ex-vessel value calculated by the Alaska Department of Fish and Game (ADFG). This current study uses similar methodology utilizing data collected by ADFG.

Methodology

Economic loss estimates in this report are based on scientific biomass data generated by subdistrict bottom surveys conducted by ADFG biologists and divers. Every dive fishery area is surveyed by ADFG divers on a rotational basis in transects prior to commercial openings in order to calculate biomass and generate Guideline Harvest Limits (GHL) for each fishery. Staff (primarily biologists) then note fishery areas which display physical evidence of sea otter predation and areas where sea otters are active.

McDowell Group has consulted extensively with ADFG staff and employed the same methods to calculate the estimated loss due to sea otter predation in the sea cucumber, geoduck, and red sea urchin fishery. In the Dungeness crab fishery, areas with high otter populations were compared to those with fewer otters to estimate the volume lost due to sea otter predation. Methodology is described in detail in this report body.

Summary of Study Findings

Economic Impacts of Sea Otter Predation on Commercial Species

- Sea otter predation in the red sea cucumber, geoduck clam, red sea urchin, and Dungeness crab fisheries is estimated to have cost the Southeast Alaska economy \$28.3 million in direct, indirect, and induced impacts since 1995.

Economic Impacts of Sea Otter Predation on Southeast Alaska Commercial Fisheries

Fishery	Estimated Pounds Lost due to Sea Otter Predation	Estimated Ex-Vessel Value Lost Due to Sea Otter Predation	Estimated Wholesale Value Lost Due to Sea Otter Predation	Time Period
Sea Cucumbers	3,254,000	\$5,294,000	\$8,951,000	1996-2011
Geoducks	530,500	3,237,000	4,210,000	2005-2011
Red Sea Urchins	3,102,000	1,024,000	3,972,000	1995-2005
Dungeness Crab	2,681,000	3,317,000	5,301,000	2000-2010
Total	9,567,500	\$12,872,000	\$22,434,000	-

Source: ADFG data and McDowell Group estimates.

- Since 1995, it is estimated \$22.4 million in wholesale value has been lost due to sea otter predation. The secondary (multiplier) impact of these losses on the regional economy is estimated to be an additional \$5.8 million, for a total of \$28.2 million.
- Dive fisheries and Dungeness crab fisheries in Southeast Alaska had a first wholesale value of \$25 million in 2010, employing roughly 625 fishermen as well as processing workers and tender operators. The secondary economic activity resulting from these fisheries is estimated to be \$6.5 million or equivalent to 59 full-time jobs.

Sea Cucumbers

- Since 1995, the sea cucumber fishery has lost an estimated 3.3 million pounds worth \$9.0 million in wholesale terms, and \$5.3 million in ex-vessel terms, due to sea otter predation.
- Sea otter impacts were particularly harmful in 2011, as an estimated 235,000 pounds was lost due to predation worth \$2.23 million in wholesale value.
- As a result of sea otter predation, the average commercial diver harvesting sea cucumbers in 2011 lost an estimated \$7,000 in ex-vessel value.
- Since 1992, ADFG has closed seven areas either specifically due to sea otter predation or presumably due to sea otter predation. Sea otters have been noted to be negatively affecting 12 other harvest areas. See Appendix 2 for a complete list and map of fishery areas affected by sea otter predation.

Geoduck Clams

- Since 2005, the geoduck clam fishery has lost an estimated 530,500 pounds worth \$4.2 million in wholesale terms, and \$3.2 million in ex-vessel terms, due to sea otter predation.
- Impacts were particularly costly in 2011, as an estimated 140,900 pounds were lost due to predation worth \$2.0 million in wholesale value.
- As a result of sea otter predation, the average commercial diver harvesting geoducks in 2011 lost an estimated \$20,000 in ex-vessel value.
- No geoduck harvest areas have yet been closed due to sea otter predation, but ADFG has identified 27 fishery areas with evidence of sea otter predation. About 70 percent of the commercial geoduck harvest comes from these 27 fishery areas, where surveys note large craters and shell fragments left over from sea otter predation.
- Although no areas have yet been closed due to sea otter predation, some prospective fishery areas found by commercial divers with sizable geoduck populations were never proposed to ADFG and therefore never opened. Sea otter predation in the area made it likely the fishery would not be worth surveying and managing by the time it could be opened (Doherty 2011, personal communication).

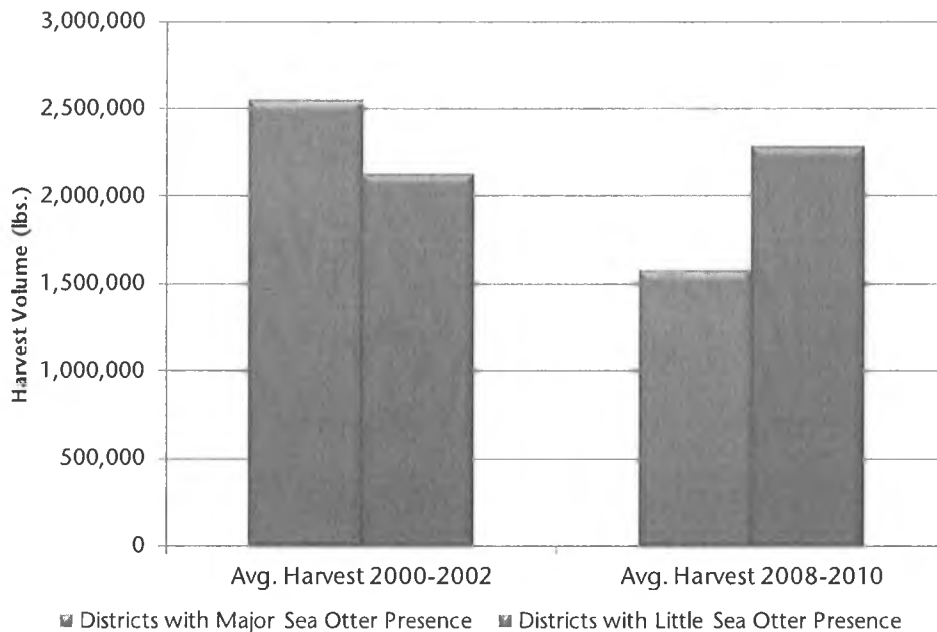
Red Sea Urchin

- The harvest of red sea urchins has declined substantially since 2006. Industry sources indicate only one or two divers are harvesting urchins in 2011, with only one active buyer. Sea otter predation impacts since 2005 have not been compiled, due to the decline of the fishery and the confidential nature of most data associated with it.
- The decline of the red sea urchin fishery in recent years is related to market factors and not due to sea otter predation.
- Prior to 2006, an estimated 3.1 million pounds of sea urchin harvest was lost due to sea otter predation, worth \$4.0 million in wholesale value.
- Despite declining effort in the sea urchin fishery, sea otter predation continues to negatively impact stocks. The 2011/12 red sea urchin GHL is 3.28 million pounds, a 40 percent decline from the 2008/09 GHL of 5.44 million pounds. If the market value rebounds and fishery participation increases, the lost GHL due to sea otters will be realized in future years as GHL's are expected to decline.

Dungeness Crab

- Sea otters regularly eat Dungeness crab, which are an attractive food source given their abundance in Southeast Alaska, considerable size, and relative ease of capture.

**Comparison of Southeast Alaska Dungeness Crab Harvest
in Districts with Major Vs. Minor Sea Otter Presence**



Note: Districts with major sea otter presence include districts: 3, 5, 6, 9, 10, and 13.

Source: ADFG harvest data.

- The three-year average harvest from districts with significant sea otter presence was 975,000 pounds less in 2008 through 2010, compared to the 2000-2002 period, a decline of 38 percent. In comparison, districts with less sea otter presence saw average harvests increase 151,000 pounds between the two periods, an increase of 7 percent.
- The Southeast Alaska Dungeness crab fishery has lost an estimated 2.7 million pounds of commercial harvest due to sea otter predation since 2000, worth \$3.3 million in ex-vessel terms and \$5.3 million in wholesale value.

Sea Otter Population Growth

According to available data, the Southeast Alaska sea otter population has increased significantly, particularly in southern Southeast Alaska where the region's dive fisheries occur. The most recent population survey was completed in 2002 and 2003, indicating a Southeast Alaska population estimate of 8,949 animals. More recent studies suggest annual growth rates are 12 percent in southern Southeast Alaska and 4 percent in northern Southeast Alaska (Hoyt 2011, personal communication). Other authoritative literature suggests sea otter populations can grow at an annual rate of 20 percent per year when expanding into new territory (Paul 2009).

The Southeast Alaska sea otter population is projected to be approximately 19,000 in 2011, increasing from less than 9,000 animals in the most recent published population estimate. By 2015, the Southeast population is expected to approach 28,000 animals. These estimates incorporate the subsistence harvest of sea otters by Alaska Natives.

**Estimated Southeast Alaska Sea Otter Population,
2002 - 2015**

Season	Last Population Survey (2002/2003)	Projected 2011 Population	Projected 2015 Population	Survey Coefficient of Variation (CV%)
Southern Southeast				
12% Annual Growth Rate	5,845 ¹	14,472	22,772	0.14
Northern Southeast (including Glacier Bay)				
4% Annual Growth Rate	3,104 ²	4,418	5,168	0.16
Total Southeast Alaska				
Estimated Population	8,949	18,890	27,940	-

¹Population estimate is from 2003.

²Population estimate is from 2002.

Source: U.S. Fish and Wildlife Service, Hoyt 2011 (personal communication), and McDowell Group calculations.

Given current foraging research, a conservative estimate about body weight (50 lbs.) and daily food intake (20 percent of body weight); a sea otter population of 27,940 would consume just over 10 million pounds of commercial species per year in Southeast Alaska. The entire 2010 Southeast Alaska harvest in the dive and Dungeness crab fisheries was 5.9 million pounds.

Abalone

A commercial fishery for northern abalone (*Haliotis kamtschatkana*) existed in Southeast Alaska from the late 1970s to mid 1990s. Guideline harvest levels were not applied until the 1980/81 season and the fishery slowly declined thereafter. Similar collapses occurred in British Columbia and Washington state.

The fishery collapsed almost certainly because of excessive harvests in the late 1970s and early 1980s. There was not a sufficient stock assessment or research program in place when the Alaska fishery boomed and there was insufficient support to develop a program within the department. Further, there was inadequate understanding among the global research community of the special vulnerabilities of abalone populations to overharvest (ADFG Report to Alaska Board of Fisheries 1999).

The decline of the abalone is probably a long-term condition now that sea otters have expanded to occupy much of their former range. Otter populations have grown exponentially since their reintroduction into outer coastal waters of southeast Alaska in the 1960s, and there are only a few pockets of abalone habitat that have not yet seen a resurgence of otters. The two species share the same environment. Otters are uniquely adapted to prey on abalone and it is clear that abalone cannot co-exist in commercial quantities with sea otters (ADFG Report to Alaska Board of Fisheries 1999).

The decline of the abalone fishery, like the decline of the red sea urchin fishery, was not related to sea otter predation. However, given current otter populations and population growth rates, it is virtually impossible that these species will abound in commercial quantities in the future. By limiting the abalone's population from fully rebuilding - enough to support a commercial fishery - sea otters have diminished the future value of Southeast Alaska's commercial dive fisheries.

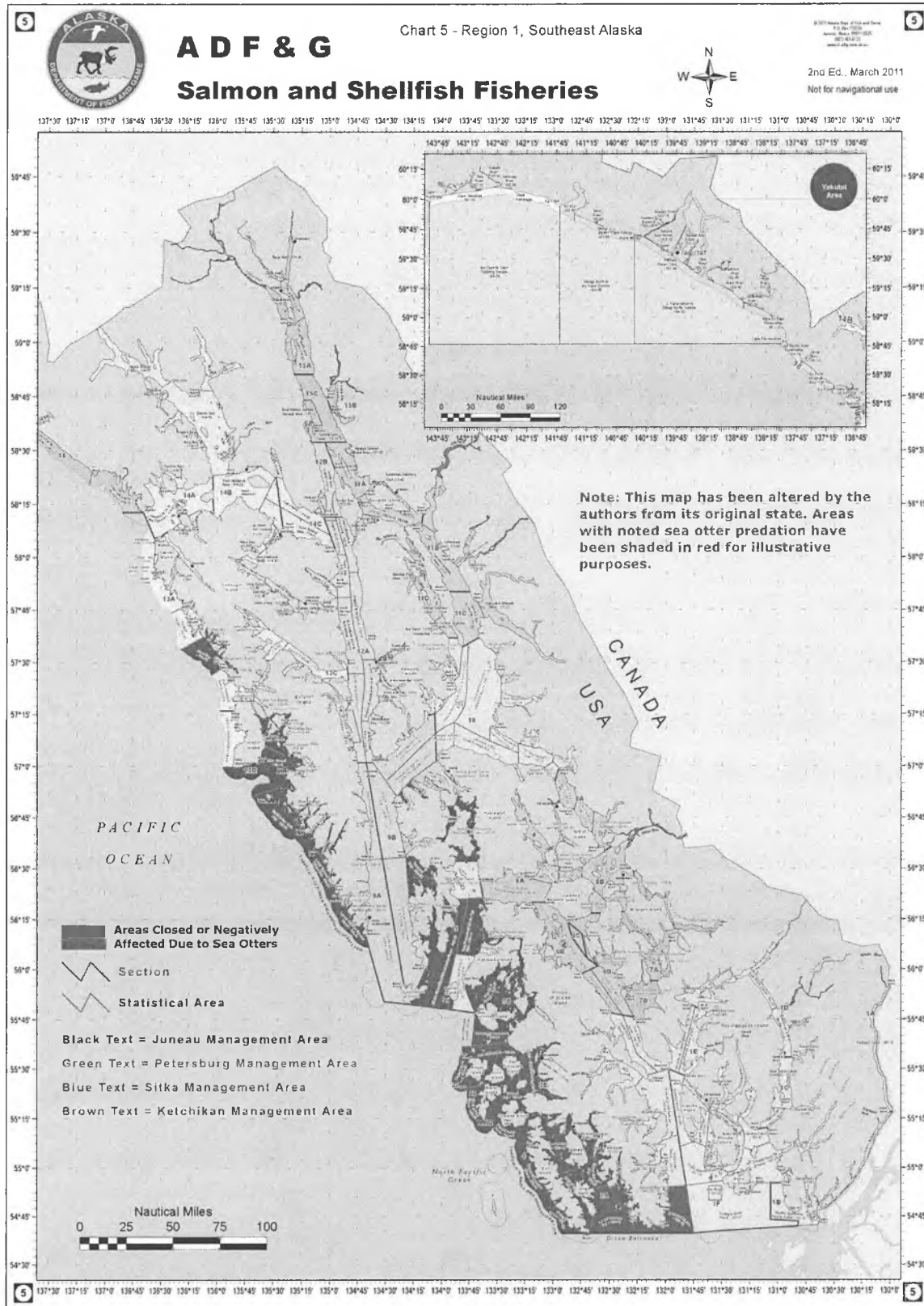
Observations of Sea Otter Predation on Commercial Species

ADFG field research and industry divers support the notion that sea otters are having a significant negative impact on the harvest volumes of geoduck, urchins, crab and other marine species. Growing sea otter populations have led to the depletion of many of these resources within the otters' range, closing some fisheries and leaving others economically unfeasible. In recent years, ADFG has closed 17 dive fishery harvest areas due to sea otter predation.

Given the food source which developed during the last 100 years with little otter predation, it is expected the outer coastline will eventually become continuously populated with sea otters from Dixon Entrance to well north of Cape Spencer (Pritchett and Hoyt, 2008). In addition, many commercial fishermen have noted otter populations in inside waters, expanding their range beyond the coastal areas.

This report contains estimates of financial losses incurred by commercial divers in the past and present, due to sea otter predation. However, large sea otter populations inevitably threaten the future of dive fisheries and crab fisheries; jeopardizing hundreds of jobs and tens of millions of dollars in economic activity for the region.

Map of Fishery Areas Negatively Affected by Sea Otters



Introduction

Purpose of the Research

The commercial harvest closures have resulted in measurable economic impacts on the seafood sector and on communities in Southeast Alaska. Harvesters, processors, and seafood-dependent communities experience lost employment, wages, tax revenue, and related economic activity. The Southeast Alaska Regional Dive Fisheries Association (SARDF) contracted with McDowell Group to quantify and explain these impacts in 2005. Since the 2005 report, otter populations have continued to grow, further impacting dive fisheries and crab fisheries. This report uses current ADFG data and sea otter research to update the impacts of sea otter predation on Southeast Alaska fisheries and communities.

Methodology

In 2005, the Alaska Department of Fish and Game (ADFG) estimated the lost guideline harvest level (GHL) due to sea otter predation in the red sea urchin and sea cucumber fisheries. These estimates were contained in a November 2005 memorandum. McDowell Group consulted with ADFG biologists who survey the fishery and calculated the original estimates of lost GHL. Using new ADFG biological survey data regarding biomass and sea otter predation, McDowell Group has employed the same methods as those used in 2005 to update the estimates of economic loss.

The Alaska Department of Fish and Game provided McDowell Group with publicly available biomass survey data and professional input (based on survey experiences and institutional knowledge). The scientific survey data and interviews with expert professionals in the department are used in this report. In addition, prior to release of this report, ADFG professionals reviewed the report to ensure data and information provided by ADFG is objectively and accurately represented.

It is important to note, however, ADFG has not conducted controlled experiments to examine the effects of sea otter predation on invertebrate populations. Their estimates are based on regular, direct observations made during dive surveys and the department's expertise as fishery managers.

Estimates of lost harvest volume were combined with average ex-vessel price data from ADFG to estimate the lost value in ex-vessel earnings. Wholesale values are based on data from the ADFG Commercial Operators Annual Report (COAR) database.

Wholesale value impacts are inclusive of impacts reflected by the loss of ex-vessel value. This is because wholesale value of a product, or the revenues a processing company gains through sale of the product, must pay for the expenses incurred in the procurement and processing of that product. This includes the purchase of the raw material from harvesters, which is reflected as the ex-vessel value.

Sea Otters in Southeast Alaska

Species Profile and Diet

Sea otters (*Enhydra lutris*) are a member of the weasel family and a significant predator in the ecosystems of much of coastal Alaska, from Southeast to the Aleutian Islands. Their average life span is 15 to 20 years. Adult male otters weigh typically weight 70 to 90 pounds and average about 4.5 feet in length, while females average 40 to 60 pounds.

The sea otters' only natural predators are sharks, killer whales (orcas), and bald eagles. Sharks and killer whales are not particularly plentiful in Southeast Alaska, and there is no shortage of other food sources for these predators. There is a very narrow window for bald eagles to hunt sea otter pups. Relatively soon after being born, the pups are able to dive and evade the eagles.

Sea otters are the only marine mammal without blubber. As a result, the animals have a high metabolism and require large amounts of food to survive. Sea otters in captivity will consume up to 25 percent of the body weight per day.¹ One male otter, therefore, can consume up to 7,300 pounds of food in one year.

Instead of blubber, sea otters have a dense, water resistant coat which traps air close to their body insulating them from the frigid waters of the North Pacific. Sea otters have the densest coat of any mammal, with roughly a million hair follicles per square inch. By comparison, the human scalp has only 20,000 hairs in total.

Sea otters typically forage in depths of 9 to 27 feet; however, a dive of 291 feet was recorded by an animal which drowned while attempting to remove bait from a crab pot.

Many studies have been conducted on the foraging habits of sea otters. Aside from the tremendous volume of food needed to sustain otters, researchers found significant differences in foraging habits depending on location and available prey. Antonelis et al. (1981) and Ostfeld (1982) found evidence to confirm the hypothesis that otters choose prey with the highest ratio of caloric-value to energy expended foraging (Barnes 2002).

Other studies tend to support the notion that sea otters are opportunistic generalists which adapt their predation to their environment. Studies from the Aleutian chain to Prince William Sound to Southeast Alaska have found different foraging habits. The most recent study, (Hoyt 2010), is collecting foraging data on sea otters in southern Southeast Alaska. Preliminary data from this study suggests when sea otters move into new areas they



¹ U.S. Fish and Wildlife Service. "Wildlife Biologue – Northern sea otter in Alaska (*Enhydra lutris kenyoni*)." p2.

are more likely to prey on commercial species. Over all, that study suggests commercial species make up 10 percent of the sea otter diet in southern Southeast Alaska.

Historical Population

Sea otters were completely removed from their natural range in Southeast Alaska by intense pressure from fur traders in the 18th and 19th centuries. Prior to the fur trade period sea otter populations in the entire North Pacific Rim – extending from Japan to Alaska to Baja California – ranged from 200,000 to 300,000 (Hoyt 2010). Sea otters were believed to have been eliminated from Southeast before 1900 (Pitcher 1989). In 1911, an international treaty, the North Pacific Fur Seal Convention, passed protecting sea otter populations in the United States, Russia, and Japan from further intensive exploitation.

The reintroduction of the sea otter into the Southeast region occurred from 1965 to 1969. A total of 402 animals were relocated from the Aleutian Islands and from Prince William Sound. Otter relocation sites included Khaz Bay, Yakobi Island, Biorka Island, the Barrier Islands, the Maurelle Islands, and Cape Spencer. The Southeast Alaska sea otter population remained low until 1987 when it began a period of rapid growth (Pitcher and Imamura, 1990).

Since that time, sea otter populations have been increasing, and the range of the animals has expanded and shifted correspondingly. The most recently completed population survey, conducted in 2002 and 2003, estimated the Southeast sea otter population at 8,949 animals. Based on aerial surveys performed in 2010 southern Southeast Alaska sea otter populations are believed to be growing at 12 percent per year. Sea otter populations in northern Southeast and Glacier Bay are believed to be growing at 4 percent (Hoyt 2011, personal communication).

**Estimated Southeast Alaska Sea Otter Population,
2002 - 2015**

Season	Last Population Survey (2002/2003)	Projected 2011 Population	Projected 2015 Population	Coefficient of Variation (CV%)
Southern Southeast				
12% Annual Growth Rate	5,845 ¹	14,472	22,772	0.14
Northern Southeast				
4% Annual Growth Rate	1,838 ²	2,616	3,060	0.17
Glacier Bay				
4% Annual Growth Rate	1,266 ²	1,802	2,108	0.15
Total Southeast Alaska	8,949	18,890	27,940	-

¹Population estimate is from 2003.

²Population estimate is from 2002.

Source: U.S. Fish and Wildlife Service, Hoyt 2011 (personal communication), and McDowell Group calculations.

Based on 2003 survey work, and a 12 percent annual growth rate, the current sea otter population of southern Southeast is believed to contain about 14,500 animals. By 2015, the southern Southeast population is expected to exceed 22,700 animals.

With a large food source available, high population growth rates will likely persist for some time. By 2015, the Southeast Alaska sea otter population is conservatively projected to contain 27,940 sea otters. Given current foraging research and a conservative estimate about body weight (50 lbs.) and daily food intake (20 percent of body weight), a sea otter population of 27,940 would consume just over 10 million pounds of commercial species per year in Southeast Alaska. The entire 2010 Southeast Alaska harvest in the dive fisheries and Dungeness crab fisheries was 5.9 million pounds. Southeast Alaska sea otters consumed an estimated 6.9 million pounds of commercial species in 2011.

Population growth rates may actually increase if otters migrate further outside of their current territory. Sea otter populations can grow by 20 percent per year when colonizing new areas with sufficient food sources and few predators (Watson 2000). From 1975 to 1987, the growth rate of the sea otter population in southeast Alaska was estimated at 17.6 percent per year (Estes 1990).

Population growth rates are limited primarily by three factors: abundance of food, predators, and population size. As a population grows larger, it consumes more resources and mortality rates increase. The fact that sea otter populations are growing three times faster in southern Southeast, despite a population which is three times larger would indicate a substantial food source available to the southern Southeast otters. One of the key differences between northern and southern Southeast, as they relate to sea otters, is the presence of large macroinvertebrate populations in the southern region.

Updated sea otter population figures will be forthcoming. The U.S. Fish and Wildlife Service (USFWS) performed aerial surveys during the summer of 2010 and 2011, but has not yet released their findings.

Recent Sea Otter Research in Southern Southeast Alaska

The most direct observation of sea otter effects on commercial fisheries comes from dive surveys performed by ADFG biologists and an ongoing North Pacific Research Board project headed up by researchers from the USFWS and the University of Alaska – Fairbanks (UAF).

ADFG performs annual dive surveys on areas open to commercial dive fisheries. Divers survey the near-shore seabed in pairs for sea cucumbers, geoducks, and sea urchins covering 2-meter-wide transects. Sea otter presence is noted during these surveys.

Observations made by ADFG divers on the outer coast of Southeast Alaska suggest sea otters select red sea urchins and pinto abalone when foraging on rock habitat and on several species of clams including geoduck clams when foraging on soft sand and mud substrate. Once these species have been depleted it appears they turn to less desirable prey such as sea cucumbers and snails (Walker, Pritchett and Hoyt, 2006).

A collaboration of researchers and specialists from UAF and USFWS embarked on a four-year project beginning in July 2010 to study interactions between sea otters and commercially important prey in southern Southeast Alaska. The project will also survey sea otter populations and study movement, habitat, and diets of otters in Southern Southeast Alaska. Preliminary results from this project have revealed the following:

- Otters can consume up to 23 percent of their body weight in a day, as they have a very high metabolic rate.

- Distribution of sea otter populations have grown and moved further inland from outer coastal areas.
- Preliminary foraging data suggests commercially important species make up 10 percent of sea otters' diet. (However, this data was collected from areas with relatively small populations of commercial dive species, and other studies have noted different foraging behavior in different regions).
- When sea otters initially colonize an area, they consume larger amounts of commercially important species such as sea cucumbers and Dungeness crab.

POTENTIAL CONSEQUENCES FOR SEA OTTERS AND COMMERCIAL FISHERIES

The sea otter population will likely continue to expand rapidly in coming years as otters consume the large biomasses of crab and macro invertebrate, species which built up in the absence of sea otters during the past century. When these biomasses have been depleted otters will need to find other food sources and many may die off due to starvation. However, because sea otters are opportunistic generalists, it is likely commercial dive fisheries and Dungeness crab fisheries in Southeast Alaska may never return to biomass levels that allow sustainable commercial harvests.

The natural balance between sea otters and their prey, which existed before fur traders wiped out sea otters in Southeast Alaska, did not allow for an imbalance between sea otters, crabs, and macro invertebrates. The population of one group either limited or fueled growth in the other. In such a situation, large-scale commercial dive fisheries and Dungeness crab fisheries may not be possible because crab and macro invertebrate populations would not be able to reach a size large enough to support a fishery of current proportions (given unabated sea otter predation).

In short, commercial dive fishing and large populations of sea otters cannot coexist in the same waters. In addition, once the commercially viable biomass of crab and macro invertebrates – such as sea cucumbers and geoducks - is gone, it likely will not return given sustained sea otter predation.

Southeast Alaska Dive Fisheries

Southeast Alaska dive fisheries occur primarily during the fall and harvest three species of bottom-dwelling marine invertebrates: geoduck clams (*Panopea generosa*), California sea cucumbers (*Parastichopus californicus*), and red sea urchins (*Strongylocentrotus franciscanus*). All three fisheries occur primarily in southern Southeast Alaska waters. Entry into the fishery is limited, but those who hold permits compete to harvest commercial species within the limits of guideline harvest levels established by ADFG.

Alaska dive fisheries started to develop in the mid-1960s, with a fishery for pinto abalone. In the 1980s commercial dive fisheries developed for sea cucumbers, sea urchins, and geoducks. In 2000, the Alaska Commercial Fisheries Entry Commission (CFEC) limited access to the fishery, restricting further growth in the number of participants.

In 2010, Southeast Alaska dive fisheries produced a first wholesale value of \$16.7 million and paid out \$9.4 million to divers. Roughly 180 permitted divers participated in the fishery in 2010 for average earnings of \$52,100 per diver. This revenue is shared with crew, as the average commercial diver employs 0.8 crew members according to surveys done by the Alaska Department of Labor and Workforce Development.

Impacts to the Southeast dive fisheries extend beyond payments made to divers. The fisheries occur during the fall, after the busy summer season when harvests of salmon, halibut, black cod, and herring are finished (or nearly finished). Dive fishery harvests provide processors with additional revenue and the ability to extend some seasonal processing jobs by allowing some processing staff to handle dive fisheries production. In addition, the fisheries add to the state, local, and federal tax base and create business for local dive shops, transport companies, and other related businesses.

Geoduck Clams

Geoduck clams command the highest price of the three dive species. Virtually all Alaska geoducks are exported to China and in 2010 geoduck clams sold for an average wholesale price of \$8.72 per pound. Quality geoducks, in the proper retail market, can command prices upwards of \$20 per pound.

Southeast Alaska Geoduck Clam Dive Fishery Snapshot

	2010/11 Season	Pct. Change Since 2005/06
Number of Active Divers	69	-3%
Average Permit Value	\$81,600	+93%
Total Harvest (in lbs.)	887,500	+39%
Total Ex-Vessel Value	\$5.9 million	+197%
Average Ex-Vessel Price	\$6.67	+114%
Total First Wholesale Value	\$8.0 million	+186%
Average First Wholesale Price (per processed lb.)	\$8.72	+94%
Average Revenue Generated Per Diver	\$115,900	+195%

Source: ADFG.

Geoduck fisheries take place throughout southern Southeast Alaska, and in waters surrounding Baranof Island. A total of 69 divers fished in 2010, although there were 91 permits for the fishery. The fishery had an ex-vessel value of \$5.9 million in 2010, and a wholesale value of \$8.0 million.

The value of the fishery has increased in recent years, as prices and harvest volumes have both risen. Harvest volume has grown in spite of sea otter predation because new harvest areas were discovered and added to the fishery. However the 2011/12 quota is only 557,900 pounds – the lowest since 2003 when there were fewer harvest areas. Further harvest reductions are likely because most of the region has been surveyed and areas with commercial quantities have already been opened. So as established areas lose GHJ to otter predation, new areas are not expected to make up for the shortfall as they have in the past.

During the past several years, SARDFA surveyors have found substantial geoduck clam beds but in some instances did not attempt to open these areas because sea otters were active in the vicinity. By the time the areas could be surveyed, studied, and opened (at a cost ultimately borne by the industry) the beds would most likely be depleted below a commercially viable level.

Sea Cucumbers

Sea cucumbers are also sold primarily into Chinese markets. Sea cucumbers are raised in large numbers in China in artificial ponds and man-made tide pools. Wild Alaska sea cucumbers tend to be much larger and have higher nutritional value, therefore command a premium price in the Chinese market.

Southeast Alaska Sea Cucumber Dive Fishery Snapshot

	2010/11 Season	Pct. Change Since 2005/06
Number of Active Divers	180	-9%
Average Permit Value	\$11,300	+27%
Total Harvest (in lbs.)	1.27 million	-12%
Total Ex-Vessel Value	\$3.4 million	-
Average Ex-Vessel Price	\$2.65	+16%
Total First Wholesale Value (per processed lb.)	\$8.1 million	+60%
Average First Wholesale Price	\$10.88	+45%
Average Revenue Generated Per Diver	\$45,000	+75%

Source: ADFG.

A total of 180 divers fished in 2010, although there were 291 permits for the fishery. Alaska sea cucumbers had an ex-vessel value of \$3.4 million in 2010, and a wholesale value of \$8.1 million.

The fishery's value has increased substantially in recent years due to rising prices. Because areas are only harvested once every three years, the harvest can fluctuate greatly from year to year. Despite the fluctuations due to harvest area rotation, the 2011/12 quota is very low. The 2011/12 quota of 999,000 pounds is the lowest since the late 1990s.

Red Sea Urchins

Red Sea Urchins are harvested for their gonads, which is a delicacy in Japan. Male and female sea urchin gonads, both known as *uni* in Japanese, are served in sashimi or in sushi.

Participation in the urchin fishery has declined since 2000, although 2010 posted the first increase in participation since 2004. Still, only 12 divers fished in 2010, out of 71 permits. The fishery had an ex-vessel value of \$148,000 in 2010. The average gross earnings of \$12,300 per diver in 2010 is the lowest since access to the fishery was limited in 2000. An industry source reports only "one or two" divers are participating in the 2011/2012 fishery, with only one buyer.

Economic Impacts of Sea Otter Predation

As sea otter populations have recovered in areas of the Pacific Coast, conflict has arisen with commercial and subsistence fisheries. Sea otters prey on sea urchins, Dungeness crab, shrimp, clams, abalone, sea cucumbers, and geoducks, among other animals. There are multiple studies that note sea otter population growth can have a negative effect on commercial stocks of these species, potentially resulting in the closure or drastic reduction of the commercial fishery. In one such example, Watson and Smith, in their 1996 paper examining sea otter/fishery interactions in British Columbia, noted there is "no doubt that sea otters threaten urchin fisheries."

Indeed, as sea otters have reestablished themselves in various areas of Southeast Alaska, formerly abundant stocks of several invertebrate species have been locally depleted below commercially harvestable levels. Since 1993 the Alaska Department of Fish and Game has closed 17 dive fishery harvest areas due to presumed sea otter predation. The Department estimates sea otter predation affects 39 percent of Southeast dive fishery harvest areas.

Summary of Dive Fishery Areas Affected by Sea Otter Predation

Species	Total Harvest Areas	Areas Closed Due to Sea Otters	Areas Closed, Presumably Because of Sea Otters	Areas Affected by Sea Otters but Not Closed	Percentage of Areas Affected or Closed Due to Sea Otters
Geoducks	41	0	0	27	66%
Sea Cucumbers	67	3	4	12	28%
Red Sea Urchins	59	4	6	9	32%
Total	167	7	10	48	39%

Source: ADFG.

The financial impact of sea otter predation affects commercial divers, processors, dive shop owners, and communities both inside and outside of Alaska. This section focuses on the cost of sea otter predation to divers and processors, who have lost revenue in the form of ex-vessel earnings and wholesale revenues due to sea otters.

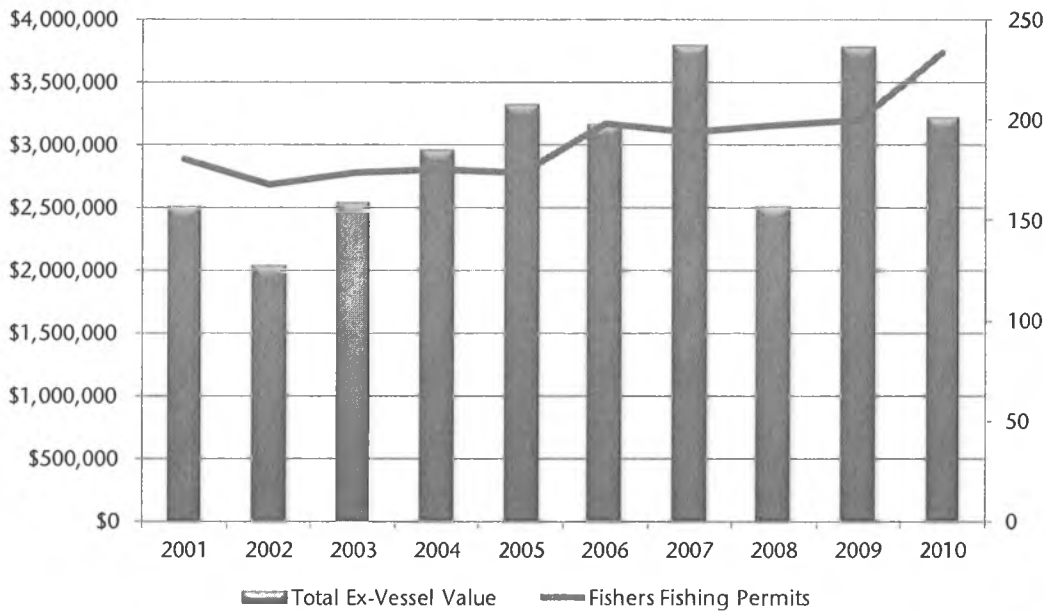
Sea otter predation has had obvious and measureable economic impacts on the sea cucumber, red sea urchin, geoduck, and Dungeness crab fisheries of Southeast Alaska. This report quantifies the estimated impacts sea otters have had on these species. In addition, sea otters affect the tanner and king crab fisheries of Southeast Alaska; however, data to quantify these impacts on these fisheries is not yet available.

Sea Cucumbers

Historical Harvest and Value

Sea cucumber fisheries occur throughout much of Southeast Alaska, in waters surrounding Prince of Wales Island, including Clarence Strait, east to the Behm Canal and waters around Revillagigedo, Gravina, and Annette Islands, and south. Fisheries also occur around Sitka, and in Sumner and Chatham Straits. Each subdistrict opens once every three years. Although divers are allowed to harvest sea cucumbers from October through March of the following year, virtually 100 percent of the harvest occurs during October and November. So although the 2011/12 season will run through March 31, 2012, most of the GHL has already been harvested.

Sea Cucumber Ex-Vessel Value and Participation
2001 - 2010



Source: CFEC.

In 2000, the Commercial Fisheries Entry Commission limited access to the fishery. Since limited access to the fishery, participation has ranged from a peak of 234 permits fished in 2001 to a low of 168 permits fished in 2009. A total of 180 permits were fished in 2010, and fishermen earned a total of \$3.2 million or \$17,850 per diver.

From 2007 to 2010, ex-vessel prices ranged from \$2.86 to \$2.56 per pound, but prices are much higher in 2011. Reports from the grounds indicate divers are being paid \$5.50/lb. for sea cucumbers this season. While the price appreciation is certainly a positive for fishermen, total ex-vessel values may not increase as much because the guideline harvest level for the 2011/12 season is down. Fishermen will be allowed to harvest roughly 1 million pounds of sea cucumber this season, a 12 percent decline from the 2008/09 season - the last time these this group of subdistricts was harvested.

Impacts of Sea Otters on Southeast Alaska Sea Cucumber Fishery

Sea otters are opportunistic generalists, consuming a wide variety of near-shore prey. Data collected in 2010 on the foraging habits of sea otters near Kake, Alaska revealed sea cucumbers made up 3.1 percent of the sea otters' diet. Similar foraging observations were made in Southwest Alaska during a 2003 study.

Although sea cucumbers do not represent the majority of sea otters diet, otters do consume large amounts of sea cucumbers each year which has had an adverse effect on the sea cucumber fishery.

Since 1996, sea otter predation has resulted in an estimated lost GHL of 3.25 million pounds worth \$5.3 million in ex-vessel terms and \$8.4 million in wholesale markets.

In 2011, sea otter predation led to a loss of roughly \$7,000 for every active sea cucumber diver.

**Estimated Sea Cucumber GHL and Value Lost Due to Sea Otters,
1996/97 – 2011/12**

Season	GHL Lost Due to Sea Otters	Ex-Vessel Price (\$)	Estimated Ex-Vessel Value Lost Due to Sea Otters	First Wholesale Value/lb. (round weight basis)	Estimated Wholesale Value Lost Due to Sea Otters
2011/12*	235,000	\$5.50	\$1,293,000	\$9.50	\$2,231,000
2010/11	151,000	\$2.65	400,000	\$6.37	961,000
2009/10	192,000	\$2.59	497,000	\$3.78	725,000
2008/09	241,000	\$2.56	617,000	\$3.94	949,000
2007/08	116,000	\$2.86	332,000	\$4.40	511,000
2006/07	143,000	\$1.99	285,000	\$3.35	480,000
2005/06	184,000	\$2.29	421,000	\$3.45	634,000
2004/05	140,000	\$2.12	297,000	\$3.48	488,000
2003/04	150,000	\$1.47	213,000	\$3.48	522,000
2002/03	84,000	\$1.26	106,000	\$2.51	211,000
2001/02	100,000	\$1.75	175,000	\$2.43	243,000
2000/01	130,000	\$2.23	290,000	\$2.41	313,000
1999/00	59,000	\$1.94	115,000	\$2.91	172,000
1998/99	40,000	\$1.55	62,000	\$3.09	124,000
1997/98	90,000	\$1.66	147,000	\$3.37	304,000
1996/97	34,000	\$1.28	44,000	\$2.44	83,000
Total	3,254,000	-	\$5,294,000	-	\$8,951,000

* 2011/12 data is preliminary and based on prices reported by industry.

Source: ADFG data and McDowell Group estimates.

Sea otter predation has forced closures, been observed, or affected 19 sea cucumber harvest areas out of a total of 67 harvest areas. Since 1993, ADF&G has closed three harvest areas specifically due to sea otter predation and has noted four additional areas were probably closed due to sea otters. Two new harvest areas were closed in 2011, specifically due to sea otters.

Geoducks

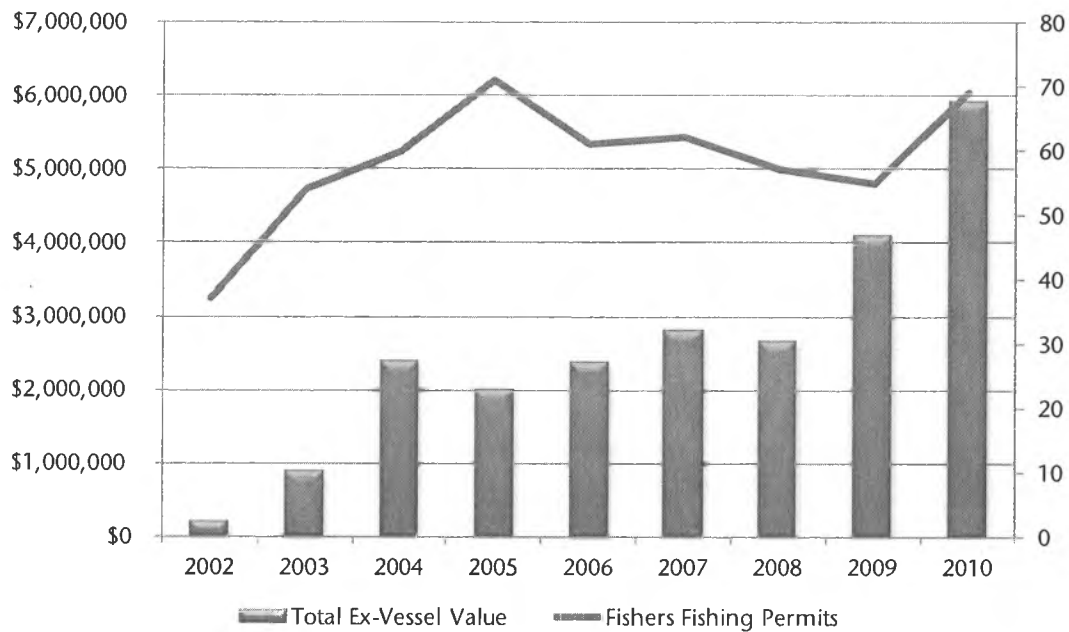
Historical Harvest and Value

Currently there are 39 commercial geoduck clam harvest areas in Southeast Alaska and 2 control areas not open for harvest. All of these areas are located in southern Southeast Alaska, with most of the GHL contained in areas surrounding the communities of Ketchikan, Craig, and Sitka.

Since 2004, and particularly in the last three years, the Southeast Alaska geoduck fishery has become a lucrative fishery. Ex-vessel prices for geoducks have nearly tripled since 2008. Reports indicate geoduck divers are receiving \$10.50/lb. from processors this season (2011/12).

Geoduck prices have increased in recent years primarily because coordination between government regulators, fishery managers, and commercial divers has improved. Better communication and coordination has allowed the industry to now sell all geoduck clams as live product. Live geoduck clams command a significantly higher price.

**Geoduck Ex-Vessel Value and Participation,
2002 - 2010**



Source: CFEC.

Harvest volume has been relatively steady since 2004, ranging from 557,900 to 824,800 pounds. Participation in the fishery has also been steady, with 55 to 71 divers participating in the fishery. In 2010, a total of 69 divers out of 91 permit holders harvested geoducks.

Impacts of Sea Otters on Southeast Alaska Geoduck Clam Fishery

Sea otter predation has become more evident in geoduck clam fisheries since the early 2000s (Walker 2011, personal communication). With geoduck fisheries becoming more commercially important in recent years, these adverse effects have become more costly for commercial divers.

Otter predation in the geoduck fishery is especially evident. Otters dig large holes into the seabed, pull up the geoduck clam, eat the meat and discard the shells – leaving behind a large hole and shell debris which divers note in their surveys. Surveys performed in 2009 on the Portillo Channel (Subdistrict 103-50) area revealed notable otter presence in 70 of 74 transects. Surveys performed on the Lower Cordova Bay (102-10 and 103-11) area showed sea otter presence in over half that district’s 60 transects (Rumble and Siddon, 2011).

McDowell Group employed the same methodology used by ADFG to estimate effects on the sea cucumber and sea urchin fisheries from 1996/97 to 2005/06 to estimate geoduck harvest volume and value lost to sea otter predation.

Evidence of sea otter predation has been observed at 27 of the 39 geoduck harvest areas. Biomass has decreased significantly in seven of these 27 areas since 2003. Given the noted sea otter activity in these geoduck fishery areas and lack of other natural predators, it is believed the declining biomass can be attributed to sea otters for these seven harvest areas.

Since 2005, sea otter predation has resulted in an estimated lost GHL of 530,500 pounds worth \$3.2 million in ex-vessel terms and \$4.2 million in wholesale markets. In 2011, sea otter predation was particularly costly, leading to a loss of roughly \$20,000 for every active geoduck diver. This is money which is directly taken out of family budgets and local economies.

**Estimated Geoduck GHL and Value Lost Due to Sea Otters
2005/06 – 2011/12**

Season	GH L Lost Due to Sea Otters	Ex-Vessel Price (\$)	Estimated Ex-Vessel Value Lost Due to Sea Otters	First Wholesale Value/lb. (round weight basis)	Estimated Wholesale Value Lost Due to Sea Otters
2011/12*	140,900	\$10.50	\$1,479,000	\$13.97	\$1,969,000
2010/11	43,800	\$6.61	289,000	\$9.03	77,000
2009/10	142,300	\$5.48	780,000	\$6.46	919,000
2008/09	18,700	\$3.66	69,000	\$5.38	101,000
2007/08	95,100	\$3.50	333,000	\$4.76	452,000
2006/07	10,200	\$3.67	37,000	\$5.00	51,000
2005/06	79,500	\$3.15	251,000	\$4.06	323,000
Total	530,500	-	\$3,237,000	-	\$4,210,000

* 2011/12 ADF&G data is preliminary and values are based on prices reported by industry.

Source: ADFG data and McDowell Group estimates.

Geoducks are in a precarious situation due to sea otters. While prices are high and divers are earning good money harvesting them, that could soon end.

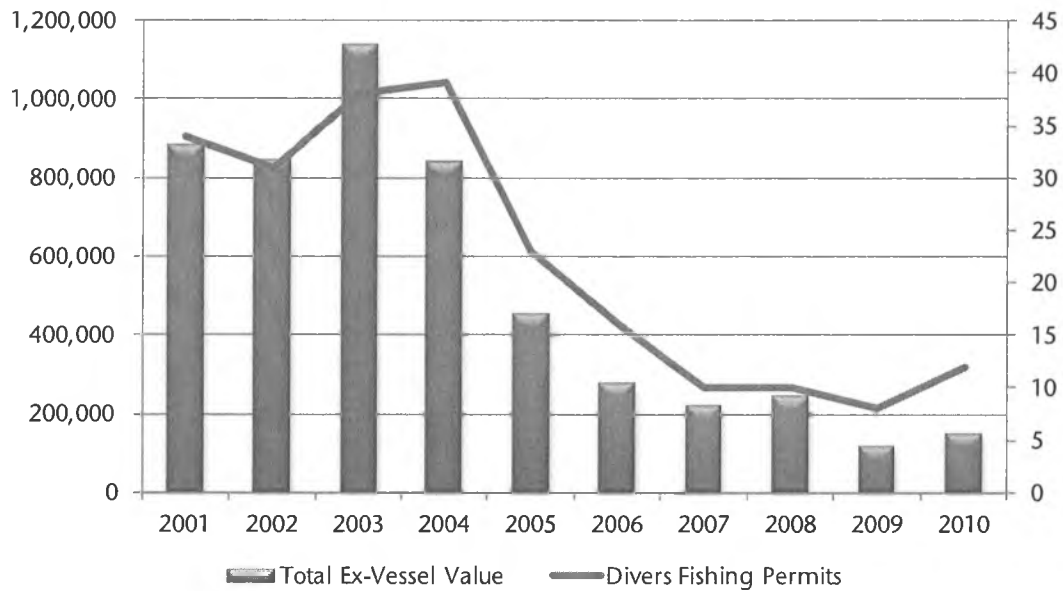
Evidence of sea otter predation has been observed at 27 geoduck fishery areas, but only seven of those areas exhibited significant biomass declines in recent years. However, if those other areas with sea otter activity become harder hit, the impact on the fishery could be devastating because sea otter predation has been noted in harvest areas containing 70 percent of the geoduck biomass. Should otters focus on geoducks as a food source more in the future, it is unlikely the geoduck biomass could reproduce quickly enough to support a commercial fishery which is economically feasible or biologically sustainable.

Red Sea Urchins

Historical Harvest and Value

Participation in the Southeast Alaska red sea urchin fishery has declined rapidly in recent years, approaching zero. During the 2011/12 season, only “one or two” are harvesting urchins with only one buyer, according to an industry source. In 2005, the fishery harvested 1.6 million pounds of red sea urchin worth an ex-vessel value of \$453,000. By 2010, production dwindled to 509,000 pounds, harvested by 12 divers who shared \$147,700 in total ex-vessel value. The 2010 harvest was just 10 percent of the 4.95 million pound guideline harvest level.

Red Sea Urchin Ex-Vessel Value and Participation, 2001 - 2010



Source: CFEC.

In the red sea urchin fishery, dwindling participation is not being driven by sea otter predation, but rather a falling market value for the product. The gonads of red sea urchins, called *uni* by the Japanese, are a popular sushi item. Virtually all of Alaska’s urchin production gets exported to Japan. In general, other urchin fisheries in Russia and the west coast harvest enough supply for the Japanese *uni* market. In addition, there have been market issues with Alaska urchins stemming from inconsistent quality (due to biological factors) and mishandled product by shippers.

In 2000, red sea urchins were fetching \$0.45/lb. on the grounds. Ex-vessel prices have steadily declined since then, and in 2010, the 12 divers who participated in the fishery were paid an average price of \$0.29/lb. Meanwhile, ex-vessel prices for geoducks and sea cucumbers have risen substantially during this period, along with fuel costs and other operating costs. Low volume and the opportunity cost of harvesting urchins, when a diver could be targeting geoducks or sea cucumbers, has made the fishery uneconomical for most divers and processors.

Impact of Sea Otters on the Southeast Alaska Red Sea Urchin Fishery

In 2008, the average sea urchin diver grossed \$24,000, and prior to that time divers generally averaged \$20,000 to \$30,000 per season. Because sea urchins are a major food source for otters, the financial impact on commercial divers was significant.

Sea otter predation resulted in an estimated harvest shortfall of 3.1 million pounds from 1996 to 2005 worth 1.0 million in ex-vessel terms and 4.0 million in wholesale value.

**Estimated Red Sea Urchin GHL, Harvest and Value Lost Due to Sea Otters,
1995/96 – 2005/06**

	GHL Lost Due to Sea Otters	Estimated Harvest Lost Due to Sea Otters (adjusted lbs.)	Estimated Ex-Vessel Value Lost Due to Sea Otters	Estimated Wholesale Value Lost Due to Sea Otters
Total	6,285,000	3,102,000	\$1,024,000	\$3,972,000

Source: ADFG data and McDowell Group estimates.

Participation in the fishery is now so low that many figures on the fishery are confidential, and since only a small portion of the GHL is harvested, the impact of sea otters in recent years is likely very small. For these reasons, sea otter impacts have not been calculated for the 2006/07 through 2011/12 seasons. However, sea otters did have a large impact on the fishery in the past, and will continue to feed on urchins in the future. In an area from the southern shoreline of Sitka Sound to West Crawfish Inlet it was estimated 16 million sea urchins were consumed by sea otters over a 15-month period from December 1992 through February 1993 (Davidson, et al., 2008).

Although the majority of the red sea urchin fishery will go unharvested this season, sea otters are still having a large impact on the biomass. The 2011/12 GHL is 3.3 million pounds; a 42 percent decline from the 2006/07 season (which marks two fishery area rotations). If this trend continues, the fishery may not improve regardless of market price.

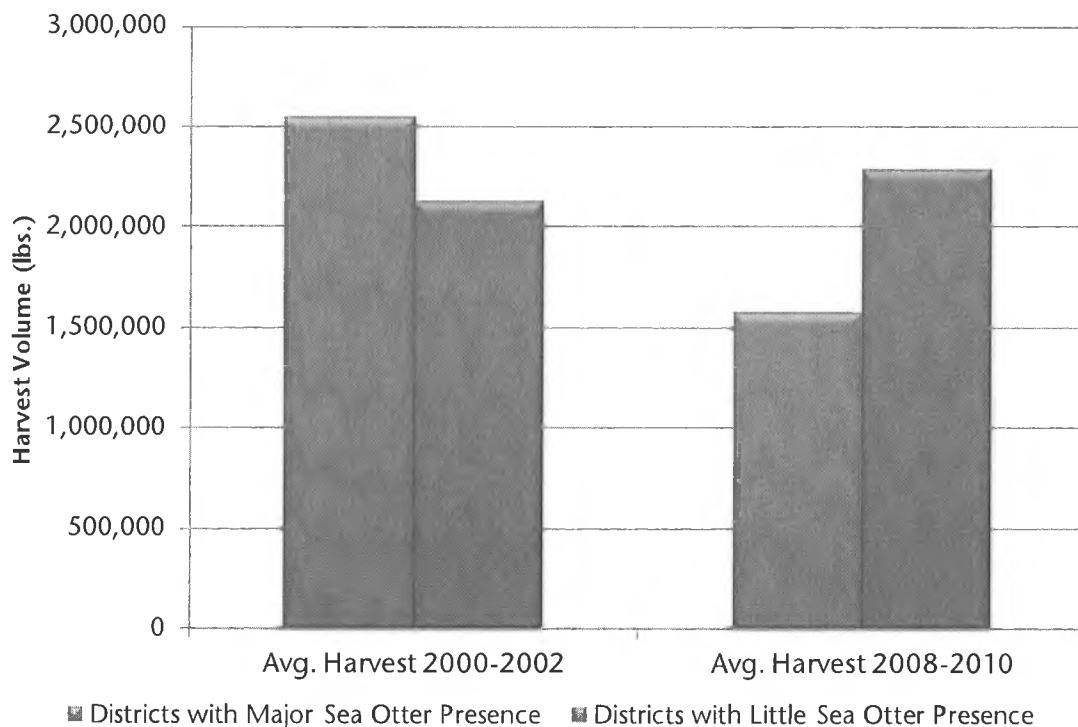
Dungeness Crab

Dungeness crab are a substantial food source for otters. Dungeness crab are typically found at depths of 15 to 100 feet, are plentiful in many Southeast Alaska estuaries, and offer a good nutritional return per unit of energy expended.

It is clear areas with a significant sea otter presence have fared much worse in recent years than areas which are not near large sea otter populations. Out of 15 shellfish districts in Southeast Alaska, six have significant sea otter populations or include translocation sites (where sea otters were released in the 1960s).

These six districts have lost nearly 1 million pounds of harvest activity while districts without sea otters have seen harvests increase slightly since the early 2000s. The greatest loss comes from District 9, near Kake, which had a harvest decline of 776,000 pounds from 2007 to 2010 alone.

Southeast Alaska Dungeness Crab Harvest



Note: Districts with major sea otter presence include districts: 3, 5, 6, 9, 10, and 13.
Source: ADF&G harvest data.

It is very likely sea otter predation is the driving force behind the majority of these lost harvest volumes. Fishermen and biologists note the effect of sea otter predation. Not surprisingly, fishermen are leaving the fishery. The Wrangell-Petersburg census area, which includes Kake and the surrounding waters, was home to fishermen who landed crab under 134 Dungeness crab permits in 2005. By 2010, only 111 permits were fished – a loss of 23 permits or roughly 46 jobs (including 1 crew member and the skipper).

According to the Alaska Department of Labor and Workforce Development, the Southeast Alaska crab fisheries employed 638 workers in 2009. The majority of these jobs are in the Dungeness crab fishery. Expanding sea otter populations seriously jeopardize these jobs.

METHODOLOGY FOR ESTIMATING DUNGENESS CRAB HARVEST LOST TO SEA OTTER PREDATION

Using field research done by ADFG, USFWS, and UAF, several Dungeness crab harvest districts were identified, which included waters known to have significant populations of sea otters. Crab harvests from these areas were compared to harvests in other districts. In effect, districts with fewer sea otters were treated as a control group. If sea otter predation was a serious issue in the areas identified, the harvest of crab should decrease in those districts relative to harvests in other districts (with fewer otters). This is exactly what took place from 2000 to 2010.

Impact of Sea Otter Predation

Districts 3, 5, 6, 9, 10, and 13 – located in southern part of the region and the outside coast line, have lost out on an estimated 2.7 million pounds of Dungeness crab since 2000. It is assumed all or most of this loss is associated with sea otters, as there are no other known factors which affect crab biomass in these districts and not others in Southeast Alaska.

In 2000, these six districts with large sea otter populations, accounted for 61 percent of the Southeast Alaska Dungeness crab harvest. By 2010, they accounted for just 33 percent; after seeing a gradual decline throughout the decade relative to districts without large sea otter populations.

Since 2000, the lost harvest volume attributed to sea otters was worth \$5.3 million in wholesale value and \$3.3 million in ex-vessel value.

Estimated Dungeness Crab Harvest and Value Lost Due to Sea Otters in Southeast Alaska, 2000/01 – 2010/11

	Estimated Harvest Lost Due to Sea Otters (live wt.)	Estimated Ex-Vessel Value Lost Due to Sea Otters	Estimated Wholesale Value Lost Due to Sea Otters
Total	2,681,000	\$3,317,000	\$5,301,000

Source: ADFG harvest data and McDowell Group estimates.

Quantifying the Impact of Sea Otter Predation

Dive fisheries in Southeast Alaska are managed by the Alaska Department of Fish and Game. Management is supported by a tax on the ex-vessel value of red sea urchins, sea cucumbers, and geoducks. This tax is used to pay for management staff and perform scientific dive surveys that allow managers to monitor the biomass of commercial species in established subdistricts, or new harvest areas.

Dive surveys are performed by SCUBA divers surveying established, or new, subdistricts along 2-meter wide transects running perpendicular to the shoreline. To complete transects, divers swim along the transect holding a 2-meter rod made of white PVC pipe in a horizontal position. Transect direction is maintained by a compass mounted on the rod.

Every harvest area gets surveyed before a fishery is opened for a given season, in addition to a group of control areas which are surveyed every year. The harvest areas, or subdistricts, open on a rotational basis, depending on the species and results of the dive surveys.

Dive surveys are expensive, but necessary for sustainable fishery management. In addition to providing data on the biomass, size, and density of commercial species, the dive surveys also allow managers a chance to maintain data on the invertebrates' habitat and eco-system. Divers have noted the presence and evidence of sea otter predation on each transect for each species, in each fishery area. Areas affected by sea otters are often distinguished by large holes with clam shell fragments (from where an otter has dug up a geoduck) or sea urchin carcasses littering the seabed. In the case of sea cucumbers, no physical evidence is left because otters consume the entire animal. However, divers note areas with active sea otter predation and have attributed large biomass declines in various subdistricts to sea otters.



Photo Credit: Alaska Department of Fish and Game.

Detailed survey data from thousands of dives recorded by fishery biologists, combined with information on historical biomass and GHL's, allows for a conservative estimate of sea otter predation. The estimated harvest volume lost due to sea otter predation can be translated into dollar terms by applying the ex-vessel price or wholesale price of a particular species in a given year.

Because virtually 100 percent of the GHL is harvested in the geoduck and sea cucumber fisheries, only the lost GHL is calculated and financial impacts are based on GHL. In the red sea urchin fishery, harvests volumes have not historically met the GHL. Therefore, impacts on the red sea urchin fishery were adjusted to reflect dollars and pounds lost are based the assumed harvest, and not on the GHL.

Accurately quantifying the impact of sea otter predation is only possible because ADFG data on sea otter predation, affected areas, commercial harvests, biomass, and market values is very good.

Because of ADFG's rigorous data collection, these estimates are believed to accurately portray the real, direct impact of sea otters on commercial species. Without such data, other studies such as Loomis (2006) have attempted to explain the value of sea otters in terms of existence value or the value of the public's "willingness to pay." These estimates are theoretical and obtained by surveying a sample of the population about what dollar value they place on knowing a certain species, in a certain locale, is flourishing or what dollar value they *would* pay to engage in a suggested recreational activity involving the species. In contrast, the effect of sea otter predation on commercial divers, seafood processors, and Southeast Alaska communities is not hypothetical.

Sea Otter Predation Impacts on Communities

Sea otter predation has led to an estimated loss of \$22.4 million in wholesale value for southern Southeast Alaska communities since 1995. Lost sales for fishermen and processors are estimated to have resulted in indirect and induced losses of \$5.8 million during that time. These losses reflect lost economic activity in industries outside the seafood industry in southern Southeast Alaska, resulting from lower wages, less household spending by affected families, less spending on indirect business costs, and less taxes collected from fisheries.

In total, sea otter predation is estimated to have cost southern Southeast Alaska communities \$28.3 million since 1995. Any revenue derived from eco-tours, expanded subsistence harvests (above what would normally occur), or economic activity associated with scientific studies, stemming from sea otter expansion have likely been negligible, in comparison.

Southern Southeast Alaska Communities Most Affected by Sea Otter Predation

Ketchikan	Sitka	Kake
Petersburg	Craig	Port Alexander
Klawock	Hydaburg	Wrangell

The livelihood of Southeast Alaska commercial divers, crab fishermen, tender operators, and seafood processing workers is currently being jeopardized by expanding sea otter populations. These include hundreds of basic sector jobs which form the foundation of a regional economy.

Residents of the Wrangell-Petersburg census area have seen 23 fewer permits fished in recent years, part of which may be attributed to sea otter predation. Employment has not declined substantially in the sea cucumber and geoduck fisheries, but sea otter predation is estimated to have cost each geoduck diver \$20,000 and each sea cucumber divers \$7,000 in 2010. Based on the estimated value of product lost in recent years and the amount of economic activity resulting from the typical full-time job in southern Southeast Alaska, the secondary impacts of sea otter predation has been equivalent to a loss of 5 to 10 full-time average-paying jobs (depending on the year).

The wholesale value of Southeast Alaska sea cucumbers, geoducks, red sea urchins, and Dungeness crab was roughly \$25 million in 2010. These fisheries employ roughly 625 fishermen and dozens more tender operators and processing workers. Using economic multipliers developed by IMPLAN², it is estimated the \$25 million in wholesale value associated with these fisheries results in indirect and induced activity worth \$6.5 million - equivalent to 53 additional full-time average-paying jobs³. Just like commercial divers and crab fishermen, these jobs are at risk of being lost as well. Indirect losses are more often more difficult to see, but they are economically real, as less money circulates in the economy leading to contracting employment.

² IMPLAN is an economic modeling software package widely used to perform economic impact analysis.

³ The estimated number of jobs created is calculated by dividing the value of the secondary impact (\$6.5 million) by the average output created per full-time equivalent (FTE) job in Southeast Alaska (\$123,992 per FTE job). Therefore, the term "average-paying" refers to a full-time job producing an average amount of economic output, and paid accordingly.

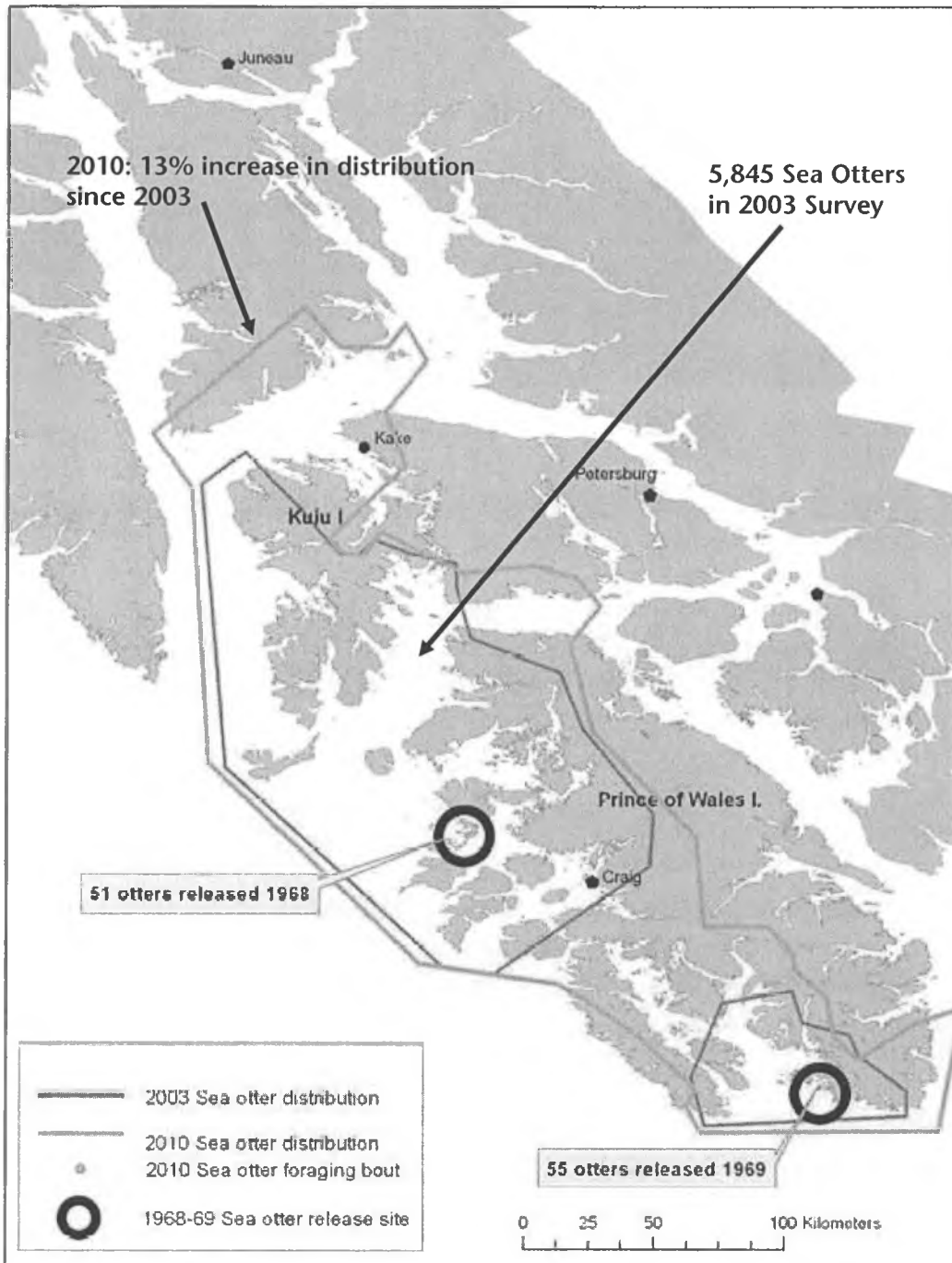
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Appendix 1: Map of Otters in Southeast Alaska



Source: Hoyt, Z., Gill, V., Eckert, G., Rice, S., "Recolonization, prey selection and resource competition by sea otters, *Enhydra lutris*, in southern southeast Alaska." November 2010 presentation.

Appendix 2: Impact of Sea Otters on Dive Fishery Areas

Sea Cucumbers

FISHERY AREAS NEGATIVELY AFFECTED BY SEA OTTER PREDATION

<u>Fishery Area</u>	<u>Subdistrict(s)</u>
Cape Chacon	102-10
Cordova Bay	103-11, 15
Long Island – Cordova Bay	103-21, 30
Hetta and Nutkwa	103-23, 25
Eastern Shore of Dall Island and Soda Bay	103-40-001, 002, 004
Bucarelli Bay	103-50
St Nicholas Channel	103-60, 70-002
Boca and Tonowek	103-80
West Dall Island	104-10, 20, 30
Port Camdon	109-43, 105-32
Deep Inlet and Sitka Sound South	113-38, 41
Sitka Sound North	113-40, 42, 43

AREAS CLOSED DUE TO SEA OTTER PREDATION

<u>Fishery Area</u>	<u>Subdistrict(s)</u>
Sea Otter Sound	103-90
Affleck Canal and Port Beauclerc	105-10, 20
Shaken Bay	105-41, 42
Saginaw and Security Bay	109-44, 45
Tebenkof Bay	109-62
Baranof Island	113-31, 32, 33
Khaz Bay	113-71, 72, 73

Geoduck Clams

FISHERY AREAS NEGATIVELY AFFECTED BY SEA OTTER PREDATION

<u>Fishery Area</u>	<u>Subdistrict(s)</u>
Kaigani Strait	103-30-001
Tlevak Strait	103-40, 50-009
South Cordova Bay	103-11
Bucareli Bay	103-50-003
Cone Island North	103-50-005, 104-40-005
Cone Island South and Paloma Pass	103-50-006, 104-35-006
Port Rea Marina	103-50-007
Portillo Channel	103-50-008
Port Mayoral (Control Area)	103-50-CON
East San Fernando Island	103-60-001
Maurelle Islands	103-70, 80, 104-40, 50-009
Ulitka Bay	103-70-001
Little Steamboat Bay	103-70-002
Steamboat Bay	103-70-003
Blanquizal Island	103-70-005
Palisades Islands	103-70-006
St. Nicholas Channel and North Lulu Island	103-70-007
Port Alice and Cone Bay	103-90-002
Turn Point	103-90-003
Davidson Inlet	103-90-004
Warren Island and Kosciusko Island	103-90-005, 105-41, 43, 50-005
Northwest Dall Island	104-20, 30-003
Port Santa Cruz	104-30-002
Taigud and Kolosh Islands	113-31, 41-004
Symonds Bay	113-31-002
Biorka and Legma Islands	113-31-003
Elovoj, Golf, and Gornoi Islands	113-31-005

Red Sea Urchins

FISHERY AREAS NEGATIVELY AFFECTED BY SEA OTTER PREDATION

<u>Fishery Area</u>	<u>Subdistrict(s)</u>
Lower Clarence Strait	102-20
Tlevak Strait	103-40
Central Dall Island	104-20-001

AREAS CLOSED DUE TO SEA OTTER PREDATION

<u>Fishery Area</u>	<u>Subdistrict(s)</u>
Cape Chacon	102-10
Dixon Entrance and Kaigani Strait	103-30
Bucareli Bay and Port Real Marina	103-50
St. Nicholas Channel	103-70
Southwest Dall Island	104-10
Meares Passage and Bucareli Bay	104-30
Western Baker Island and Cone Island	104-35
Western Noyes Island and Cone Island	104-40
Whale Bay	113-22
Baranof Island	113-11, 21