SJR

13

<TARGET><BILL>SJR 13</BILL><SUBJECT>SJR 13</SUBJECT><COMM>SRES30</COMM></TARGET>

ALASKA STATE LEGISLATURE

SESSION
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SENATOR BERT K. STEDMAN

SPONSOR STATEMENT

SJR 13

"Urging the United States Congress to amend the Marine Mammal Protection Act and urging certain federal agencies to permit Alaska Native organizations and the Alaska Department of Fish and Game to co-manage, take, and study sea otters."

Along Alaska's coast, the growing sea otter population is devastating the shellfish biomass. If the population continues to go unchecked, predation from sea otters inevitably threatens the future of dive and crab fisheries; jeopardizing hundreds of jobs and tens of millions of dollars in economic activity. The dramatically increasing and currently high number of sea otters has depleted shellfish stocks to a degree that subsistence, personal use, sport and commercial fishing have been halted. In recent years, ADFG has closed 18 dive fishery harvest areas due to the shrinking biomass.

The sea otter diet consists mainly of marine invertebrates including: crabs, clams, sea urchins, sea cucumbers, shrimp and abalone. Sea otters can consume up to 25 percent of their body weight per day. One male otter can consume up to 7,300 pounds of food per year. As of 2012, the US Fish and Wildlife Service estimates a population of 25,000 sea otters in Southeast Alaska with an estimated growth rate of 13% growth per year.

The Marine Mammal Protection Act (MMPA) of 1972 removed marine mammals from the State of Alaska's management denying most Alaskans the opportunity to harvest sea otters. However, Section 101 of the MMPA provides an exemption for Alaska Natives to harvest sea otters for subsistence and artisanal purposes. Senate Joint Resolution 13 urges Congress and appropriate federal agencies to work with the State of Alaska, Alaska Native organizations and non-Native leaders to create a sustainable and equitable management plan for sea otters that properly balances human needs with sea otter populations.

Furthermore, to ensure that adequate numbers of sea otters are being harvested each year, the resolution urges Congress to amend the MMPA to provide for more hunting opportunities and uses of sea otters in Alaska. Lastly, SJR 13 urges Congress to allow the State or Alaska Native organizations to manage sea otter populations in Alaska.

The Alaska Sea Otter and Steller Sea Lion Commission
PO Box 142, Old Harbor, Alaska 99643
907-286-2377 (direct) 1-888-409-477 (fax)

Comments by
Lianna Jack, Executive Director

on SJR 13
Submitted March 12, 2018

Thank you for the opportunity to submit comments on SJR 13. The Alaska Sea Otter and Steller Sea Lion Commission is a non-profit tribal consortium Alaska Native Organization (ANO) as described under the Marine Mammal Protection Act, with over 50 tribes and tribal organizations as members from around Alaska where sea otters and Steller sea lions can be found.

The Alaska Sea Otter Commission formed in December 1988 to promote Alaska Native involvement in policy decisions regarding northern sea otters. In 1998, at the request of member tribes, the Alaska Sea Otter Commission added the advocacy of Alaska Natives and Steller sea lions, and formally expanded to the Alaska Sea Otter and Steller Sea Lion Commission.

Our objectives include promoting the role of Alaska Natives in sea otter and Steller sea lion conservation and management efforts, assessing sea otter and Steller sea lion populations in Alaska through cultural science (TEK) and local biological research, working with regulatory agencies toward the common goal of conservation and management of healthy sea otter and sea lion populations, and educating and informing our youth and the public about the traditional and contemporary relationship between Alaska Natives, sea otters, and Steller sea lions.

The Alaska Sea Otter and Steller Sea Lion Commission Board met March 7, 2018 and SJR 13 was included on the agenda. The Board voted unanimously to strongly oppose SJR 13 and to approve TASSC Resolution 18-01, which has already been submitted to the Resources Committee for the record in this hearing.

We appreciate the sentiment behind SJR 13 and agree that the sea otter population in Southeast Alaska has grown to a level where it is negatively affecting shellfish populations. However, we do not believe that the measures outlined in SJR 13 are the appropriate course to address the issue. We strongly oppose having the Alaska Department of Fish and Game included in any management measures for marine mammals, nor do we support having the Alaska Department of Fish and Game granted any management authority. We not believe the ADFG should be involved in developing a population management plan nor implementing such plan. We strongly

oppose ADFG being granted a permit to take marine mammals to project subsistence fishery resources.

We believe that the measures outlined in SJR 13 have the potential to cause disruption and confusion as sea otter subsistence and handicraft occur in other parts of Alaska. We fully support the U.S. Fish and Wildlife Service working with tribally authorized ANOs and tribes to develop management plans and measures for sea otters.

We do not support SJR 13 and urge the Senate Resources Committee not to approve SJR 13.

Thank you for the opportunity to submit these comments.

THE
ALASKA
SEA OTTER AND
STELLER SEA LION
COMMISSION

A Statewide Tribal Consortium Representing Tribes From:

KODIAK ISLAND
CHUGACH/PRINCE WILLIAM SOUND
SOUTHEAST ALASKA
COOK INLET
ALEUTIAN ISLANDS
ALASKA PENINSULA
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The Alaska Sea Otter and Steller Sea Lion Commission
Resolution 18-01

Title: Opposing the State of Alaska's Senate Joint Resolution No. 13 ***"Urging the United States Congress to amend the Marine Mammal Protection Act and urging the United States Department of the Interior to permit Alaska Native Organizations and the Alaska Department of Fish & Game to co-manage, take, and study marine mammals under the Marine Mammal Protection Act"***

WHEREAS, the Alaska Sea Otter Commission organized in 1988 to promote Alaska Native involvement in policy decisions and to encourage and implement self-regulation of sea otter use by Alaska Natives; and

WHEREAS, in 1998, at the request of member tribes, the Alaska Sea Otter Commission expanded to encourage and implement self-regulation of Steller sea lion use by coastal Alaska Natives, and became the Alaska Sea Otter and Steller Sea Lion Commission (TASSC); and

WHEREAS, TASSC recognizes and supports the continuation of Alaska Natives cultural practices harvesting marine mammals, the creation, trade and sale of handicrafts and art from marine mammal parts and associated economic development; and

WHEREAS, TASSC is composed of sovereign, tribal governments that join by resolution from across Alaska; and

WHEREAS, Senate Joint Resolution No. 13 was introduced to the Alaska Legislature "Urging the United States Congress to amend the Marine Mammal Protection Act and urging the United States Department of Interior to permit Alaska Native organizations and the Alaska Department of Fish and Game to co-manage, take, and study marine mammals under the Marine Mammal Protection Act"; and

WHEREAS, TASSC strongly opposes the State of Alaska's Senate Joint Resolution No. 13 urging the United States Congress to amend the Marine Mammal Protection Act; and

WHEREAS, TASSC remembers the activity of the Alaska Department of Fish and Game with regards to sea otters prior to the atomic testing at Amchitka; and

WHEREAS, TASSC agrees that sea otter population in Southeast Alaska has grown exponentially between 1969-2014 to a point where negative impacts are occurring on natural resources and the marine environment; and

WHEREAS, the indigenous peoples of Alaska successfully managed the sea otter populations before Western contact; and

WHEREAS, the Marine Mammal Protection Act of 1972 continues the right and traditions of coastal Alaska Natives to harvest sea otter for personal use or to sell or trade amongst other Alaska Natives; and

WHEREAS, Section 119 of the Marine Mammal Protection Act provides for the development of marine mammal co-management agreements between the Secretaries of the Interior and Commerce and Alaska Tribes or Tribally Authorized Alaska Native Organizations; and

WHEREAS, there was no communication or consultation with federally recognized tribes or Tribally Authorized Alaska Native Organizations on SJR 13; and

WHEREAS, TASSC believes that the proposed actions in SJR 13 to amend the Marine Mammal Protection Act to expand the scope of allowable uses for harvest of marine mammals will affect marine mammals throughout Alaska, not just Southeast Alaska; and

WHEREAS, TASSC believes that allowing the sale and foreign export of pelts will negatively affect Alaska Native artisans and handicrafters from across Alaska who depend on the sale of items made with sea otter; and

WHEREAS, TASSC believes that allowing the sale of raw unaltered pelts from Southeast would create undue burden on the hunter or the Department of Interior since an otter pelt is indistinguishable from one region to another and other areas are listed under the Endangered Species Act, which would prohibit sea otter subsistence across the state to be uniform if this were enacted; and

WHEREAS, there is currently no requirement for an Alaska Native to possess an Alaskan hunting permit in order to hunt marine mammals; and

WHEREAS, the State of Alaska management of fish and game resources has not proven successful in a number of instances and does not provide the basis for sound sea otter management; and

WHEREAS, TASSC fully support the U.S. Fish and Wildlife Service working with tribes and tribally authorized Alaska Native Organizations to address sea otter issues and implement sea otter research and programs; and

NOW THEREFORE BE IT RESOLVED, TASSC strongly opposes the efforts of the Alaska State Legislature to encourage the Secretary of the Interior to work with the Alaska Department of Fish and Game to develop a population management plan for sea otters; and

FURTHER RESOLVED, TASSC strongly opposes amending the Marine Mammal Protection Act to expand the scope of allowable uses for the harvest of marine mammals; and

FURTHER RESOLVED, TASSC strongly opposes amending the Marine Mammal Protection Act to permit an Alaska Native to assign their marine mammal hunting rights to anyone who hold a State of Alaska hunting permit; and

FURTHER RESOLVED, TASSC strongly opposes granting authority to the Alaska Department of Fish and Game to permit the sale and foreign export of raw sea otter pelts; and

FURTHER RESOLVED, TASSC strongly opposes the Alaska Department of Fish and Game having the ability to take as many marine mammals as necessary in order to protect other subsistence fisheries resources, administer the management plan, and delegate all or part of the agency's management authority; and

BE IT FINALLY RESOLVED THAT, TASSC strongly opposes SJR 13 and the involvement of the State of Alaska in sea otter co-management.

ADOPTED this _6_ day of _March_ 2018, by the Alaska Sea Otter and Steller Sea Lion Commission, by a vote of _6_ yeas, _0_ nays, _0_ abstentions and _0_ absences.

CERTIFY

President and Chair Margaret Roberts

ATTEST

Secretary Helen Aderman

Fiscal Note

State of Alaska
2018 Legislative Session

Bill Version: SJR 13
Fiscal Note Number:
() Publish Date:

Identifier: SRESOURCES SJR13 3 - 5 - 18
Title: URGING CO-MANAGEMENT PLAN FOR SEA OTTERS
Sponsor: STEDMAN
Requester: Senate Resources

Department:
Appropriation:
Allocation:
OMB Component Number: 0

Expenditures/Revenues

Note: Amounts do not include inflation unless otherwise noted below. (Thousands of Dollars)

	FY2019 Appropriation Requested	Included in Governor's FY2019 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY 2019**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**
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 (Operating Only)

None							
Total	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Positions

Full-time							
Part-time							
Temporary							

Change in Revenues

None							
Total	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimated SUPPLEMENTAL (FY2018) cost: 0.0 *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY2019) cost: 0.0 *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

ASSOCIATED REGULATIONS

Does the bill direct, or will the bill result in, regulation changes adopted by your agency?
If yes, by what date are the regulations to be adopted, amended or repealed?

Why this fiscal note differs from previous version/comments:

One page zero fiscal note

Prepared By: Senator Giessel
Senate Resources Committee
Phone: (907)465-4843
Date: 03/05/2018

30-LS1408\J
Bullard
3/8/18

CS FOR SENATE JOINT RESOLUTION NO. 13( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

THIRTIETH LEGISLATURE - SECOND SESSION

BY

Offered:
Referred:

Sponsor(s): SENATORS STEDMAN, Wilson

A RESOLUTION

Urging the United States Congress to amend the Marine Mammal Protection Act and urging certain federal agencies to permit Alaska Native organizations and the Alaska Department of Fish and Game to co-manage, take, and study sea otters.

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

WHEREAS, between 1965 and 1969, the Alaska Department of Fish and Game reintroduced approximately 400 sea otters in six different locations in Southeast Alaska's coastal waterways without a long-term management plan; and

WHEREAS, in the absence of a management plan, the sea otter population in southern Southeast Alaska's coastal waters has grown at an alarming rate; while 5,800 sea otters were observed in 2003, an aerial survey conducted by the United States Fish and Wildlife Service in 2012 estimated the population at over 27,712, an apparent population growth rate of 13 percent each year, placing the 2018 population at an estimated 51,058; and

WHEREAS the federal government, which is responsible for protecting marine mammals under the Marine Mammal Protection Act (16 U.S.C. 1361 - 1423h) has not established an effective and ecologically balanced management plan for sea otters that serves to protect Southeast Alaska's coastal marine ecosystem and shellfish resources that are

adversely affected by sea otters; and

WHEREAS a growing sea otter population is contributing to ecological imbalances and diminished human subsistence and commercial harvests of Alaska shellfish resources; and

WHEREAS the reintroduced sea otter population has proliferated without management, consuming unquantified yet significant volumes of crab, abalone, urchins, sea cucumbers, clams, and other shellfish resources on which Southeast Alaska's human residents rely; and

WHEREAS the drastic population growth of the reintroduced sea otters and the current population density of sea otters has, in some areas, depleted shellfish stocks so severely that human subsistence, sport, personal use, and commercial harvest of shellfish is not permitted because of unsustainably depleted shellfish resources; and

WHEREAS many residents of the state's coastal communities depend, directly or indirectly, on the abundance and harvest of fisheries resources; and

WHEREAS the state's coastal communities face substantial challenges in developing economic opportunities for their residents; and

WHEREAS, because revenue from harvests of the state's fisheries resources contributes significantly to the economies of the state's coastal communities, residents of these communities are sensitive to situations that threaten the harvest of fisheries resources; and

WHEREAS Alaska Natives have harvested sea otters since time immemorial; and

WHEREAS the Marine Mammal Protection Act denies Alaska Natives their customary and traditional practice of selling intact sea otter pelts; and

WHEREAS the Marine Mammal Protection Act permits Alaska Natives to harvest sea otters for subsistence and for purposes of creating and selling authentic Alaska Native handicrafts and clothing, if the sea otters are harvested in a manner that is not wasteful; and

WHEREAS, under the Marine Mammal Protection Act, Alaska Natives may sell certain handicrafts and clothing made with sea otter pelts; and

WHEREAS, to take a sea otter in the state, current federal law requires an individual to reside along the North Pacific or Arctic Ocean coasts and to either possess 25 percent Alaska Native blood quantum or be enrolled under the Alaska Native Claims Settlement Act,

and there will be fewer individuals who meet those requirements in the future; and

WHEREAS the legal import of language in the Marine Mammal Protection Act, which cites "authentic Native articles of handicraft and clothing" and "significantly altered," may not be clear to Alaska Native hunters and craftspeople; and

WHEREAS the United States Fish and Wildlife Service has failed to develop a management plan for sea otters in consultation with any Alaska Native organization, even though Alaska Native organizations have approached the service about developing a management plan; and

WHEREAS implementation of a sustainable sea otter management plan would maintain sea otter populations at a level that allows for ecological balance in the state's coastal shellfish habitat and provide for expanded economic activity in the state's coastal regions; and

WHEREAS the State of Alaska is a model for the successful and sustainable management and harvest of fish and game resources and is best situated to manage sea otters along the state's coast; and

WHEREAS, after the Alaska Department of Fish and Game, the National Marine Fisheries Service is the next best situated state or federal agency to manage the state's sea otter population because the agency already manages other marine mammals and fishery resources that are being adversely affected by sea otters; and

WHEREAS, under the Marine Mammal Protection Act, the United States Secretary of the Interior is permitted to enter into cooperative agreements with Alaska Native organizations to conserve marine mammals and provide co-management of subsistence resources by Alaska Natives, and an agreement could include a management plan for the harvest of sea otters that also protects shellfish resources adversely affected by an unsustainable sea otter population; and

WHEREAS, rather than the United States Fish and Wildlife Service managing sea otters in a manner that allows for ecological balance and human harvest of fishery resources, the United States Fish and Wildlife Service has a record of protecting sea otters to the detriment of other fishery resources and human needs, resulting in a situation in which the fishery resources that sea otters feed are imperiled and the sea otter population itself placed at risk of collapse;

BE IT RESOLVED that the Alaska State Legislature urges the appropriate federal

agencies to work with the Alaska Department of Fish and Game and Southeast Alaska's Native and non-Native leaders to establish a plan for sea otter management that will maintain a balance between sustainable human harvest of shellfish resources and the region's reintroduced sea otter population; and be it

FURTHER RESOLVED that the Alaska State Legislature urges the United States Congress to transfer responsibility for sea otter management in the state from the United States Department of the Interior to the Alaska Department of Fish and Game under 16 U.S.C. 1379, or, if not to the Alaska Department of Fish and Game, to the National Marine Fisheries Service in the United States Department of Commerce; and be it

FURTHER RESOLVED that the Alaska State Legislature urges state and federal agencies, in developing a management plan, actively to consider how the plan may expand and enhance small businesses and provide other economic opportunities for Southeast Alaska's residents; and be it

FURTHER RESOLVED that the Alaska State Legislature urges the United States Congress to amend the Marine Mammal Protection Act to provide for an ecologically balanced sea otter management regime instead of protecting sea otters at the expense of marine ecosystems and fishery resources; expand the scope of allowable uses for harvest of sea otters; permit any Alaska Native residing in the state who is a member of a federally recognized tribe under 25 U.S.C. 5130 to take sea otters; provide that "authentic native articles of handicrafts and clothing" under 16 U.S.C. 1379 include sea otter pelts that may be sold without restriction; and allow the Alaska Department of Fish and Game or an Alaska Native organization authorized under a cooperative agreement with the United States Secretary of the Interior or the National Marine Fisheries Service to co-manage subsistence uses of sea otters, including the authority to permit the sale and foreign export of sea otter pelts; and be it

FURTHER RESOLVED that, when an Alaska Native organization or the Alaska Department of Fish and Game certifies to the United States Secretary of the Interior or the National Marine Fisheries Service, in writing, that a sea otter population poses a threat to Alaska Native subsistence resources and that the population may withstand higher levels of taking without becoming unsustainable, and the Alaska Native organization or the department provides a management plan for the study and taking of the sea otters designed to protect

fishery resources used for subsistence purposes, the Alaska State Legislature urges the United States Secretary of the Interior or the National Marine Fisheries Service to issue a scientific permit to the department or Alaska Native organization to carry out the management plan; and be it

FURTHER RESOLVED that the Alaska State Legislature urges that the scientific permit issued by the United States Secretary of the Interior or the National Marine Fisheries Service

(1) authorize the Alaska Department of Fish and Game or an Alaska Native organization to take as many sea otters as is necessary to protect subsistence fisheries resources;

(2) grant the department or Alaska Native organization the authority to administer the management plan, including the plan's amendment or modification, as circumstances, including changes in the sustainability of the sea otter population or fisheries resources within the same ecosystem, may dictate; and

(3) permit the department to delegate all or part of the agency's management authority to an Alaska Native organization.

COPIES of this resolution shall be sent to the Honorable Paul D. Ryan, Speaker of the U.S. House of Representatives; the Honorable Orrin Hatch, President pro tempore of the U.S. Senate; the Honorable Ryan Zinke, United States Secretary of the Interior; and the Honorable Lisa Murkowski and the Honorable Dan Sullivan, U.S. Senators, and the Honorable Don Young, U.S. Representative, members of the Alaska delegation in Congress.

Organized Village of Kake
P.O. Box 316
Kake, Alaska 99830-0316
Telephone 907-785-6471
Fax 907-785-4902 / www.kakefirstnation.org
(Federally Recognized Tribal Government serving the Kake, Alaska area)

Resolution No. 2018-08 – Organized Village of Kake Opposition of State of Alaska Senate Joint Resolution No. 13

WHEREAS, the Organized Village of Kake (hereinafter OVK) is a federally recognized Indian Tribe under federal law and is empowered under its *Constitution & By-Laws* to execute agreements and contracts with the United States to benefit its members; and,

WHEREAS, OVK is organized pursuant to the authority of the Federal Indian Reorganization Acts (hereinafter IRA) of 1934 & 1936 with the IRA Council as the duly elected governing body formed under its *Constitution & By-Laws*; and,

WHEREAS, OVK recognizes the importance of addressing our traditionally gathered resources and practices; and economic development through the utilization of local, private, federal and state programs; technical assistance; and to increase traditional gathering resources & practices; economic development, and

WHEREAS OVK strongly opposes the State of Alaska's *Senate Joint Resolution No. 13* regarding potential co-management efforts to "co-manage, take and study marine mammals under the Marine Mammal Protection Act", and

WHEREAS, two efforts were made in the 1960's by the Alaska Department of Fish & Game to trans relocate sea otter from Amchitka Island with no form of management or control or consultation, and

WHEREAS, OVK agrees that sea otter population in Southeast Alaska has grown exponentially between 1969-2014 to a point where negative impacts are occurring on natural resources and the marine environment, and

WHEREAS, it is estimated that over 200,000 sea otter inhabited an area from Northern California to Japan during the 18th century when Alaska Natives rightfully practiced indigenous commerce and managed natural resources effectively, and

WHEREAS, the Marine Mammal Protection Act of 1972 continues the right of coastal Alaska Natives to harvest sea otter to sell or trade amongst qualified Alaska Natives with a blood quantum equal or greater than 25%, and

WHEREAS, Senator Bert Stedman, the State of Alaska, or the Alaska Department of Fish & Game did not made an effort to communicate, consult or coordinate efforts regarding sea otter population or management with federally recognized Tribes in Southeast Alaska, and

WHEREAS, fish & game resources managed by the State of Alaska, such as (but not limited to) salmon, herring, shellfish, Sitka black tail deer have not proven to be sustainable and cannot be used as a model for successful management, and

WHEREAS, OVK opposes working with the Alaska Department of Fish & Game to establish a plan for sea otter management that will maintain a balance between sustainable shellfish harvesting and our region's sea otter population, and

WHEREAS, OVK also opposes the requirement to purchase a hunting license from the State of Alaska to harvest sea otter because no license is currently required to harvest sea otter by qualified Alaska Natives, and

WHEREAS, OVK opposes the Alaska State Legislature's efforts to receive a "scientific permit" that will authorize the Alaska Department of Fish & Game to:

1. Take as many marine mammals as is necessary to protect other subsistence fisheries resources; or
2. Grant the Alaska Department of Fish & Game the authority to administer a management plan, including the plan's amendment or modification, as circumstances, including changes in the sustainability of the marine mammal or other fisheries resources, and
3. Permit the Alaska Department of Fish & Game to delegate all or parts of the agency's management authority to an Alaska Native Organization, and

WHEREAS, OVK will create or work with Tribally Authorized Co-Management Bodies under the Marine Mammal Protection Act of 1972 and its amendments- as well as U.S. Fish & Wildlife Service to address sea otter in Southeast Alaska, and

WHEREAS, the Tribally Authorized Co-Management Bodies can create a Section 119 Memorandum of Agreement between U.S. Fish & Wildlife Service (under the Department of Interior) and National Marine Fisheries Service (under the Department of Commerce) to begin unified efforts regarding sea otter population counts, ecosystem assessments and bio-sampling, and

NOW THEREFORE BE IT RESOLVED, OVK strongly opposes the Alaska State Legislature's efforts to have federal agencies to work with the Alaska Department of Fish & Game to establish a plan for sea otter management, and

FURTHER BE IT RESOLVED, OVK opposes Alaska State Legislature's efforts to create a management plan and considerations on efforts to expand and enhance small businesses and provide economic opportunities for Southeast Alaska's residents, and be it

FURTHER BE IT RESOLVED, OVK also opposes Alaska State Legislature's efforts to "expand the scope of allowable uses for harvest of marine mammals; require Alaska Natives to purchase a hunting license to hunt sea otter, or allow Alaska Department of Fish & Game to enter a cooperative agreement to co-manage subsistence uses of marine mammals, especially the authority to permit the sale and foreign export of sea otter pelts, and be it

FURTHER BE IT RESOLVED, that no scientific permit be issued to the State of Alaska for the purposes of sea otter population control, and

BE IT FINALLY RESOLVED, OVK opposes Alaska State Legislature's efforts to receive a scientific permit authorizing the Alaska Department of Fish and Game to take as many marine mammals as is necessary to protect resources; or be granted to administer a management plan, including any amendments or modifications; or permit Alaska Department of Fish & Game to delegate all or part of the agency's management authority.

CERTIFICATION

This resolution was duly adopted at an IRA Council meeting held this 24th day of February, 2018 by a quorum of 5 (includes president as non-voting chairperson except in case of tie vote) with 4 yes votes, 0 no votes, and 0 abstaining.

Joel M Jackson pres
Joel Jackson, President

Attested by

Updated 2/3/2017

Sea otter stock status in Southeast Alaska

In 1965 the Alaska Department of Fish and Game (department) captured 412 sea otters near Amchitka Island and in Prince William Sound and translocated them to several locations in Southeast Alaska, in an effort to renew the collapsed sea otter population and to mitigate nuclear testing in western Alaska. The Southeast Alaska sea otter population remained small until 1987 when a period of rapid growth began. The most recent sea otter survey in Southeast Alaska was done in 2012 and was conducted by the United States Fish and Wildlife Service (USFWS). At that time the sea otter population was estimated to be 25,712 sea otters which is more than double the 2008 estimate. The estimated growth rate of the Southeast Alaska sea otter stock is estimated to be 12-14% per year and the population is increasing.

Sea otter harvest and fishery-related mortality

While there is little observer coverage on most commercial fisheries in Southeast Alaska, sea otter mortality caused by commercial fishing operations is believed to be very low. Sea otters are hunted by Alaska Natives and average annual harvest during the five-year period 2006-2010 was 447 animals, an increase from the annual average harvest of 322 animals during the previous five year period (Figure 1). The current harvest level is well below the Potential Biological Removal (PBR) of 2,179 animals.

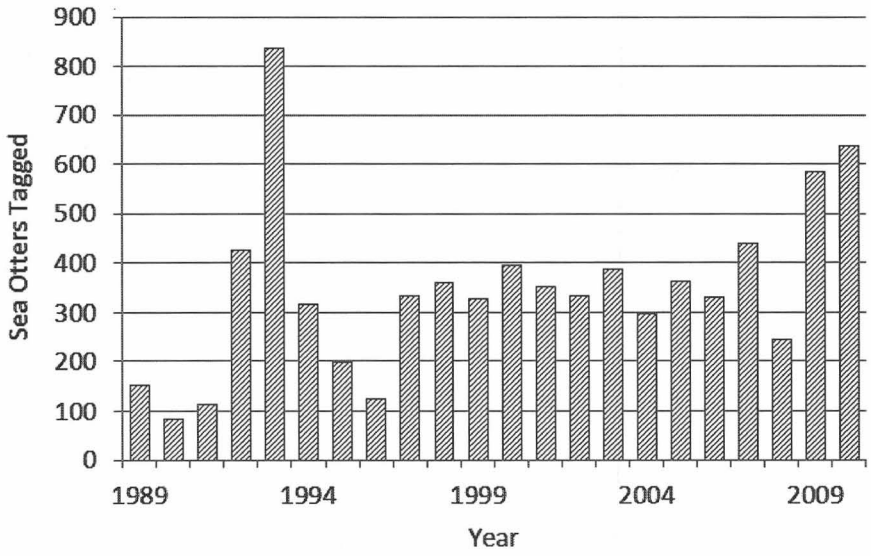

Figure 1. Sea otter harvest in Southeast Alaska, 1989-2010. Data from U.S. Fish and Wildlife Service.

Sea otter impacts on fisheries

Sea otters prey primarily on benthic invertebrates, including mollusks, echinoderms, and crustaceans. The increasing population of sea otters in Southeast Alaska has had negative impacts on the region's commercial dive fisheries by reducing stock biomass, which has resulted in lower allowable harvests and fishery closures in some areas. Although the amount of lost biomass and revenue due to sea otters is probably substantial, it is difficult to quantify because changes in stock size due to sea otter predation are intertwined with declines due to fishing and other sources of mortality. Sea otter impacts are most easily detected on geoduck and sea urchin populations because physical signs of predation are obvious, while impacts to sea cucumber stocks are more difficult to confirm. The department estimates that 39% of sea cucumber, 66% of geoduck, and 64% of sea urchin commercial fishing areas have been impacted (i.e. reduced) by sea otters (Figure 2).

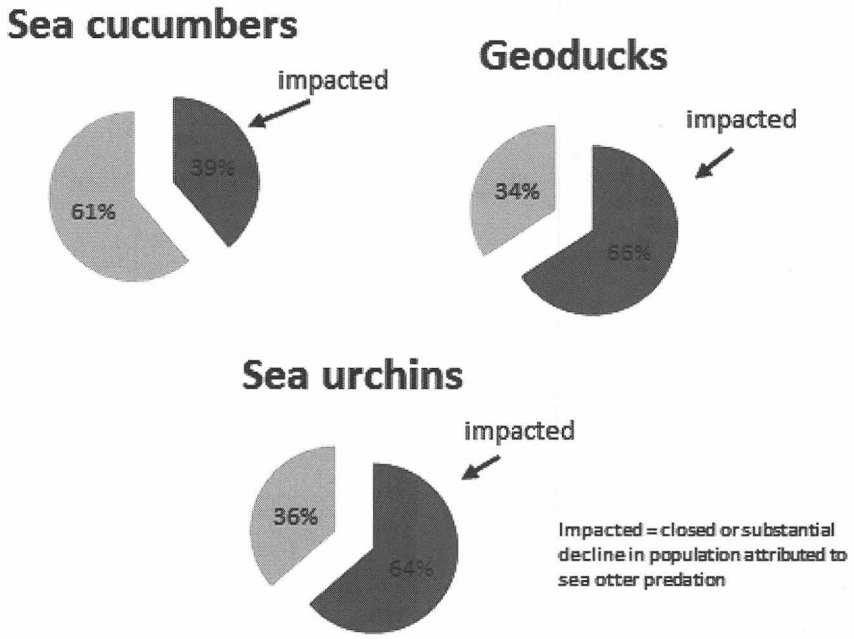

Figure 2. Percentage of Southeast Alaska commercial dive fishery areas impacted by sea otters through 2016.

Efforts to mitigate sea otter impacts on commercial fisheries

As the Southeast Alaska sea otter population has increased and had a deleterious effect on commercially important shellfish species, mitigation of these impacts has been discussed. These efforts have centered on informing policy makers of the harm to Southeast Alaska coastal communities caused by sea otter predation, research to quantify and describe impacts and improve knowledge of sea otter biology, and exploration of legislative and regulatory remedies.

Aside from successfully describing the problem, none of these steps have been particularly successful or yielded significant benefits for the commercial fishing industry.

The department was involved with a relatively informal group of stakeholders assembled to discuss sea otter issues in Southeast Alaska. This stakeholder group was supported by the previous administration and none of the department staff tasked to the group are still employed by the state. Information on those meeting outcomes is sparse. The last meeting of the group is believed to have occurred in spring 2014. Overall there appears to be disappointment from the stakeholders in the level of engagement and policy direction on sea otters from the state.

Future direction and recommendations

Amending the federal Marine Mammal Protection Act (MMPA) Endangered Species Act (ESA) to ease restrictions on sea otter harvest and use may result in increased sea otter harvest and concomitant reduction in predation on commercially important species. However, even if harvest increased up the PBR level the sea otter population would likely continue to grow. Attempting to amend the MMPA and ESA may require expenditure of considerable effort by Alaska's Congressional Delegation and other state officials.

The state has been asked by the Southeast Alaska Regional Dive Fisheries Association (SARDFA) to reform the sea otter stakeholder workgroup. The request was to assign appropriate state policy makers to the workgroup and reengage in development of an ecosystem based management approach for Southeast Alaska sea otters. Unless the USFWS service agrees to such an ecosystem based approach, including sea otter harvests adequate to reduce the sea otter population on commercially important shellfish grounds, formation of a workgroup is not likely to benefit the commercial fishing industry in a meaningful way.

One approach to lengthen the period of time that Southeast Alaska dive fisheries remain viable is a limited entry permit buyback program. This action could reduce the number of active permit holders and increase profits for the remaining permit holders to offset losses caused by sea otters and could be without changes to federal policy or law. SARDFA continues to discuss how to arrange and fund a buyback program.

THE STATE
of ALASKA
GOVERNOR BILL WALKER

Department of Fish and Game

Alaska Board of Fisheries

1255 West 8th Street
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Juneau, Alaska 99811-5526
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March 9, 2018

Ryan Zinke, Secretary
Office of the Secretary
U.S. Department of Interior
1849 C Street NW
Washington DC 20240

Wilbur Ross, Secretary
Office of the Secretary
U.S. Department of Commerce
1401 Constitution Ave NW
Washington, DC 20230

Subject: Southeast Alaska Sea Otter Population Growth Impacts

Dear Secretaries Zinke and Ross:

The Alaska Board of Fisheries (Board) establishes regulations providing for conservation and utilization of Alaska's subsistence, sport, commercial, and personal use fisheries. The Board's process brings forth one of the highest levels of public input of any regulatory process in the nation. At the Board's recent thirteen-day Southeast Alaska Shellfish and Finfish regulatory meeting, Board members reviewed and deliberated on 155 public and agency proposals while receiving public comments and testimony from more than 200 Alaskans. During the meeting it was made clear through testimony from the Alaska Department of Fish and Game (ADF&G) and the public that sea otter repopulation efforts in Southeast Alaska through the Marine Mammal Protection Act (MMPA) have been extremely successful.

Enacted in 1972, the MMPA is critical US legislation designed to protect threatened marine mammal species, including sea otters in Southeast Alaska. Sea otter populations were decimated throughout our state by early Russian explorers seeking furs. Under the MMPA, Alaska sea otter reintroduction and recovery began in the 1960s and according to the most current published reports from the US Fish and Wildlife Service (USFWS) by 2013 the number of wild otters exceed 25,712. This level of recovery makes the sea otter a landmark success under the MMPA, but at the current USFWS estimated of annual growth rate of 12-14%, the population could reach unsustainable levels and will place significant additional pressure on the surrounding ecosystem.

The growing population of otters may continue to harm and ultimately eliminate some key fisheries that are important sources of food and livelihoods for coastal communities, subsistence harvesters, and commercial fishermen. To address this unique marine mammal recovery, the Board is in support of efforts by the US Departments of Commerce and Interior to review the MMPA with the intent to allow the affected communities to responsibly and sustainably manage the species and is encouraging Congress to undertake similar review.

Asking the federal government to adjust the MMPA from a law that promotes species repopulation with no control, to one that manages successful repopulation at a sustainable level is not something the Board takes lightly. We recognize the importance of sea otters to our environment, ecosystem, and visitor industry, and place great value in maintaining a healthy sea otter population.

That said, the impacts of this successful reintroduction and continued population growth is profound. The estimated annual consumption of the current sea otter population is 195 million pounds of seafood, the primary take being shellfish. Based on the growth estimates through 2030, this number edges closer to half a billion pounds annually. Compared to the estimated 195 million pounds consumed by the sea otter population each year, Southeast Alaska's commercial fishermen targeting the same species harvest between 5-7 million pounds annually – approximately 3-4% of the shellfish consumed annually by sea otters.

Many areas carefully managed for long-term sustained fisheries are now gutted with no expectation of species recovery in the foreseeable future. At the Board's Southeast meeting, commercial fishing divers reported no remaining signs of prey species in areas where sea otters are abundant. As these commercial fisheries close, fishermen seek new areas including those near communities that are heavily used by local subsistence harvesters. These migrations create increased user conflict, often leading to additional closures for commercial harvesters. Loss of these fisheries will have a significant economic impact on many rural coastal communities; in 2016 alone, the value paid to commercial harvesters for key shellfish species was $18.6 million spread across 447 permits.

The Board appreciates your consideration of its concerns on behalf of impacted Alaskans.

Regards,

John Jensen
Chairman, Alaska Board of Fisheries

cc: Honorable Senator Lisa Murkowski, U.S. Congress
Honorable Senator Dan Sullivan, U.S. Congress
Honorable Representative Don Young, US Congress
Honorable Governor Bill Walker, State of Alaska
Honorable Pete Kelly, Senate President, Alaska Legislature
Honorable Bryce Edgmon, House Speaker, Alaska Legislature
Julie Kitka, President, Alaska Federation of Natives

Subsistence harvested sea otter tagging statistics in Southeast Alaska by location and year, 2000-2017.

Village	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Angoon	0	0	0	2	0	0	0	0	0	0	0	0	0	0	8	0	0	0
Coffman Cove	0	0	0	0	0	0	0	0	0	0	0	21	0	0	0	0	0	0
Craig	40	59	45	70	26	15	48	38	15	44	136	98	63	72	167	57	3	26
Gustavus	0	0	0	0	0	0	0	0	0	0	0	0	0	50	57	70	66	72
Haines	--	--	--	--	--	--	--	--	--	--	--	--	--	0	0	0	0	1
Hoonah	9	4	2	43	50	52	34	28	30	27	53	28	127	124	49	215	68	31
Hydaburg	95	49	0	19	0	0	0	4	0	0	0	20	14	27	23	68	4	62
Juneau	0	11	39	24	0	9	1	0	31	33	35	3	7	0	0	0	21	10
Kake	8	6	6	12	3	7	0	29	7	2	17	21	157	214	148	88	80	68
Kasaan	0	0	0	0	4	11	6	0	0	0	0	0	0	0	0	0	0	0
Ketchikan	11	31	4	3	73	27	57	52	9	0	11	14	0	4	45	0	20	0
Klawock	38	57	41	62	0	57	15	7	7	199	47	60	72	99	143	102	108	139
Naukati Bay	0	0	0	0	0	0	0	0	0	0	0	3	63	57	71	74	97	40
Pelican	1	9	20	17	11	0	2	6	10	3	4	21	2	10	15	11	9	2
Petersburg	0	0	22	2	17	31	0	3	0	0	13	91	49	79	69	33	37	27
Sitka	158	117	108	91	91	91	108	226	132	141	217	201	284	546	355	325	359	334
Wrangell	6	0	0	13	0	3	7	8	6	19	69	8	32	9	2	16	1	11
Yakutat	27	10	53	28	23	62	60	39	8	117	88	149	132	203	271	160	88	59
Total	393	353	340	386	298	365	338	440	255	585	690	738	1002	1494	1423	1219	961	882

20-Feb-18

U.S. Fish and Wildlife Service, Marine Mammals Management Office, 1011 E. Tudor Rd, MS341, Anchorage, AK 99503, USA
Marking, Tagging, and Reporting Program
Brad Benter: 907-786-3980
Michael Winfree: 907-786-3479

Petersburg Borough, Petersburg, Alaska
RESOLUTION #2018-07

A RESOLUTION REQUESTING THE UNITED STATES CONGRESS TO SUPPORT SEA OTTER MANAGEMENT IN SOUTHEAST ALASKA BY AMENDING THE MARINE MAMMAL PROTECTION ACT AND URGING THE UNITED STATES DEPARTMENT OF THE INTERIOR TO PERMIT ALASKA NATIVE ORGANIZATIONS AND THE ALASKA DEPARTMENT OF FISH AND GAME TO CO-MANAGE, TAKE, AND STUDY MARINE MAMMALS UNDER THE MARINE MAMMAL PROTECTION ACT

WHEREAS, the Petersburg Borough is a small island fishing community located in Southeast Alaska with a population of approximately 3,100 residents; and

WHEREAS, Petersburg Borough residents 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 in Southeast Alaska's coastal waterways without a long-term management plan; and

WHEREAS, the federal government, which has jurisdiction under the Marine Mammal Protection Act (MMPA), has established no effective management plan for protecting the ecosystems affected by sea otters and maintaining an ecological balance of shellfish resources; and

WHEREAS, without proper management, the sea otter population in southern Southeast Alaska has grown at an alarming rate (over 5,800 observed in 2003 and a 2010 aerial survey by the United States Fish and Wildlife Service estimated over 11,000 otters, a growth rate of 13% per year, which extrapolates to a population of nearly 69,000 by 2025); and

WHEREAS, the unmanaged proliferation of reintroduced sea otters, which consume non-quantified yet substantial volumes of the crab, abalone, urchins, sea cucumbers, clams and other shellfish upon which the region's residents also heavily rely, appears to be contributing to degradation of the ecological balance in many areas leading to diminished harvests of these important resources for subsistence and commercial purposes; and

WHEREAS, the drastic increase and high density of reintroduced sea otters has, in some areas, so depleted shellfish stocks that subsistence, personal use, and sport fishing is almost non-existent, and commercial fishing is closed due to unsustainably low abundance; and

WHEREAS, monies derived from the harvest of Alaska's sustainably managed aquatic resources form a major component of the economies of Alaska's coastal communities and thereby make them particularly sensitive to situations negatively impacting yields from those resources; and

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

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

WHEREAS, Section 101 of the MMPA provides for exemptions for Alaska Natives for the harvest of a marine mammal as long as the taking is for subsistence purposes and not accomplished in a wasteful manner; and

WHEREAS, Alaska Natives under the MMPA are denied the customary and traditional ability to sell intact sea otter pelts; and

WHEREAS, Section 101 of the MMPA allows for the use of marine mammal pelts in the creation of authentic native articles of handicraft and clothing and provides that Alaska Natives may sell these value added fur products; and

WHEREAS, Alaska is a model for the management of harvestable resources for sustained yield and sustainable use; and

WHEREAS, implementation of a sustainable harvest management regime would maintain sea otter populations at a level suitable for continued ecological balance and expand economic opportunity; and

WHEREAS, Section 119 of the MMPA allows the Secretary of the Department of Interior to enter into cooperative agreements with Alaska Native organizations for the conservation of marine mammals, the development of marine mammal co-management structures with Federal and State agencies and the creation of local management plans for the harvest of marine mammals for subsistence use and providing protection to important subsistence shellfish resources creating an ecological balance.

THEREFORE BE IT RESOLVED, that the Petersburg Borough Assembly urges the appropriate Federal agencies to work with the Alaska Department of Fish and Game, and the Alaska Native and non-Native leaders in the Southeast region, to establish strategies and plans for an ecological balance of shellfish resources and the reintroduced sea otter population of Southeast Alaska; and

BE IT FURTHER RESOLVED, that the Petersburg Borough Assembly urges state and federal agencies, in developing the management plan, to actively consider means of expanding and enhancing small business and broader economic opportunities for residents of Southeast Alaska; and

BE IT FURTHER RESOLVED, that the Petersburg Borough Assembly urges the United States Congress to amend the MMPA to expand the scope of allowable uses for sea otters taken for subsistence purposes; and

BE IT FURTHER RESOLVED, that when an Alaska Native organization or the Alaska Department of Fish and Game certifies to the United States Secretary of the Interior, in writing, that a marine mammal poses a threat to Alaska Native subsistence resources and that the marine mammal may withstand higher levels of taking without becoming unsustainable, and the Alaska Native organization or the Department provides a management plan for the study and taking of the marine mammal designed to protect other fishery resources used for subsistence

purposes, the Petersburg Borough Assembly urges the Secretary to issue a scientific permit to the Alaska Native organization or the department to carry out the management plan; and

BE IT FURTHER RESOLVED, that the Petersburg Borough Assembly urges that the scientific permit issued by the United States Secretary of the Interior:

1. Authorize an Alaska Native organization or the Alaska Department of Fish and Game to take as many marine mammals as is necessary to protect other subsistence fisheries resources;

2. Grant the Alaska Native organization or the Department the authority to administer the management plan, including the plan's amendment or modification, as circumstances, including changes in the sustainability of the marine mammal or other fisheries resources, may dictate; and

3. Permit the Department to delegate all or part of the agency's management authority to an Alaska Native organization.

Passed and Approved by the Petersburg Borough Assembly on March 5, 2018.

Mark Jensen, Mayor

ATTEST:

Debra K. Thompson

Debra K. Thompson, Borough Clerk

Fishery Management Report No. 17-59

2018 Report to the Board of Fisheries, Miscellaneous Shellfish Fisheries

by

Kyle Hebert

December 2017

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat or long
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations

alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

FISHERY MANAGEMENT REPORT NO. 17-59

2018 REPORT TO THE BOARD OF FISHERIES, MISCELLANEOUS SHELLFISH FISHERIES

by
Kyle Hebert
Alaska Department of Fish and Game, Division of Commercial Fisheries, Douglas

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1565

December 2017

The Fishery Management Reports series was established in 1989 by the Division of Sport Fish for the publication of an overview of management activities and goals in a specific geographic area, and became a joint divisional series in 2004 with the Division of Commercial Fisheries. Fishery Management Reports are intended for fishery and other technical professionals, as well as lay persons. Fishery Management Reports are available through the Alaska State Library and on the Internet: http://www.adfg.alaska.gov/sf/publications/. This publication has undergone regional peer review.

Kyle Hebert,
Alaska Department of Fish and Game, Division of Commercial Fisheries,
802 3rd St., Douglas Alaska, 99824 USA

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ABSTRACT

The commercial miscellaneous shellfish (or "dive") fisheries in the Southeast Region (Registration Area A/Southeast Alaska and Registration Area D/Yakutat) are a group of fisheries targeting geoduck clams, red sea urchins, sea cucumbers and abalone. The common feature of these fisheries is that all are limited to hand picking by diving. With the exception of abalone, all of the dive fisheries have well developed management plans, with abundance-based stock assessment programs at their core. Most development of these fisheries has occurred since the 1990s, making the dive fisheries relatively new to Alaska. The Alaska Department of Fish and Game works closely with the Southeast Alaska Regional Dive Fisheries Association (SARDFA) to develop management plans for these fisheries. SARDFA is a non-profit organization that represents limited entry permit holders of the dive fisheries, and that generates funds for management, research, and the promotion of dive fisheries. Sea otters pose a major threat to the dive fisheries in Southeast Alaska. The department has documented substantial declines in population levels of sea cucumbers, sea urchins, and geoducks in areas occupied by sea otters. Consequently, guideline harvest levels have been reduced, and a growing number of areas have been closed to commercial harvest.

Keywords: abalone, Commercial Fisheries Entry Commission, dive fisheries, geoduck clams, red sea urchins, sea cucumbers, Southeast Alaska Regional Dive Fisheries Association (SARDFA), Alaska Board of Fisheries

INTRODUCTION

SOUTHEAST ALASKA DIVE FISHERIES

This report provides a general overview of miscellaneous shellfish fisheries, commonly referred to as "dive fisheries", in Southeast Alaska and Yakutat. Southeast Alaska dive fisheries currently harvest three species of invertebrates: geoduck clams *Panopea generosa*, California sea cucumbers *Parastichopus californicus*, and red sea urchins *Mesocentrotus franciscanus*. All three fisheries occur primarily in southern Southeast Alaskan waters. The pinto abalone *Haliotis kamschatkana* fishery is currently closed to commercial harvest. A small experimental sea cucumber fishery was prosecuted during the 2007/08 season in the Yakutat area but not continued because of lack of harvestable sea cucumber biomass.

The Southeast Alaska/Yakutat area (Region I) consists of Alaska waters between Cape Suckling on the north and Dixon Entrance on the south. The region is divided into two registration areas: Area A, the Southeast Alaska area, extends from Dixon Entrance to Cape Fairweather; and Area D, the Yakutat area, extends from Cape Fairweather to Cape Suckling. Southeast Alaska dive fisheries primarily occur in miscellaneous shellfish registration Area A. The Southeast Alaska area is divided into 16 regulatory districts (Districts 1 through 16) with each district divided into several statistical subdistricts for harvest reporting. For management purposes, the Ketchikan area office oversees fisheries that occur in Districts 1–4, the Petersburg and Wrangell area offices oversee Districts 5–10 (excluding Section 9-A), the Sitka area office oversees Section 9-A and District 13, and the Juneau area office oversees Districts 11–15.

Southeast dive fisheries are relatively recent additions to the region's commercial fishing industry. The first commercial landings for abalone occurred in the mid-1960s, and red sea urchins, sea cucumbers, and geoduck clams in the early to mid-1980s (Tables 1–4). Initial participation in each fishery was often limited to just one or two divers and has developed to current effort levels. All dive fisheries except abalone are competitive limited entry fisheries. Fish ticket information indicates 242 permits reported landings during the 2015/16 season, the most recent season with complete information available, including 175 sea cucumber, 55 geoduck clam, and 12 red sea urchin permits.

The exvessel value of the 2015/16 Southeast Alaska dive fisheries was estimated to be $8,658,000. This estimate is considered conservative as it is based on the price reported on fish tickets and does not include unreported price adjustments or situations where price information was not reported. The actual exvessel value will not be known until final processor reports are received and analyzed through the Commercial Fisheries Entry Commission (CFEC). The harvest of sea cucumbers at was valued at $5,338,855, geoduck clam harvest was valued at $2,987,218, and red sea urchin fishery harvest was valued at $331,829.

COMMERCIAL FISHERIES ENTRY COMMISSION

Prior to July 1, 1996, entry into Southeast Alaska's dive fisheries was open access, requiring an interim-use permit by the CFEC for participation. Historically, most fisheries began slowly with little effort but interest grew quickly as exvessel value increased, new markets opened, and participants expanded beyond the more traditional fisheries such as salmon or groundfish. Effort quickly increased to levels that made it difficult for the Alaska Department of Fish and Game (department) to manage each fishery.

In 1996, the Alaska State Legislature established a four-year moratorium on interim-use permits for the Southeast dive fisheries. The legislation, HB 547, was incorporated into statute as AS 16.43.228. The moratorium specified a cap on the total number of interim-use permits in the Southeast Alaska geoduck, sea cucumber, sea urchin, and abalone fisheries. This legislation temporarily halted growth in the number of participants in these fisheries and provided specific eligibility criteria to be used in each fishery.

The effective date of the moratorium was July 1, 1996, and it expired automatically on June 30, 2000. During the moratorium, the legislation directed the CFEC to consult with the Board of Fisheries (board), the department, and the participants in these fisheries about a permanent limited entry program. The legislation also directed the CFEC to determine the type of limited entry program that would be most appropriate for these fisheries. These fisheries would have returned to open access on the expiration date unless the CFEC limited these fisheries under the current limited entry law.

In September 1999, the CFEC proposed to adopt regulations for limiting entry into the geoduck and sea urchin dive fisheries. For these fisheries, CFEC proposed to establish:

1) the maximum numbers of permits to be issued for each fishery;
2) July 1, 1996, as the date for determining an applicant's qualifications for a Southeast Alaska geoduck or sea urchin dive entry permit;
3) time periods for each fishery in which an individual must have participated in the fishery as an interim-use permit holder to be eligible to apply for an entry permit; and
4) definitions for the proposed limitation of the geoduck and sea urchin dive fisheries.

The CFEC originally proposed a return to open access status for the sea cucumber and abalone dive fisheries at the end of the then current moratorium. Following a series of public comment periods and meetings, and after obtaining staff developed options for limiting entry, all current dive fisheries became limited entry fisheries. Regulations for red sea urchins were finalized in November 2000 and sea cucumbers and geoducks in May 2001. The maximum number of limited entry permits originally authorized for each fishery was 104 for geoduck clams, 436 for sea cucumber, and 95 for red sea urchins. In 2017 there were a total of 408 permits for the

Southeast Alaska dive fisheries: 85 for geoduck clams, 267 for sea cucumbers and 56 for red sea urchins. Abalone is currently an open access fishery (CFEC 2017).

SOUTHEAST ALASKA REGIONAL DIVE FISHERIES ASSOCIATION

Southeast Alaska Regional Dive Fisheries Association (SARDFA) is a non-profit economic development corporation, whose voting members are all permit holders for the three Southeast dive fisheries (geoduck clams, sea cucumbers, and red sea urchins). SARDFA's mission is to develop, expand, and enhance new and existing dive fisheries in Southeast Alaska in a sustainable and economically feasible manner. SARDFA is managed by a board of directors which is elected by the membership. The board is composed of (1) one member from each of five Southeast communities (Ketchikan, Prince of Wales Island, Sitka, Petersburg, and Wrangell), (2) one member from out of state, (3) one at-large director, (4) one municipal director, and (5) one processor-director; for a total of nine directors. SARDFA contributes funds for department management and stock assessment programs and has coordinated with the department to manage open fishery areas during each season.

State general funds have not been sufficient to fund the costs of management and research activities required for the dive fishery program. In the early development of these fisheries this funding gap was filled through financial contributions by industry processors, local municipalities, federal funding, voluntary diver assessments, and test fishing projects in which the resource was harvested and sold by the state. Southeast industry divers saw a need to establish an organization and provide for a funding mechanism to meet the funding gap and continue to expand the dive fisheries. Through municipality funding, industry divers hired a project coordinator to develop and promote state legislation addressing this need. The legislation, CSHB 198, passed unanimously in the House and Senate, was signed by the governor June 20, 1997 and became effective June 21, 1997. CSHB 198 allowed for the creation of SARDFA and empowered it to exact taxes on dive fishery landings to help pay for fishery development.

SARDFA has created committees to focus on the individual needs of each dive fishery. The committees are a valuable source of input to the department regarding fishery management concerns and ideas. These committees are advisory to the SARDFA Board. The Board reviews and votes on committee recommendations and negotiates approved recommendations together with the department. The department is required by the State of Alaska to protect the integrity of the state's fisheries, and therefore the department does not approve any recommendations that are not consistent with the state's constitutional and statutory fishery sustainability clauses.

Southeast dive fisheries permit holders pay self-imposed taxes (i.e., "assessments") in addition to the standard 3% shared fisheries business tax that is levied on all other commercial fisheries in the state. The assessment percentages vary by fishery depending on fishery development and management costs, and are currently set at 5% for sea cucumber and sea urchin pounds landed and 7% for geoduck pounds landed. The assessments collected from the dive fisheries in the first year totaled $227,986. For the state fiscal year 2017, total tax collected was $549,449.

SEA CUCUMBER

BACKGROUND

The commercial species of sea cucumber harvested in Southeast Alaska is the California sea cucumber *Parastichopus californicus*. It is a common species distributed from Mexico to

Southeast Alaska and has been observed at least as far west and north as the Alaska Peninsula, Aleutian Islands, Bering Sea, and Kodiak Island where there is a small sea cucumber fishery. It occupies a broad range of subtidal habitats from nearshore shallows to over 100 fathoms, although greatest abundance probably occurs in less than 60 feet of depth. The sea cucumber's primary food is detritus, which it ingests along with significant amounts of fine substrate. Its ecological function includes recycling detrital material into nutrients for the primary producers in the marine food chain (Lambert 1997, O'Clair and O'Clair 1998). *P. californicus* favors locations with moderate current, avoiding mud bottoms and areas subject to inundation by freshwater or glacial runoff. The abundance of sea cucumbers in Southeast Alaska is generally greatest in the southern and western portions in protected bays and inlets.

FISHERY DEVELOPMENT AND HISTORY

The first experimental fishing permits for sea cucumbers were requested in 1981. One or two permits were issued each year between 1981 and 1986, with only one vessel reporting landings. The first fisheries were based in Ketchikan and, over the years, evolution of management strategies resulted in a partition of most of the statistical subdistricts into one of three seasonal rotations. The initial fishery had no established season; now, harvests are reported from October to September, the current management season (Table 1).

Most of the vessels pioneering this fishery were small skiffs of limited range and capability operating in the vicinity of either Ketchikan or Sitka, mostly as a day fishery. Currently, larger vessels operate with two divers and a crewman with living quarters and the capability of transporting product and divers during typical fall and winter weather conditions. Harvest is conducted hand picking through use of scuba or surface-supplied air system (called "hookah"), usually at depths of 30 to 60 feet. The number of hours each diver can work each day depends on the maximum working depths and may be as little as three or four hours. Harvest consists of collecting sea cucumbers in large mesh bags and transporting the filled bags to the tendering vessel.

Processing is currently conducted in a two-step process. The freshly caught animal is eviscerated on the fishing grounds, where a knife is used to make an inch-long puncture in the body wall of the animal. Drained sea cucumbers are then placed in totes and transported to the processing facility where they are either processed immediately or held for up to two days in a refrigerator. Sea cucumbers were purchased by the bucket in early years but are now sold exclusively by drained weight. Holding times for the eviscerated, densely packed sea cucumbers are limited by their rapid decomposition even when refrigerated.

Processing at the plant consists of separating the muscle bundles from the skin with a scraper or knife. The major products from this fishery are the longitudinal and transverse muscle bundles, or meat, and the skins. Skin processing involves cooking or boiling the skins to a specific texture and drying the product. The dried skins are a preferred item in upscale oriental cuisine and are also used for medicinal purposes. Sea cucumbers harvested in Southeast Alaska have been processed in Craig, Juneau, Ketchikan, Petersburg, Sitka, British Columbia, and the state of Washington.

Effort increased in the fishery to a maximum of 424 divers during the 1995/96 season because of high prices the previous season and concerns that the fishery was to be limited by the CFEC. Beginning July 1, 1996, the CFEC imposed a moratorium into Southeast dive fisheries that limited the number of divers able to participate in the sea cucumber fishery to 472. The CFEC

moratorium ended July 1, 2000 with a maximum of 436 limited entry permits authorized for the sea cucumber fishery. Currently there are 267 permits in the Southeast Alaska sea cucumber fishery. Typically the guideline harvest level (GHL) has been established at between 1 and 1.5 million pounds (drained weight) (Table 1).

Between 2006 and 2011, with SARDFA input and funding, a period of growth occurred in the sea cucumber fishery. The department surveyed 13 and added 8 new areas to the sea cucumber commercial fishery. Additionally, the fishing areas of two previously commercial areas were expanded. The total GHL increase with newly opened and expanded areas was approximately 430,100 pounds.

Yakutat Bay was surveyed during the 2005 season with an estimated biomass of 225,006 lb and a corresponding GHL of 31,200 lb. This fishery did not fall within the limited entry jurisdiction in Southeast Alaska and was an open access fishery. Six divers participated in the fishery making 34 landings and harvesting 31,353 lb. Yakutat Bay was surveyed again in 2010 but the biomass was too low to support a commercial fishery.

MANAGEMENT STRATEGY AND REGULATION DEVELOPMENT

The *Southeast Alaska Sea Cucumber Commercial Fisheries Management Plan* (5 AAC 38.140) was developed because the sea cucumber fishery was expanding rapidly in the late 1980s, and ADF&G could not manage the fishery with the interim-use permit system. The department closed the fishery in May 1990 and reopened it in October 1990 following development of the plan. This plan seeks to protect subsistence opportunities and provides for sustained commercial fishing harvests. To protect subsistence opportunities, the sea cucumber management plan established 16 areas closed to commercial fishing (5 AAC 38.140 (k)). There are also provisions to prevent the use of diving gear in the subsistence (5 AAC 02.020 (1)) and personal use (5 AAC 77.010 (l)(3)) fisheries in those areas. Annual commercial fishery guideline harvest levels are 6.4% of the lower boundary of the confidence interval of the total sea cucumber biomass, taken on a three-year rotational basis (i.e., 19.2% of standing stock once every three years). Rotational fisheries have the advantage of lowering overall departmental assessment survey and management costs.

Initially, the *Sea Cucumber Management Plan* provided for a season that began October 1 in 1990 with two 48-hour openings per week. The season was changed to a November opening in 1993, and in order to extend the season, weekly fishing periods were reduced to seven daylight hours on Mondays in November, plus an additional four daylight hours on Tuesdays from December through March. The *Sea Cucumber Management Plan* was amended by the Alaska Board of Fisheries for the 1997 season and provided for an October 1 opening date with weekly fishing periods of seven daylight hours on Mondays in October, plus an additional four daylight hours on Tuesdays from November through March. There are also provisions for limiting the numbers of divers per vessel to two, providing fishing period trip limits of 2,000 lb per person, and limiting gear to scuba, surface-supplied systems, or snorkels. During the January 2000 board meeting, the open weekly fishing period was amended, providing for a Monday 8:00 a.m. to 3:00 p.m. and Tuesday 8:00 a.m. to 12:00 p.m. opening in October (i.e., opening an additional half-day in October). The board also allowed the use of enhanced air nitrox of ≤40% oxygen, which is a breathing gas used for diving that allows longer bottom time at depth without increasing the risk of decompression illness due to the lower partial pressure of nitrogen. Time series of stock assessment data was used to evaluate sea cucumber population response to harvest under the

current management plan (Clark et al. 2009). This analysis revealed highly diverse responses among management units. Although changes in mean density, mean weight, and biomass were apparent in many areas, variability made detection of statistically significant differences difficult. However, in general the study found that areas open to commercial harvest have decreased in mean density and biomass but have increased in mean weight. In several surveyed areas that are closed to commercial harvest, decreases have also been observed in density, weight, and biomass, indicating that populations respond to environmental variables in addition to exploitation.

2016/17 Sea Cucumber Commercial Harvest Season

The 2016/17 season opened by regulation on Monday, October 3, 2016 with a GHL of 1,243,200 pounds of sea cucumbers. A total of 169 permit holders reported landings with a fish ticket exvessel value of $5,279,192 (Table 1).

2017/18 Outlook

Biomass estimates made during the summer of 2017 indicated a harvestable surplus of 1,234,400 pounds of sea cucumbers available for the 2017/18 season. The 2017/18 sea cucumber fishery opened by regulation at 0800, October 2, 2017. Weekly fishery openings are expected to occur through at least November 2018.

GEODUCK CLAM

Background

Geoduck clam *Panopea generosa* beds have a patchy, habitat-specific distribution in the central and southern portions of Southeast Alaska, primarily in protected waters near the outside coast. Highest densities are found in fine-to-course sand substrates with minimal surge energy. Highest densities of geoducks within Southeast, Alaska have been observed in the large island groups just west of Craig, including shoreline adjacent to Suemez Island, Baker Island, Lulu Island, and Noyes Island. Studies conducted in the state of Washington, in British Columbia, and in Southeast Alaska indicate this clam can live to be over 100 years old (Bureau et al. 2003). Southeast Alaska is the extreme northern limit of the geographic range of this species, and recruitment is sporadic or very low seasonally. Research from British Columbia and Washington indicates geoducks have sporadic recruitment, low growth rates, and high maximum age, making this species susceptible to overharvest.

A troubling problem for consumption of the clams is the tendency for geoduck clams to bioaccumulate undesirable microorganisms or compounds. In particular, high levels of the toxin that causes paralytic shellfish poisoning (PSP) have been found in geoducks in Southeast Alaska, most strongly associated with the viscera. The mantle and necks are the usual body parts consumed, and PSP toxin concentrations are lower in these parts. Although the sale of processed clams with viscera removed is permitted, exvessel value for processed clams is substantially less than that for whole, live product.

In order to protect consumers, the Alaska Department of Environmental Conservation (ADEC) requires that geoducks be sampled from each individual commercial fishery area and tested for PSP toxin level. Before a commercial fishery may be opened, PSP toxin levels from sampled geoducks must test below 80 µg per 100 grams of tissue. In addition, the ADEC samples water

quality in commercial fishery areas to test for human pathogenic microorganisms. Because of the time required for transport and testing of samples, and the relatively short shelf life of the fresh harvested product, a close working relationship is required between department fishery managers, the ADEC, and SARDFA for a successful fishery opening. The current PSP protocol was adopted prior to the 2003/04 season. Using PSP data collected since the inception of this program, the ADEC modified the PSP testing protocol prior to the 2006/07 season. These modifications allow an additional day of harvest before test results expire, and require fewer test samples prior to allowing the harvest and marketing of live product. These changes have reduced cost to industry and increased marketing opportunities.

FISHERY DEVELOPMENT AND HISTORY

The development and expansion of the geoduck fishery in Southeast Alaska has been a direct result of the working relationship between the industry (SARDFA), the department, and ADEC. Additional fishery areas have been identified by the industry and surveyed by the department. The approval by ADEC of pre-fishery PSP sampling has allowed live marketing of all geoducks, which has substantially increased the value of the fishery. Although the value of the fishery is high now, it began with small fisheries in a few locations.

Starting in 1978 with the Noyes Island survey, state grants were used to find and qualitatively assess commercial beds in the Ketchikan, Craig, Petersburg, Wrangell, and Sitka areas. A number of potential commercial beds were located near Ketchikan, Craig, and Sitka. Procedures for testing and certifying the product for human consumption were established by the ADEC. Population assessment surveys were conducted on 3 beds around Noyes Island near Craig, a harvestable biomass estimated, and the ADEC completed sanitation surveys on these areas. Two processors conducted the required modifications to their facilities and procedures to handle batch processing, lot testing, and product quarantine, and were consequently certified to process geoducks.

In late 1985, the first permit was issued for the commercial harvest of geoduck clams. During the 1985/86 season 143,868 lb of the 300,000 lb, five-year quota (Table 2) was harvested by 8 divers in the Noyes Island area. During the 1986/87 season, only 28,191 lb were harvested by only 3 divers. The decline was mainly due to poor marketing conditions and high operational costs. Increased interest in this fishery began after the department completed a population estimate on the west side of Gravina Island in 1987. Biorka Island, near Sitka, was included in the geoduck fishery during the 1989/90 season, and Kah Shakes was included in the 1990/91 season.

In the 1991/92 geoduck fishery, participation of divers from the state of Washington caused increased effort and harvest. Prior to this, nonresident participation was minimal. Participation fluctuated in the late 1990s due to decreasing exvessel value with sales of processed product. However, changes in PSP testing protocol by the ADEC prior to the 2003/04 season, which allowed over 90% percent of the harvested product to be sold live, generated increased effort in the fishery. During the last 12 seasons all of the harvest has been sold as live product. The exvessel value of the fishery for the 2015/16 season was estimated at $2.9 million. Estimates from more recent fisheries were not available at the time of publication.

The geoduck fishery's expansion between the 2004/05 and 2009/10 seasons was because of the following:

1) Federal funding for surveys (the *Nearshore Marine Grant*),
2) Industry reconnaissance to identify new commercially harvestable areas, and
3) Commercial fisheries logbook program provided the department with additional information about location of geoduck beds.

As of the 2017/18 season, a total of 38 distinct commercial fisheries (Figures 2 and 3) have been identified and surveyed in Southeast Alaska.

MANAGEMENT STRATEGY AND REGULATION DEVELOPMENT

An objective of the department's geoduck fishery management is to be conservative to protect stocks by restricting the rate of exploitation to a very low sustainable level. The species is long-lived and recruitment is sporadic and low both spatially and temporally, making this species particularly vulnerable to overharvest. Fisheries do not occur during the summer to avoid the summer spawning and recruitment period and to minimize PSP toxin levels.

Fisheries are restricted to areas for which biomass estimates are available. Only four locations had been surveyed prior to 1997: Symonds Bay on Biorka Island in the Sitka Management Area, West Gravina Island (Vallenar Bay, South Vallenar Point, Middle Gravina and Nehenta Bay areas), Kah Shakes (Kirk Point/Bullhead Cove), and northern Noyes Island (Ulitka Bay, Little Steamboat Bay, and Steamboat Bay areas) in the Ketchikan Management Area. The GHL for each area is calculated as 2% of the lower bound confidence interval of the harvestable adult population, multiplied by the number of years in the fishery rotation (e.g., 2 if fished every other year). Following reassessment dive surveys during the summer of 1997, it became apparent that the abundance of geoducks in some areas was much lower than expected, and the distribution of geoduck clams was less than previous surveys had indicated. These preliminary results suggested that previous GHLs established for the geoduck clam fishery were not sustainable. As a result, the department delayed the opening, originally scheduled for October 1, 1997, until further analysis and review of the survey results were completed.

During the fall of 1997, the department held public meetings to discuss possible management options for the fishery including a season opening date. Representatives of CFEC, Fish and Wildlife Protection (FWP), and the ADEC attended. An opening date and daily open hours were agreed on as well as a GHL for each area. Generally, the 2% per year harvest rate was maintained for all areas but the number of years an area would remain closed or "fallow" was increased to four years in Symonds Bay and west Gravina Island with Steamboat Bay and Kah Shakes remaining on a two-year rotation. This expanded rotational cycle in Symonds Bay and west Gravina Island produced a GHL that was high enough to accurately target during the fishery.

As a result of the meeting held prior to the 1997/98 season, the Southeast Alaska Geoduck Task Force was formed. On January 7, 1998, the task force voted to assess themselves $0.25 on the pound for the February 1998 commercial opening. Through a cooperative agreement between ADF&G and SARDFA, portions of funds generated through the voluntary self-tax were used to conduct surveys to estimate the geoduck clam biomass in Port Alice (summer 1998), Turn Point, Cone Bay, and Nakat Inlet (Cape Fox and Lord/Sitklan Islands, summer 1999). The opening of Port Alice was delayed until 1999/2000 season because of the need for water quality testing.

A cooperative agreement was also formed between ADF&G and the Sitka Harvest Divers Association (SHDA). Using funds provided by SHDA, the department conducted a survey of the geoduck clam populations on the west coast of Baranof Island and nearby islands in portions of Subdistricts 113-31 and 113-41. This area has since become known as the Goddard area due to the proximity of the Goddard Hot Springs and includes three present day fisheries (Biorka/Legma Islands, Taigud/Kolosh Islands, Elovoi/Golf/Gornoi Islands, Figure 2).

As previously stated, reconnaissance surveys were integral to the expansion and development of the geoduck fisheries in Southeast Alaska. The purpose of the reconnaissance surveys was for the industry to identify the most likely sites capable of supporting commercial geoduck fisheries. These data were given to the department to aid in the development of biomass assessment surveys. Many of these industry reconnaissance surveys were funded using contracts with Federal Nearshore Funds[1].

Between 2001 and 2003 reconnaissance surveys were done by SHDA and SARDFA in a substantial portion of Southeast Alaska which resulted in the department conducting stock assessment surveys in Sea Otter Sound (Port Alice/Cone Bay, Turn Point), Nakat Inlet (Cape Fox, Lord/Sitklan Island) and the Goddard area. Additional funds from Federal Nearshore grants were used to conduct surveys from 2005 through 2008. Five of these reconnaissance surveys were done in existing areas, better defining beds and increasing survey precision and subsequently GHLs. The 2005 reconnaissance work was conducted in Cone Island North, Cone Island South/Paloma Pass, Port Real Marina, Portillo Channel, and Bucareli Bay fisheries.

At the 2000 Board of Fisheries meeting, the geoduck management plan was adopted (5 AAC 38.142); prior to that there were only general regulations about clams (5 AAC 38.110), and no regulations that specifically addressed the Southeast Alaska geoduck clam fishery. The department, in cooperation with the SARDFA Geoduck Committee, developed these regulations for the Southeast Alaska commercial fishery that were adopted by the board. The core elements were as follows:

1. There are no size limits for geoducks and all geoducks harvested must be retained.
2. Annual guideline harvest levels must be established for an area before it is open to commercial harvest. The GHL must be based on biomass estimates where biomass surveys have been conducted within the previous 12 years.
3. Commercial harvest gear is limited to dive gear while using a hand-held, manually operated, water jet device.

Prior to the 2003/04 season, the department opened commercial geoduck fisheries in Southeast Alaska without knowledge of the PSP level in the area. Instead, geoducks were harvested and then tested for PSP in "lots" to determine if shipped geoducks should be recalled. This post-harvest testing procedure only allowed for sale of geoducks that were already processed (dressed and packaged), which prevented access to the lucrative market of live geoducks. Due to requests by SARDFA for changes to ADEC's program, ADEC held a geoduck conference in Anchorage on August 5 and 6, 2002. A result of this conference was the implementation of an enhanced live

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[1] The reconnaissance and biomass surveys were funded, in part, by grants NA06FN0385 and NA16FN1560 from the National Oceanic and Atmospheric Administration (NOAA). The views expressed are those of the authors and do not necessarily reflect the views of NOAA or any of its sub-agencies.

shipment program for geoducks. This required changes in the department's fishery management in order to target live geoduck sales. This PSP testing program was enacted prior to the 2003/04 fishery. During the 2003/04 through 2006/07 seasons a significant amount of PSP data were collected by ADEC and changes to the testing protocol were adopted. Because of this change in protocol, more than 90% of the GHL was shipped live, which significantly increased the value of the fishery.

Because fishery area openings are based on PSP testing within a small time window, short notice of openings occurs. Permit holders are required to closely monitor PSP test results which are posted on ADEC's and SARDFA's web sites. In past years, if a fishery area did not pass PSP standards, permit holders chose to wait until the area had passed because the value of live product is much greater than processed product. This approach causes the overall geoduck fishery to extend over a longer period.

During the January 2003 Board of Fisheries meeting the geoduck management plan was amended with the establishment of a control site (Port Mayoral) within Subdistrict 103-50. The board also amended regulations that the department may consider PSP levels in geoduck management (5 AAC 38.142 (a)). During the February 2006 Board of Fisheries meeting the geoduck management plan was amended to allow the department to require a harvest logbook from commercial divers. A second geoduck clam control site was also established within Subdistrict 101-27 (Blank Inlet).

2015/2016 Geoduck Commercial Harvest Season

The 2015/16 season GHL was 543,600 lb (Table 2). A total of 55 divers harvested 565,761 pounds of geoducks. The fishery was opened on October 1, 2015. All of the geoducks from this season were sold live, resulting in the second highest average price per pound in the history of the fishery.

This season openings in fishing areas around Sitka were intentionally delayed, as requested by SARDFA, to take advantage of markets at the end of the season. These areas were opened in September 2016.

2017/2018 Outlook

A total of 559,000 pounds of whole geoduck clams will be available for harvest during the 2017/18 season (Figure 2 and Table 2).

RED SEA URCHIN

Background

Two commercial species, red sea urchins *Mesocentrotus franciscanus* and green sea urchins *Strongylocentrotus droebachiensis*, are common in Southeast Alaska. The red sea urchin occurs primarily on rocky shorelines of the outside coast with largest concentrations in southern Southeast Alaska. Green sea urchins are most common in protected waters of Southeast Alaska in a wider variety of habitats. The red sea urchin population is kept at very low levels by sea otters in many areas of the outside coasts, including the Barrier Islands, Baker Island, Chichagof Island, Dall Island, Kuiu Island, Lulu Island, Maurelle Islands, Noyes Island, Sumez Island, southern Prince of Wales Island, and nearby areas. The only commercial fishery for urchins in recent years in Southeast Alaska has been for red sea urchins. Urchins are harvested for their roe

or "uni", with no distinction made between males or females. The product is most valuable fresh and is marketed primarily in Japan.

FISHERY DEVELOPMENT AND HISTORY

Harvests of red sea urchins in Southeast Alaska began in 1981 near Ketchikan, primarily around Gravina Island. Both red and green sea urchins were harvested, with the vast majority of the harvest comprised of red urchins. Participation and harvest built through the mid-1980s (Table 3), expanding to include Districts 1, 2, 3, and 4. Harvest grew to 890,092 lb in 1986/87 and then tapered off due to difficulties in marketing. In 1988, harvests were restricted to District 1, Gravina Island, District 3 and the West Coast of Prince of Wales Island due to lack of staff time and budgetary support the fishery.

Interest in establishing a commercial urchin fishery in Southeast Alaska resurged in 1990 due to the success of urchin fisheries in California, Washington, and British Columbia. This interest was directed towards the Sitka area; however, lacking basic stock information, further commercial harvest was postponed until completion of a test fishery in late 1990 and early 1991 to estimate population size and to gather size frequency data. A limited commercial fishery opened in southern Sitka Sound in January 1991 with a harvest of 174,233 lb before it was closed in April. Subsequent fisheries were opened in 1992 and 1993, and then closed indefinitely due to extreme predation by sea otters. All other areas of Southeast Alaska remained closed pending development of a management plan, stock assessments, harvest quotas, and a means of monitoring and managing the fishery.

The department initiated a test fishery in District 1 near Ketchikan in the spring 1995 as a method to pay for population assessment surveys. The test fishing contract was awarded to Ocean Fresh Seafoods of Fort Bragg, California, the sole bidder. Under the contract, Ocean Fresh paid the department $139,567 in exchange for the opportunity to harvest 3,000,000 lb of red sea urchins. The test fishery spanned 14 months from March 1995 through April 1996, and harvested 2,965,607 lb of red sea urchins (Table 3). Monthly roe recovery averaged between 5.5% and 12.2%. The average price per pound ranged from $0.29 to $0.81. The test fishery provided considerable employment and revenues to Southeast Alaska, with an estimated exvessel value of approximately $1,402,837 for dive harvesters.

Fully developed red sea urchin fisheries have occurred since the 1996/97 fishing season. The overall quota has ranged between 4.4 and 6.8 million pounds; however, selected areas have seen reductions in biomass, probably due to sea otter predation. Most areas in Southeast Alaska supporting red sea urchin populations are threatened by the rapidly sea otter population. The numbers of participating divers and landings have been low in recent years, relative to the early year of the fishery.

MANAGEMENT STRATEGY AND REGULATION DEVELOPMENT

Prior to 1996 permits to fish for sea urchins were given under authority of 5 AAC 38.062. In 1984, the first year with significant landings of red urchins, there was a size limit of 3–5 inches test diameter to protect small urchins for recruitment, to provide large urchins as a protective spine canopy for small urchins, and to give processors the desired size urchin. An interim management plan was in place in 1987 for the Ketchikan area with a three-year area rotation and size limits modified slightly to 3–4.5 inches. A second interim plan was developed for 1991 through 1993 for the Sitka area. The Sitka area plan included a 3.2% annual harvest rate on the

estimated biomass, three-year area rotations, weekly fishing periods of noon, Saturday through noon, Thursday, and no size limits.

In 1996, the department and the sea urchin industry developed interim regulations and a management plan for the commercial urchin fishery in Southeast Alaska. This plan was implemented during the 1996/1997 season. The regulations were adopted by the commissioner under authority of 5 AAC 39.210 for *High Impact Emerging Fisheries* and became effective in December 1996. The Alaska Board of Fisheries formally adopted the red sea urchin management plan during their regular meeting in January 1997. The core elements were:

1. Annual guideline harvest levels are 6% of the biomass estimate. Fisheries will only be opened where biomass surveys have been conducted in the previous 3 years.
2. Harvest opportunities are to be distributed to each week of every month that the fishery is open. The fishery is to be managed to span approximately 4 months, subject to needs for conservation, law enforcement, reducing waste, and promoting fishery development. Size limits and trip limits may be imposed if needed to slow the pace of the fishery.
3. Processing vessels must carry observers, and vessels transporting unprocessed product out of Registration Area A must first obtain a transport permit.
4. In addition to fish ticket requirements, processors must submit records of the roe recovery within 30 days of landing.

The board made a modification to the regulation requiring onboard observers during the 2003 board meeting. New regulations with a three-year sunset clause allowed a catcher-seller to catch and process product onboard the harvest vessel (5 AAC 38.145 (n)). This regulation was permanently adopted during the January 2006 board meeting.

During the 2006 meeting, the board extended the interval between assessment surveys from 3 to 6 years but no more than the equivalent of the combined 3-year annual guideline harvest levels could be harvested within those 6 years. This reduced the number of surveys required to maintain red sea urchin areas open to commercial harvest when those area's GHL were not entirely taken; the GHL not taken in any one year can be forwarded into subsequent year's GHL. This regulation allowed the more efficient and cost effective surveying of areas whose GHL is not taken each year, without increasing the overall harvest between surveys.

2016/17 Red Sea Urchin Commercial Harvest

The 2016/17 season opened by regulation on October 1, 2016 with a GHL of 3,690,000 pounds. In 2016, stock assessment surveys were conducted by the department in three areas of District 2. Nine divers participated in the fishery and due to low fishing effort, landings fell far short of the GHL, harvesting only 7% of the GHL. The exvessel value was estimated at $162,086.

2017/18 Outlook

The GHL for the 2017/18 season in Southeast Alaska is 3,435,100 lb. The fishery opened by regulation October 1, 2017.

ABALONE

BACKGROUND

The Alaskan abalone fishery targeted the pinto abalone *Haliotis kamschatkana*, which inhabits the rocky substrate of the lower intertidal and subtidal surge zones of the outer coasts of Southeast Alaska. Commercially harvestable quantities of abalone occurred in parts of Districts 1, 2, 3, 4, 5, and 13. Life history information for this species in Alaska is very limited and relies on information from other North Pacific locations to understand the basic biology of this species. Tagging studies indicate it is a slow growing, long-lived species. Spawning occurs during the summer through early autumn. Size frequency information indicates that in at least some areas, a climax population may have existed prior to recent commercial exploitation. Recruitment levels appear to be low and sporadic and fecundity increases greatly with increasing shell length. Known predators include rockfish, starfish, octopus, sea otter, and man. Throughout the range of this and various other abalone species, exploitation has usually resulted in stock depletion and restrictive management (Sloan and Breen 1988; Woodby et al. 2000).

Abalone may be picked by hand from the shoreline during extreme low tides. However, until recently, most of the subsistence and personal use and the entire commercial fishery utilized scuba or hookah umbilical diving gear and most of the harvest occurred subtidally. Current subsistence and personal use regulations prohibit the use of compressed gas systems (e.g., scuba or hookah) to harvest abalone.

FISHERY DEVELOPMENT AND HISTORY

The abalone fishery was marked by a boom in harvests and effort in the late 1970s and early 1980s followed by declining harvests and even higher amount of effort (Table 4). The decline in harvest may be attributed to a combination of excessive fishing, predation by a growing sea otter population, and apparent low productivity of abalone stocks when heavily harvested. The increase in fishing effort was partially due to an increase in value from one dollar per pound in the early 1970s to more than ten dollars a pound during the last four seasons (1992-1996).

The marked increase in harvests and effort occurred in the 1978/79 season, when effort increased more than three-fold and harvests increased to 180,000 lb from a long-term average of about 6,000 lb. Harvests peaked at 378,685 lb the next season (Table 4). This peak exceeded the quota of 250,000 lb adopted by the board in the spring of 1980 and the fishery was closed by emergency order for the first time.

High harvests continued through the 1981/82 season when almost 371,000 lb were landed, despite a reduction in the Guideline Harvest Range (GHR) to a maximum of 125,000 lb and a reduction in the fishing season. By the 1984/85 season, there was concern for the population when the lower end of the GHR was not reached despite 151 days of fishing.

The 1990/91 through 1995/96 seasons opened on October 1 and with the exception of District 13, which was managed separately and closed by emergency order, the length of the season for the rest of Southeast Alaska was set prior to the opening to avoid overharvest. A harvest of 68,400 lb during the 1990/91 season was the beginning of a second downward trend that was to continue through the remainder of the fishery.

As the 1994/95 season progressed, harvest levels were much lower than anticipated, and dramatically lower than historic levels. Fish ticket data indicated that 15,055 lb had been

harvested during the 8-day opening. Despite requests from harvesters to reopen the fishery, the southern Southeast fishery was not reopened. The District 13 fishery was open for a total of 8 days for 7,824 lb of abalone (GHL of 8,000 lb). For all areas, anecdotal information from harvesters indicated that good harvest areas were difficult to find. Harvest per unit effort for the fishery (lb per diver per day) declined to 64% of the 1993 level.

The 1995/96 southern southeast abalone fishery was open for six days with an upper GHR of 10,000 lb. A total of 8,524 lb was taken by 44 divers with 48 landings in six days. The average price per pound was $8.99 giving the fishery an exvessel value of $74,074. Due to poor harvest rates and a concern by some harvesters that abalone populations were greatly reduced from historic levels, the fishery was not reopened despite not reaching the upper end of the GHR. The District 13 fishery lasted 6 days with an upper GHR of 6,000 lb. Harvests of 3,833 lb and 1,995 lb occurred, respectively, during the 2 openings (5,828 lb total). A total of 56 divers made 73 landings with an approximate exvessel value of $52,452 in the District 13 fishery.

In response to a decrease in harvest rates observed during the 1990s, the apparent lack of abalone in many of the traditional harvest areas, and numerous comments from subsistence users and commercial divers regarding the diminishing numbers of abalone, the fishery has been closed by emergency order since October 16, 1995 to protect the remaining, reduced population (Woodby et al. 2000). The emergency closure is consistent with 5 AAC 38.035. *AREA CLOSURES.* (b), which states, "When the commissioner finds that continued fishing would jeopardize the health of a shellfish species described in this chapter in a registration area or portion of a registration area, the commissioner, by emergency order, shall close fishing for that shellfish species in the registration area or portion of the registration area." The closure applied to all of Southeast Alaska including both the Sitka area and southern Southeast fisheries. Anecdotal information from department staff and harvest divers suggest a continuing decline in abalone populations. This continued reduction may be in part to sea otter predation.

MANAGEMENT STRATEGY AND REGULATION DEVELOPMENT

Prior to the boom in harvest and effort in the late 1970s, abalone harvests were regulated primarily by response to local market conditions. Quotas, season limitations, and guideline harvest ranges were not imposed until 1980 after harvests were rising dramatically.

The major fisheries were divided into District 13 (northern outer coast) and Districts 3, 4, and 5 (southern outer coast) fisheries. This division was established historically by early fishing and landing patterns that generally persisted throughout the fishery's history. Closed waters around Craig, Klawock, Ketchikan, Sitka, and Coronation Island were implemented to protect stocks used for subsistence and personal use from commercial exploitation.

Size limits have undergone several increases prior to reaching the present 4-inch minimum. The size limit was raised from 3 inches to 4 inches for Districts 1 through 6 in 1968 and from 3 inches to 3½ inches for Districts 9 through 14 in 1976. A change for all districts to 3½ inches occurred in 1977. The board adopted an increase in minimum size to 3¾ inches in the spring of 1979. In November 1993, the board again increased the legal size limit to 4.0 inches due to concerns about declining abalone stocks. The intent of the larger size limit was to reduce the harvest rate on mature abalone thereby encouraging reproduction and rebuilding populations.

Guideline harvest ranges and season length both decreased in several steps. In 1980 the harvest limit was set at 250,000 lb and the year-round season was reduced to September 1 through May

31. In the spring of 1981, the GHR was reduced from 100,000 to 125,000 lb, and the season was shortened even more to September 15 through May 15. In 1982 the board split the existing GHR, allocating 86,000–107,500 lb to the Ketchikan area and 14,000–17,500 lb to the Sitka area. In 1983 the board split the season into autumn and spring segments each getting 50% of the allowable harvest. The board restricted the 1985/1986 harvest to a range of 25,000–50,000 lb in the Ketchikan area and a maximum of 8,000 lb in the Sitka area. The District 13 season was reduced to November 1 through May 15 and all other areas were changed to October 1 to May 15. In 1986 the season was changed to October 1 through May 15 for all areas. The upper GHR was further reduced to 10,000 lb for the 1995/1996 season for southern Southeast and to 6,000 lb for the Sitka area. These lower GHRs were intended to provide a limited commercial fishery while increasing the potential for recruitment.

FISHERY OUTLOOK

The population is far below its historical level due to overfishing and predation by sea otters. This low level likely does not promote significant recruitment and the department is unsure when, or if, the population will rebuild to a level capable of supporting a commercial fishery. A fishery will not be opened until a management plan is developed that addresses the issues and information identified in 5 AAC 39.210, *Management Plan for High Impact Emerging Fisheries*. As part of that process the department would require a plan for determining productivity and abundance of abalone, and a harvest strategy that would ensure a sustained fishery.

These elements would be difficult to achieve and the department would be very concerned about local and serial depletion under either an open access or limited entry fishery. The department believes that it is highly unlikely stocks will recover sufficiently to allow commercial fishing to resume.

Subsistence and Personal Use fisheries for abalone remain open in Southeast Alaska. A reduction in bag limit from 50 abalone (20 in the Sitka area) to 5 was approved for both fisheries at the 2013 Board of Fisheries meeting due to concerns about the low and declining abundance observed during department dive surveys.

In 2013, the National Marine Fisheries Service (NMFS) received two petitions requesting that pinto abalone be listed as endangered or threatened under the Endangered Species Act (ESA). After reviewing the status of pinto abalone along the west coast of North America, NMFS made a determination in 2014 that listing was not warranted, because pinto abalone were not currently in danger of extinction throughout all or a significant portion of its range and are not likely to be become so within the foreseeable future. Despite not listing the species under the ESA, the status review conducted by NMFS found that data gaps existed for several areas, including Southeast Alaska. In response, NMFS and ADF&G initiated surveys in 2016 at locations in the vicinities of Ketchikan and Craig to collect data on abalone density, size and distribution. Additionally, surveys were initiated in Sitka Sound in 2015 as a collaborative effort between the Sitka Sound Science Center and ADF&G. Data from these surveys will be used to evaluate abalone and better understand whether populations can sustain harvest in Southeast Alaska.

SEA OTTERS

BACKGROUND

During the first half of the 20th century, sea otters *Enhydra lutris* were not present in the Alexander Archipelago due to their near extermination roughly 100 years ago (Kenyon 1969) as a result of the fur trade. It is likely that, as a result of this absence, prey species of sea otters expanded in abundance due to less predation. Population responses have been documented in sea urchin populations *Strongylocentrotus spp* (Estes and Palmisano 1974). In 1965 sea otters were first captured near Amchitka Island and in Prince William Sound and transferred to various locations in southeast Alaska where it was thought they would subsequently establish new populations (Jameson et al. 1982). On the outer coast of Southeast Alaska 412 otters were successfully released. The population remained low until 1987 when it began a period of rapid growth (Pitcher and Imamura 1990).

The annual rate of increase for the Southeast Alaska sea otter stock ranged from 15.7% to 23.3% between 1966 and 1988. A 1994 survey conducted for the entire Alexander Archipelago from Cape Spencer to Dixon Entrance estimated 11,697 individual otters (Agler et al. 1995). In 2002 there were an estimated 3,188 sea otters in the northern half of Southeast Alaska with 1,266 of those occurring in Glacier Bay and an additional estimated 6,008 in the remaining portions of the Alexander Archipelago (Bodkin 2004, personal communication). This data should be interpreted carefully because the estimates have large error components. The most recent population estimate for Southeast Alaska is over 25,000 sea otters, as estimated by the U.S. Fish and Wildlife Service in 2013.

Observations made by department divers on the outer coast of Southeast Alaska suggest that primary prey targets for sea otters are red sea urchins and pinto abalone when foraging on rock habitat, and geoduck clams when foraging on soft sand and mud substrate. Sea otters appear to be capable of remaining in areas for many years by sustaining themselves on prey that may be targeted secondarily, such as sea cucumbers, small clams, snails, and barnacles.

COMMERCIAL FISHERY INTERACTION

The increasing population of sea otters in coastal waters of Southeast Alaska continues to have a substantial and detrimental impact on the economy of the region's dive fisheries, by reducing standing stock biomass, which results in lower GHLs. The sea urchin fishery was the first dive fishery in the region to be affected, with the closure of Sitka Sound because of severe population declines. Sea otters moved into the southern Sitka Sound red sea urchin fishing area in 1992 and, over the next year, removed an estimated 16,000,000 urchins or the majority of the standing stock (Davidson et al. 1993).

Many sea urchin and sea cucumber fishery areas have been greatly impacted by sea otter predation (Figures 1, 4, 5, and 7) and several have been closed due to low abundance in an attempt to protect the remaining spawning biomass. In an effort to determine if benthic invertebrate populations can recover from high levels of sea otter predation, the department has re-surveyed some areas that have been re-colonized by sea otters and closed to commercial fishing for several years. An example of this is Tebenkof Bay, on the west side of Kuiu Island, which was closed to commercial fishing in 2004 because of the virtual elimination of sea cucumbers by sea otters. In 2011 the department conducted another survey in the area and found that no recovery of the sea cucumber populations had occurred and that sea otters were still

abundant. Similar results were found in 2013 for Subdistricts 105-41,42 (Shakan Bay on northwest Prince of Wales Island), and in 2014 for Subdistrict 103-70 (near San Fernando Island west of Craig), where sea cucumbers were nearly absent from these areas after over a decade since the last survey.

Sea otters have also impacted many geoduck commercial fishery areas. Many of these areas are on the outer coast, where sea otters are concentrated. About two-thirds of the commercial geoduck fishery areas have been negatively impacted by sea otters, and in 2017 some areas were closed after they fell below the threshold necessary to allow a commercial fishery (Figure 6). Since 2006, during geoduck surveys, the department has recorded sea otter observations and signs of their predation. Sea otter impacts are evident by deep craters created by sea otter digging, and empty or broken clam shells. Of the geoduck fishery areas that have been affected by sea otters, the percentage of survey transects with observed signs of sea otter predation have ranged from 4% to 100%.

Although sea otter predation on abalone is believed to be relatively high, it is not considered the major factor in the decline of abalone in the 1980s because sea otter expansion occurred after high harvests by commercial fishing (Woodby et al. 2000). However, the increase and expansion of the sea otter population and resulting predation on abalone is thought to be a main factor preventing abalone from recovering.

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TABLES AND FIGURES

Table 1.–Registration Area A (Southeast Alaska) commercial sea cucumber harvest, effort, and value, 1986/87 through 2013/14. Dashes indicate that values are unavailable.

Season[a]	Guideline Harvest Level (lb)	Total Harvest (lb)	Average Price / lb[b]	Estimated Exvessel Value[b]	Number of Divers	Number of Landings	Average lb / Diver	Average Earnings / Diver[b]
Data prior to 1986/1987 season is confidential.								
1986/87	34,043	34,043	$0.21	$7,149	7	44	4,863	$1,021
1987/88	65,056	65,056	$0.21	$13,662	11	143	5,914	$1,242
1988/89	801,405	801,405	$0.21	$169,096	57	922	14,060	$2,967
1989/90	2,318,305	2,318,305	$0.42	$969,142	205	2,263	11,309	$4,728
1990/91	704,491[c]	804,184	$0.59	$472,386	143	890	5,624	$3,303
1991/92	839,160[c]	869,988	$0.80	$697,970	187	704	4,652	$3,732
1992/93	1,100,440	1,249,621	$0.79	$988,628	240	1,003	5,207	$4,119
1993/94	799,235	964,343	$1.03	$995,783	320	949	3,014	$3,112
1994/95	1,351,000	1,322,219	$1.79	$2,361,541	261	1,379	5,066	$9,048
1995/96	1,157,500	1,332,095	$1.39	$1,846,556	424	1,582	3,142	$4,355
1996/97	939,300	909,789	$1.29	$1,169,612	294	1,234	3,095	$3,978
1997/98	892,410	894,739	$1.63	$1,458,425	226	976	3,959	$6,453
1998/99	1,026,345	1,055,572	$1.55	$1,636,137	219	971	4,820	$7,471
1999/00	1,580,000	1,569,626	$1.95	$3,060,771	200	1,378	7,848	$15,304
2000/01	1,122,500	1,158,385	$2.23	$2,583,199	220	913	5,265	$11,742
2001/02	1,425,200	1,438,451	$1.75	$2,517,289	235	1,201	6,121	$10,712
2002/03	1,576,700	1,639,440	$1.26	$2,042,882	201	1,313	8,156	$10,164
2003/04	1,637,700	1,698,650	$1.42	$2,472,456	195	1,296	8,711	$12,679
2004/05	1,381,200	1,374,532	$2.12	$2,769,116	194	1,139	7,085	$14,274
2005/06	1,475,800	1,437,731	$2.00	$2,875,462	198	1,418	14,523	$14,523
2006/07	1,598,700	1,597,457	$1.97	$3,146,990	175	1,237	17,983	$17,983
2007/08[d]	1,384,300	1,449,301	$2.43	$3,774,428	181	1,290	7,923	$21,086
2008/09	1,122,100	1,102,637	$2.30	$2,536,065	176	1,072	6,301	$13,078
2009/10	1,574,700	1,610,826	$2.34	$3,769,333	169	1,240	9,532	$22,304
2010/11	1,262,800	1,274,541	$2.52	$3,211,843	180	1,109	7,081	$17,841
2011/12	999,000	1,023,834	$5.06	$5,180,600	189	1,043	5,417	$27,411
2012/13	1,476,000	1,512,895	$4.05	$6,127,225	199	1,369	7,602	$30,790
2013/14	1,472,600	1,556,983	$3.97	$6,181,223	198	1,396	7,864	$31,218
2014/15	1,084,800	—	—	—	—	—	—	—
2015/16	1,439,900	1,525,387	$3.50	$5,338,855	175	1,278	8,716	$30,508
2016/17	1,243,200	1,319,798	$4.00	$5,279,192	169	1,206	7,809	$31,238
2017/18e	1,234,400	—	—	—	—	—	—	—

[a] Season = October 1 through September 30. Experimental fishing program prior to 1990/1991 season.

[b] Based on CFEC (annual) data prior to the 1998/1999 season, then based on ADF&G fish ticket data.

[c] Quota originally calculated in numbers of sea cucumbers.

[d] Does not include data for the Yakutat sea cucumber fishery.

Table 2.–Registration Area A (Southeast Alaska) commercial geoduck clam harvest, effort, and value, 1985/86 through 2013/14. Dashes indicate that values are not available.

Season[a]	Guideline Harvest Level (lb)	Total Pounds Landed	Average Price per Pound[b]	Estimated Exvessel Value[b]	Number of Divers	Number of Landings	Total Days Open	Average Pounds per Diver	Average Earnings per Diver[b]
1985–86	c	143,868	$0.21	$30,212	8	40	240	17,984	$3,777
1986–87	c	28,191	$0.25	$7,048	3	9	240	9,397	$2,349
1987–88	125,000	185,674	$0.30	$55,702	6	156	240	30,946	$9,284
1988–89	189,232	143,188	$0.49	$70,162	9	127	240	15,910	$7,796
1989–90	199,000	207,083	$0.51	$105,612	18	165	240	11,505	$5,867
1990–91	196,000	189,585	$0.51	$96,688	15	130	176	12,639	$6,446
1991–92	219,000	193,074	$0.66	$127,429	20	131	33	9,654	$6,371
1992–93	196,000	189,379	$1.11	$210,211	22	109	19	8,608	$9,555
1993–94	219,000	209,322	$1.50	$313,983	40	115	11	5,233	$7,850
1994–95	195,000	197,246	$1.85	$364,905	64	190	14	3,082	$5,702
1995–96	209,000	229,681	$2.02	$463,956	109	401	10	2,107	$4,256
1996–97	196,000	203,017	$2.57	$521,754	97	359	6	2,093	$5,379
1997–98	196,000	180,443	$3.89	$701,923	110	312	3	1,640	$6,381
1998–99	112,500	111,311	$2.13	$237,092	98	206	66	1,136	$2,419
1999–00	250,400	603,100	$1.60	$323,616	61	240	50	3,316	$5,305
2000–01	391,100	438,334	$1.06	$464,634	74	543	148	5,923	$6,279
2001–02	285,322	283,405	$0.72	$204,052	37	324	78	7,660	$5,515
2002–03	382,100	392,406	$1.69	$663,166	50	537	35	7,848	$13,263
2003–04	341,000	377,584	$2.87	$1,083,666	49	482	25	7,706	$22,116
2004–05[d]	477,000	535,516	$3.93	$2,104,578	60	710	24	8,925	$35,076
2005–06[d]	403,800	436,040	$2.04	$889,522	64	545	51	6,813	$13,899
2006-07[d]	687,100	726,866	$3.88	$2,820,240	66	812	42	11,013	$42,731
2007-08[d]	590,800	610,807	$3.12	$1,905,718	59	675	42	10,353	$32,300
2008-09[d]	868,700	906,685	$3.66	$3,318,467	56	920	39	16,191	$59,258
2009-10[d]	630,900	658,714	$6.74	$4,439,732	60	694	28	10,979	$73,996
2010-11[d]	824,800	845,582	$6.61	$5,589,297	69	953	25	12,255	$81,004
2011-12[d]	557,300	556,210	$10.31	$5,734,525	69	777	25	8,061	$83,109
2012-13[d]	763,200	800,783	$6.88	$5,509,387	68	974	30	11,776	$81,020
2013-14[d]	601,400	514,037	$7.92	$4,071,173	69	763	34	7,450	$59,003
2014-15	750,600	—	—	—	—	—	—	—	—
2015-16[d]	543,600	565,761	$5.28	$2,987,218	55	658	28	10,287	$54,313
2016-17[df]	616,900	—	—	—	—	—	—	—	—
2017-18[ef]	572,400	—	—	—	—	—	—	—	—

[a] Season = October 1 through September 30.

[b] Average price data is based entirely on ADF&G fish ticket data. Note: 1985-2000 prices were reported for 90% of total pounds landed; however, from 2001-2009 and for the 2010–11 season prices were reported for only 35% of total pounds landed and for the 2009–10 season, prices were reported for 50% of the total pounds harvested.

[c] Five-year, 300,000 pound GHL in three areas.

[d] Mariculture site fisheries are not included.

Table 3.–Registration Area A (Southeast Alaska) commercial red sea urchin harvest, effort, and value, 1980/81 through 2013/14. Dashes indicate that values are not available.

Season	Guideline Harvest Level (lb)	Total Landed (lb)	Average Price Per lb[a]	Estimated Exvessel Value[b]	Number of Divers	Number of Landings	Average lb per Diver	Average Earnings per Diver[a]
1980/81[b]				Confidential				
1981/82[b]				Confidential				
1982/83[b]				Confidential				
1983/84	—	23,303	$0.12	$2,796	4	9	5,826	$699
1984/85	—	188,023	$0.17	$31,906	16	84	11,751	$1,994
1985/86	—	58,303	$0.13	$7,288	8	32	7,288	$911
1986/87	—	890,092	$0.14	$125,335	26	459	34,234	$4,821
1987/88[b]				Confidential				
1988/89	—	223,883	$0.41	$91,106	11	128	20,353	$8,282
1989/90	—	23,617	$0.25	$5,833	9	33	2,624	$648
1990/91	—	174,233	$0.26	$45,823	6	91	29,039	$7,637
1991/92	—	428,220	$0.30	$128,894	37	256	11,574	$3,484
1992/93	—	143,485	$0.29	$41,467	17	108	8,440	$2,439
1993/94	—	0	—	0	0	0	—	—
1994/95[b]	3,000,000	2,088,395	$0.45	$944,329	1	1,391	2,088,395	$944,329
1995/96[b]	—	877,212	$0.52	$458,508	1	705	877,212	$458,508
1996/97	6,093,579	4,929,280	$0.38	$1,878,056	150	3,483	32,862	$12,520
1997/98	4,255,364	4,083,877	$0.34	$1,408,397	129	2,465	31,658	$10,918
1998/99	4,822,700	3,075,095	$0.40	$1,230,038	62	1,524	49,598	$19,839
1999/00	5,748,700	2,676,456	$0.38	$1,017,053	47	1,094	56,946	$21,639
2000/01	6,806,700	2,373,993	$0.36	$854,637	56	842	42,393	$15,261
2001/02	5,689,300	2,720,241	$0.34	$924,882	32	995	85,008	$28,903
2002/03	5,309,900	3,578,493	$0.32	$1,133,706	36	1,265	99,403	$31,492
2003/04	5,095,100	2,834,872	$0.33	$895,369	40	1,019	70,872	$22,384
2004/05	5,518,300	1,801,893	$0.32	$576,605	31	651	58,125	$18,600
2005/06	5,753,100	1,024,282	$0.31	$317,527	17	354	60,252	$18,678
2006/07	5,599,500	622,501	$0.33	$205,425	11	209	56,591	$18,675
2007/08	5,599,500	710,718	$0.36	$283,030	10	266	71,072	$23,303
2008/09	5,440,100	354,697	$0.34	$125,403	9	121	39,411	$13,934
2009/10	5,059,800	506,959	$0.29	$147,150	11	201	46,087	$13,377
2010/11	4,950,000	276,745	$0.34	$93,913	3	103	92,248	$31,304
2011/12	3,274,500	160,540	0.41	$65,821	3	58	53513	21940
2012/13	3,275,300	357,679	$0.37	$133,082	8	125	44,710	$16,635
2013/14	3,275,300	540,463	$0.45	$243,208	10	186	54,046	$24,321
2014/15	3,310,700	—	—	—	—	—	—	—
2015/16	3,838,900	677,202	$0.49	$331,829	12	314	56,434	$27,652
2016/17	3,690,000	265,715	$0.61	$162,086	9	114	29,524	$18,010
2017/18[d]	3,435,100	—	—	—	—	—	—	—

[a] Based on CFEC (annual) data prior to the 1998/1999 season, then based on ADF&G seasonal fish ticket data.

[b] Department test fishery. GHL is the agreed test fishery maximum poundage taken during spring 1995–spring 1996, in exchange for research funds.

Table 4.–Registration Area A (Southeast Alaska) commercial abalone harvest, effort, value, and season length, 1970/71 through 1996/97. Dashes indicate that values are not available.

Season	Guideline Harvest Range (lb x 1,000)	Southern Southeast Harvest (lb)	District 13 Harvest (lb)	Total Southeast Harvest (lb)	Number of Divers	Exvessel Value	Season Length (days)
1970/71	—	—	—	—	—	—	365
1971/72	Confidential Data—Less than 3 divers reporting landings						365
1972/73	—	65	2,610	2,675	6	$2,675	365
1973/74	—	—	3,000	3,000	3	$4,500	365
1974/75	—	—	13,826	13,826	3	$20,739	365
1975/76	—	55	8,497	8,552	8	$17,104	365
1976/77	Confidential Data—Less than 3 divers reporting landings						365
1977/78	—	805	10,861	11,666	10	$14,816	365
1978/79	—	130,607	49,320	179,927	35	$253,697	365
1979/80	—	316,952	61,733	378,685	43	$408,980	287
1980/81	250	233,589	18,382	251,971	40	$420,792	273
1981/82	100–125	338,305	32,589	370,894	54	$445,073	59
1982/83	100–125	100,458	12,826	113,284	41	$240,162	36
1983/84	100–125	99,294	8,735	108,029	31	$302,481	126
1984/85	100–125	59,237	8,379	67,616	25	$165,659	151
1985/86	25–58	32,817	7,720	40,537	18	$117,963	71
1986/87	25–58	47,404	13,820	61,224	24	$168,366	146
1987/88	25–58	57,209	10,406	67,615	42	$208,930	36
1988/89	25–58	65,928	10,172	76,100	45	$307,444	33
1989/90	25–58	57,784	4,020	61,804	67	$330,651	40
1990/91	25–58	62,779	5,607	68,386	97	$374,071	9
1991/92	25–58	35,987	8,095	44,082	96	$267,578	35
1992/93	25–58	26,905	9,083	35,988	100	$386,151	19
1993/94	25–58	27,680	7,172	34,852	86	$487,928	7
1994/95	25–58	15,055	7,824	22,879	102	$330,373	8
1995/96	0–16	8,524	5,828	14,352	100	$126,526	7
1996/97	closed indefinitely						

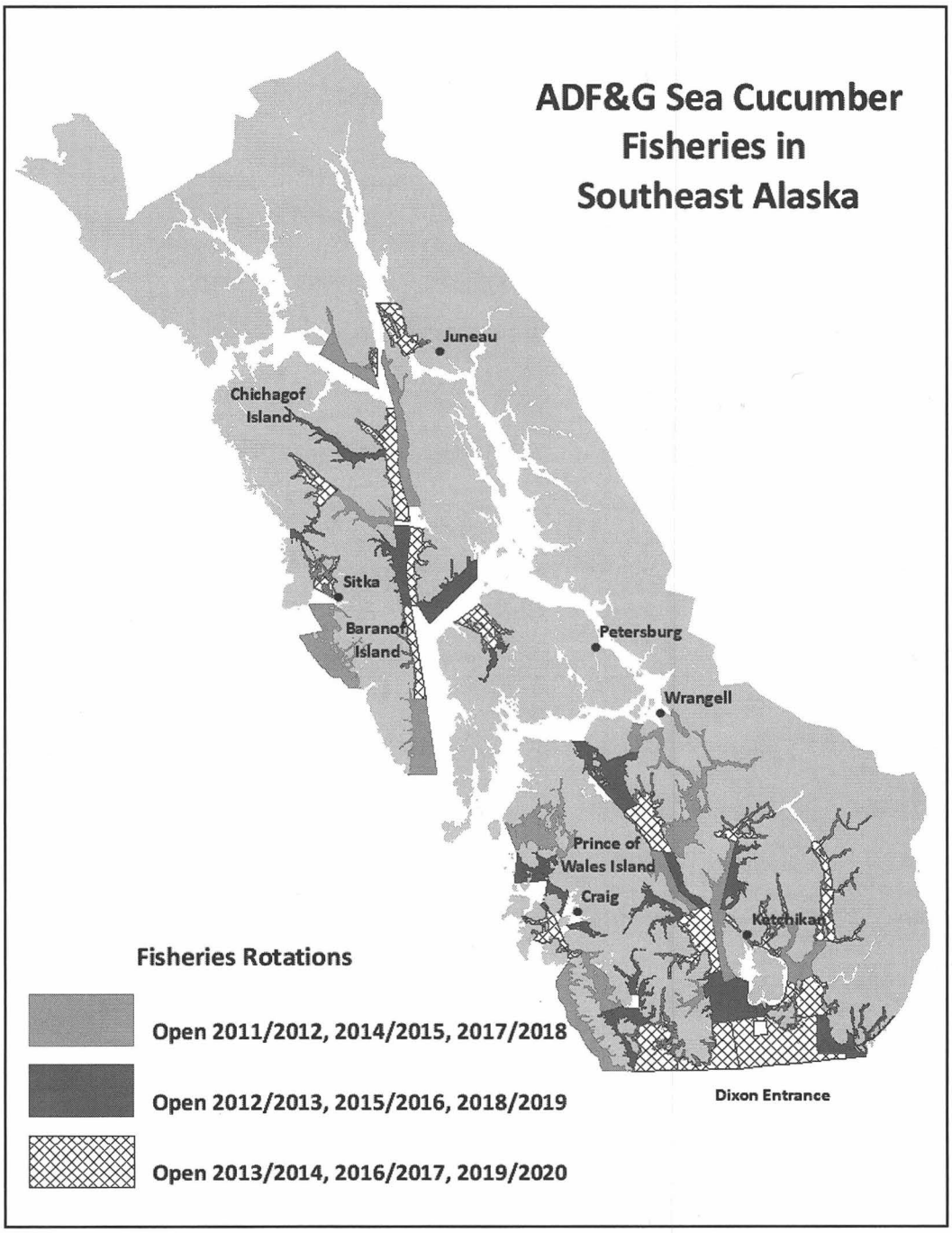

Figure 1.–Sea cucumber commercial harvest areas and rotational seasons.

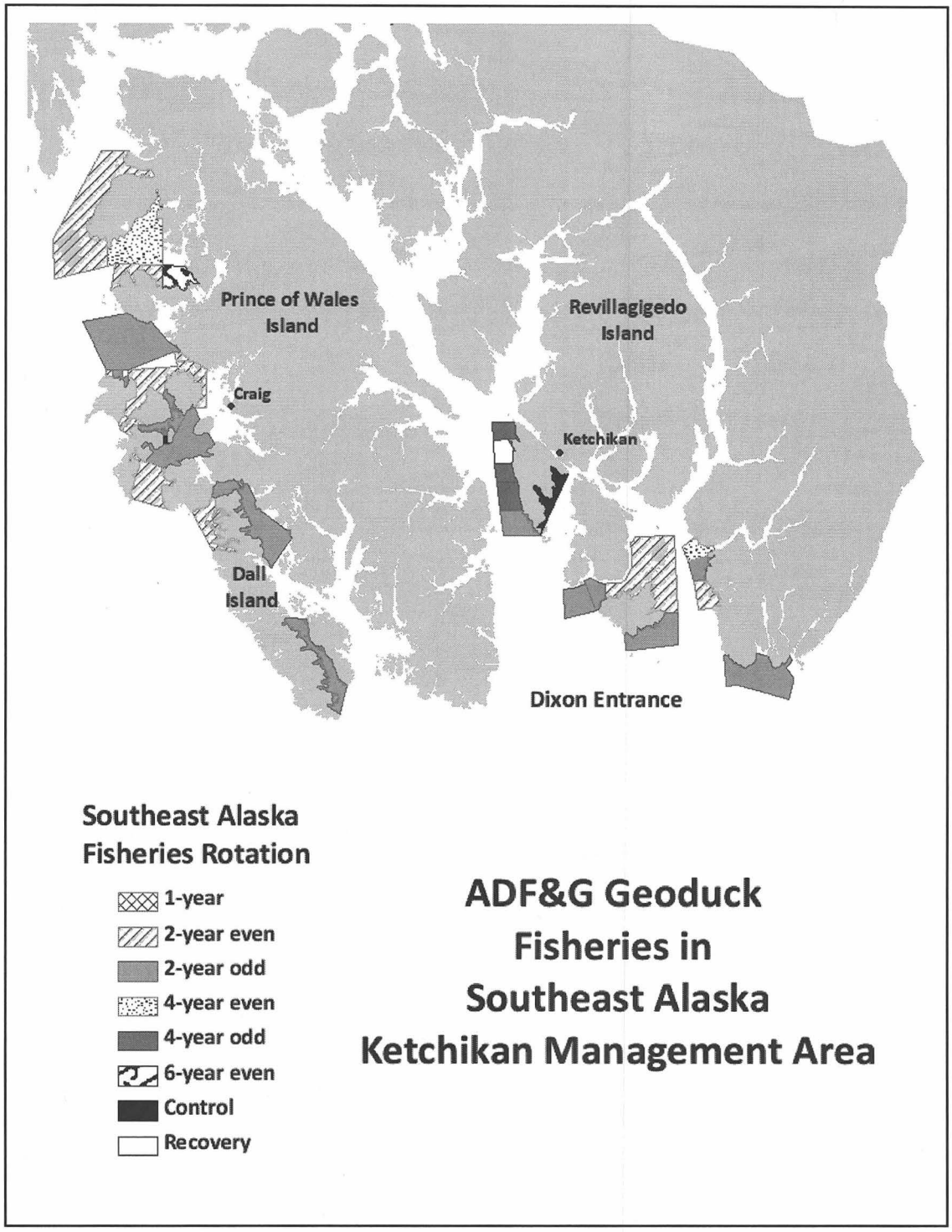

Figure 2.–Geoduck clam commercial harvest and rotation cycles and control areas in the Ketchikan Management Area.

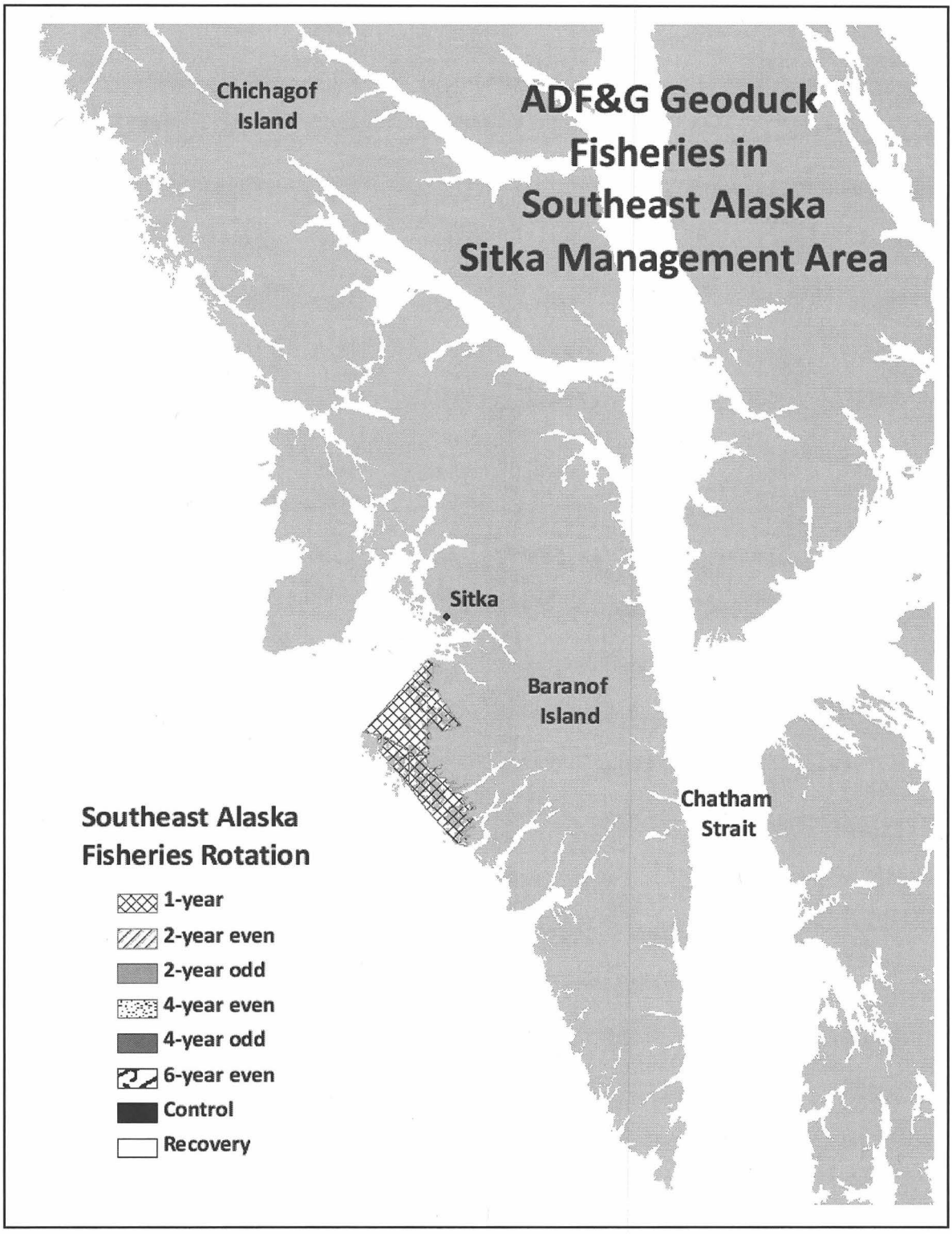

Figure 3.–Geoduck clam commercial harvest and rotation cycles in the Sitka Management Area.

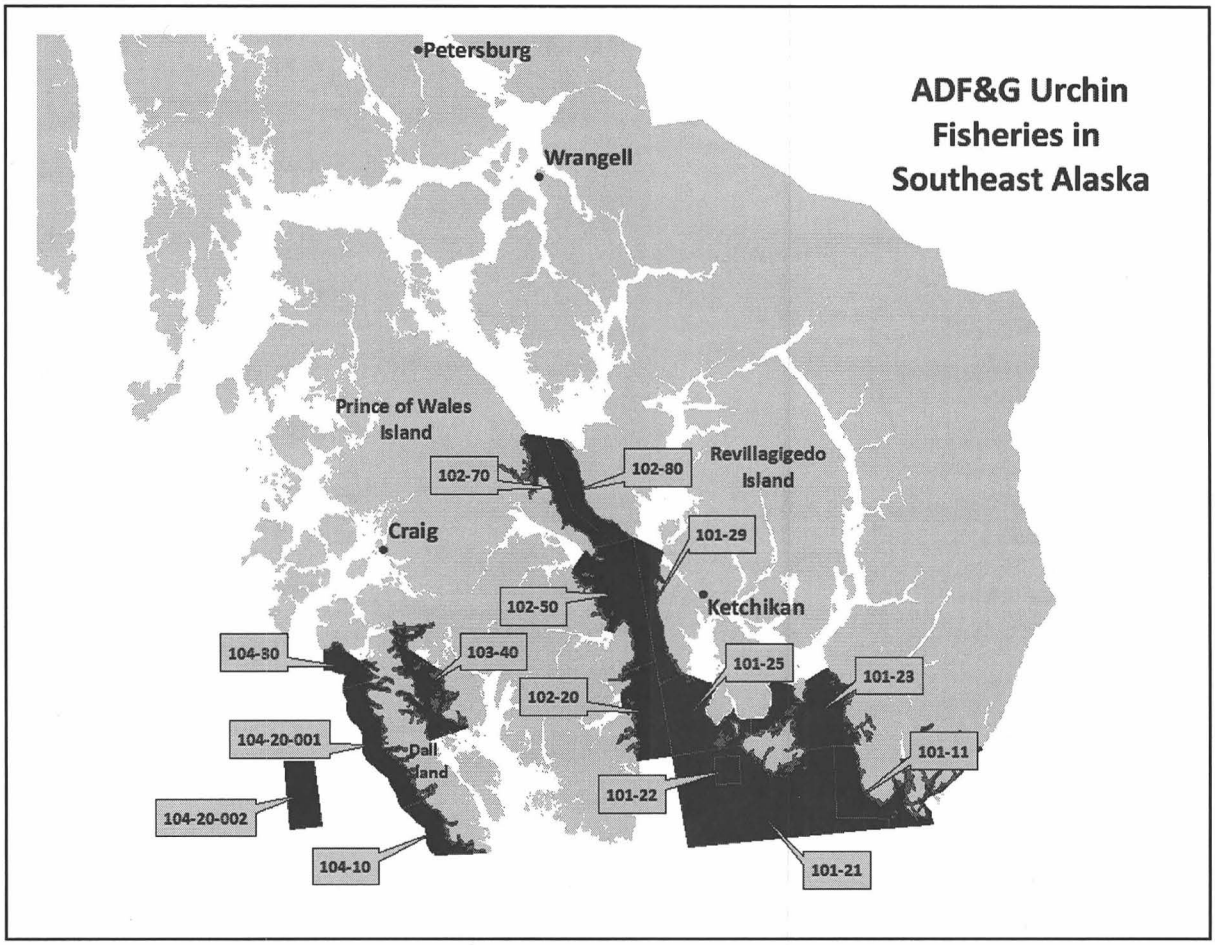

Figure 4.–Red sea urchin commercial harvest areas.

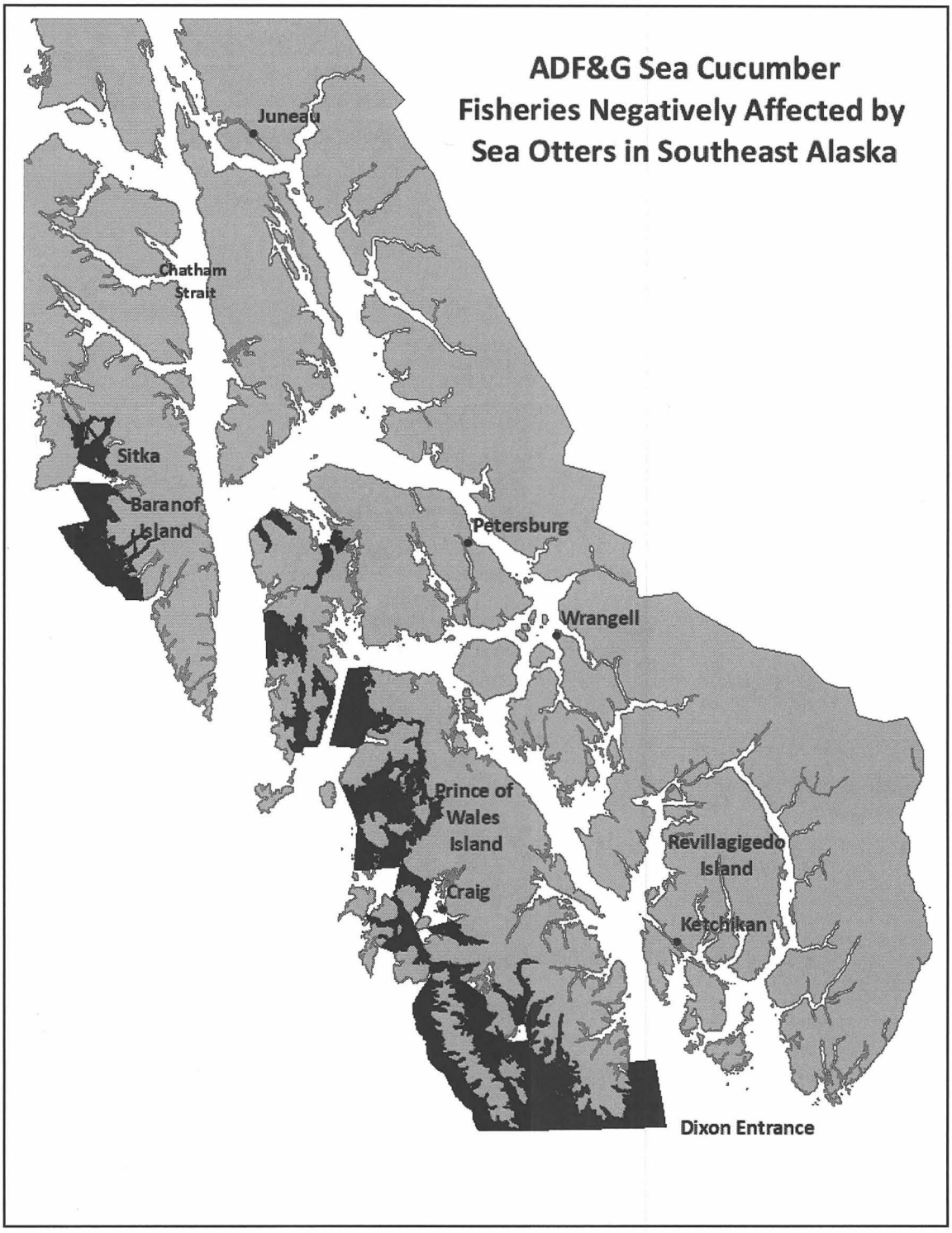

Figure 5.–Sea cucumber commercial harvest areas negatively affected by sea otters.

Figure 6.–Geoduck commercial harvest areas negatively affected by sea otters.

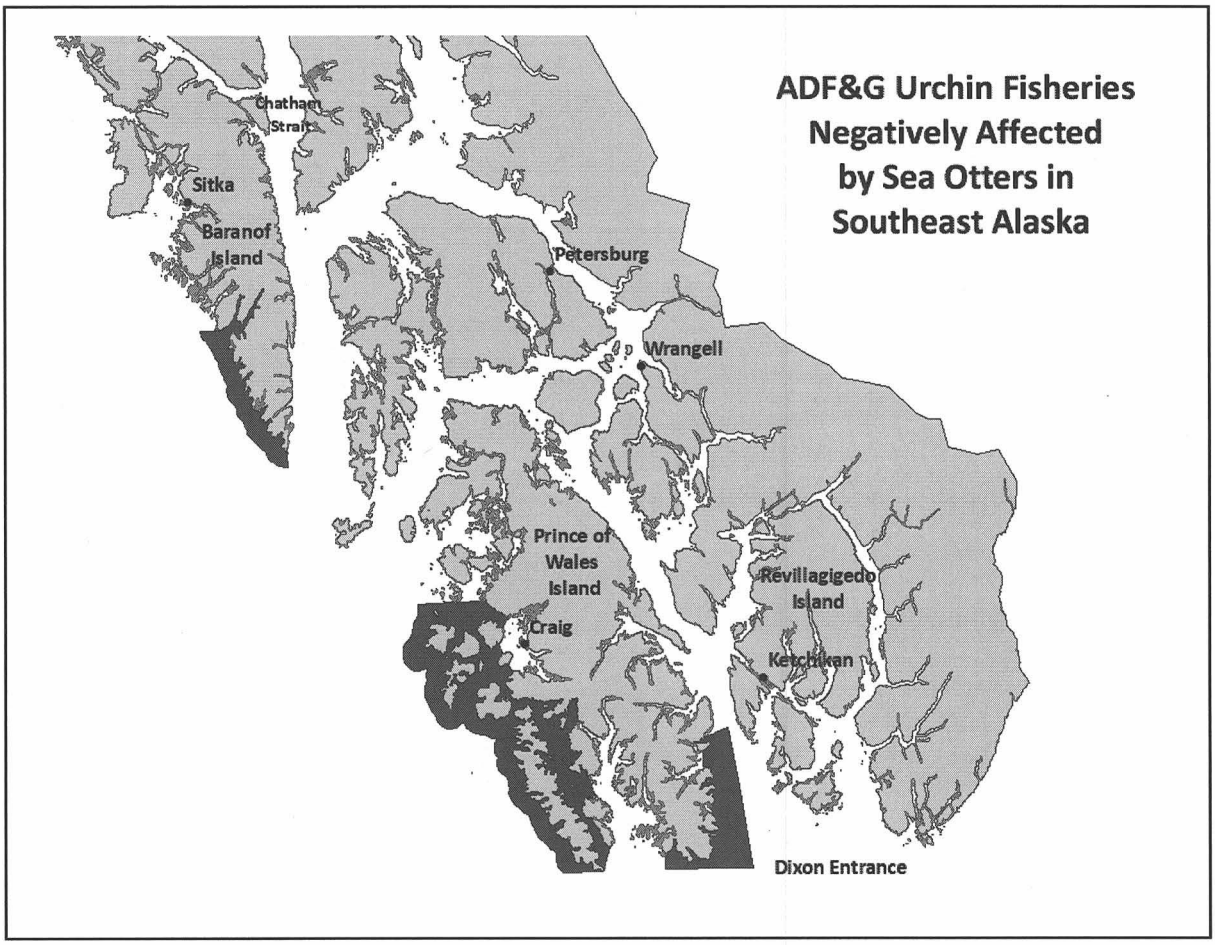

Figure 7.–Red urchin commercial harvest areas negatively affected by sea otters.

Fishery Management Report No. 17-55

Annual Management Report for the 2016/2017 Southeast Alaska/Yakutat Dungeness Crab Fisheries

by

Joe Stratman

Kellii Wood

and

Adam Messmer

December 2017

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat or long
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

FISHERY MANAGEMENT REPORT NO. 17-55

ANNUAL MANAGEMENT REPORT FOR THE 2016/2017 SOUTHEAST ALASKA/YAKUTAT DUNGENESS CRAB FISHERIES

by
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December 2017

The Fishery Management Reports series was established in 1989 by the Division of Sport Fish for the publication of an overview of management activities and goals in a specific geographic area, and became a joint divisional series in 2004 with the Division of Commercial Fisheries. Fishery Management Reports are intended for fishery and other technical professionals, as well as lay persons. Fishery Management Reports are available through the Alaska State Library and on the Internet: http://www.adfg.alaska.gov/sf/publications/. This publication has undergone regional peer review.

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ABSTRACT

This report reviews the commercial fishery for Dungeness crab in Region I, which includes Registration Area A (Southeast Alaska) and Registration Area D (Yakutat).

Dungeness crab harvests in Region I totaled 2,358,645 lb valued at $7.17 million during the last completed season. The average dock price per pound for Dungeness crab during the 2016/2017 season was $3.09.

The Dungeness crab fishery in Region I is fully developed. The first commercial harvest of Dungeness crab from Southeast Alaska occurred in the 1930s.

Limited Dungeness crab stock assessment surveys were conducted from 1996 through 1997, and again from 2000 through 2004. Dungeness crab management is by sex, size, and season. In addition to sex, size, and season, a management plan has been implemented for the Southeast Alaska Dungeness crab fishery, mandating the department to conduct a full season harvest estimate two weeks into the summer season. If this full season harvest estimate falls below thresholds described in the management plan, season length is reduced. Dockside sampling and skipper interviews also are routinely conducted in Southeast Alaska.

Surveys for Yakutat Dungeness crab were conducted in 2004, 2012, and 2013. Yakutat stocks of Dungeness crab are at very low levels and have been designated as collapsed and recovering. The Yakutat Dungeness crab fishery will remain closed until signs of recovery are apparent and until a management and stock assessment plan is developed to provide sustainable harvest.

Key words: Dungeness crab, *Metacarcinus magister*, Southeast Alaska, Yakutat, fisheries management, crab, Region I, harvest statistics, Alaska Board of Fisheries

CHAPTER 1: SOUTHEAST ALASKA DUNGENESS CRAB FISHERY

INTRODUCTION

Dungeness crab *Metacarcinus magister* are members of the highly evolved brachyuran (true crab) infraorder of the subphylum Crustacea. They are commercially significant and widely distributed in coastal waters of the eastern Pacific Ocean from Santa Barbara, California, to the Pribilof Islands (Jensen 1995). Dungeness crab are found throughout Registration Area A (Southeast Alaska), which is near the northern limit of their range, in areas with mud and sand substrate at depths between two and 50 fathoms.

Southeast Alaska, Area A (Figure 1.1), has produced a long-term average of about 2.64 million lb of Dungeness crab per season. Ten-year average harvests for the 1970s, 1980s, 1990s, and 2000s have been 0.61, 2.45, 3.40, and 4.55 million lb, respectively. The 2016/17 season harvest was 2.36 million lb.

Although the Southeast Alaska Dungeness crab fishery is under limited entry, and there are 277 active permanent and interim Dungeness crab limited entry permits, actual participation varies. During the most recent five seasons, an average of 183 permit holders have registered and fished (Table 1.1). Most vessels are below limit seiner length (58 ft overall length), although they range in size from small skiffs to over 90 ft overall length. Almost all participants use standard, hatbox-shaped pots constructed with steel frames and webbed with stainless-steel wire; maximum pot size is 50 inches in diameter and 18 inches high. The maximum legal vessel gear limit is 300 pots per vessel.

Dungeness crab life history timing is less synchronous than for other commercially important northern crab species. The peak male molt period in Southeast Alaska extends from February through July (Bishop et al. *unpublished data*; Lehman and Osborn 1970; Shirley and Shirley 1988); this is followed by a female molt period in August and September (Bishop et al. *unpublished data*; Shirley and Shirley 1988), which coincides with peak mating timing in late summer through early fall (Shirley and Shirley 1988; Stone and O'Clair 2001) because Dungeness crab females only mate in the soft shell condition (Hartnoll 1969). After molting and mating, females take approximately a month to harden, extruding eggs soon thereafter from October through December (Shirley et al. 1987).

Because Dungeness crab females can store sperm for up to two years (Jensen et al. 1996), mating is not a prerequisite for oviposition and old-shell females also extrude eggs; however, clutch sizes decline with each successive oviposition without new sperm reserves (Hankin et al. 1989). Dungeness female fecundity increases with body size up to a maximum of about 2.5 million eggs. The high potential fecundity of large females is tempered by a decrease in molt frequency with size, which results in a reduction in relative fecundity (Hankin et al. 1985, 1989). There is evidence for reduced population productivity for this species in Southeast Alaska, because it appears that females at this latitude extrude eggs only on a biannual basis (Swiney et al. 2003). As female Dungeness crab grow to a large size, they exhibit assortative mating behavior (i.e.,

females are mated only by males one or more molts larger in body size) (Butler 1960; Shirley and Sturdevant 1988).

Dungeness crab management is by sex, size, and season, with the added caveat of a provision to close the fishery early if the predicted harvest does not meet one of two thresholds. In order to conserve reproductive potential, only male crab with a minimum carapace width (CW) of 6.5 inches notch to notch may be harvested. There are three different commercial Dungeness crab fishing seasons in regulation. For Districts 1 and 2, and the portion of Section 13-B not in the Sitka Sound Special Use area, there is a fall/winter season from October 1 to February 28. The portion of Section 13-B that is in the Sitka Sound Special Use area and a portion of Whale Passage has a fall season, from October 1–November 30. The remainder of Southeast Alaska has a summer (June 15–August 15) and fall (October 1–November 30) season. The Southeast Alaska Dungeness Crab Management Plan (5 AAC 32.146) directs the department to predict the entire season's harvest by June 29 each season. If the predicted harvest is 1.5 million lb or less, the summer season closes no sooner than 21 days after the season opened, and the fall Dungeness crab fishing season specified in regulation does not open. If the predicted harvest is greater than 1.5 million lb but less than 2.25 million lb, the summer season ends no sooner than 28 days after the season opened with a curtailed fall season of 30 days. If the department determines that harvest projections fail to meet this threshold due to soft-shell crab early in the summer Dungeness crab fishing season, the department may open a full fall Dungeness crab fishing season as specified in regulation.

This report will describe Southeast Alaska Dungeness crab fishery history, regulation development, management concerns, research, and summaries of recent seasons. It is intended to provide a comprehensive overview to brief the board on the Southeast Alaska Dungeness crab fishery to facilitate promulgation of regulations. It is also intended to inform the public about the Southeast Alaska Dungeness crab fishery, and it acts as an Annual Management Report for this fishery to provide transparent fishery management.

FISHERY DEVELOPMENT AND HISTORY

The first commercial harvest of Dungeness crab from Southeast Alaska occurred in the 1930s. Harvest statistics prior to 1960 were combined into a single total for much of the Gulf of Alaska, so harvest information for Southeast Alaska is not available. Since 1960, commercial Dungeness crab harvests from Southeast Alaska have averaged 2.69 million lb per season (Table 1.1).

The Dungeness crab fishery in Southeast Alaska has evolved through four distinct periods since the early 1960s. From the early 1960s through the early 1980s, participation was low so the need for formal regulations and other restrictions was minimal. The 1960s were characterized by a few larger vessels in a directed fishery harvesting an average of 2.2 million lb per year. This harvest was fueled by high market demand due to low harvests in Washington, Oregon, and California. The principal product was canned crabmeat.

During the 1970s, production in Washington and Oregon rebounded and demand for crab from Southeast Alaska declined. With little or no processor support, fishermen had to either sell over the dock to the public or make complicated and risky arrangements to airfreight live crab out of state. Only a few dozen small vessels in the 30- to 45-foot range fished, primarily during the summer. Harvests for this period averaged 0.61 million lb by 31 permit holders.

Between the 1981/82 and 1990/91 seasons, the fishery underwent sweeping change. Declining crab harvests in Pacific Coast states and changing markets increased demand for Alaska frozen sections, whole cooked crab, and air-freighted live crab. More processors began purchasing crab and supporting the fishery through the entire summer season. Harvests during the 1980s increased, averaging 2.45 million lb per season, and the numbers of participants increased, averaging 173 permit holders. The fishery grew from a small group of 30- to 45-foot vessels to a larger fleet that included skiff-sized vessels up to 30 ft in length. These changes resulted in shift from a primary fishery for a relatively small number of single-species participants to a secondary fishery for a larger number of new and often transitory entrants.

Increased participation led to a permit moratorium imposed by the Commercial Fisheries Entry Commission (CFEC) in 1991. During the four years of the moratorium, CFEC conducted numerous studies and public meetings to evaluate the need for limited entry into this fishery. Subsequently, CFEC requested that the legislature authorize use of tiered pot limits to accommodate the large number of qualifying participants while limiting the effort to acceptable levels. In January 1996, the moratorium period ended and a tiered pot limit form of limited entry was adopted for implementation by June 15, 1997. The tiered permit system is structured to provide a maximum of 48,750 pots to the fishery. To date, there are 277 active permanent and interim Dungeness crab limited entry permits. Of these limited entry permits, 49 are 300-pot permits, 43 are 225-pot permits, 83 are 150-pot permits, 98 are 75-pot permits, two are ring net permits, and two are diving gear permits.

REGULATION DEVELOPMENT

FISHING SEASONS AND PERIODS

From the early 1930s through 1955, regulations included a prohibition on the taking of females, a minimum size limit for males, and a closed season on the most important grounds for two to four months between May 1 and September 1. Available documentation from that period indicates that molting was thought to occur during the summer. The summer closure was generally acceptable to fishermen because of other fishing opportunities in the salmon and halibut fisheries. The summer closure was repealed in the late 1950s.

From 1960 to 1969 there was no closed season for the Southeast Alaska commercial Dungeness crab fishery. The first seasonal closures after statehood were adopted in 1970 when portions of Districts 5 and 6 were closed April 1–June 30. In 1975 the first regionwide season was adopted; Dungeness crab could be taken from May 16 to March 31, and the District 5 and 6 closures remained in effect. In 1976 the regional open season was changed to June 1–February 28. That regional season remained in effect through 1982 (however, the specific closures in Districts 5 and 6 were repealed in 1978). In 1983 and 1984, the regional open season was July 1–February 28, and a shortened season was adopted for part of Sitka Sound. Beginning in 1985, the commercial fishery was open June 15–August 15 and October 1–February 28 because field studies indicated that the major period when females molted and were mated was late August–September. Conclusions of research done later in Southeast Alaska supported those field studies, and other research indicated that peak timing of the female molt and mating is late summer through early fall. The first split season for Districts 1 and 2 was adopted in 1986. In that year the season for Districts 1 and 2 was changed to October 1–February 28. The season for the northern and central portions of the region remained June 15–August 15 and October 1–February 28. In 1989, in response to increasingly high effort levels and high harvest rates, the

season in the northern and central portions of the region was further shortened by three months and the fall/winter season was limited to October 1–November 30. Districts 1 and 2 and Section 13-B remained open from October 1 to February 28. In 2000 the board adopted a separate 2-month season of October 1–November 30 for waters of Section 13-B in the Sitka Sound Special Use area to provide additional harvest opportunity for the Sitka subsistence fishery.

The season remained October 1–February 28 in Districts 1 and 2 and a portion of Section 13-B until 2009, when the board adopted a proposal that made the commercial Dungeness crab season in Districts 1 and 2 the same as the northern and central portions of the region. That regulation change had a sunset clause that stipulated both Districts 1 and 2 would revert back to a fall/winter season beginning February 29, 2012, unless other action was taken. In 2010, the board considered an agenda change request from the Organized Village of Kasaan and revised the season description for District 2, changing it back to a fall/winter season. No action was taken on the sunset clause that remained in place for District 1, so the season in that area reverted back to the fall/winter season in 2012. In 2015 the board adopted a change in the start times for the summer, fall, and fall/winter season descriptions from 12:00 noon to 8:00 a.m.

Size Restrictions

From 1924 to 1935, legal harvest of Dungeness crab was restricted to males over 6.5 inches in greatest width. From 1936 to 1962, only males over 7 inches in greatest width were legal. Since 1963, the legal size has been 6.5 inches in shoulder width, measured across the carapace immediately anterior to the tenth anterolateral spines. This measuring point is most often used in jurisdictions throughout the range of Dungeness crab, and is used because the large tenth anterolateral spines are often broken or eroded in older-shelled crab. Although size at maturity varies somewhat throughout its range, the 6.5-inch (inside the points) legal size limit in Alaska for the commercial Dungeness crab fishery is currently the largest legal size limit on the Pacific coast.

Gear Definitions and Specifications

Since 1934, trawls have been prohibited in the Southeast Alaska Dungeness crab fishery. Gear was further limited to pots or ring nets in 1954. A pot limit of 300 pots or ring nets was implemented in 1963. Diving gear was included as legal gear in 1966. Nearly all of the commercial harvest is currently taken with pots.

Starting in 1963, Dungeness crab pot buoys were required to display the registration number of the vessel fishing the gear. In 1988, the minimum size of buoy markings was set at 1.5 inches in height, in numerals at least ¼-inch wide that contrasted with the color or texture of the buoy.

In 1977, two escape rings 4⅜ inches in diameter were required in each pot, and a Dungeness pot was defined by its tunnel eye openings, which individually could not exceed 30 inches in perimeter. In 1978, an escape panel secured by a maximum of 120-thread cotton twine was required. A minimum size for buoy numbers of 1.5 inches high and ¼ inch wide was implemented in 1989. In 1991, the breaking strap or biodegradable twine for the lid retainers was changed from 120-thread to 60-thread. The intent of this change was to minimize untended ghost fishing of lost or derelict pots. In order to facilitate the enforcement of pot limits, identification tags were required to be attached to every buoy connected to a Dungeness crab pot beginning with the 2001/02 season. Dungeness crab pots and ring nets used in Southeast Alaska must all be buoyed and marked identically. In 2012, an amended proposal was carried by the board that

changed the requirement from buoys that had to be marked identically to buoys of essentially the same color, shape, size, and markings.

Dungeness gear development remained static for many years, with little change in configuration, materials, size, and weight to significantly affect pot efficiency. However, trigger devices that minimize escapement of crab through entrance tunnels have been developed and are being installed on commercial gear, and some fishermen have begun using larger pots. In order to prevent further increases in pot size, a maximum pot size of 50 inches in diameter was implemented prior to the 2001/02 season.

Other Regulatory Changes

Vessel registration and hold inspection requirements started in 1974. Southeast Alaska was designated a superexclusive registration area in 1983. Hold inspections were rescinded in 1984. A Dungeness crab management plan became effective beginning with the 2001/02 season. The plan calls for early closure of the Southeast Alaska Dungeness crab season when regional catch is projected to be below one of two threshold levels. Changes to the Dungeness crab fishery made at the 2009 board meeting included the following: the Dungeness crab management plan was modified to allow management flexibility if harvest projections fail the meet the threshold for a full season due to soft-shell crabs early in the summer fishing season; clarification of permit stacking requirements; and revocation of closed areas in Chaik Bay and Whale Pass. In 2015 the board carried amended proposals to close waters to commercial Dungeness crab fishing near the communities of Angoon and Hoonah.

MANAGEMENT CONCERNS

Season Timing

The summer season overlaps with a portion of the male molt period, and legal males are harvested prior to mating, shifting the burden of reproduction onto smaller males. Harvesting legal males prior to reproducing has the potential of creating genetic pressure for crab to grow more slowly to avoid harvest. The prevalence of soft-shell crab in the catch and harvest during the summer fishery continues to be high in some areas and seasons. This suggests that production is being lost due to handling mortality, which has been documented as being higher for soft-shell Dungeness crab (Kruse et al. 1994).

Interpretation of Port Sampling Data

Aside from fish ticket data, port sampling data make up the longest time series dataset used to manage the fishery. Port sampling data are invaluable, showing the mean and range of carapace widths and individual weights, recruit class composition, and mean and range of catch per unit effort (CPUE) from sampled landings (Tables 1.2 and 1.3). Information obtained during the dockside interview includes the percentage of legal male crab not retained due to being soft or light. A high percentage of recruit crab in the harvest is indicative of annual recruitment into the fishery; however, in recruit-driven fisheries a smaller proportion of strong year classes are carried over to buffer the fishery against the effects of a poor year class. Trends in recruit composition of the harvest indicate that the fishery has historically been dependent on annual recruitment, with postrecruit crab making up a smaller percentage of the harvest since 2000 (Table 1.2). High variability in sample size, from a low of 303 crab in the 1984/85 season to a

high of 24,704 crab in the 2001/02 season (Table 1.2), and inherent subjectivity in regards to shell ageing, make it difficult to interpret data and make comparisons between certain seasons.

High Effort Levels Relative to Available Grounds

Conflict between user groups is rising as competitive pressure and gear saturation crowds commercial gear onto grounds traditionally used by noncommercial fishermen. This has resulted in commercial closed areas in numerous small areas around many communities in Southeast Alaska, including Juneau, Tenakee Springs, Elfin Cove, Point Baker, Thorne Bay, Gustavus, Ketchikan, Haines, Sitka, Hollis, Angoon, and Hoonah. There are continuing requests to the board for additional commercial closed areas.

In accordance with a federal law that was passed in 1998, commercial Dungeness crabbing was closed in designated wilderness areas in the Glacier Bay National Park and Preserve beginning June 15, 1999. Non-wilderness portions of the bay closed to Dungeness crabbing on September 30, 1999. Permit holders were given compensatory pay if they fished in either the Beardslee Islands or Dundas Bay wilderness areas for at least six of the years between 1987 and 1998. Processors were eligible for compensatory pay to offset losses if they purchased crab from these areas during the same time frame.

Lastly, sea otter populations are expanding their range in Southeast Alaska. With their reintroduction to Southeast Alaska in 1965, their expansion has been accompanied by drastic declines in the availability of many economically important invertebrate species, including Dungeness crab. The decline in Dungeness crab harvest in Districts 3, 4, and 14 is attributed to sea otters, whose populations began to rapidly increase in 1987 (Pitcher and Imamura 1990). Sea otters are currently expanding their range into important Dungeness crab fishing Districts 5, 6, 8, 9, and 10.

Lack of Regionwide Life History Information

In response to the department's concerns over fishery timing, excessive fishery capacity, and harvest levels, a program of stock assessment pot surveys was initiated. The survey objectives were to describe life history timing of Dungeness crab in Southeast Alaska and trends in abundance in support of a move toward more abundance-based management. Surveys were conducted in important fishery areas of central and northern Southeast Alaska from 2000 to 2004. However, the survey program was eliminated due to insufficient resources in 2005. Questions regarding life history timing throughout the region remain and continue to affect management of the fishery. Fishery independent surveys would be one way to continue to gather regionwide life history information, such as molt timing and growth increment.

RESEARCH

In addition to comprehensive fish ticket reporting (by regulation, processors are required to submit reports of effort, location, and pounds of harvest for each commercial landing), three surveys, occasional onboard observer sampling, occasional on-the-grounds sampling, and regular dockside sampling have been conducted for the Southeast Alaska Dungeness crab fishery.

SURVEYS

Icy Strait Survey

In July 1987 and May 1988, the department conducted a survey to provide baseline data for an assessment of the effects of sea otters on Dungeness crab populations in the Icy Strait area (Pitcher and Imamura 1990).

Stikine River Flats Survey

In the spring of 1996 and 1997, the department conducted preseason assessment surveys of the Dungeness crab stocks in the Stikine River Flats area (Statistical Areas 108-40 and 108-41) of central Southeast Alaska. This stock is a consistently important contributor to the overall Southeast Alaska harvest. Using a random transect experimental survey design and commercially configured pots with smaller mesh, the department collected size, sex, and shell hardness data during late May, prior to the commercial fishery opening on June 15. After the season opened, staff conducted onboard field observations of commercial fishing operations in the same general area. The goal of these initial projects was to develop a method for estimating the prevalence of undersized and legal-sized soft-shell male crab that would be vulnerable to handling by the commercial fleet early in the summer season.

Kittiwake Survey

A Dungeness crab pot survey was conducted from April 2000 to June 2004, with four major objectives:

- Investigate the utility of abundance-based management tools in this fishery:
    - develop pre- and postseason indices of abundance for legal and prerecruit males and determine their utility as predictors of harvest;
    - use a ratio estimator (Dawe et al. 1993) to model the results of pre- and postseason surveys and estimate the population size of Dungeness crab in Stikine Flats, Duncan Canal, Port Camden, Berners Bay, Peril Strait, Tenakee Inlet, and St. James Bay.
- Describe Dungeness crab life history and ecology:
    - describe timing of life history events;
    - describe interannual variation in crab size and shell age composition by sex;
    - describe species composition of invertebrates and fish captured in Dungeness crab pots.
- Refine pot survey methods for Dungeness crab to describe the relationship between crab catch by size and sex and soak time in pots with open and closed escape rings.
- Describe growth of Dungeness crab in Southeast Alaska.

From 2000 to 2004, 3,309 commercial pots were set during March/April, June, August/September, and November/December survey periods in nine survey areas: Stikine Flats, Duncan Canal, Kah Sheets Bay, Port Camden, Berners Bay, Peril Strait, Tenakee Inlet, St. James Bay, and Seymour Canal (Figure 1.2). Not all survey areas were sampled during each survey period and year. Depth-stratified clusters of three or four pots were set in depths from 5.5 to 73.2 meters. Clusters had alternately open then closed escape rings, and cluster locations were selected using a systematic sampling design with random start (Bishop et al. *unpublished data*).

Survey findings are summarized as follows:

- June legal CPUE was a useful index of population size only for Duncan Canal; for other survey areas it had little predictive power because crab were either not completely catchable or had not yet molted into the fishery in June. Soft-shell prevalence peaked in March/April through August/September for males and in August/September for females (Bishop et al. *unpublished data*).
- Data were modeled using Change-in-Ratio and Index-Removal methods to estimate legal population size, catchability, and exploitation rates. Change-in-Ratio population estimation yielded exploitation rates averaging 93% and 99% respectively for Stikine Flats and Duncan Canal open escape ring pots, and 83% and 83% for Peril Strait and Tenakee Inlet closed escape ring pots. In Port Camden, St. James Bay, and Berners Bay, low, variable, and even negative exploitation rates were estimated, probably as a result of an inseason recruitment molt, which violates the assumption of a closed population. The Index-Removal method produced exploitation rate estimates that were biased low due to catchability increasing between the two survey periods. The variable success of the two methods demonstrates a high level of spatial and temporal variability in Dungeness crab life history timing, which makes their assessment very difficult (Bishop et al. 2010).
- Crab were tagged in seven areas from 2000 to 2003. Tag–recapture data was analyzed to determine molt increment and molt probability. The molt increment of 29.9 mm CW was independent of premolt size for the adult male size range considered. Previous work done in Southeast Alaska identified male crab as being functionally mature (observed in mating embraces) at 120 mm CW (Shirley and Sturdevant 1988). The growth increment and molt probability work from the 2000–2003 surveys predicted that functionally mature crab would be under legal size for over one year (Bishop et al. 2007). Thus, the current size limit protects males to reproduce at least once before harvest. Molt probability at the legal size limit of 165 mm CW was 48%, declining to near zero for crab of 172 mm CW. Although information on the growth of smaller instars is needed, the age at first harvest is probably at least 4 years (Bishop et al. 2007).

Onboard Observer Sampling

During the 1998/99 season, two onboard observing trips were conducted in the Stikine River Flats area.

On-the-Grounds Sampling

During the 1999/00 commercial season, 20 separate commercial Dungeness crab vessels were sampled on the grounds during two separate fishing periods (June and October) in three areas—Stikine River Flats, Thomas Bay, and Duncan Canal—aboard the department research vessel *Kittiwake*.

Dockside Sampling

Since 1985, commercial Dungeness crab landings in Southeast Alaska have been sampled in the ports of Petersburg, Wrangell, Sitka, Juneau, Ketchikan, and Haines. Goals of the dockside sampling program are to describe the size and shell age composition, average weight, and catch rates of Dungeness crab in the commercial fishery. Port samplers measure the crab, determine shell condition, and check for damage to the carapace and legs. By analyzing these data and

knowledge of Dungeness crab growth rates, the department can determine the recruit class composition of the harvest (Tables 1.2 and 1.3).

In order to gain a better understanding of spatial and interannual variability in shell condition and of market limits, shell hardness of delivered and discarded crab was measured with durometers during the 2009/10 and 2010/11 commercial seasons (Bishop 2013).

RECENT SEASONS

2014/2015 SEASON SUMMARY

The predicted harvest for the 2014/15 season was above the Dungeness crab management plan thresholds, so the season length was not curtailed. Districts 8, 6, 9, and 10 had the largest harvests when compared to the other districts (Table 1.4). A total of 4,061,800 lb were harvested during the summer fishery (80%), the largest summer season harvest since 2002. The fall fishery harvest totaled 561,457 lb (20%) for a total harvest of 5,063,854 lb by 192 permit holders, making the 2014/15 season the third largest on record (Table 1.1). Harvest in June and July combined made up 73% of the full season harvest (Table 1.5). Port sampling data show 86% recruit class crab, down from the previous season (Table 1.2). For the entire 2014/15 season, 0.4% of the commercial harvest was sampled. Landed crab averaged 2.0 lb (Table 1.3). Strong prices, an average of $2.99 per lb (Table 1.1), and harvest yielded a total fishery value of $15,117,159; one of the most lucrative seasons ever.

2015/2016 SEASON SUMMARY

The predicted harvest for the 2015/16 season was above the Dungeness crab management plan threshold, so the season length was not curtailed. During the 2015/16 fishery, 205 permit holders, the most since the 2008/09 season, harvested a total of 3,259,362 lb of Dungeness crab (Table 1.1). The summer fishery made up 82% of the harvest, or 2,688,849 lb, and the remaining 18%, or 570,513 lb, was taken during the fall fishery. District 8 was again a large producer, with 22% of the overall harvest, and 16% of the harvest came from District 11 (Table 1.4). Harvest in June and July combined made up 76% of the full season harvest (Table 1.5). Port sampling data show 82% recruit class crab (Table 1.2). Harvested crab sold for an average of $2.99 per lb (Table 1.1) and averaged 2.1 lb each (Table 1.3). Total exvessel value of the 2015/16 fishery was $9,730,921.

2016/2017 SEASON SUMMARY

The predicted harvest for the 2016/17 season was above the Dungeness crab management plan threshold, so the season length was not curtailed. During the 2016/17 fishery, 208 permit holders harvested a total of 2,358,645 lb of Dungeness crab (Table 1.1). The summer fishery made up 82% of the harvest, or 1,933,956 lb, and the remaining 18%, or 424,689 lb, was taken during the fall fishery. District 8 was again a large producer, with 25% of the overall harvest, and 12% of the harvest came from District 6 (Table 1.4). Harvest in June and July combined made up 76% of the full season harvest (Table 1.5). Port sampling data show 87% recruit class crab (Table 1.2). Harvested crab sold for an average of $3.04 per lb (Table 1.1) and averaged 2.1 lb each (Table 1.3). Total exvessel value of the 2016/17 fishery was $7,168,785.

2017/2018 Season Outlook

The department projected total season harvest based on landings and effort data from the first full week of fishing. The projection indicated that total season harvest would not exceed 2.25 million lb but fell near the lower end of the range described in 5 AAC 32.146(2) (B) (1.5 million to 2.25 million lb) at 1.68 million lb. According to the management plan, the department must close the commercial Dungeness crab summer fishing season no sooner than 28 days after the season opens when the projected full season harvest falls within this range. It was announced on June 29, 2017 that the commercial Dungeness crab summer fishing season in Southeast Alaska would close at 11:59 p.m. Tuesday, July 25, 2017, a three-week reduction in fishing time from the maximum allowed. Shortening the 2017/18 commercial Dungeness crab summer fishing season in Southeast Alaska to a 40-day season was commensurate with the estimate falling near the lower end of the 1.5 million lb to 2.25 million lb range.

The Dungeness crab management plan also stipulates a 30-day fall fishing season when the full season projection falls between 2.25 million and 1.5 million lb. However, 5 AAC 32.146(3) states that if the department determines that harvest projections fail to meet threshold due to soft-shell crab early in the commercial Dungeness crab summer fishing season, the department may open the commercial Dungeness crab fishery for the full fall/winter fishing season. During the first week of the 2017/18 summer fishing season (landings made 6/15/17 through 6/22/17), dockside interviews noted a 14% average per landing of soft-shelled legal crab not retained. However, some amount of soft-shelled crab is normally caught in the first week. In an effort to determine an average amount of soft-shelled crab caught in the first week, the previous three-year average of 10% was used as a proxy for a "normal" amount of soft-shelled crab. Since the 14% soft-shelled crab from the 2017/18 season exceeded the three-year average of 10%, the difference of 4% (24,217 lb) was applied to the first week's harvest to estimate what amount of poundage, in excess of the norm, was not retained. Based on the regression model used to produce the full season harvest estimate, adding this poundage to the total for the first week was not enough to produce a harvest estimate that exceeded the 2.25 million lb threshold in regulation. Adding the additional soft-shelled crab increased the estimate from 1.68 to 1.81 million lb.

The department also examined the total amount of harvest from the first week graded as soft-shelled by the buyers. In the first week of the 2017/18 season, 449 lb were graded as soft regionwide. This amount is far below the recent three-year average of 2,424 lb. While market considerations do play into grading from year to year, the decrease in the total amount of harvest from the first week given a soft-shell delivery code by the buyers did not indicate an above average amount of soft-shelled crab encountered by the fleet in the first week of the fishery.

Based on the data from port sampling and fish tickets, the department assessed that soft-shelled crab not retained during the first week of the season were not a contributing factor in failing to meet threshold, unlike the decision made in 2013/14, and therefore a 30-day fall fishing season was established for the entire region. Since the management plan was put into regulation in 2000, the 2017/18 season is the second season (along with the 2013/14 season) that the threshold for a normal season described in regulation was not met. The 2017/18 season is the first season with a 30-day fall season since the management plan was implemented.

CHAPTER 1—TABLES AND FIGURES

Table 1.1–Registration Area A (Southeast Alaska) commercial Dungeness crab fishery catch, effort, and value, 1960 to present.

Year/Season	Number				Lb per permit	Pots lifted	CPUE [a]	Mean weight	Price per lb
	Permits	Landings	Crab	Lb					
1960	ND	ND	ND	1,449,405	ND	ND	ND	ND	ND
1961	ND	ND	ND	671,455	ND	ND	ND	ND	ND
1962	ND	ND	ND	2,985,939	ND	ND	ND	ND	ND
1963	ND	ND	ND	3,296,362	ND	ND	ND	ND	ND
1964	ND	ND	ND	3,996,100	ND	ND	ND	ND	ND
1965	ND	ND	ND	2,392,395	ND	ND	ND	ND	ND
1966	ND	ND	ND	1,968,117	ND	ND	ND	ND	ND
1967	ND	ND	ND	2,033,156	ND	ND	ND	ND	ND
1968	ND	ND	ND	1,900,690	ND	ND	ND	ND	ND
1969/1970	24	392	501,011	1,149,111	47,880	ND	ND	2.3	ND
1970/1971	21	380	349,045	776,617	36,982	ND	ND	2.2	ND
1971/1972	22	315	205,359	452,681	20,576	ND	ND	2.2	ND
1972/1973	31	316	ND	599,487	19,338	ND	ND	ND	ND
1973/1974	41	483	ND	748,519	18,257	ND	ND	ND	ND
1974/1975	55	453	ND	715,249	13,005	ND	ND	ND	ND
1975/1976	36	344	285,459	611,621	16,989	ND	ND	2.1	ND
1976/1977	25	173	225,217	515,378	20,615	ND	ND	2.3	ND
1977/1978	12	87	58,046	127,345	10,612	ND	ND	2.2	ND
1978/1979	25	208	345,379	754,759	30,190	ND	ND	2.2	ND
1979/1980	37	313	371,670	801,753	21,669	ND	ND	2.2	ND
1980/1981	26	227	236,630	521,247	20,048	ND	ND	2.2	ND
1981/1982	75	749	1,266,271	2,932,427	39,099	ND	ND	2.3	$0.83
1982/1983	129	1,298	1,551,520	3,662,112	28,388	ND	ND	2.4	$0.77
1983/1984	132	1,536	942,477	2,155,849	16,332	ND	ND	2.3	$1.15
1984/1985	183	1,593	847,824	1,843,521	10,074	ND	ND	2.2	$0.90
1985/1986	216	2,077	1,059,717	2,316,994	10,727	159,300	2.8	2.2	$1.22
1986/1987	224	2,330	1,184,771	2,453,055	10,951	232,328	3.9	2.1	$1.02
1987/1988	240	2,745	1,610,707	3,390,832	14,128	278,944	4.6	2.1	$1.08
1988/1989	264	2,683	1,517,105	3,321,734	12,582	248,755	4.8	2.2	$0.91
1989/1990	245	2,096	875,861	1,918,880	7,832	194,239	3.4	2.2	$1.06
1990/1991	243	2,339	1,293,500	2,662,151	10,955	329,916	3.9	2.1	$1.44
1991/1992	318	3,386	2,260,678	4,707,106	14,802	462,425	4.2	2.1	$1.21
1992/1993	245	2,497	1,424,742	3,095,419	12,634	313,522	3.7	2.2	$0.84
1993/1994	198	1,956	1,167,481	2,536,701	12,812	271,474	3.6	2.2	$0.92
1994/1995	184	1,787	927,878	1,921,739	10,444	230,595	4.0	2.1	$1.10
1995/1996	200	2,737	2,176,200	4,404,519	22,023	460,378	4.2	2.0	$1.62
1996/1997	203	2,896	2,406,434	5,005,840	24,659	399,472	4.9	2.1	$0.96
1997/1998	232	4,043	1,921,545	4,062,543	17,511	616,608	2.8	2.1	$2.18
1998/1999	244	3,134	1,132,885	2,329,499	9,547	481,214	2.2	2.1	$1.47
1999/2000	197	2,862	1,611,136	3,280,503	16,652	474,986	2.8	2.0	$1.64

-continued-

Table 1.1–Page 2 of 2.

Year/Season	Number				Lb per permit	Pots lifted	CPUE	Mean weight	Price per lb
	Permits	Landings	Crab	Lb					
2000/2001	199	2,380	1,254,573	2,565,410	12,892	400,616	2.7	2.0	$1.50
2001/2002	209	3,059	2,099,643	4,104,128	19,637	539,636	3.9	2.0	$1.73
2002/2003	220	3,561	3,512,242	7,332,665	33,330	785,936	4.5	2.1	$1.07
2003/2004	209	2,931	2,184,724	4,537,049	21,708	609,085	3.6	2.1	$1.32
2004/2005	198	2,412	2,239,892	4,587,631	23,170	564,417	4	2.0	$1.36
2005/2006	189	2,203	2,039,101	4,205,480	22,251	468,400	4.4	2.1	$1.21
2006/2007	171	2,074	2,228,852	4,503,970	26,339	468,426	4.8	2.0	$1.38
2007/2008	193	2,841	2,657,986	5,408,355	28,023	647,401	4.2	2.0	$2.13
2008/2009	207	2,816	2,351,764	4,731,668	22,858	647,204	3.6	2.0	$2.18
2009/2010	195	2,441	1,770,701	3,569,697	18,306	535,292	3.3	2.0	$1.72
2010/2011	176	2,208	1,588,622	3,245,265	18,439	445,348	3.6	2.0	$1.78
2011/2012	162	2,014	1,252,387	2,594,897	16,018	377,162	3.3	2.1	$2.22
2012/2013	160	2,199	1,144,095	2,359,309	14,746	398,172	2.9	2.1	$2.50
2013/2014	150	2,226	1,288,223	2,590,022	17,267	393,377	3.3	2.0	$2.49
2014/2015	192	3,306	2,504,931	5,063,854	26,374	623,948	4.0	2.0	$2.99
2015/2016	205	3,001	1,545,614	3,259,362	15,899	545,458	2.8	2.1	$2.99
2016/2017	208	2,545	1,135,953	2,358,645	11,340	464,519	2.4	2.1	$3.04
5-year average	183	2,655	1,523,763	3,126,238	17,125	485,095	3.1	2.1	$2.80
Total average [b]	158	1,930	1,390,130	2,692,741	19,311	439,642	3.7	2.1	$1.55

Note: ND = not available.

[a] CPUE values for 1985/1986 through 2009/2010 seasons estimated using only landings with associated pot lift data.

[b] Total averages calculated using all seasons with available data.

Table 1.2–Summary of commercial Dungeness crab size frequency and shell condition data collected during dockside sampling in Registration Area A, 1975/1976 to present.

	Number sampled		Carapace width (mm)		Recruitment	
Season	Boats	Crab	Mean	Range	% Recruit[a]	% Postrecruit[b]
1975/1976	19	1,930	180.4	154–217	75.9	19.8
1976/1977	3	304	177.5	159–204	76.2	20.5
1977/1978	6	624	178.7	159–211	47.0	50.0
1978/1979	11	1,130	180.0	161–213	75.1	24.0
1979/1980	4	422	181.3	160–217	78.2	21.5
1980/1981	5	447	179.8	161–207	83.2	16.1
1981/1982	12	1,263	182.6	160–215	66.0	33.9
1982/1983	9	849	187.2	164–218	63.5	36.2
1983/1984	11	1,205	185.7	159–225	65.8	33.2
1984/1985	3	303	175.9	164–205	88.4	10.6
1985/1986	26	2,650	177.7	157–228	87.1	9.9
1986/1987	29	2,872	177.3	156–228	75.8	19.7
1987/1988	63	6,226	178.5	160–213	76.1	21.3
1988/1989	81	7,595	182.1	157–225	65.9	32.0
1989/1990	75	7,123	181.0	157–220	61.1	36.1
1990/1991	166	16,399	174.9	156–223	83.8	11.3
1991/1992	172	16,897	178.6	153–230	85.5	12.0
1992/1993	146	14,262	180.2	157–215	77.2	21.0
1993/1994	81	7,628	181.8	155–226	77.9	20.7
1994/1995	79	7,832	176.2	160–222	84.1	12.2
1995/1996	136	13,621	175.6	158–228	89.0	8.7
1996/1997	222	11,196	178.5	154–215	80.9	16.7
1997/1998	200	10,263	179.2	156–220	80.1	17.5
1998/1999	196	10,145	176.9	101–216	74.0	22.0
1999/2000	262	13,257	176.2	110–212	76.8	19.2
2000/2001	338	16,913	176.9	87–213	81.7	14.9
2001/2002	494	24,704	174.7	153–219	87.6	6.3
2002/2003	424	21,331	178.9	140–225	89.2	8.6
2003/2004	425	21,590	178.5	93–224	85.8	11.5
2004/2005	433	21,876	178.0	140–215	88.7	8.0
2005/2006	397	19,910	177.8	90–233	90.2	6.8
2006/2007	455	22,771	176.8	157–230	93.7	4.1
2007/2008	400	20,948	177.4	123–229	88.9	8.1
2008/2009	354	18,926	177.7	160–225	89.3	7.8
2009/2010	376	20,214	177.1	140–223	88.5	8.3
2010/2011	354	18,912	178.8	159–216	89.6	8.2
2011/2012	366	20,012	178.4	93–219	86.9	9.9
2012/2013	346	18,614	177.9	154–219	87.6	9.1
2013/2014	292	16,133	175.4	157–219	88.5	7.3
2014/2015	163	10,405	177.3	153–216	85.5	12.0
2015/2016	177	10,787	178.9	158–228	82.4	15.4
2016/2017	140	8,413	177.6	161–227	86.8	10.2

[a] Recruit = all new and soft-shell crab ≥165 mm and ≤194 mm carapace width excluding spines.

[b] Postrecruit = all new and soft-shell crab >194 mm and old- and very old-shell crab ≥165 mm carapace width.

Table 1.3–Dungeness crab catch rate and weights in Registration Area A, 1975/1976 to present. Data were collected during dockside sampling and interviews[a].

	Number					Weight (lb)			
Season	Boats interviewed	Pots lifted	Crab captured	Mean no./pot	Range no./pot	Mean	Range	Estimated no. crab harvested [b]	Percent harvest sampled [c]
1975/1976	-	-	-	-	-	-	-	-	-
1976/1977	-	-	-	-	-	-	-	-	-
1977/1978	-	-	-	-	-	-	-	-	-
1978/1979	5	ND	ND	ND	ND	2.2	2.0–2.5	343,072	0.3
1979/1980	-	-	-	-	-	-	-	-	-
1980/1981	-	-	-	-	-	-	-	-	-
1981/1982	-	-	-	-	-	-	-	-	-
1982/1983	4	2,475	13,000	5.3	4.3–7.3	2.7	2.7–2.7	1,356,337	0.1
1983/1984	7	1,680	1,540	0.9	2.6–6.3	2.3	2.0–2.7	937,325	0.1
1984/1985	-	-	-	-	-	-	-	-	-
1985/1986	23	675	4,881	7.2	4.6–14.4	2.1	1.7–2.6	1,103,330	0.2
1986/1987	28	3,888	20,603	5.3	2.7–11.5	2.0	1.7–2.3	1,226,528	0.2
1987/1988	61	9,597	44,812	4.7	1.1–11.6	2.1	1.7–2.6	1,614,682	0.4
1988/1989	81	16,342	86,143	5.3	0.4–15.0	2.3	1.6–2.6	1,444,232	0.5
1989/1990	113	20,681	68,537	3.3	0.2– 9.6	2.1	1.6–2.7	913,752	0.8
1990/1991	166	40,802	173,431	4.3	0.5–11.3	2.0	1.6–2.2	1,331,076	1.2
1991/1992	177	54,269	270,611	5.0	1.0–13.9	2.1	1.7–2.6	2,241,479	0.8
1992/1993	146	34,288	152,641	4.5	0.9–14.0	2.2	1.9–2.7	1,407,009	1.0
1993/1994	81	16,616	59,540	3.6	0.6–12.5	2.3	1.7–2.8	1,102,913	0.7
1994/1995	79	17,448	62,640	3.6	0.8–8.6	2.0	1.8–2.6	960,870	0.8
1995/1996	136	40,967	231,165	5.6	0.3–18.7	2.0	1.7–2.3	2,202,260	0.6
1996/1997	222	54,835	303,170	5.5	0.6–26.5	2.1	1.7–2.8	2,383,733	0.5
1997/1998	195	52,778	151,957	2.9	0.7–10.0	2.1	1.3–2.9	1,934,544	0.5
1998/1999	194	49,340	144,884	2.9	0.6–35.3	2.1	1.7–2.5	1,109,285	0.9
1999/2000	261	66,992	254,327	3.8	0.5–32.3	2.0	1.7–2.3	1,640,252	0.8
2000/2001	339	99,052	322,024	3.3	0.2–8.8	2.1	1.3–4.9	1,221,624	1.4
2001/2002	494	160,978	743,736	4.6	0.8–18.8	2.0	1.5–2.5	2,052,064	1.2
2002/2003	423	160,698	761,474	4.7	0.1–53.3	2.1	1.7–6.3	3,491,745	0.6
2003/2004	422	143,519	606,003	4.2	0.1–15.7	2.1	1.5–6.2	2,160,500	1.0
2004/2005	433	181,955	725,892	4.0	0.1–18.1	2.1	1.8–2.5	2,184,586	1.0
2005/2006	395	129,471	618,833	4.8	0.6–14.5	2.1	1.7–2.8	2,002,610	1.0
2006/2007	455	144,864	759,336	5.2	1.0–19.7	2.0	1.7–2.4	2,251,985	1.0
2007/2008	400	136,926	606,900	4.4	0.7–16.8	2.0	1.7–2.5	2,704,178	0.8
2008/2009	353	130,617	513,144	3.9	0.5–27.5	2.1	1.8–2.6	2,253,175	0.8
2009/2010	376	139,095	486,999	3.5	0.5–14.6	2.0	1.7–2.4	1,784,849	1.1
2010/2011	354	109,371	396,471	3.6	0.7–14.3	2.1	1.4–2.5	1,545,364	1.2
2011/2012	365	103,796	355,477	3.4	0.7-12.4	2.1	1.6-2.7	1,235,665	1.6
2012/2013	346	101,231	299,359	3.0	0.7-14.4	2.1	1.6-2.7	1,123,480	1.7
2013/2014	293	83,685	352,878	4.2	0.5-15.8	2.0	1.5-4.8	1,295,011	1.2
2014/2015	163	65,762	300,282	4.6	0.9-30.5	2.0	1.4-2.6	2,531,927	0.4
2015/2016	177	55,026	198,676	3.6	0.5-12.4	2.1	1.7-2.8	1,552,077	0.7
2016/2017	140	48,885	138,936	2.8	0.5-12.1	2.1	1.8-3.0	1,123,640	0.7

Note: ND = not available.

[a] Includes data collected that could not be assigned to a fishing area.

[b] Calculated by dividing fish ticket weight data from Table 1.1 by dockside sampling data on average weight per crab.

[c] Calculated by dividing number of crab sampled for size frequency by estimated number of crab caught.

- Data confidential because fewer than three permits fished.

Table 1.4–Catch and effort by district for the commercial Dungeness crab fishery in Registration Area A, 2007/2008 season to present.

District	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
1	120,826	117,108	104,856	127,484	173,501	155,735	130,508
2	85,338	75,580	42,137	83,072	132,368	54,909	74,477
3	-	-	-	-	-	-	-
4	-	-	0	0	0	-	0
5	77,066	-	-	-	43,932	2,599	0
6	542,259	506,615	423,218	359,841	743,498	391,520	272,295
7	172,434	108,528	93,693	164,471	279,524	144,961	147,310
8	641,618	480,356	737,887	447,720	1,175,973	716,317	583,958
9	132,734	129,909	53,429	184,663	586,610	232,350	117,392
10	225,245	262,717	180,024	265,740	516,160	312,331	165,182
11	581,629	304,591	159,608	127,911	204,842	515,626	217,783
12	109,049	189,197	98,134	152,450	277,935	151,509	200,946
13	104,179	152,427	162,184	300,425	446,825	193,533	77,578
14	184,786	90,835	75,501	182,022	214,284	120,610	103,776
15	259,680	156,583	218,867	162,435	265,572	262,883	261,035
16[a]	0	0	0	0	0	0	0
Total	3,245,265	2,594,897	2,359,309	2,590,022	5,063,854	3,259,362	2,358,645

- Data confidential because fewer than three permits fished.

[a] District 16 reopened to commercial fishing in 2009.

Table 1.5–Registration Area A (Southeast) commercial Dungeness crab fishery catch by month from 1969/1970 season to present in pounds.

Season	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
1969/1970	210,941	106,248	47,305	14,167	5,008	7,084	8,068	21,348	84,909	201,026	217,524	225,483	1,149,111
1970/1971	122,623	68,644	35,867	9,312	5,567	4,563	-	11,123	37,045	168,485	150,383	157,067	776,617
1971/1972	88,861	63,283	23,306	10,912	6,955	1,755	2,183	7,366	27,392	43,563	97,816	79,289	452,681
1972/1973	83,561	49,466	31,516	16,746	3,532	1,447	-	4,237	30,461	38,606	167,156	169,569	599,487
1973/1974	87,311	71,607	27,469	8,764	3,459	4,745	9,869	16,884	40,893	142,395	205,799	129,324	748,519
1974/1975	84,977	53,947	27,885	26,478	6,298	13,717	18,056	24,762	21,464	135,529	167,131	135,005	715,249
1975/1976	82,751	49,676	25,868	11,725	6,855	3,005	9,886	18,101	35,906	110,226	136,819	120,803	611,621
1976/1977	46,068	32,006	13,826	11,070	4,128	6,060	0	-	0	105,864	206,112	89,889	515,378
1977/1978	31,376	15,915	24,956	6,291	-	7,997	0	0	0	-	-	29,570	127,345
1978/1979	104,639	70,406	43,321	23,033	18,229	-	-	0	0	126,420	206,929	152,721	754,759
1979/1980	137,494	75,079	52,076	30,098	12,670	-	0	0	0	165,728	184,630	137,043	801,753
1980/1981	69,865	36,342	30,249	15,064	8,599	-	0	0	0	62,684	166,140	122,220	521,247
1981/1982	427,076	292,859	164,235	67,699	28,413	34,251	0	0	0	460,619	896,944	560,331	2,932,427
1982/1983	450,388	218,577	144,551	83,744	16,250	22,883	0	0	0	941,641	1,048,742	735,336	3,662,112
1983/1984	267,566	146,550	84,479	45,845	30,897	14,702	0	0	0	775,324	453,526	336,960	2,155,849
1984/1985	279,568	157,009	137,374	59,151	27,024	15,466	0	0	0	0	677,982	489,947	1,843,521
1985/1986	-	380,060	178,215	55,702	29,746	20,111	0	0	0	362,973	849,615	440,463	2,316,994
1986/1987	0	455,224	274,451	100,322	57,950	48,885	0	0	0	272,989	796,367	446,867	2,453,055
1987/1988	0	479,320	280,735	109,622	63,054	54,324	-	0	0	572,329	1,185,935	639,662	3,390,832
1988/1989	0	312,008	178,232	43,786	17,382	19,950	0	0	0	775,398	1,401,800	573,178	3,321,734
1989/1990	0	207,015	96,004	15,179	-	-	0	0	0	500,788	820,896	267,394	1,918,880
1990/1991	0	499,302	281,647	8,551	1,053	2,778	-	0	0	582,141	925,769	360,416	2,662,151
1991/1992	0	717,506	324,070	17,086	7,561	4,422	0	0	0	987,389	1,821,479	827,593	4,707,106
1992/1993	0	177,194	101,101	12,403	-	3,627	-	0	0	935,175	1,360,389	503,792	3,095,419
1993/1994	0	232,813	116,882	11,727	4,734	5,806	0	0	0	660,473	1,106,117	398,149	2,536,701
1994/1995	0	242,047	97,299	38,076	-	-	0	0	0	523,740	716,277	302,939	1,921,739
1995/1996	0	627,671	229,009	35,131	16,780	25,555	0	0	0	1,193,222	1,630,576	646,575	4,404,519
1996/1997	0	686,308	314,634	35,442	19,408	30,821	0	0	0	1,197,906	1,925,600	795,721	5,005,840
1997/1998	0	524,626	219,601	65,279	64,055	37,457	0	0	0	1,128,616	1,568,198	454,711	4,062,543
1998/1999	0	383,335	178,943	33,544	19,080	5,345	0	0	0	853,216	672,988	183,048	2,329,499

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Table 1.5–Page 2 of 2.

Season	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
1999/2000	0	370,194	166,974	23,788	12,290	2,317	0	0	0	1,331,925	1,050,893	322,122	3,280,503
2000/2001	0	299,645	136,807	7,524	9,692	2,846	0	0	0	975,841	884,852	248,203	2,565,410
2001/2002	0	693,816	263,849	35,115	14,127	1,777	0	0	0	1,541,443	1,166,262	387,739	4,104,128
2002/2003	0	977,240	355,447	36,871	21,451	4,800	0	0	0	2,169,951	2,885,891	881,014	7,332,665
2003/2004	0	836,212	290,595	34,967	15,949	12,550	0	0	0	1,628,596	1,339,496	378,684	4,537,049
2004/2005	0	607,852	234,475	36,010	7,408	11,352	0	0	0	1,829,607	1,454,980	405,947	4,587,631
2005/2006	0	720,388	238,024	26,301	13,107	2,470	0	0	0	1,785,128	1,084,237	335,825	4,205,480
2006/2007	0	783,691	204,913	14,046	2,704	1,665	0	0	0	1,741,957	1,254,440	500,554	4,503,970
2007/2008	0	1,357,627	415,923	30,735	5,695	1,327	0	0	0	1,204,153	1,504,129	888,766	5,408,355
2008/2009	0	801,375	168,098	4,620	1,122	-	0	0	0	1,546,315	1,645,744	563,497	4,731,668
2009/2010	0	739,398	210,216	0	0	0	0	0	0	1,101,310	1,112,933	405,840	3,569,697
2010/2011	0	453,422	114,467	-	-	0	0	0	0	1,431,374	1,008,528	232,935	3,245,265
2011/2012	0	444,606	116,091	-	0	0	0	0	0	968,601	813,612	251,227	2,594,897
2012/2013	0	416,132	90,183	6,712	-	-	0	0	0	996,658	657,716	189,958	2,359,309
2013/2014	0	768,734	232,607	5,743	-	-	0	0	0	821,825	649,475	109,346	2,590,022
2014/2015	0	777,452	199,238	17,248	5,305	-	0	0	0	2,117,601	1,555,974	388,225	5,063,854
2015/2016	0	442,237	111,003	5,239	7,250	4,784	0	0	0	1,591,523	894,198	203,128	3,259,362
2016/2017	0	340,299	74,967	7,172	-	-	0	0	0	1,295,651	507,407	130,898	2,358,645

- Data confidential because fewer than three permits fished.

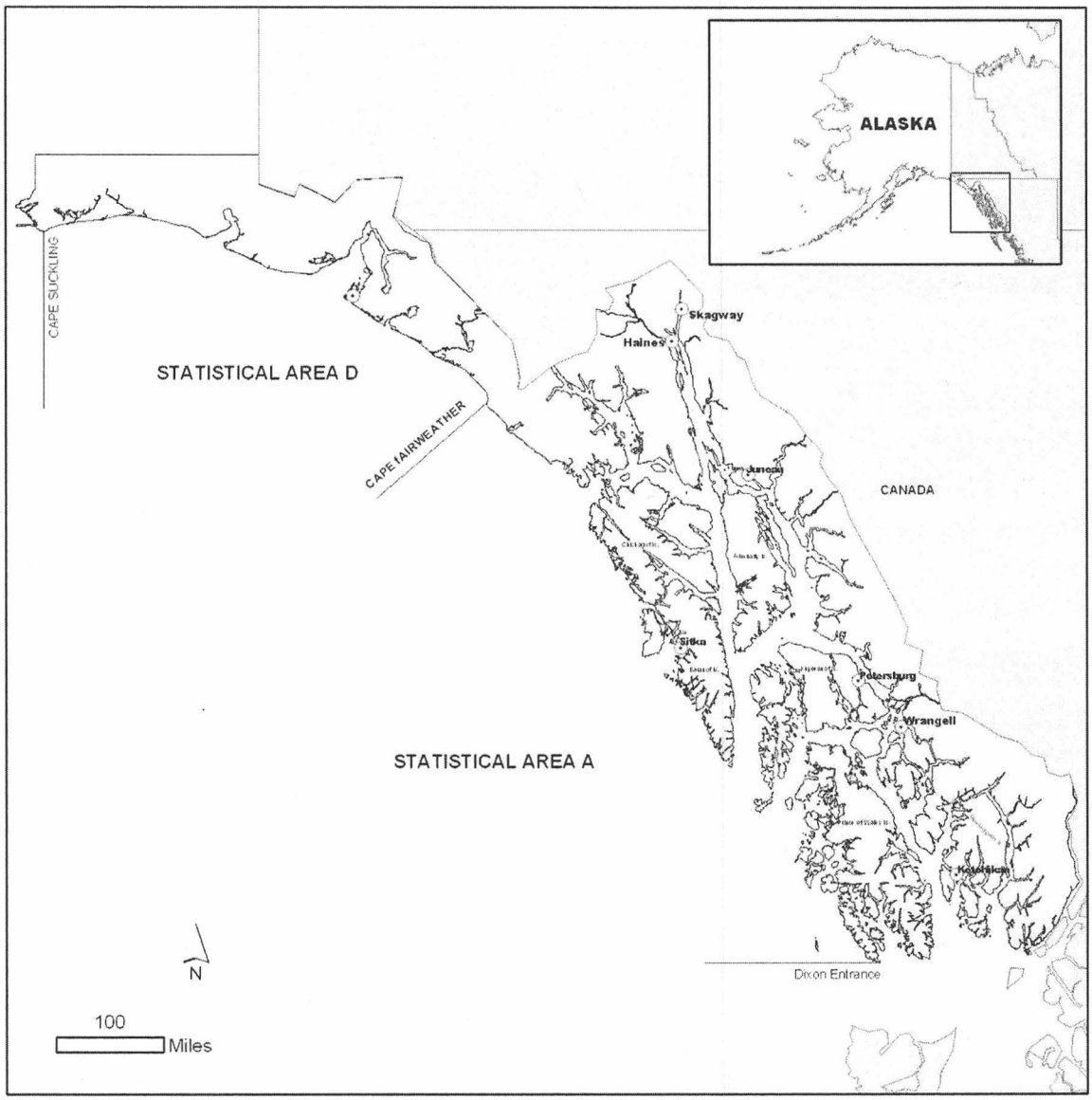

Figure 1.1–Registration Area A (Southeast Alaska) and Registration Area D (Yakutat).

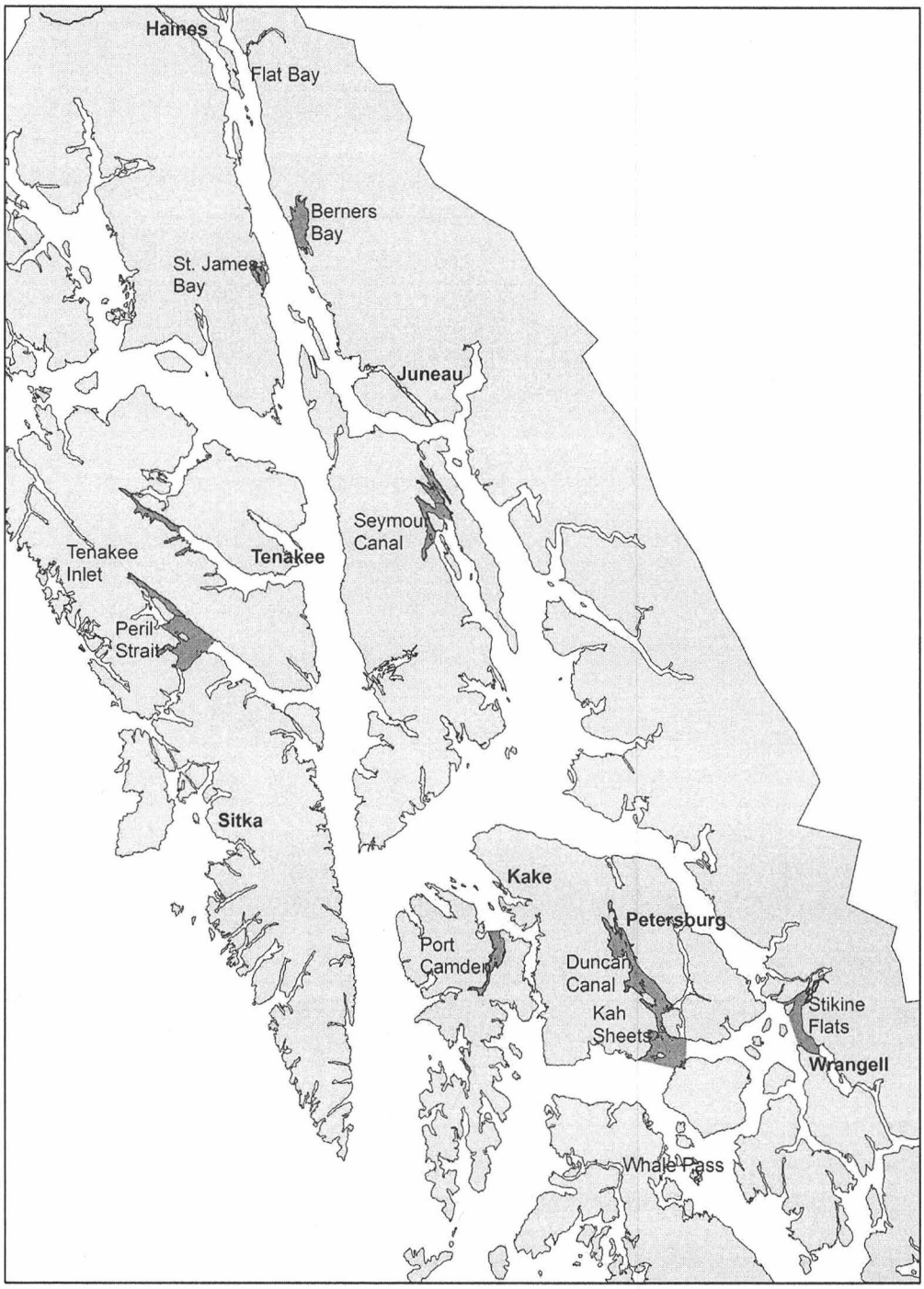

Figure 1.2–Dungeness crab survey locations in Southeast Alaska.

CHAPTER 2: YAKUTAT DUNGENESS CRAB FISHERY

INTRODUCTION

Registration Area D (Yakutat) Dungeness crab management is by sex, size, and season. In order to conserve reproductive potential, only male crab with a minimum CW of 6.5 inches notch to notch may be harvested. The season is from May 15 to July 14 and November 1 to February 28. Although the Yakutat Dungeness crab fishery is under open entry, Yakutat is a superexclusive registration area for Dungeness crab; a vessel registered to fish in this area cannot register or fish in any other area in Alaska during the same calendar year.

Fishing grounds in Yakutat are near to the northern limit of Dungeness crab distribution. Within Yakutat waters, Dungeness crab are widely distributed but tend to concentrate off ocean beaches in two to 10 fathoms. Some of the most productive summer fishing occurs in the shore break of exposed beaches. Although the fishery extends along the entire coast, much of the total harvest is taken from four or five distinct, localized fishing grounds. During the 40 seasons from 1960/61 to 1999/00, Yakutat produced a long-term average harvest of about 1.37 million lb per season, but a downward trend began in 1992/93 (Table 2.1). Historically, the product was marketed as canned or frozen meat, sections, and whole cooked or live crab. In later years the majority of the harvest took place in May and June (Table 2.2), and whole cooked or live crab entered the summer tourist markets in Washington, Oregon, and California.

This Yakutat Dungeness crab fishery was closed beginning with the 2000/01 season. Fish ticket and dockside sampling data provided the first indications of low stock abundance, and the 1997/98, 1998/99, and 1999/00 fishing seasons were closed early. Dungeness crab surveys to evaluate stock status in Yakutat were conducted in 2004, 2012, and 2013. These surveys showed no evidence of stock recovery. The Yakutat area Dungeness crab fishery will remain closed until stock status improves and a management and research program designed to provide sustained yields is implemented.

Anyone with a permit and license could register a vessel to crab in this area if the fishery were open. Historically, as many as 67 permits fished annually in the Yakutat area (Table 2.1). For three seasons preceding the closure of the fishery, an average 23 permits were fished. Most participating vessels are 50 ft overall length or larger, with some vessels up to 90 ft in overall length. Almost all fishery participants have used standard, hatbox-shaped pots constructed with steel frames and webbed with stainless steel wire.

This report will describe Yakutat Dungeness crab fishery development and history, regulation development, management concerns, and research. It is intended to provide a comprehensive overview to the board on the Yakutat area Dungeness crab fishery to facilitate promulgation of regulations. It is also intended to inform the public about the Yakutat area Dungeness crab fishery and acts as an Annual Management Report for this fishery to provide transparent fishery management.

FISHERY DEVELOPMENT AND HISTORY

Through much of its history, from the mid-1920s to the mid-1960s, Southeast Alaska and Yakutat were managed as a single unit. Prior to the 1960s, harvests from much of the Gulf of Alaska were combined into a single total; Yakutat contributions were significant, but the exact percentages are unavailable. The fishery can be divided into three distinct periods.

In the 1960s and the 1970s, participation was low and harvests were relatively stable (Table 2.1), averaging 1.13 million lb per season in the 1960s and 1.26 million lb per season in the 1970s. At that time, demand for Dungeness crab from Yakutat was generally inversely related to the availability of crab from Washington, Oregon, and California and highly dependent on the willingness of one or two major processors to purchase crab during the summer. The fishery was market driven.

In the 1980s, effort and harvest generally increased (Table 2.1). Harvest in the 1980s averaged 2.18 million lb. The 1980s saw the largest individual season harvests in the history of the fishery, with 5.16 million lb taken in the 1982/83 season and 3.49 million lb taken in the 1988/89 season (Table 2.1). As the preferred product form changed from frozen or canned meat to air-freighted live crab, there was increasing interest from processors to handle Dungeness crab. For many crabbers from the Pacific Northwest, the Yakutat summer fishery was attractive because their home waters were closed during the summer. The rising demand in the early 1980s coincided with the entry of a large recruit class into the fishery and a decline in harvests from Washington, Oregon, and California. The recruit year class supported increasing fishing effort through the next two seasons and set the pattern for development of the fishery, which is driven by stock abundance.

In the 1990s, harvest and effort gradually declined each season. Fish ticket and dockside sampling data provided the first indications of low stock abundance, and the 1997/98, 1998/99, and 1999/00 fishing seasons were closed early. In the 1999/00 season, 10 permits fished for a harvest of less than 66,000 lb (Table 2.1). The fishery was closed beginning in the 2000/01 season and has remained closed since that time.

REGULATION DEVELOPMENT

The documented regulatory history of the Yakutat Area Dungeness crab fishery started in 1924. Most management jurisdictions within the range of this species employ passive management measures such as size limits, restricting harvest to males, and specifying a season that avoids known sensitive molting and mating periods. In Yakutat, this management triad, called 3-S management (size, sex, and season), is compromised somewhat because the summer season overlaps with a portion of time males are molting. The current May 15–July 14 and November 1–February 28 season description is a compromise developed over many years to avoid the major molts to the extent possible, while maximizing economic returns. There are few alternatives to a summer season in Yakutat because the most productive grounds are exposed to extreme weather conditions in the winter.

Traditional 3-S management has been used for many decades to manage Dungeness crab fisheries from California to Kodiak. However, concerns remain regarding its efficacy in intensive, highly competitive, open access fisheries. Further work in Yakutat is needed to structure harvest to protect weak stock segments or soft-shell crab while optimizing exploitation rates and product quality. The department will reopen the Yakutat commercial Dungeness crab

fishery when fishery independent survey data show stock recovery and additional management measures are implemented.

Fishing Seasons and Periods

For most years and seasons before 1975/76, the fishery was open all year. The accounting period started on January 1 and ended on December 31. In 1975, following eight consecutive years of harvests between one and two million lb and a rapid rise in the number of fishing vessels, the season was shortened to May 16–February 28, 1976. It was then closed in the summer by emergency order because large numbers of soft-shell crab were observed in the landed harvest. The 1976/77 season started on June 1, with a scheduled closure on February 28, 1977. The season opening and closing dates remained the same through the 1981/82 season, although several intervening seasons were closed by emergency order when large numbers of soft-shell crab were sampled at the dock. The season changed again in 1982, to May 1 through February 28, 1983. Each season from 1982/83 through 1984/85 was closed by emergency order at some point in the summer due to increasing numbers of soft-shelled crab in the landed harvest. In 1985, a split season was implemented from May 1 to July 14, and November 1 to February 28, 1986. Management of the summer fishery focused on avoiding major male molts, which frequently start on the western grounds around Icy Bay and move eastward through the summer. The summer season was generally tailored to start after the major molt on the western grounds and end before the major molt in the Yakutat Bay stocks. By 1986, it was evident that the May 1 opening was too early, and the season was shortened to start on May 15. For each season since, the summer segment of the season has started on May 15 and ended on July 14, and the winter segment has started on November 1 and ended on February 28. The timing of the winter segment was intended to provide a fishery for local residents fishing in Yakutat Bay.

Although there were no specific proposals addressing Yakutat stock status before the board in 1997, the board directed the department to take steps to conserve the Yakutat Area Dungeness crab stock. In the first three weeks of the 1997/98 season, a large portion of the harvest was recruit size crab and low abundance was observed which is indicative of poor stock condition. An emergency order closure was issued for June 13, 1997, to foster recovery of the stock. The winter portion of the fishery was closed to allow an accrual of benefits from the summer closure; however, the 1998/99 fishery indicated further recruitment failure and overall low stock abundance. On June 9, 1998, the fishery was closed early for the second consecutive season, and on June 15, 1999, the fishery was closed by emergency order for a third season. In 2000 the board designated the Yakutat Area Dungeness crab fishery as a collapsed and recovering fishery, and the fishery has been closed since that time.

Size Restrictions

From 1924 to 1935, the legal size of male crab was 6.5 inches in greatest width of carapace or "tip to tip" width. This changed in 1936 to 7 inches and remained unchanged until 1963, when the measurement was redefined as 6.5 inches in width, measured immediately anterior to the tenth anterolateral spines. This was essentially the equivalent of a 7-inch total shell width measurement but more consistent because damage to the tips of the tenth anterolateral spines is common, particularly in older-shell crab. This measurement standard, termed "shoulder width" or "notch to notch" width, has been in effect since then.

GEAR RESTRICTIONS

In 1934, trawls were prohibited. Only pots or ring nets were allowed from 1954 to 1965. A gear limit of 300 pots or ring nets was implemented in 1963. In 1966, diving gear was legalized. The legal limit for pots and ring nets was raised to 600 pots in 1968. In 1995 the legal limit for pots was reduced to 400. Two escape rings with a minimum inside diameter of 4⅜ inches were first required in 1976. The intent of escape rings is to permit the escape of undersized males and females, which are usually smaller than legal males. In 1977, a Dungeness pot was defined as a pot with tunnel eye openings that individually do not exceed 30 inches in perimeter. A biodegradable natural-fiber breaking strap for the pot tiedown has been required since 1978. Originally specified for a maximum of 120-count thread, it was reduced in 1990 to 30-count thread, and then increased in 1991 to 60-count thread. In 2012, the pot limit was reduced substantially from 400 to 60 pots per vessel.

OTHER REGULATIONS

Registration and hold inspections were required starting in 1974. In midsummer 1983, Yakutat was designated a superexclusive registration area, and vessels registering to fish in the Yakutat Area were prohibited from fishing in any other area in Alaska for the calendar year. The hold inspection requirement was repealed in 1984, although registration was still required. In the same year, the area between Sitkagi Bluffs and Cape Yakataga, the western half of the Yakutat fishing district, was designated a nonexclusive area. The partial nonexclusive area was difficult to enforce, so this and other problems led to redesignation of the entire Yakutat fishing district as a superexclusive registration area in 1985. In 1986, Yakutat was designated as Registration Area D, distinct and separate from Southeast Alaska (Registration Area A).

MANAGEMENT CONCERNS

The Yakutat Dungeness crab fishery was designated as collapsed in 2000. Although the department has not established a policy on reopening of collapsed fisheries, this process will likely be stepwise. The first step is to demonstrate stock recovery through a fishery independent survey.

Once recovery is demonstrated, full reopening of the fishery must be contingent upon funding of a management and research program designed to provide sustained yields. This could include a pot survey, inseason dockside sampling based in Yakutat, and a management program with associated biometric support if necessary. Concerns with potential fishing effort in the open access fishery in Yakutat remain. However, these concerns have been alleviated somewhat by the substantial pot reduction from 400 to 60 that occurred in 2012.

RESEARCH

In addition to comprehensive fish ticket reporting (by regulation, processors are required to submit reports of effort, location, and lb of harvest for each commercial landing), sporadic surveys, and dockside sampling have been conducted for the Yakutat Dungeness crab fishery.

SURVEYS

Surveys of Yakutat Dungeness crab grounds were conducted in 2004, 2012, and 2013. The primary objective of these surveys was to determine the catch rate of legal male Dungeness crab simulating commercial fishing methods. Secondary objectives were to collect size and sex data

from Dungeness crab captured using standard department survey sampling protocols, and to quantify shell hardness in male crab.

In order to simulate commercial fishing methods, the survey contractor selection criteria stipulated that the captain must have experience commercial fishing for Dungeness crab in the Yakutat area. The contractor was required to simulate commercial fishing techniques as close as possible so pot locations and soak times were not predetermined, but pot pulls were required to be distributed by subdistrict approximately proportional to the historic harvest distribution.

In 2004, the contractor set 605 pots in five statistical areas, 181-10, 181-40, 181-50, 181-60, and 183-10. A department biologist onboard enumerated and sampled the catch and recorded pot locations. A total of 53 legal male crab were captured (Table 2.3).

A request for quotations to conduct a Yakutat Dungeness crab survey in June 2011 was announced by news release on March 21, 2011. The single respondent was awarded the contract but was subsequently forced to retract his bid due to unforeseen circumstances. There was insufficient time remaining to rerelease a new RFQ, and the survey was cancelled.

In 2012, the survey was again put out to bid. The contractor set 600 pots in late May/early June in the same five statistical areas sampled in 2004. Two department biologists sampled the catch and recorded pot locations. Durometers were also used in 2012 to quantify shell hardness in male crab. A total of 188 legal male crab were captured (Table 2.3). In addition to the legal male catch, 446 sublegal males were caught (Table 2.3). A majority of these sublegal males were prerecruit class crab.

In 2013, the survey was again put out to bid. The contractor set 600 pots in late-May/early-June in the same five statistical areas sampled in 2012. Like the previous year, two department biologists sampled the catch, took shell hardness readings, and recorded pot locations. The distribution of pots within the five statistical areas was very similar to the previous year's survey. Only 21 legal male crab were caught (Table 2.3).

A request for quotations to conduct a Yakutat Dungeness crab survey in June 2014 was announced by news release on April 4, 2014. There were no bidders and the survey was not conducted. Funding for the Yakutat Dungeness survey was eliminated from the FY 15 budget and to date has not been restored.

DOCKSIDE SAMPLING

Sporadic dockside sampling of the landed harvest in Yakutat was conducted from the 1975/76 season until the fishery was closed (Tables 2.4 and 2.5). Goals of dockside sampling are to describe the size and shell age composition, average weight, and catch rates of Dungeness crab in the commercial fishery. Port samplers measure the crab, determine shell condition, and check for damage to the carapace and legs. From this and knowledge of crab growth, the department can determine the recruit or year-class composition of the harvest. For the Yakutat fishery, the wide range of landing ports (as far away as Cordova) and very sporadic deliveries make it difficult to schedule dockside sampling of deliveries.

CHAPTER 2—TABLES

Table 2.1–Registration Area D (Yakutat) commercial Dungeness crab fishery catch, effort, and value, 1960 to present.

Year/Season	Number				Lb per permit	Pots lifted	CPUE	Mean weight
	Permits	Landings	Crab	Lb				
1960	ND	ND	ND	543,762	ND	ND	ND	ND
1961	ND	ND	ND	1,023,545	ND	ND	ND	ND
1962	ND	ND	ND	937,051	ND	ND	ND	ND
1963	ND	ND	ND	1,383,298	ND	ND	ND	ND
1964	ND	ND	ND	637,140	ND	ND	ND	ND
1965	ND	ND	ND	910,278	ND	ND	ND	ND
1966	ND	ND	ND	528,060	ND	ND	ND	ND
1967	ND	ND	ND	2,031,460	ND	ND	ND	ND
1968	ND	ND	ND	2,096,119	ND	ND	ND	ND
1969/1970	11	107	522,840	1,223,240	111,204	ND	ND	2.3
1970/1971	10	83	661,629	1,508,561	150,856	ND	ND	2.3
1971/1972	7	88	524,208	1,212,198	173,171	ND	ND	2.3
1972/1973	9	85	NA	1,992,574	221,397	ND	ND	ND
1973/1974	27	236	NA	2,347,752	86,954	ND	ND	ND
1974/1975	22	154	NA	1,031,573	46,890	ND	ND	ND
1975/1976	17	113	264,426	579,908	34,112	ND	ND	2.2
1976/1977	7	32	230,886	537,543	76,792	ND	ND	2.3
1977/1978	3	12	54,449	131,052	43,684	ND	ND	2.4
1978/1979	12	122	796,823	1,799,403	149,950	ND	ND	2.3
1979/1980	21	87	613,725	1,436,923	68,425	ND	ND	2.3
1980/1981	10	73	411,293	895,220	89,522	ND	ND	2.2
1981/1982	28	169	1,323,791	3,228,301	115,296	ND	ND	2.4
1982/1983	35	346	2,046,436	5,160,135	147,432	ND	ND	2.5
1983/1984	67	511	1,110,413	2,666,383	39,797	ND	ND	2.4
1984/1985	39	236	325,420	774,828	19,867	ND	ND	2.4
1985/1986	32	175	172,166	371,237	11,601	66,258	2.6	2.2
1986/1987	22	116	363,764	755,912	34,360	49,248	7.4	2.1
1987/1988	28	220	1,257,033	2,725,040	97,323	135,919	9.2	2.2
1988/1989	32	253	1,549,275	3,494,368	109,199	186,574	8.3	2.3
1989/1990	29	227	712,424	1,701,859	58,685	124,857	5.7	2.4
1990/1991	36	327	867,031	2,101,676	58,380	177,984	4.9	2.4
1991/1992	67	506	1,133,583	2,853,322	42,587	252,606	4.5	2.5
1992/1993	49	265	541,961	1,392,700	28,422	176,345	3.1	2.6
1993/1994	44	253	352,151	815,969	18,545	119,496	2.9	2.3
1994/1995	47	251	393,371	915,523	19,479	108,923	3.6	2.3
1995/1996	46	277	239,602	557,528	12,120	95,419	2.5	2.3
1996/1997	27	155	111,930	244,825	9,068	42,362	2.6	2.2
1997/1998	30	87	74,810	156,072	5,202	34,177	2.2	2.1
1998/1999	29	92	62,525	121,478	4,189	26,178	2.4	1.9
1999/2000	10	52	31,966	65,386	6,539	14,630	2.2	2.0
2000/2001-2016/2017 [a]	0	0	0	0	0	0	0	0

Note: ND = not available.

[a] Fishery closed by emergency order.

Table 2.2–Registration Area D (Yakutat) commercial Dungeness crab fishery catch by month from 1969/1970 to present in pounds.

Season	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
1969/1970	0	0	0	0	0	0	0	0	103,529	254,663	528,992	336,056	1,223,240
1970/1971	-	0	0	0	0	0	0	0	40,322	386,645	426,131	511,856	1,508,561
1971/1972	0	0	0	0	0	0	0	0	-	407,771	572,408	223,406	1,212,198
1972/1973	-	0	0	0	0	0	0	0	-	653,684	842,083	392,705	1,992,574
1973/1974	80,860	0	0	0	0	-	0	-	205,354	679,692	1,079,498	195,187	2,259,469
1974/1975	37,430	-	0	0	0	0	0	16,274	140,999	475,964	213,265	113,346	1,031,573
1975/1976	0	0	0	0	0	0	0	4,095	80,190	239,468	251,345	-	579,908
1976/1977	0	0	0	0	0	0	0	0	0	136,024	238,516	163,003	537,543
1977/1978	-	-	-	-	0	0	0	0	0	0	0	33,705	131,052
1978/1979	0	0	0	0	0	0	0	0	0	738,083	816,293	245,027	1,799,403
1979/1980	0	0	0	0	0	0	0	0	0	840,102	563,873	32,948	1,436,923
1980/1981	-	-	0	-	-	-	0	0	0	404,436	328,334	141,180	895,220
1981/1982	-	0	0	0	0	0	0	0	0	2,467,710	634,913	111,793	3,228,301
1982/1983	0	0	0	0	0	0	0	0	0	3,092,078	1,857,371	210,686	516,135
1983/1984	183,798	55,867	-	5,572	-	2,961	0	0	970,737	1,197,775	201,830	42,667	2,666,383
1984/1985	0	0	0	0	0	0	0	0	404,286	316,460	54,082	0	774,828
1985/1986	0	0	-	-	-	-	0	0	158,232	160,459	49,203	0	371,237
1986/1987	0	0	24,944	16,582	-	-	0	0	195,237	393,867	122,987	0	755,912
1987/1988	0	0	41,755	44,308	8,474	22,478	-	0	846,605	1,279,970	474,553	0	2,725,040
1988/1989	0	0	-	14,467	-	0	0	0	1,003,658	1,856,524	590,290	0	3,494,368
1989/1990	0	0	0	-	-	-	0	0	647,224	860,857	191,351	0	1,701,859
1990/1991	0	0	49,133	25,628	27,968	12,897	-	0	668,300	1,057,943	256,446	0	2,101,676
1991/1992	0	0	22,941	18,802	8,056	9,274	0	0	866,372	1,598,073	329,804	0	2,853,322
1992/1993	0	0	0	5,222	4,423	-	-	0	665,462	655,327	59,021	0	1,392,700
1993/1994	0	0	28,254	14,015	4,705	2,531	0	0	434,904	299,740	31,820	0	815,969
1994/1995	0	0	109,603	27,329	-	-	0	0	333,656	426,246	17,786	0	915,523
1995/1996	0	0	46,059	7,427	2,104	-	0	0	263,382	209,841	27,832	0	557,528
1996/1997	0	0	-	-	-	-	0	0	109,390	94,113	24,818	0	244,825
1997/1998	0	0	0	0	0	0	0	0	102,905	53,167	0	0	156,072
1998/1999	0	0	0	0	0	0	0	0	93,632	27,846	0	0	121,478
1999/2000	0	0	0	0	0	0	0	0	47,727	17,659	0	0	65,386
2000/2001–2016/2017[a]	0	0	0	0	0	0	0	0	0	0	0	0	0

- Data confidential because fewer than three permits fished.

[a] Fishery closed by emergency order.

Table 2.3–Number of pots sampled and number of crab caught in the 2004, 2012, and 2013 surveys of commercial Dungeness crab grounds in Yakutat, Registration Area D.

Years surveyed	Number of pots		Number of crab in sampled pots			
	Set	Sampled	Sublegal males	Legal males	Females	Legal males per pot
2004	605	425	31	53	33	0.12
2012	600	600	446	188	155	0.31
2013	600	599	147	21	76	0.04

Table 2.4–Summary of commercial Dungeness crab size frequency and shell condition data collected during dockside sampling in Registration Area D, 1975/1976 to 1999/2000.

	Number sampled		Carapace width (mm)		Recruitment	
Season	Boats	Crab	Mean	Range	% Recruit[a]	% Postrecruit[b]
1975/1976	12	1,500	180.1	157–210	81.1	18.9
1976/1977	-	-	-	-	-	-
1977/1978	-	-	-	-	-	-
1978/1979	27	4,503	183.9	156–221	75.4	24.6
1979/1980	4	605	187.4	166–221	67.8	32.2
1980/1981	-	-	-	-	-	-
1981/1982	11	1,215	182.2	160–218	84.7	15.3
1982/1983	16	1,695	186.3	158–222	74.8	25.2
1983/1984	27	2,491	193.9	163–227	44.3	55.7
1984/1985	41	4,191	190.7	162–233	51.1	48.9
1985/1986	61	6,526	180.1	156–226	70.2	29.8
1986/1987	29	3,545	176.0	158–225	70.2	29.8
1987/1988	33	4,726	182.6	159–224	74.7	25.3
1988/1989	46	5,448	184.3	153–222	66.0	34.0
1989/1990	17	1,702	185.2	159–223	60.2	39.8
1990/1991	19	1,901	183.8	161–217	75.7	24.3
1991/1992	26	2,596	185.2	157–220	68.3	31.7
1992/1993	9	1,013	185.3	163–221	61.1	38.9
1993/1994	17	1,758	179.7	158–220	77.3	22.7
1994/1995	9	1,023	178.4	161–215	87.3	12.7
1995/1996	16	1,675	175.3	157–210	90.0	10
1996/1997	16	2,134	177.0	155–209	85.5	14.5
1997/1998	21	3,114	176.2	159–207	92.6	7.4
1998/1999	17	1,072	176.8	161–207	38.1	61.9
1999/2000	16	1,435	174.0	159–204	87.0	13.0

[a] Recruit = all new- and soft-shell crab ≥165 mm and ≤194 mm carapace width excluding spines.

[b] Postrecruit = all new- and soft-shell crab >194 mm and old and very old-shell crab ≥165 mm carapace width.

- Data confidential because fewer than three permits fished.

Table 2.5–Dungeness crab catch rate and weights in Registration Area D, 1977/1978 to 1999/2000. Data were collected during dockside sampling and interviews[a].

Season	Number			Mean no./pot	Range no./pot	Weight (lb)		Estimated no. crab harvested[b]	Percent harvest sampled[c]
	Boats interviewed	Pots lifted	Crab captured			Mean	Range		
1977/1978	-	-	-	-	-	-	-	-	-
1978/1979	22	10,830	105,020	9.7	6.2–15.7	2.5	2.0–3.0	731,465	0.62
1979/1980	3	ND	ND	ND	ND	2.5	2.4–2.8	574,769	0.11
1980/1981	-	-	-	-	-	-	-	-	-
1981/1982	7	ND	ND	ND	ND	2.3	2.0–2.5	1,409,738	0.09
1982/1983	14	440	ND	ND	ND	2.4	1.9–2.7	2,141,135	0.08
1983/1984	27	1,850	17,085	9.2	8.3–13.1	2.7	1.9–3.0	1,006,182	0.25
1984/1985	37	3,945	6,680	1.7	0.9–2.5	2.6	2.1–3.0	299,161	1.4
1985/1986	59	22,883	28,997	1.3	0.3–9.2	2.2	1.8–2.5	172,668	3.78
1986/1987	20	7,710	47,226	6.1	3.5–9.2	2.1	1.9–2.5	366,948	0.97
1987/1988	31	13,465	65,176	4.8	3.0–11.7	2.2	1.9–2.5	1,244,311	0.38
1988/1989	44	43,351	283,640	6.5	3.9–23.0	2.4	2.1–2.7	1,468,222	0.37
1989/1990	17	13,639	71,125	5.2	2.8–9.6	2.4	2.2–2.6	709,108	0.24
1990/1991	19	19,575	99,912	5.1	2.3–10.3	2.4	2.1–2.6	890,489	0.21
1991/1992	26	14,939	75,621	5.1	1.3–18.7	2.5	2.2–2.7	1,164,621	0.22
1992/1993	9	3,180	13,416	4.2	1.8–6.5	2.5	2.1–2.8	559,317	0.18
1993/1994	17	17,905	50,118	2.8	0.8–4.6	2.2	2.0–2.5	365,905	0.48
1994/1995	9	8,200	26,400	3.2	1.6–7.5	2.3	2.0–2.5	405,099	0.25
1995/1996	16	8,460	22,143	2.6	0.5–4.8	2.0	1.8–2.4	277,377	0.6
1996/1997	15	9,575	20,421	2.1	0.6–6.2	2.0	1.8–2.3	124,911	1.71
1997/1998	20	20,563	49,828	2.4	0.8–4.6	2.1	1.9–2.4	75,397	4.13
1998/1999	16	7,075	14,215	2.0	1.2–3.0	2.1	1.8–2.3	58,123	1.84
1999/2000	16	13,182	27,796	2.1	6.6–2.0	2.0	1.7–3.5	32,210	4.46

[a] Includes data collected that could not be assigned to a fishing area.

[b] Calculated by dividing fish ticket weight data from Table 2.1 by dockside sampling average weight per crab data.

[c] Calculated by dividing number of crab sampled for size frequency by estimated number of crab caught.

\- Data confidential because fewer than three permits fished.

Note: ND = no data available.

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UNITED FISHERMEN OF ALASKA

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March 9, 2018

Senator Cathy Giessel, Chair
Senate Resources Committee
Alaska State Legislature, Room 427
State Capitol, Juneau AK 99801

Re: Support for SJR13 – Sea Otter Co-Management

Dear Chair Giessel and Committee Members,

United Fishermen of Alaska (UFA) is the statewide commercial fishing trade association, representing 35 commercial fishing organizations participating in fisheries throughout the state, and the federal fisheries off Alaska's coast.

UFA Supports SJR13 and its companion legislation HJR 35.

In 1960, 400 Sea Otters were introduced to the waters of Southeast Alaska by the Department of Fish and Game without a management plan in place. Over the past 50 plus years, the sea otter population in Southeast has increased at an alarming rate. In 2010, the United States Fish and Wildlife Service estimated over 11,000 otters at a growth of 13% per year, which extrapolates to a population of nearly 70,000 by 2025.

As a result, sea otters have nearly wiped out shellfish stocks used for subsistence, personal use, and sport fishing. Commercial fisheries are closed due to unsustainably low abundance. Southeast residents rely on healthy shellfish stocks as a food source and livelihood and they are watching the otters destroy shellfish stocks before their eyes. The loss of commercial harvests have resulted in negative economic impacts to fishermen, processors and seafood dependent communities which have experienced a loss in employment wages and associated economic activities.

There is a solution. Southeast Alaska Natives have hunted sea otters since time immemorial. However, under the Marine Mammal Protection Act, they are forbidden to sell intact sea otter pelts and can only sell pelts that have been customarily altered for art or clothing.

Alaska is a model for the management of harvestable resources for sustained yield and is the only state in the United States, which cites this model of management in the Alaska Constitution. The mandate within the Alaska Constitution to manage for sustained yield conflicts with the current interpretation and enforcement of the Marine Mammal Protection Act by the U.S. Fish and Wildlife Service. Implementation of a sustainable harvest management regime would serve the dual purposes of managing and maintaining sea otter populations and protect the Southeast shellfish population, allowing it to recover.

Section 119 of the US Marine Mammal Protection Act allows the Secretary of the Department of Interior to enter into cooperative agreements with Alaska Native organizations for the development of marine mammal co-management structures with Federal and State agencies, and the creation of local management plans for the harvest of marine mammals for subsistence use, and to provide important subsistence shellfish resources through ecological balance.

United Fishermen of Alaska urges State and Federal government managing authorities to work with the Alaska Department of Fish and Game, and the Alaska Native and non-Native leaders to develop strategies for an ecological balance of shellfish resources and the re-introduced sea otter population of Southeast Alaska, including shellfish enhancement programs. We ask that these groups actively consider means of expanding and enhancing small business and broader economic opportunities for residents of Southeast Alaska.

United Fishermen of Alaska supports expanding the hunter base by allowing all Alaska Natives to hunt and create handicrafts from sea otters allowing the wholesale sale of native handicrafts from sea otters. We support the efforts of the Shellfish Preservation Alliance (SPA) to further these actions.

Please find our attached Resolution 2018 – 01: A Resolution In Support of Sea Otter Management, which the UFA board voted to support at our Spring 2018 meeting.

Thank you for your consideration.

Jerry McCune
President

Frances H. Leach
Executive Director

CC: Senator Bert Stedman

Attachment

MEMBER ORGANIZATIONS
Alaska Bering Sea Crabbers • Alaska Independent Tendermen's Association • Alaska Longline Fishermen's Association • Alaska Scallop Association
Alaska Trollers Association • Alaska Whitefish Trawlers Association • Armstrong Keta • At-sea Processors Association • Bristol Bay Fishermen's Association
Bristol Bay Reserve • Cape Barnabas, Inc. • Concerned Area "M" Fishermen • Cook Inlet Aquaculture Association • Cordova District Fishermen United
Douglas Island Pink and Chum • Freezer Longline Coalition • Golden King Crab Coalition • Groundfish Forum • Kenai Peninsula Fishermen's Association
Kodiak Regional Aquaculture Association • Kodiak Seiners Association • North Pacific Fisheries Association • Northern Southeast Regional Aquaculture Association
Petersburg Vessel Owners Association • Prince William Sound Aquaculture Corporation • Purse Seine Vessel Owner Association
Seafood Producers Cooperative • Southeast Alaska Herring Conservation Alliance • Southeast Alaska Fisherman's Alliance
Southeast Alaska Regional Dive Fisheries Association • Southeast Alaska Seiners • Southern Southeast Regional Aquaculture Association
United Cook Inlet Drift Association • United Southeast Alaska Gillnetters • Valdez Fisheries Development Association

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UFA Resolution 2018 – 01

A RESOLUTION IN SUPPORT OF SEA OTTER MANAGEMENT.

WHEREAS, United Fishermen of Alaska (UFA) is the statewide commercial fishing trade association, representing 35 commercial fishing organizations participating in fisheries throughout the state, and the federal fisheries off Alaska's coast, with the mission "*To promote and protect the common interest of Alaska's commercial fishing industry, as a vital component of Alaska's social and economic well-being; 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 in the absence of a long-term management plan; and

WHEREAS, the federal government, which has jurisdiction under the Marine Mammal Protection Act (MMPA), has established no effective management plan for protecting the ecosystems affected by sea otters and maintaining an ecological balance of shellfish resources; and

WHEREAS, the unmanaged proliferation of reintroduced sea otters, which consume non-quantified yet substantial volumes of the crab, abalone, urchins, sea cucumbers, clams and other shellfish upon which the region's residents also heavily rely, appears to be contributing to a degradation in the ecological balance in many areas leading to diminished harvests of these important resources for subsistence and commercial purposes; and

WHEREAS, without proper management, the sea otter population in southern Southeast Alaska has grown at an alarming rate (over 5,800 observed in 2003 and a 2010 aerial survey by the United States Fish and Wildlife Service revealed an estimate of over 11,000 otters a growth rate of 13% per year, which extrapolates to a population of nearly 70,000 by 2025); and

WHEREAS, the drastic increase and high density of reintroduced sea otter has, in some areas, so depleted shellfish stocks that subsistence, personal use, and sport fishing is almost non-existent, and commercial fishing is closed due to unsustainably low abundance; and

WHEREAS, monies derived from the harvest of Alaska's sustainably managed aquatic resources form a major component of the economies of Alaska's coastal communities and thereby make them particularly sensitive to situations negatively impacting yields from those resources; and

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

WHEREAS, residents of Alaska rely on shellfish not only for their livelihood, but for survival in a subsistence way of life; and

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

WHEREAS, Alaska Natives under the Marine Mammal Protection act are denied the customary and traditional ability to sell intact sea otter pelts; and

WHEREAS, Section 101 of the US Marine Mammal Protection Act further allows for the use of marine mammal pelts in the creation of authentic native articles of handicraft and clothing; and

WHEREAS, under the Act, such value added fur products, so created, are already allowable for sale in both intra and interstate commerce; and

WHEREAS, Alaska is a model for the management of harvestable resources for sustained yield and is the only state in the United States which cites this model of management in the Alaska Constitution; and

WHEREAS, the mandate within the Alaska Constitution to manage for sustained yield conflicts with the current interpretation and enforcement of the Marine Mammal Protection Act by the U.S. Fish and Wildlife Service; and

WHEREAS, implementation of a sustainable harvest management regime would serve the dual purposes of maintaining sea otter populations at a level suitable for continued ecological balance and expanded economic opportunity; and

WHEREAS, Section 119 of the US Marine Mammal Protection Act allows the Secretary of the Department of Interior to enter into cooperative agreements with Alaska Native organizations for the conservation of marine mammals, the development of marine mammal co-management structures with Federal and State agencies and the creation of local management plans for the harvest of marine mammals for subsistence use and providing protection to important subsistence shellfish resources creating an ecological balance; and

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

NOW, THEREFORE, BE IT RESOLVED THAT UNITED FISHERMEN OF ALASKA urges the appropriate Federal agencies work with the Alaska Department of Fish and Game, and the Alaska Native and non-Native leaders in the Southeast region, to establish strategies and plans for an ecological balance of shellfish resources and the re-introduced sea otter population of Southeast Alaska, including shellfish enhancement programs; and be it

FURTHER RESOLVED that United Fishermen of Alaska urges State and Federal government managing authorities, in developing those management plans, to actively

consider means of expanding and enhancing small business and broader economic opportunities for residents of Southeast Alaska; and be it

FURTHER RESOLVED that United Fishermen of Alaska, as a means of expanding and enhancing economic opportunities for residents of Southeast Alaska, urges Federal authorities to consider expanding the scope of allowable uses for sea otters taken for subsistence purposes; and be it

FURTHER RESOLVED that United Fishermen of Alaska, supports expanding the hunter base by allowing all Alaska Natives to hunt and create handicrafts from sea otters; and be it

FURTHER RESOLVED that United Fishermen of Alaska, supports allowing the wholesale sale of native handicrafts from sea otters; and be it

FURTHER RESOLVED that United Fishermen of Alaska supports the efforts of the Shellfish Preservation Alliance (SPA) to further these actions; and

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

By the UFA Board of Directors, February 28, 2018.

Jerry McCune, President

Attest: Frances Leach
Executive Director

Senate Resources
State Capitol Rm 427
Juneau AK, 99801

RE: Letter of Concern Resolution SJR013

March 08, 2018

Dear Senator Giessel;

I am writing to express my concern regarding important inaccuracies in Resolution SJR013. The cultural exemption under the Marine Mammal Protection Act (MMPA) for coastal Alaska Native people to harvest sea otters is not a population management tool as suggested in SJR013. There are already co-management plans for local subsistence harvest of sea otters between Alaska Native Tribes and the U.S. Fish and Wildlife Service (Service) in place that guide local actions. These plans were developed from information contained in the MMPA Stock Assessment Reports for sea otters in SE Alaska. Resolution SJR013 states that there is no management plan; that is not correct. Further, the MMPA allows for more harvest (calculated potential biological removal 2,179 sea otters) than is currently being reported by the Marking, Tagging, and Reporting program for subsistence take (447 per year average 2006-2010). If Tribes wish to harvest more sea otters to protect local shellfisheries and utilize the pelts; they all ready have that ability without permitting unrestricted harvest outside the cultural exemption.

The effort to remove management authority from the Service and transfer it to the State to co-manage hunting with an unstated Alaska Native Organization is poorly conceived and is riddled with repercussions. In an attempt to protect commercial fishery opportunities for a few in a localized areas, these actions would exclude other important cultural and economic uses of the species across the state. SJR013 is urging us to implement hunting by permit for sea otters and open legal trade and foreign export of pelts which has global implications for the fur trade and may impact the species negatively as a whole. It is true that the sea otter population is growing and recolonizing former habitat in SE Alaska, and it is also true that there are two populations that are listed as Threatened under the Endangered Species Act. Sea otters are recovering from near extirpation globally and significant population segments are not thriving here in the United States.

Regarding achieving ecological balance through targeted hunting and removal of sea otters, the SJR013 states "*a growing sea otter population appears to be contributing to ecological imbalances and diminished human subsistence and commercial harvests of Alaska shellfish*

resources;". The local ecology was unbalanced greatly when sea otters were extirpated from the region by unmanaged commercial hunting for pelts; the unbalance favored shellfish population growth that local regions have come to depend upon. What is not mentioned is that sea otters and coastal Alaska Native people co-existed for thousands of years prior to the commercial fur trades and the sea provided food for all. Like comments you have received from Alaska Native Tribes in SE, e.g. the Organized Village of Kake, I do not support SJR013 and believe it will harm a recovering species and negatively impact coastal Alaska communities. I urge you not to support SJR013 because it is poorly conceived and has local and global consequences. I also urge you to support existing management structures to improve sea otter population monitoring (much of which is outdated) and to encourage timely updates to the MMPA Stock Assessment reports so that there is current information publicly available. Thank you for taking time read my concerns.

Sincerely,

Angela Doroff
Long-term resident of coastal Alaska
1200 Carriage Court
Homer, AK 99603

CITY AND BOROUGH OF WRANGELL, ALASKA

RESOLUTION No. 01-18-1387

A RESOLUTION OF THE ASSEMBLY OF THE CITY AND BOROUGH OF WRANGELL, ALASKA, SUPPORTING SEA OTTER MANAGEMENT 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 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 in the absence of a long-term management plan; and

WHEREAS, the federal government, which has jurisdiction under the Marine Mammal Protection Act (MMPA), has established no effective management plan for protecting the ecosystems affected by sea otters and maintaining an ecological balance of shellfish resources; and

WHEREAS, the unmanaged proliferation of reintroduced sea otters, which consume non-quantified yet substantial volumes of the crab, abalone, urchins, sea cucumbers, clams and other shellfish upon which the region's residents also heavily rely, appears to be contributing to a degradation in the ecological balance in many areas leading to diminished harvests of these important resources for subsistence and commercial purposes; and

WHEREAS, without proper management, the sea otter population in southern Southeast Alaska has grown at an alarming rate (over 5,800 observed in 2003 and a 2010 aerial survey by the United States Fish and Wildlife Service revealed an estimate of over 11,000 otters a growth rate of 13% per year, which extrapolates to a population of nearly 70,000 by 2025); and

WHEREAS, the drastic increase and high density of reintroduced sea otter has, in some areas, so depleted shellfish stocks that subsistence, personal use, and sport fishing is almost non-existent, and commercial fishing is closed due to unsustainably low abundance; and

WHEREAS, monies derived from the harvest of Alaska's sustainably managed aquatic resources form a major component of the economies of Alaska's coastal communities and thereby make them particularly sensitive to situations negatively impacting yields from those resources; 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, Southeast Alaska's indigenous inhabitants have hunted sea otters since time immemorial; and

WHEREAS, Alaska Natives under the Marine Mammal Protection act are denied the customary and traditional ability to sell intact sea otter pelts; and

WHEREAS, Section 101 of the US Marine Mammal Protection Act further allows for the use of marine mammal pelts in the creation of authentic native articles of handicraft and clothing; and

WHEREAS, under the Act, such value added fur products, so created, are already allowable for sale in both intra and interstate commerce; and

WHEREAS, Alaska is a model for the management of harvestable resources for sustained yield and is the only state in the United States which sites this model of management in the Alaska Constitution; and

WHEREAS, the mandate within the Alaska Constitution to manage for sustained yield is in conflict with the current interpretation and enforcement of the Marine Mammal Protection Act by the U.S. Fish and Wildlife Service; and

WHEREAS, implementation of a sustainable harvest management regime would serve the dual purposes of maintaining sea otter populations at a level suitable for continued ecological balance and expanded economic opportunity; and

WHEREAS, Section 119 of the US Marine Mammal Protection Act allows the Secretary of the Department of Interior to enter into cooperative agreements with Alaska Native organizations for the conservation of marine mammals, the development of marine mammal co-management structures with Federal and State agencies and the creation of local management plans for the harvest of marine mammals for subsistence use and providing protection to important subsistence shellfish resources creating an ecological balance; and

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

WHEREAS, the Assembly of the City and Borough of Wrangell adopted a similar Resolution in 2011.

NOW, THEREFORE, BE IT RESOLVED THAT THE ASSEMBLY OF THE CITY AND BOROUGH OF WRANGELL, ALASKA urges the appropriate Federal agencies work with the Alaska Department of Fish and Game, and the Alaska Native and non-Native leaders in the Southeast region, to establish strategies and plans for an ecological balance of shellfish resources and the reintroduced sea otter population of Southeast Alaska, including shellfish enhancement programs; and be it

FURTHER RESOLVED that the Assembly of the City and Borough of Wrangell, Alaska urges State and Federal government managing authorities, in developing those management plans, to actively consider means of expanding and enhancing small business and broader economic opportunities for residents of Southeast Alaska; and be it

FURTHER RESOLVED that the Assembly of the City and Borough of Wrangell, Alaska, as a means of expanding and enhancing economic opportunities for residents of Southeast Alaska, urges Federal authorities to consider expanding the scope of allowable uses for sea otters taken for subsistence purposes; and be it

FURTHER RESOLVED that the Assembly of the City and Borough of Wrangell, Alaska supports the efforts of the Shellfish Preservation Alliance (SPA) to further these actions; and

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: January 9, 2018.

David L. Jack, Mayor

ATTEST: _____
Aleisha Mollen, Deputy Borough Clerk

City & Borough of Wrangell
Incorporated Borough May 30 2008
Incorporated City June 15 1903
Alaska

CITY AND BOROUGH OF WRANGELL

INCORPORATED MAY 30, 2008

P.O. BOX 531 (907)-874-2381
Wrangell, AK 99929 FAX (907)-874-3952
www.wrangell.com

March 6, 2018

To: Chair of the Senate Resource Committee Senator Cathy Geissel
Members of the Resource Committee

Re: SJR 13 - Urging Co-management Plan For Sea Otters

On January 9, 2018 the Wrangell Borough Assembly passed a Resolution (01-18-1387) that urged Federal agencies to work with the Alaska Department of Fish and Game, and the Alaska Native and non-Native leaders in the Southeast region, to establish strategies and plans for an ecological balance of shellfish resources and the reintroduced sea otter population of Southeast Alaska, including the shellfish enhancement programs.

The Resolution further urged State and Federal government managing authorities, in developing those management plans, to actively consider means of expanding and enhancing small business and broader economic opportunities for residents of Southeast Alaska and expanding the scope of allowable uses for sea otters taken for subsistence purposes

Finally, the Assembly supports the efforts of the Shellfish Preservation Alliance (SPA) and is requesting that the State and Federal government managing authorities 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.

Sincerely,

Carol Rushmore,
Economic Development Director
City & Borough of Wrangell, Alaska

encl: Resolution No. 01-18-1387

Senator Cathy Giessel, Chair
Senate Resources Committee
senator.cathy.giessel@akleg.gov

March 9, 2018

Re: Support for SJR 13 - Urging Co-Management Plan For Sea Otters

Dear Senator Giessel and Members of the Senate Resources Committee,

I am writing on behalf of the Alaska Fisheries Development Foundation (AFDF) to support SJR 13 – Urging Co-Management Plan for Sea Otters.

Established in 1978, AFDF works on behalf of the seafood industry, and is dedicated to identifying problems common to the Alaska seafood industry and developing efficient, sustainable solutions that provide benefits to the economy, environment and communities.

In 2014, AFDF began work on the Alaska Mariculture Initiative, with a intention of accelerating the development of a mariculture industry in Alaska. However, enhancement and farming of shellfish in Alaska requires management of both shellfish and sea otters (apex predators of shellfish).

The current interpretation of the federal Marine Mammal Protection Act (MMPA) and the Alaska Constitution (which requires sustainable management of all species, including shellfish) are in conflict. This conflict needs resolution in order to protect and manage sea otters, but also shellfish. The current predation of shellfish by, and expansion of, sea otters is not sustainable.

SJR 13 encourages the establishment of an otter management plan that will maintain a balance between sustainable human harvest of shellfish and the region's exponentially expanding otter population. The resolution also urges consideration of how the plan may expand and enhance small businesses and provide other economic opportunities for Alaskans. In context with this resolution, the Alaska Mariculture Initiative's efforts to develop shellfish enhancement (including support for the bill HB128) fall in line with the resolution, however, those efforts will be greatly inhibited, if a management plan for otters is not adopted.

Please feel free to contact me if you have questions.

Sincerely,

Julie Decker, Executive Director

Cc: Senator Bert Stedman

Alaska Fisheries Development Foundation
P.O. Box 2223, Wrangell, AK 99929 - Ph: 907-276-7315
www.afdf.org

AFDF
Alaska Fisheries Development Foundation, Inc.

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John Sund
Service Sector
Stellar North LLC

Southeast Alaska Fishermen's Alliance

9369 North Douglas Highway

Juneau, AK 99801

Phone: 907-586-6652 Email: seafa@gci.net

Fax: 907-523-1168 Website: http://www.seafa.org

March 12, 2018

Senate Resources
Senator Catch Giessel, Chair
Alaska State Capitol, Room 427
Juneau, AK 99801

RE: Support for SJR 13 – Sea Otters

Dear Senator Giessel, Chair and Senate Resource Committee Members,

Southeast Alaska Fishermen's Alliance (SEAFA) supports SJR 13 to raise the issue of the effect sea otters are having on the shellfish resources of Southeast Alaska. Alaska's constitution to manage fishery resources for sustained yield is in conflict with the hands-off management of sea otters by the USFWS. Without some changes to the current situation eventually we will reach a point where the sea otters will be starving and the important shellfish resources they prey on will be below a sustainable level of population. These shellfish resources are important to the Southeast residents both as subsistence resources in rural areas, as important commercial fisheries, recreational and sport use. This resolution is one step forward to focusing efforts on possible changes within the framework of native harvests and handicrafts.

Sincerely,

Kathryn Hansen

Kathy Hansen
Executive Director

Shellfish Preservation Alliance
PO Box 20527
Juneau, AK 99802
907-465-7666 shellfishpreservationalliance@gmail.com

March 12, 2018

Senator Stedman
Alaska State Capitol
Juneau, AK 99811

RE: SJR 13 – Support for Sea Otter Resolution

Dear Senator Stedman,

Thank you for introducing resolution SJR13 regarding the management of sea otters. We appreciate this issue being raised and support the resolution. It became very apparent again at the Southeast Board of Fish meeting that Alaska will not be able to meet it's mandate for maintaining sustainable resources when there is no management of sea otters.

US Fish and Wildlife Service (USFWS) has made it clear that they intend to manage sea otters by allowing them to run their course – which is to allow them to rapidly expand and then starve themselves until the population reaches an equilibrium but unfortunately at that point the shellfish resources which is so important to the rural communities for subsistence uses and for sport and commercial will no longer be viable for any harvest nor at maximum sustainable yield as mandated by the Constitution.

Many native tribes and organizations have approached the USFWS about developing management plans and or co-management authority and to date USFWS has not entered into any joint endeavor. The Southeast Federal Subsistence Regional Advisory Council gets in a discussion about sea otters at almost every meeting and again no action has resulted from the issue being raised continually.

The Shellfish Preservation Alliance is a new group formed in 2017 as a coalition of native hunters, native artists, tribal governments and organizations, municipalities, fishermen, fishing associations and processors to work together for changes allowing for an ecological balance between sea otters, shellfish resources and humans.

Sincerely,

John Moller
President

March 12, 2018

Senator Stedman
Alaska State Capitol
Juneau, AK 99811

RE: SJR 13 – Support for Sea Otter Resolution

Dear Senator Stedman,

Thank you for introducing resolution SJR13 regarding the management of sea otters. I am an Aleut originally from Unalaska/Dutch Harbor and now live in Juneau. I own Bering Sea Design, producing sea otter crafts. I also own an Alaska Dungeness crab permit and commercial fish in Southeast Alaska.

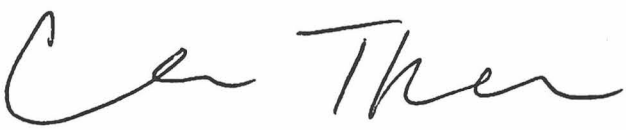
I recently married a life-long Alaskan from Fairbanks. He is non-native and our kids will not be qualified to hunt sea-otters. Also, unless my siblings marry an Alaskan Native, you are hearing from the last of the Moller's to harvest sea otters. Considering my Great, Great Grand Father was a hunter on the last commercial sea otter hunt in the Aleutians and Shimigan Island's-this is sad.

My family has been hunting these critters longer than most Alaskans and my Great, Great Grandfather traded raw pelts wholesale-now we have the federal government telling us what we can and cannot do. All while, these invasive species eats my subsistence resources and is making it more and more difficult to make a living with my commercial fishing permit.

This is about a balance of our resources; so that we can ALL co-exists. I thank you again for this effort and urge you to pass SJR 13 out of committee.

Sincerely,

Carley Thayer
Juneau
907.723.3872



UNITED SOUTHEAST ALASKA GILLNETTERS

Box 2196, Petersburg AK 99833 * (253) 237-3099 * usag.alaska@gmail.com * akgillnet.org

March 6, 2018

Senator Cathy Giessel
Senator Bert Stedman
Capitol Bldg., Juneau, AK, 99801
Senator.Cathy.Giessel@akleg.gov
senator.bert.stedman@akleg.gov

Dear Senators Stedman, Giessel and interested others:

United Southeast Alaska Gillnetters (USAG) SUPPORTS Senate Joint Resolution 13, *"Urging the United States Congress to amend the Marine Mammal Protection Act and urging the United States Department of the Interior to permit Alaska Native organizations and the Alaska Department of Fish and Game to co-manage, take, and study marine mammals under the Marine Mammal Protection Act."*

United Southeast Alaska Gillnetters works to serve the region's salmon gillnetters and although this resolution particularly addresses the reintroduced sea otters that do not directly affect our fleet, gillnetters are very interested in having a healthy ecosystem and robust Dungeness fishery as the summer crab season coincides with the salmon gillnet season. In years of high crab abundance, many gillnetters will choose to pursue the crab fishery over gillnetting, reducing congestion and allowing for a higher individual average salmon harvest for the fleet. Both the Dungeness and dive fisheries are important "shoulder fisheries" in the fall season for the gillnet, troll, and seine fleets, extending the fishing season and providing economic diversity for these fleets as well as coastal communities.

As the unmanaged sea otter populations continue to rise and spread, so does the need for proper management of them; this resolution addresses this important economic and environmental problem. We also support a similar resolution recently adopted by United Fishermen of Alaska.

Thank you,

Cynthia Wallesz
Executive Director

Senate Joint Resolution 13

Senate Resources Committee
March 12, 2018
Presented by Senator Bert Stedman

Senate Joint Resolution 13

Urging the United States Congress to amend the Marine Mammal Protection Act and urging certain federal agencies to permit Alaska Native Organizations and the Alaska Department of Fish & Game to co-manage, take, and study sea otters.

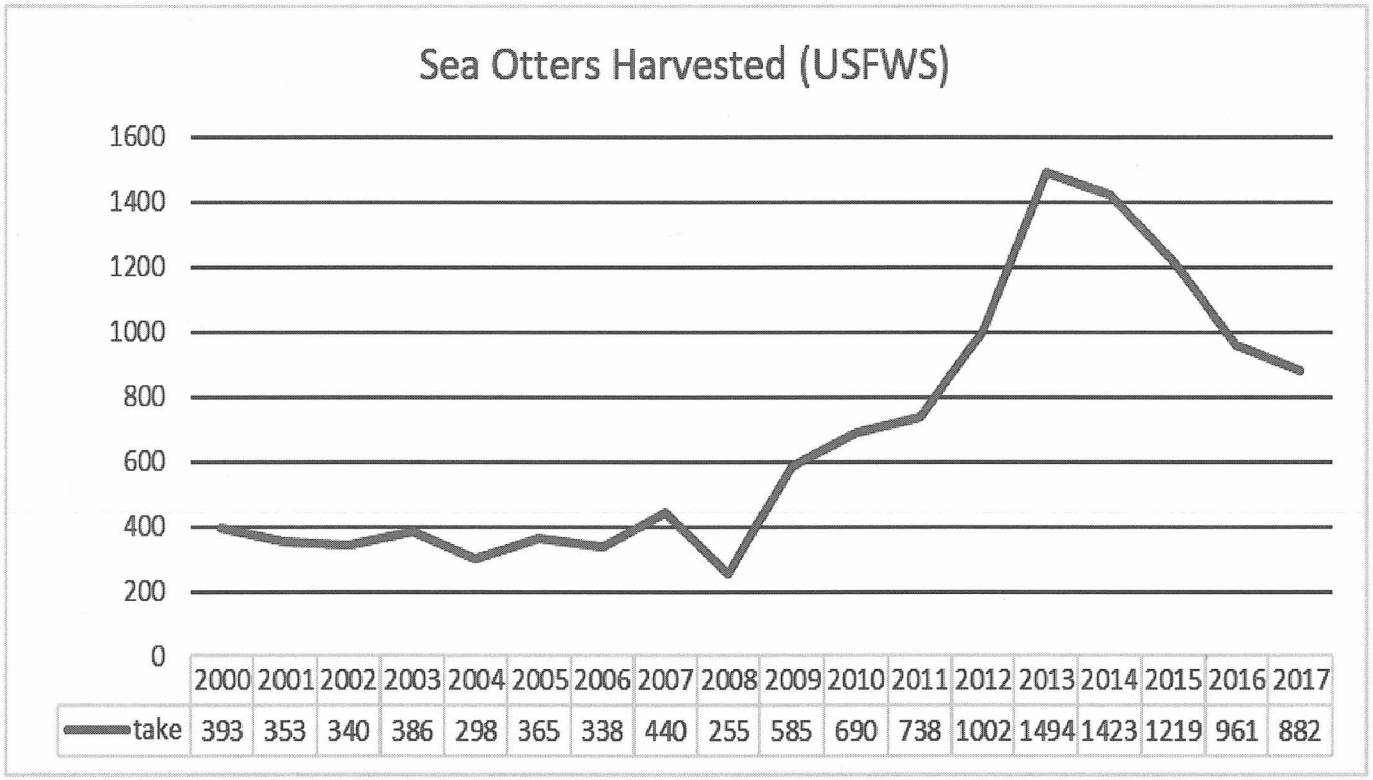
Growing Sea Otter population is devastating the shellfish population.

Senate Joint Resolution 13

- 1965-1969 - 400 otters were reintroduced in Southeast Alaska.
- Current population is over 25,000 with estimated growth rate of 13%.
- ADF&G has closed 18 dive fish areas due to sea otters.
- Subsistence fishery resources are threatened.

Senate Joint Resolution 13

The number of sea otters harvested is well below the Potential Biological Removal level (set by the USFWS) of 2,179 animals.



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
take	393	353	340	386	298	365	338	440	255	585	690	738	1002	1494	1423	1219	961	882

Resolved Clauses

Senate Joint Resolution 13

- Urges federal agencies to work with state, native, and local leaders to establish a sea otter management plan to protect shellfish resources.
- Urges transfer of sea otter management authority to ADF&G or to National Marine Fisheries Service.
- Urges state and federal agencies to consider small business enhancements and economic activities in management plan.

Resolved Clauses (continued)

Senate Joint Resolution 13

- Urges amendments to Marine Mammal Protection Act:
  - Change regime from protection to management of sea otters.
  - Expand the scope of allowable uses of harvested sea otters.
  - Permit any Alaska Native who is a member of a federally recognized tribe to take sea otters.

Resolved Clauses
(continued)

Senate Joint Resolution 13

- Urges amendments to Marine Mammal Protection Act:
  - Provide that "authentic native" crafts be sold without restriction.
  - Allow ADF&G or Native Organization to co-manage the subsistence use of sea otters.
  - Permit the sale and foreign export of sea otter pelts.

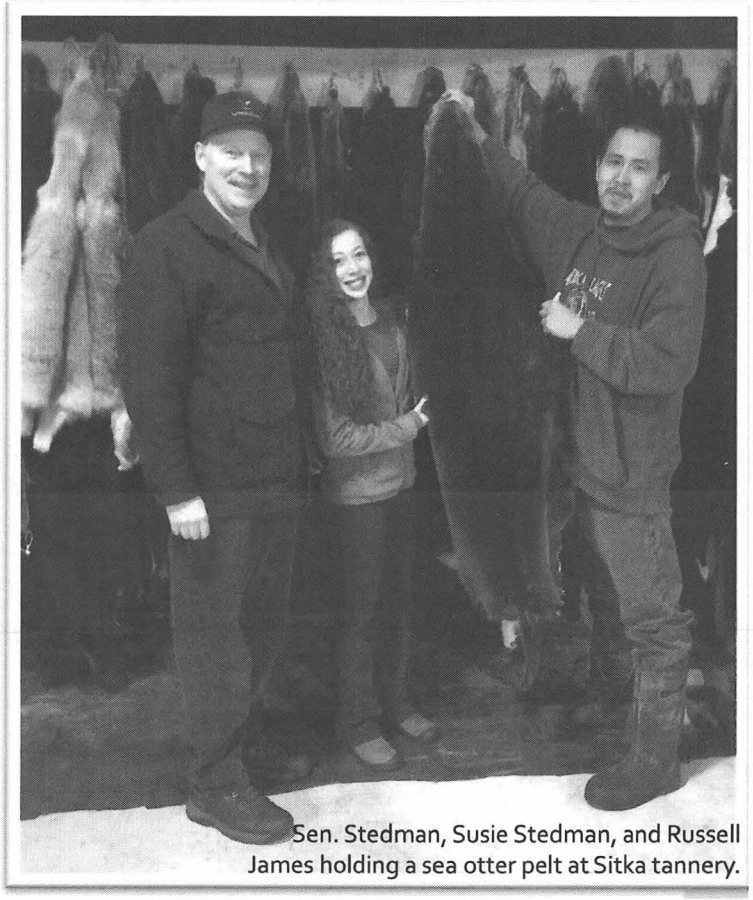
Final Resolved Clause

Senate Joint Resolution 13

Urges federal agencies to issue a permit authorizing ADF&G or Native organizations to take as many sea otters as is necessary to protect the threatened subsistence fisheries.

Thank you.

Senate Resources Committee
March 12, 2018
Presented by Senator Bert Stedman



Sen. Stedman, Susie Stedman, and Russell James holding a sea otter pelt at Sitka tannery.