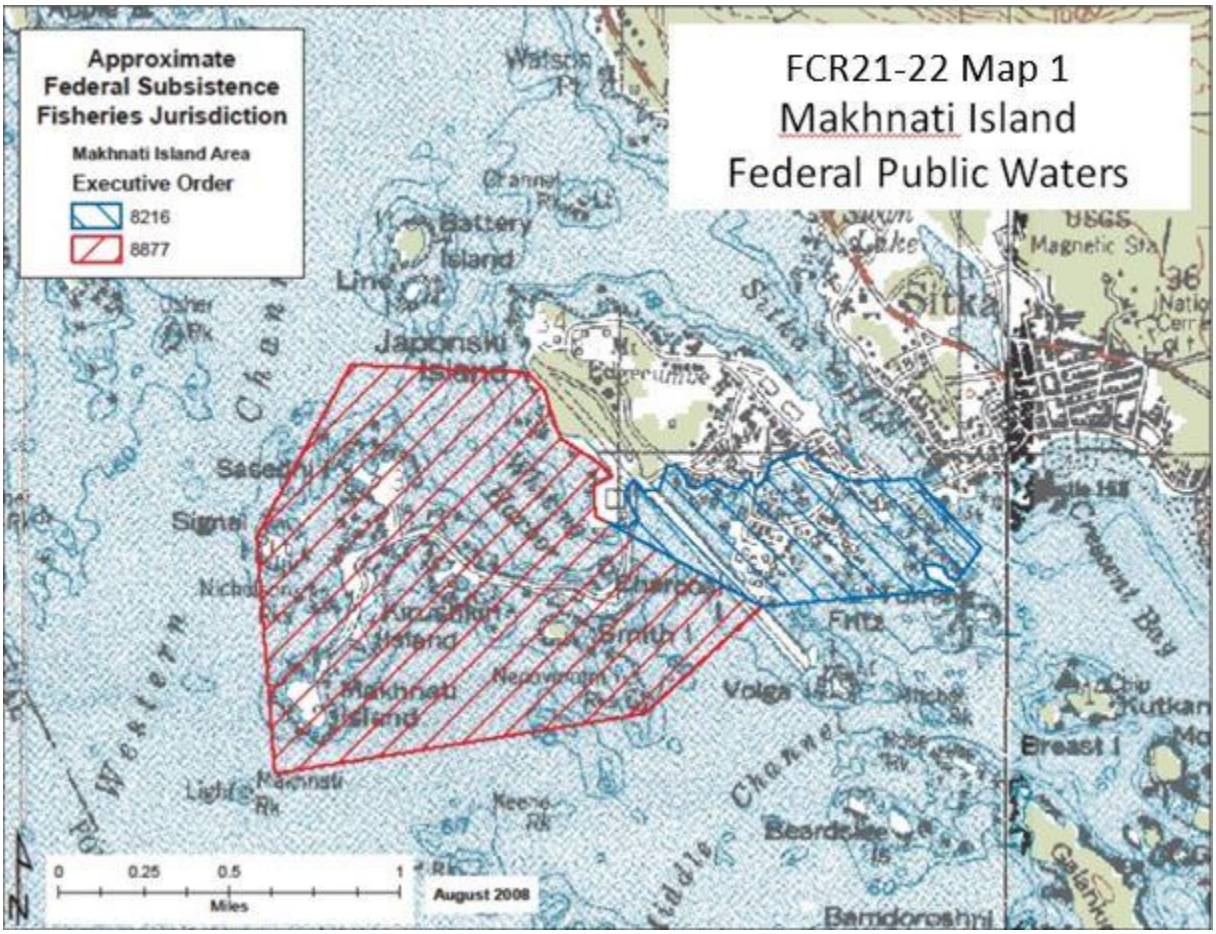
FCR21-22 Executive Summary	
General Description	Fisheries Closure Review FCR21-22 concerns Makhnati Island Federal public waters in Sitka Sound, which are closed to the harvest of Herring except by Federally qualified subsistence users.
Proposed Regulation	Maintain status quo, modify, or eliminate the closure
OSM Preliminary Conclusion	**Maintain status quo**
Southeast Alaska Subsistence Regional Advisory Council Recommendation	
Interagency Staff Committee Comments	
ADF&G Comments	
Written Public Comments	**None**

FEDERAL FISHERIES CLOSURE REVIEW
FCR21-22

Closure Location

Southeastern Alaska Area, District 13B, Makhnati Island Federal public waters (**Map 1**) — Pacific Herring



Map 1. Makhnati Island Federal Public Waters created by Executive Orders 8216 and 8877.

Current Federal Regulation

Under existing Federal regulations, there are no closed seasons, harvest limits or closed areas.

36 CFR 242 and 50 CFR 100

§___.27(a)(2) You may take fish for subsistence uses at any time by any method unless you are restricted by the subsistence fishing regulations found in this section.	*Year-round*

§___.27(i)(13)(xx) The Federal public waters in the Makhnati Island area, as defined in §___.3(b)(5) are closed to the harvest of Herring and Herring spawn except by Federally qualified subsistence users.

Closure Dates

Year Round

Current State Regulation

5 AAC 27.150. Waters closed to Herring fishing in Southeastern Alaska Area

Herring may not be taken in

…

District 13, in the waters enclosed by a line extending from a point on the Baranof Island shore at the O'Connell Bridge at 57_ 02.87' N. lat., 135_ 20.33' W. long., to the northernmost point of Aleutski Island at 57_ 02.74' N. lat., 135_ 20.46' W. long., to the westernmost point of Makhnati Island at 57_ 02.40' N. lat., 135_ 23.48' W. long., to Bieli Rocks at 57_ 05.42' N. lat., 135_ 29.98' W. long., to the northwestern point of Crow Island at 57_ 06.96' N. lat., 135_ 28.57' W. long., to the westernmost point of Big Gavanski Island at 57_ 08.11' N. lat., 135_ 26.13' W. long., to the northernmost point of Big Gavanski Island at 57_ 08.49' N. lat., 135_ 25.21' W. long., to the Baranof Island shore at Harbor Point at 57_ 07.59' N. lat., 135_ 23.37' W. long.

Regulatory Year Initiated

2015

Customary and Traditional Use Determination

Rural residents of Southeastern and Yakutat Fishery Management Areas have a customary and traditional use determination for all fish in the Southeastern Alaska Area.

Extent of Federal Public Lands/Waters

For purposes of this discussion, the phrase “Federal public waters” is defined as those waters described under 36 CFR 242.3 and 50 CFR 100.3.

The Federal subsistence program exerts jurisdiction of approximately 800 acres of marine waters near Makhnati Island as described in §___.3(b)(5) (**Map 1**). These waters are under the management authority

of the Bureau of Land Management however the in-season manager is the local U.S. Forest Service, Sitka District Ranger.

Regulatory History

Federal Regulatory History

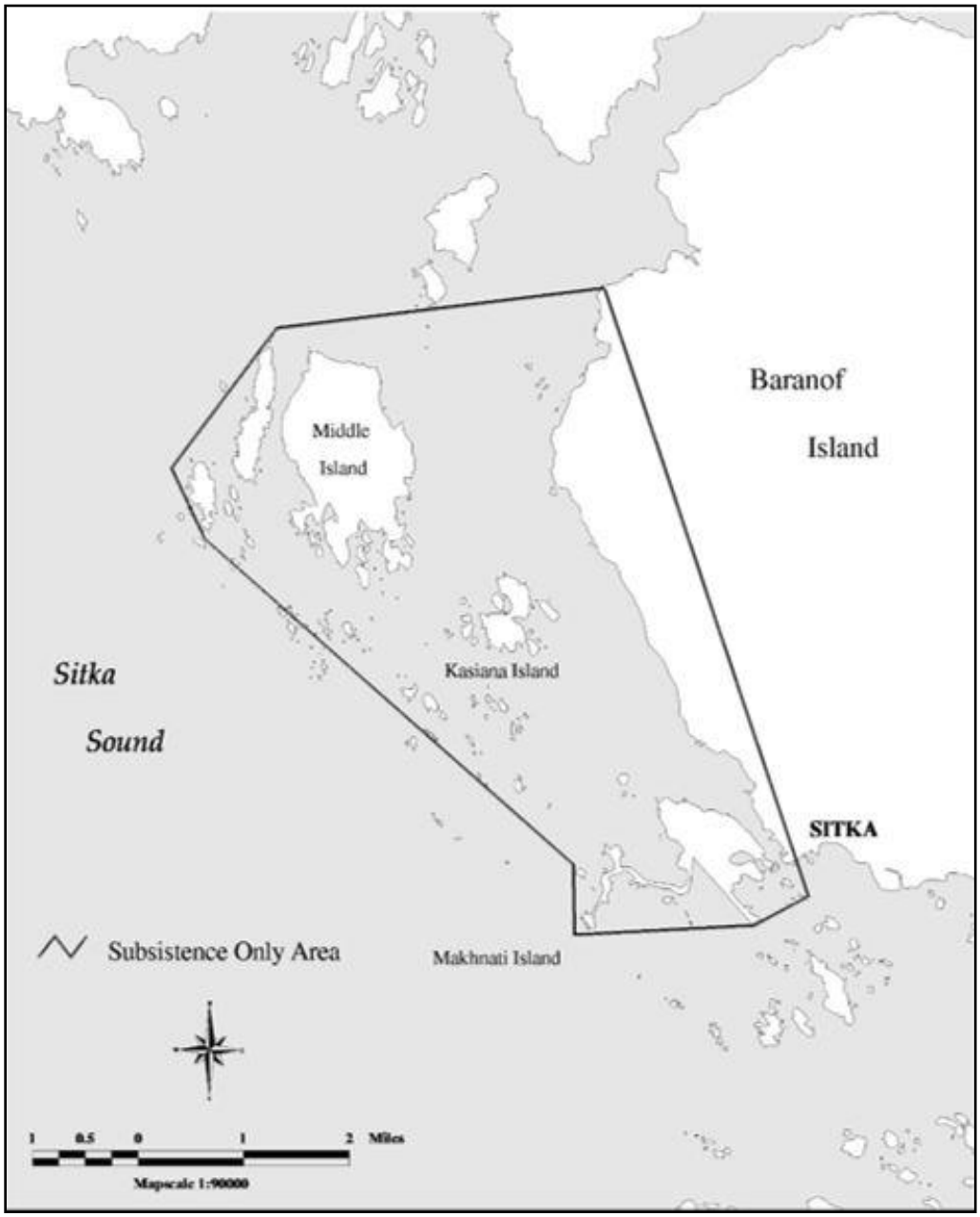
Public testimony at Council meetings since the early 2000s has consistently indicated that the Herring needs of subsistence users were not being met. Beginning in 2007, several Makhnati Herring proposals were submitted and considered by the Board.

In January 2007, the Federal Subsistence Board (Board) considered two proposals regarding subsistence Herring egg harvest in the Makhnati Federal public waters near Sitka (FSB 2007a). Proposal FP07-18, submitted by the Southeast Alaska Subsistence Regional Advisory Council (Council) and FP07-19, submitted by the Sitka Tribe of Alaska, both sought to close the Makhnati Federal public waters to commercial Herring fishing during the months of March and April. The proponents believed the closure would be a constructive step toward ensuring adequate subsistence harvests of Herring and Herring spawn. The Board deferred action on proposal FP07-18 and took no action on FP07-19 (FSB 2007a). The Board asked the Council to form a working group to recommend criteria which would govern decisions to open or close the commercial Herring fishery in the Makhnati Federal public waters and possible alternate solutions. Although the working group did not reach consensus on all recommendations, its report was presented to the Council in September 2007. The Council accepted the report and distributed it to the public. At its September 2007 meeting, the Council developed closure language for the Makhnati Island area based on the working group report. The Council recommended the closure of Federal public waters near Makhnati Island to non-Federally qualified subsistence users when the forecast Herring biomass is less than 35,000 tons for the Sitka Sound area or when amounts necessary for subsistence (ANS), as set by the Alaska Board of Fisheries (BOF), is not met for two consecutive years (SESRAC 2007). In comparison, ADF&G's Herring management plan used a threshold level of 20,000 tons, below which no commercial sac roe harvest would occur. The Board considered the Council's recommendation during a December 2007 public meeting as part of proposal FP07-18. Following considerable oral testimony from Tribal representatives, professional managers and U.S. Forest Service staff, the Board rejected the Council's recommendation. The Board's rationale was that there was not substantial evidence of a conservation concern or a need for a closure to insure the continuance of subsistence uses (FSB 2007b).

On March 25, 2008, Special Action Request FSA07-03 was received by the Board from the Sitka Tribe of Alaska requesting that the Federal public waters in the Makhnati Island area, as defined in 36 CFR 242.3(b)(5) and 50 CFR §100.3(b)(5), be closed to the harvest of Herring and Herring spawn except for subsistence harvests by Federally qualified subsistence users from March 24, 2008 through April 30, 2008. The Board responded by letter dated April 3, 2008 informing the Sitka Tribe of Alaska that the commercial fishery was completed prior to the Board action and consequently the matter was moot.

Also on March 25, 2008, the Sitka Tribe of Alaska requested that the Secretaries of Agriculture and the Interior (Secretaries) exert their authority through extra-territorial jurisdiction to close the commercial Herring fishery in the area shown in **Map 2**. The Secretaries denied the Sitka Tribe of Alaska's request

stating they can "only exercise their authority to impose Federal jurisdiction outside of Federal public land under extraordinary circumstances. The threshold for such a decision is extremely high, and is not met in this case. With such a healthy Herring biomass, there is clearly no conservation concern with regard to the Herring stocks and the associated fishery in Sitka Sound. Given the spawning characteristics of Herring, closing State marine waters as requested would not significantly increase the likelihood of Federally qualified subsistence users harvesting their desired amounts in the Makhnati Island Federal public waters."



Map 2. Area requested by the Sitka Tribe of Alaska to be open only to subsistence uses of Herring.

Proposal FP09-05, submitted by the Sitka Tribe of Alaska in 2008, requested the closure of Federal public waters in the Makhnati Island area near Sitka (**Map 1**) to the harvest of Herring and Herring spawn except for subsistence by Federally qualified subsistence users. In January of 2009 (FSB 2009) and again in January of 2011 (FSB 2011), the Board deferred proposal FP09-05 until no later than the next fisheries regulatory cycle.

In January of 2009, the Board deferred this proposal until the next fisheries cycle to allow the BOF to act on a variety of proposals that could change State regulations for the Sitka Sound Herring fisheries and to obtain results from two research projects.

One project, conducted by Heather Meuret-Woody of the Sitka Tribe of Alaska and Nate Bickford of the University of Great Falls, was based on the use of trace chemical signatures of adult Herring otoliths to identify discrete spawning areas within Sitka Sound (Meuret-Woody and Bickford 2009). The Board was particularly interested in whether Herring spawning in Federal waters are a distinct population or stock. While the sampling strategy was very limited, the investigators detected a difference between adult Herring in Salisbury Sound and Sitka Sound, but not among spawning Herring within Sitka Sound, which includes the Makhnati Federal public waters.

The other project, conducted by the Sitka Tribe of Alaska, was designed to determine the amount of subsistence use of Herring roe in the Federal public waters near Makhnati Island (Fisheries Resource Monitoring Program project 08-651, Makhnati Island Subsistence Herring Fishing Assessment).

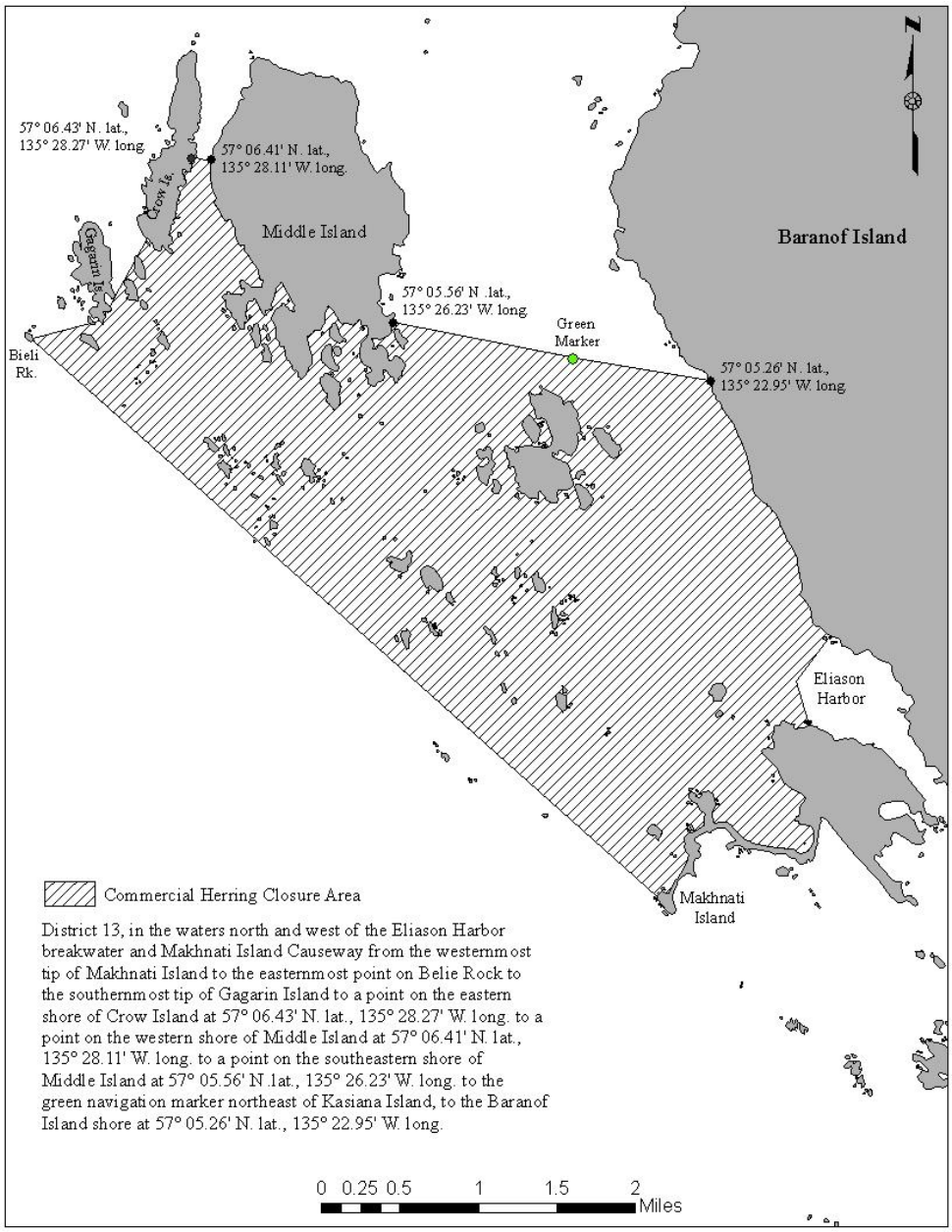
In 2010, immediately prior to the Council meeting, the Sitka Tribe of Alaska submitted a letter to Federal Subsistence Board Chairman Mr. Tim Towarak dated September 21, 2010 requesting FP09-05 be deferred. The Board agreed and deferred the proposal until no later than the next fisheries regulatory cycle. The Sitka Tribe of Alaska cited three reasons for requesting the deferral.

1. The Sitka Tribe of Alaska was conducting a study, commissioned by the Bureau of Indian Affairs, of current Herring management in Sitka Sound. However, this study was not peer reviewed for publication and was not anticipated to be ready for review by the Council or by the Board before its January 2013 Board meeting (Feldpausch 2012, pers. comm.) To date, this report has not been peer reviewed.

2. The Sitka Tribe of Alaska wanted results of project 08-651 to be available to the Council and Board. According to Meuret-Woody et al. (2010), “the Makhnati area was once used by many subsistence users, but today is not used as frequently due to the development of the area and the ease of most subsistence Herring egg gatherers to harvest in other areas”.

3. The Sitka Tribe of Alaska had formed a Herring Planning Research Priority Group, and the work of that group was not anticipated to be ready for review by the Council or by the Board before its January 2013 Board meeting (Feldpausch 2012, pers. comm.). To date, the group has not developed any products or recommendations.

In January 2013 the Board once again considered FP09-05 and rejected the proposal consistent with the recommendation of the Council. The Board's rationale was that since the last deferment in 2011 the BOF took "significant action to reduce conflicts between the purse seine sac roe fishery and subsistence harvesting, including closing a large area important to subsistence harvesting to commercial fishing" (FSB 2013) (**Map 3**). This closed area already includes a large portion of the Makhnati Federal public waters. The Board also believed that a Federal closure would provide essentially no additional advantage for subsistence users (FSB 2013).



Map 3. January 2012 Board of Fisheries action creating a zone closed to commercial fishing for Herring in Sitka Sound that includes part of the Makhnati Federal waters (Gordon, 2014).

The Sitka Tribe of Alaska submitted FP15-17 for the 2015 regulatory cycle, requesting that the Federal public waters of Makhnati Island near Sitka be closed to the taking of Herring and Herring spawn to all but Federally qualified users. The Board adopted FP15-17 at its January 2015 meeting citing a conservation concern for Herring across the Southeast Alaska Area, and the need to continue subsistence uses of Herring and Herring spawn in the Makhnati Federal public waters (FSB 2015).

Federal fisheries managers have been delegated the authority to close or re-open Federal public waters to non-subsistence fishing. This delegation may be exercised only when it is necessary to conserve fish stocks or to continue subsistence uses. Although the ADF&G forecasts the Herring biomass before the season starts, the actual return and spawning success of Herring is not known until after the commercial and subsistence fisheries are completed. Therefore, Federal actions to close waters to non-Federal uses would only take place in years for which the Herring biomass was forecasted to be below the threshold needed to support commercial uses. Otherwise, since the commercial fishery usually takes place well before the subsistence fishery, managers would not know that subsistence harvests were poor until long after the commercial fishery ended.

State Regulatory History

In response to a poor subsistence Herring egg harvest in 2001, the Sitka Tribe of Alaska submitted a proposal to the BOF in 2002. The proposal requested the Herring sac roe fishery be dispersed to avoid concentrating the commercial harvest in traditional subsistence egg harvesting areas. The BOF amended the proposal by removing a suggested requirement for a subsistence permit for all subsistence harvest in favor of face to face surveys to estimate subsistence Herring egg harvest. The BOF also established the ANS for Herring roe in Sitka Sound, Section 13-A and13-B north of the latitude of Aspid Cape at 105,000 to 158,000 pounds (5AAC 01.716(7) (b)) (Turek 2003). Regulations limit customary trade in Herring roe on kelp (5AAC 01.717 and 5 AAC 01.730 (g)). Other than spawn on kelp, there are no harvest limits for Herring or Herring spawn. According to the conditions of a Herring spawn on kelp subsistence fishing permit, the annual possession limit for Herring spawn on kelp is 32 pounds for an individual or 158 pounds for a household of two or more persons. There are no regulations regarding subsistence reporting requirements, or specific allocations for subsistence (Turek 2006).

In November of 2002 a Memorandum of Agreement was signed by the Chairman of the BOF, the Commissioner of the ADF&G and the Sitka Tribe of Alaska Chairman. The State and the Sitka Tribe of Alaska agreed to collaborate, communicate, and collect and share data (STA 2006). The Memorandum of Agreement contained provisions for in-season collaboration which included daily contact between the Sitka Tribe of Alaska and ADF&G and stipulated that the Sitka Tribe of Alaska would be consulted as to whether a proposed commercial opening might affect subsistence opportunity. If the Sitka Tribe of Alaska concluded there was a potential for the subsistence fishery to be adversely effected by a proposed opening, the Sitka Tribe of Alaska would provide this conclusion and rationale to ADF&G verbally and in writing. A formal objection to a proposed opening did not necessarily result in a commercial closure, as ADF&G maintained discretion as to whether or not to open the commercial fishery. In June 2009 ADF&G sent a letter to Sitka Tribe of Alaska withdrawing from the Memorandum of Agreement because of the perception that the Sitka Tribe of Alaska had access to information and input into decision making that was not readily available to the general public and other user groups.

ADF&G is required to "distribute the commercial harvest by fishing time and area if the department [ADF&G] determines that is necessary to ensure that subsistence users have a reasonable opportunity to harvest the amount of Herring spawn necessary for subsistence uses" (5AAC27.195(a)(2)). Additionally, commercial Herring vessels and crew members may not take or possess Herring for subsistence 72 hours prior to or following a commercial Herring fishing period.

In February 2009 the BOF created new regulations for the Sitka Sound Herring fisheries effective beginning with the 2010 season. Descriptions of those actions follow:

1. Section 13-A south of the latitude of Point Kakul (57˚21.75' N. lat) in Salisbury Sound will formally be included in the Sitka Sound sac roe seine area [5AAC 27.110(b)(1)(d)].

2. The mature biomass threshold, below which no fishery would occur in Sitka Sound, was increased from 20,000 tons to 25,000 tons. The harvest rate when the biomass is above 25,000 tons does not change from the harvest rate previously established in regulation except that the minimum harvest rate, when the forecast biomass is at 25,000 tons, will be 12% [5AAC 27.160(g)].

3. The range of the amount of Herring roe reasonably necessary for subsistence in Section 13-A and Section 13-B north of Aspid Cape was increased from 105,000–158,000 pounds to 136,000–227,000 pounds [5AAC 01.716(b)].

On February 28, 2012, the BOF passed a regulation to close an area to commercial Herring fishing in Sitka Sound [5 AAC 27.150(a)(7)] to "reduce perceived conflict between the commercial fishery and the subsistence fishery" (Thynes et al. 2013). The area is defined as north and west of the Eliason Harbor breakwater and Makhnati Island causeway from the western most tip of Makhnati Island to the eastern most point on Belie Rock to the southern-most tip of Gagarin Island to a point on the eastern shore of Crow Island at 57˚ 6.430′ W. longitude to a point on the western shore of Middle Island at 57˚6.407′ N. Latitude 135˚28.105′ W. longitude to a point on the southeast shore of Middle Island at 57˚5.557′ North latitude 135˚26.227′ W. Longitude to the green day marker northeast of Kasiana island, to the Baranof Island shore at 57˚5.258′ North latitude, 135˚ 22.951′ West longitude (**Map 3).**

Closure last reviewed

No reviews completed.

Justification for Original Closure (ANILCA Section 815 (3) criteria):

> *Nothing in this title shall be construed as – (3) authorizing a restriction on the taking of fish and wildlife for nonsubsistence uses on public lands (other than national parks and monuments) unless necessary for the conservation of healthy populations of fish and wildlife, for the reasons set forth in section 816, to continue subsistence uses of such populations, or pursuant to other applicable law…*

The Board cited a conservation concern for Herring across the Southeastern Alaska Area, and the need to continue subsistence uses of Herring and Herring spawn in the Makhnati Federal public waters as justification for adopting FP15-17 (FSB 2015).

Council Recommendation for Original Closure

Support FP15-17 **with modification** to close the Federal Public Waters of Sitka Sound to the harvest of Herring with the use of commercial Herring purse seine gear.

The modified regulation should read:

> *§___.27(i)(13)(xx) The Federal public waters in the Makhnati Island area, as defined in §___.3(b)(5) are closed to the harvest of Herring with the use of commercial Herring purse seine gear.*

The Council felt that the area in question is a prime spawning area and important for the subsistence harvest of Herring roe on kelp. They noted that only a very small portion of it is fishable by the commercial fleet so there should be little impact on the commercial fishery. They modified the original proposal because they did not want to exclude anyone but commercial harvesters (SEASRAC 2014; FSB 2015).

State Recommendation for Original Closure

Oppose. The State opposed this proposal because it would unnecessarily eliminate a necessary management tool and the flexibility to manage the commercial purse seine Herring fishery (FSB 2015).

Biological Background

The following is excerpted from the ADF&G Wildlife Notebook Series (ADF&G 2000):

> Pacific Herring generally spawn during the spring. In Alaska, spawning is first observed in the southeastern archipelago during mid-March. Spawning is confined to shallow, vegetated areas in the intertidal and subtidal zones.
>
> The eggs are adhesive, and survival is better for those eggs which stick to intertidal vegetation than for those which fall to the bottom. Milt released by the males drifts among the eggs and fertilizes them. The eggs hatch in about two weeks, depending on the temperature of the water.
>
> Herring spawn every year after reaching sexual maturity at 3 or 4 years of age. The number of eggs varies with the age of the fish and averages 20,000 annually. Average life span for these fish is about 8 years in Southeast Alaska.
>
> Mortality of the eggs is high. Young larvae drift and swim with the ocean currents and are preyed upon extensively by other vertebrate and invertebrate predators. Following metamorphosis of the larvae to the juvenile form, they rear in sheltered bays and inlets and appear to remain segregated from adult populations until they are mature.

Herring are located in distinctly different environments during different periods of the year. After spawning, most adults leave inshore waters and move offshore to feed primarily on zooplankton such as copepods and other crustaceans. They are seasonal feeders and accumulate fat reserves for periods of relative inactivity. Herring schools often follow a diel vertical migration pattern, spending daylight hours near the bottom and moving upward during the evening to feed.

The annual biomass of Herring returning to spawn in Sitka Sound (commercial purse seine catch + post season model estimates) has exhibited an increasing trend over the last 40 years of commercial fishing with a decline beginning in 2012 followed by a dramatic increase in 2019 **(Figure 1)**. In 2018 the total estimate of Herring biomass returning to Sitka Sound was estimated at 59,228 tons, down from a high of 119,049 tons in 2009. In 2019 the total estimate of Herring biomass returning to Sitka Sound was estimated at 130,738 tons. The 2020 pre fishery forecast was 212,330 tons. The estimated number of Herring returning to Sitka Sound in 2020 will be announced this fall.

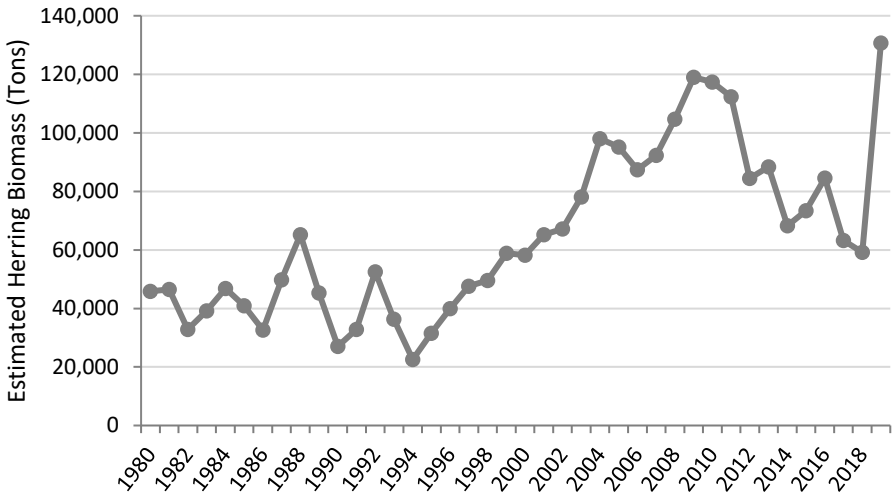


Figure 1. Annual estimated biomass of Herring returning to Sitka Sound from 1980 – 2019.

Harvest History

Subsistence Harvest

The Alaska Department of Fish and Game and Sitka Tribe of Alaska began monitoring the harvest of herring spawn in Sitka Sound in 2002 (Brock and Turek 2007; Holen et al. 2011; Sill and Lemons 2012, 2014a, 2014b, 2015, 2017, 2020; and Sill and Cunningham 2017, 2019). For years when data are available (2002–2018), the average annual total harvest of eggs in Sitka Sound on all substrata is 138,382 pounds (**Table 1)**. When compared to the amounts reasonably necessary for subsistence established by the BOF, estimated harvest indicates that subsistence needs were not met in 2005, 2007, 2008, 2011–2013 and 2015–2018 (Holen et al. 2011; Sill and Cunningham 2019)**.** In 2018, the overall lack of herring spawn and the distance to where spawn could be found were the major reasons provided for why a household did not attempt to harvest (Sill and Lemons 2020). Respondents have been asked on surveys to

document harvest locations during 11 years since 2006. Harvest in Mahknati Federal waters occurred a minimum 6 of 11 years and a minimum 2 to 10% of households each year.

Table 1. Subsistence harvest of Herring roe on all substrates in Sitka Sound, 2002-2018 (CI 95%) (Sill and Lemons 2020).

Year	Number of Households Attempting	Number of Households Harvesting	Total Roe Harvest (lbs)	Lower Range of Harvest Estimate (lbs)	Upper Range of Harvest Estimate (lbs)
2002	N/A	77	151,717	116,701	186,734
2003	117	116	278,799	225,704	331,895
2004	120	118	381,226	312,224	450,229
2005	111	95	79,064	72,272	85,856
2006	93	88	219,356	176,484	267,228
2007	92	81	87,211	67,702	106,720
2008	59	54	71,936	67,764	76,708
2009	91	91	213,712	193,623	233,801
2010	40	40	154,620	139,872	169,367
2011	57	53	83,443	79,719	87,166
2012	50	47	115,799	102,332	129,265
2013	52	50	78,090	70,075	86,102
2014	68	68	154,412	135,054	173,769
2015	52	51	106,998	84,664	129,333
2016	38	35	84,554	50,028	119,079
2017	53	44	65,691	49,268	82,114
2018	39	29	25,862	7,576	44,148
2019	Pending	Pending	Pending	116,701	186,734
2020	Pending	Pending	Pending	225,704	331,895
Average	**71**	**67**	**138,382**		

In findings of research, Shewmake (2013 *in* Sill and Lemons 2020: 22) describes influences on herring spawn harvest amounts. Research found that mean consecutive spawning days in subsistence use areas of Sitka Sound can be a reasonably good predictor of harvest success.

> Successful harvests in Sitka Sound are predicated on two groups of factors broadly categorized as social opportunity and ecological opportunity. On the social side are issues like sufficient time, resources, knowledge, and skills to engage in harvesting activities. Within the ecological grouping the main factor is the quality of the eggs, which is influenced by timing, duration, location, and weather. The metric of mature biomass in any one year does not appear to have a direct correlation with harvest amounts; some years with increased biomass estimates were years with decreased harvests and vice versa. There may be finer details within the run size composition that may correlate with subsistence harvests, but such investigations are beyond the scope of this project. Good quality eggs cover the substrate several layers deep and lack impurities, such as sand. Thickness of deposition is related to the number of days of the spawning activity, as well as other factors such as the size or density of the spawning school of herring. It has been

> found that mean consecutive spawning days in subsistence use areas of Sitka Sound can be a reasonably good predictor of harvest success (Shewmake 2013 *in* Sill and Lemons 2020: 22).

Commercial Harvest

The following is excerpted from Woodby et al. (2005):

> Sac roe fisheries harvest Herring just before spawning using either purse seine or gillnet. The roe is salted and packaged as a product that sometimes sells for over $100/lb ($220/kg) in Japan. In recent years the Alaska sac roe harvest has averaged about 50,000 tons (45,500 mt), almost all of which ends up in the Japanese marketplace.

The Southeast Alaska Sac Roe Herring Fishery is managed by ADF&G under a management plan (Salomone et al. 2020). Although the guideline harvest level (GHL) for forecasted biomasses above 45,000 tons is 20%, the commercial fishery rarely reaches that level of harvest. The forecasted annual biomass has been greater than 45,000 tons in 22 of the last 40 years and the commercial harvest during those years averaged 13.5%.

The area where the commercial sac roe Herring fishery occurs varies widely from year to year. From 1992 to 2014, the Federal public waters near Makhnati Island have made up part of the areas open to commercial sac roe Herring fishing 8 out of 23 years (1993, 1999, 2001, 2003, 2005, 2006, 2011 and 2014). Since the area of Federal public waters has been part of larger areas open to commercial fishing, there is no way to apportion harvest from only Federal public waters. Most of the commercial harvest has been taken a significant distance away from Federal public waters and traditional subsistence harvest areas yet adequate subsistence harvests, in relation to Amounts Necessary for Subsistence set by the State, were not obtained in 2005, 2007, 2008, 2011–2013, and 2015–2018. The Makhnati Federal waters have been closed to Herring and Herring roe harvest to all but Federally qualified subsistence users since 2015.

Cultural Knowledge and Traditional Practices

In 2008, in response to proposals to the Federal Subsistence Board, the Office of Subsistence Management funded a project with Sitka Tribe of Alaska to document contemporary use of Makhnati Federal waters. Meuret-Woody et al. (2010) relied heavily on recent research of one of its authors, Thomas Thornton (et al. 2010), who used archaeological, historical, and environmental records as well as ethnographic interviews with contemporary local experts involved with herring fisheries. Four ADF&G technical papers focus on Sitkans' harvest and use of herring for subsistence: Gmelch and Gmelch (1985), Schroeder and Kookesh (1990), Brock and Turek (2007), and Holen et al. (2011). *The Tlingit Indians* by Emmons and de Laguna (1991) describe in detail herring ecology and Native egg harvests in Sitka. Meuret-Wood et al. (2010) provide a description of use patterns, with a focus on Makhnati Federal waters.

The community of Sitka is located on the east side of Baranof Island at the mouth of the Indian River in Southeast Alaska. Present-day Sitka is located at the site of an historical Sitka Tlingit *Sheet'ka Kwaan* settlement and fish, wildlife, and plant use area. While salmon and other fish were the primary wild

resources harvested for home use, herring eggs, or *yaaw*[1] in Tlingit, were an important part of the seasonal round. While there has been non-Native participation in the herring egg fishery, non-Natives are not known to harvest in quantity or to participate as major suppliers of herring eggs to non-harvesting households (Schroeder and Kookesh 1990). Additionally, almost all herring egg harvesting, receiving, and distribution has been shown to be within the Alaska Native community.

Tlingit traded among themselves and with neighboring tribes. Sheet'ka Kwaan moved large quantities of herring eggs to Yakutat in order to trade them with the Alaskan and Canadian interior regions. Herring eggs were a substantial source of Sheet'ka Kwaan wealth and prestige. While herring were eaten, their roe was considered a delicacy (Brock and Turek 2007). After 1865, the use of Native trading networks in Southeast Alaska was gradually de-emphasized in favor of goods and merchandise brought in by American traders. "Currently the bulk of traded herring roe is transported from Sitka via commercial air carriers to people in other Alaskan communities and cities in the contiguous United States" (Brock and Turek 2007:2).

Although herring eggs have been harvested for subsistence uses throughout the state in the past, Sitka Sound provides the largest and most reliable source of herring eggs in Alaska today. Harvesting occurs on a number of substrata, but primarily three: hemlock branches placed in the water and existing beds of *Macrocystis* kelp and hair kelp. Through their extensive research, Sill and Lemons provide the following concise description of the causes of differences in Sitkans' herring roe harvest locations from year to year:

> There is year-to-year variability in the locations used for the harvest within the broader core area [see **Map 2**]; this variability occurs for a number of reasons. Within limits, harvesters will go where the herring are spawning. Herring do not have site fidelity like salmon; therefore, the specific beaches and coves where they spawn each year can change. Harvesters look for areas they feel are most likely to produce high-quality spawn based on factors such as geography, substrate, and protection from wind and waves. Some harvesters do not have access to a boat, so they need to harvest in locations accessible by the road system, regardless of where the herring are spawning. Skiffs and other small boats are commonly used by herring harvesters and wind and rough seas can become dangerous; therefore, protected areas are sought. Protected areas are also favored for their likelihood of high-quality spawn since ocean surge can stir up sand on the seafloor, thus degrading the quality of the herring spawn harvest. As Sitka has developed, and concerns for water quality have grown, harvesters have also tried to ensure that the area they harvest from is not negatively affected by development. In 2018, the harvest suffered in part because suitable locations were unavailable for harvest; the herring did not spawn in expected locations, where they did spawn was far away, and many of the areas (Kruzof Island) were in poor locations for quality product (Sill and Lemons 2020:22).

[1] Transcription of Tlingit words follows the system proposed by Naish and Story as closely as possible (Davis 1976).

Prior to World War II, the islands within the Makhnati Federal waters were basically undeveloped, save for fishing sites and boat haul-outs. The Causeway, connecting some of the islands, was built during WWII. After WWII, access to the islands via crossing the airport runway was restricted in the 1960s, which now restricts access to the Causeway Islands to boat only (Keres Consulting 2003, Meuret-Woody et al. 2010). The Federal waters encompassing Makhnati Island were a center for subsistence harvesting activities prior to World War II. The myriad of islands were named in Tlingit *Aanya X'aat'x'i* and are referenced in the phrase *Shee At'ika* which is the basis for Sitka's name today.

The Makhnati area has been a preferred harvesting site for several reasons. First, both hair kelp and especially *Macrocystis* kelp beds exist in the area, specifically along the northern edge of the Causeway in Whiting Harbor and along Japonski Island. Naturally occurring kelp is the preferred substrate upon which to harvest herring eggs, many fishers reported during research in the 1980s and 1990s (Schroeder and Kookesh 1990, Holen et al. 2011), as long as spawn are present. Harvesting eggs from these substrata allow fishers to make a single trip to harvest a large quantity of eggs, compared to hemlock branches which must be sunk and retrieved. Herring eggs on Macrocystis kelp are gathered in abundance compared to other substrata and the ability to transport and process the eggs is more of a limiting factor than regulatory limits or difficulty harvesting. However, kelp substrata are distributed unevenly in Sitka Sound, existing in only some areas. Second, kelp beds in the Causeway area lay in protected, nearshore waters. Thus, they are safer to get to and probably require less skill to harvest. *Macrocystis* kelp is harvested using similar methods as hair kelp. During large tides, it is gathered by hand or with a short rake. When the tide is higher, a long rake or a grapple is used. Finally, the Causeway can be accessed even in inclement weather that prevents harvesting from areas other than the Federal waters.

According to elders interviewed in 1989, Sitka was considered the herring egg capital of the northern portion of southeast Alaska even before the colonial period began. This is because of the large abundance of herring: "Numerous informants spoke of the whole of Sitka Sound being white with spawn during their childhoods and told of unattached eggs washing up with the tide two or more feet deep on shores" (Schroeder and Kookesh 1990: 3). Additionally, the length of the spawning period, about two weeks, attracted fishers. Spawning time is unpredictable and harvesters have a better chance of getting good quality spawn in the quantity needed from the longer spawning period at Sika (Schroeder and Kookesh 1990). Meuret-Woody and others' (2010) key respondents unanimously asserted that the herring spawn is not as dense as it was in the past, the herring spawns are shorter in duration, and the spawn has diminished from historical areas, such as southern Sitka Sound. In addition several key respondents indicated that the timing of the commercial sac roe fishery has impacted the subsistence harvest of herring eggs as the two fisheries coincided with one another in the past; however, since the mid-1990s the commercial sac roe fishery occurs before the subsistence herring egg harvest.

All key respondents interviewed by Meuret-Woody and others (2010) stated that herring spawn is not as dense as it was in the past, herring spawns are shorter in duration, spawn has diminished from historical areas, and their ability to gather herring eggs has been greatly reduced since the inception of the sac roe commercial fishery. Commercial harvest of herring began in 1882 with a herring reduction plant at Killisnoo. In the peak year of 1929, 3,120,307 gallons of herring oil and 23,872,093 pounds of herring

meal were produced at reduction plants. Stock depletion resulted in fishing restrictions in 1939 (Schroeder and Kookesh 1990).

OSM PRELIMINARY CONCLUSION

x **maintain status quo**
_ **modify or eliminate the closure**

Justification

This closure has been in place since the 2015 fishing season. Since 2018 there was little or no commercial harvest due to lack of suitable size fish for commercial markets, even though the Sitka Sound Herring biomass has increased substantially since 2019. There is a reported decline in participation by subsistence users but the reason for that decline is poorly understood. Public testimony clearly supports the cultural importance of Herring roe harvest by Federally qualified subsistence users. The recent unusually poor performance of the commercial fishery and declining subsistence harvest support maintaining the closure until its effectiveness can be better understood. There is no evidence that this closure has had any effect on the commercial Herring fishery because the fishery either did not occur or the areas open to commercial fishing were distant from the closed area.

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