

FCR25-03 Executive Summary

General Description	FCR25-03 is a standard review of a Federal subsistence fishery closure to the harvest of herring and herring roe to all but federally qualified subsistence users in the waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area.
Current Regulation	<i>§ __.27(i)(13)(xxi) 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.</i>
OSM Preliminary Conclusion	Retain the Status Quo
Southeast Alaska Subsistence Regional Advisory Council Recommendation	
Interagency Staff Committee Comments	
ADF&G Comments	
Written Public Comments	1 Retain the Status Quo

FEDERAL FISHERIES CLOSURE REVIEW

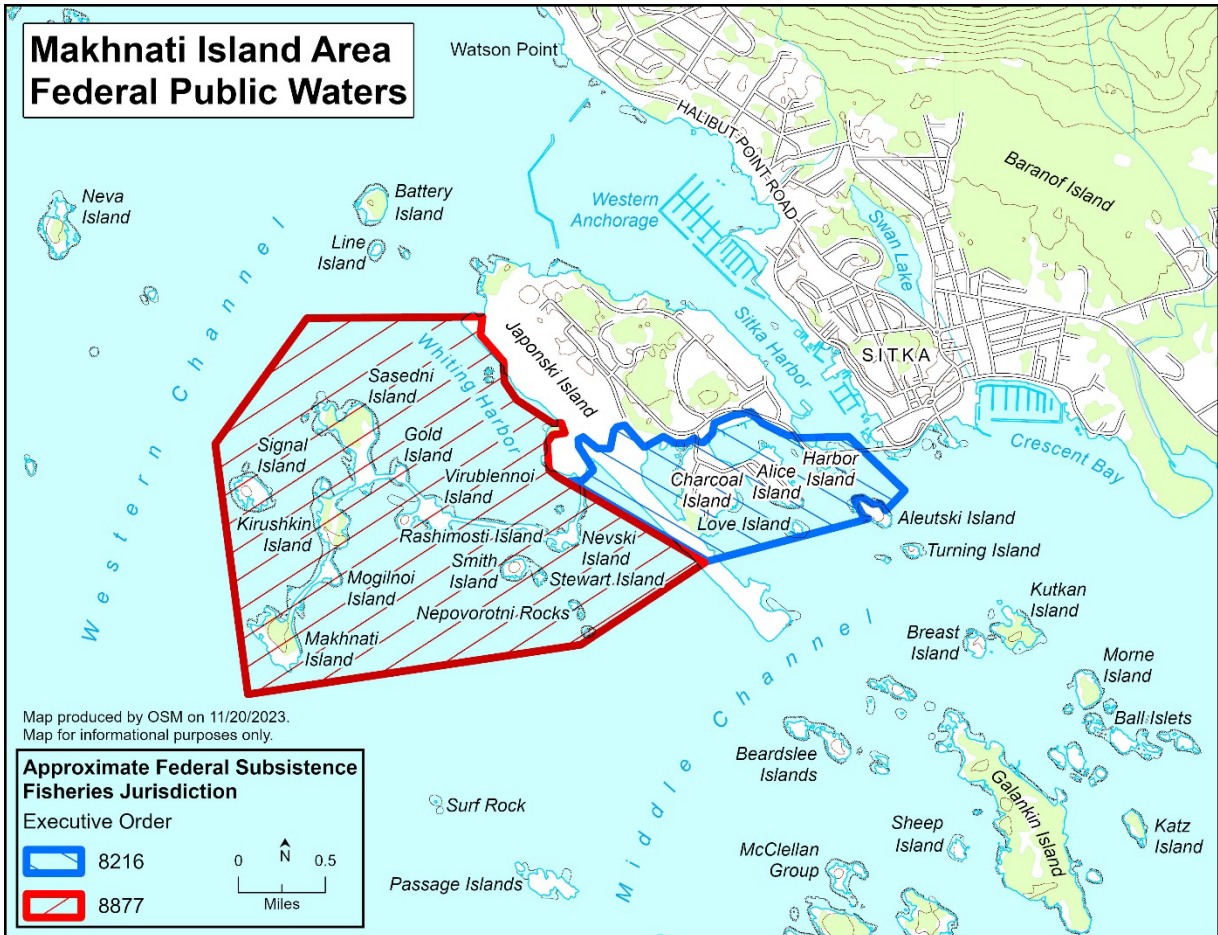
FCR25-03

ISSUE

FCR25-03 is a standard review of a Federal subsistence fishery closure to the harvest of herring and herring roe to all but federally qualified subsistence users in the waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area (**Map 1**). It is the Federal Subsistence Board's (Board) policy that Federal public lands and waters should be reopened when the closures are no longer necessary, and that closures will be reviewed at least once every four years. The purpose of this review is to determine if the Makhnati Island area herring and herring spawn closure to non-federally qualified users is still warranted.

Closure Location and Species

Southeastern Alaska Area — Herring and Herring spawn



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

Current Federal Regulation

Southeastern Alaska Area – Herring and Herring spawn

§ ___.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.*

§ ___.27(i)(13)(xxi) *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

Southeastern Alaska Area – Herring

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

Herring may not be taken in

...

(7) 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

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 Federal subsistence in-season manager is the local U.S. Forest Service, Sitka District Ranger.

Customary and Traditional Use Determination

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

Regulatory History

Federal Regulatory History

Public testimony at Southeast Alaska Subsistence Regional Advisory Council (Southeast Council) meetings since the early 2000s has consistently indicated that the herring needs of subsistence users were not being met in the area of the current closure. Beginning in 2007, several Makhnati herring proposals were submitted and considered by the Board.

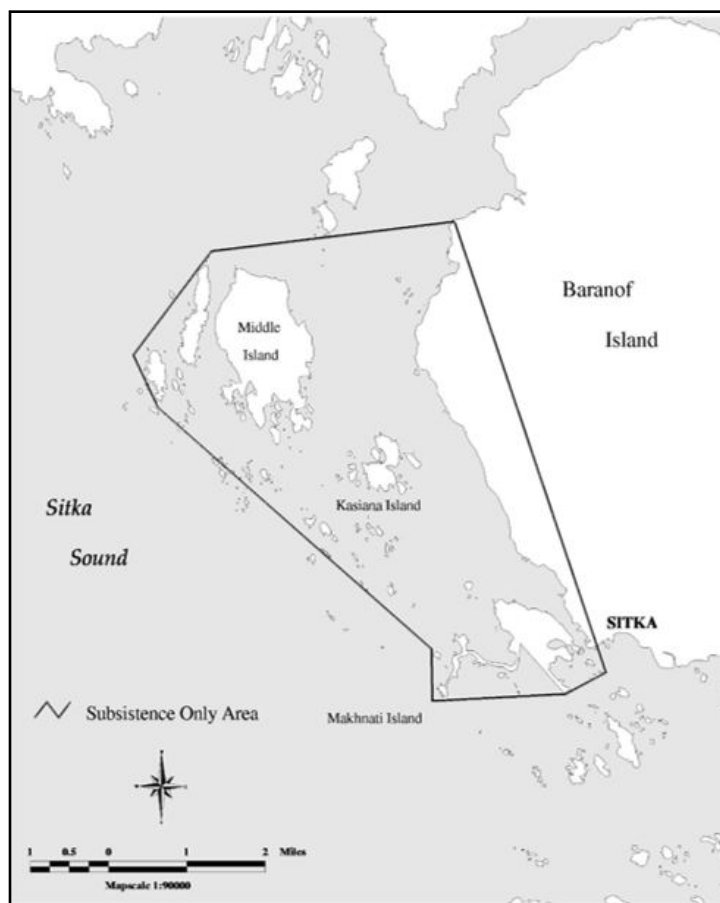
In January 2007, the Board considered two proposals regarding subsistence herring egg harvest in waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area near Sitka (FSB 2007a). Proposal FP07-18 was submitted by the Southeast Council. FP07-19 was submitted by the Sitka Tribe of Alaska. Both proposals sought to close waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area 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 Southeast Council to form a working group to discuss possible alternate solutions and to recommend criteria which would govern decisions to open or close the commercial herring fishery in waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area.

Although the working group did not reach consensus on all recommendations, its report was presented to the Southeast Council in September 2007. The Southeast Council accepted the report and distributed it to the public. At its September 2007 meeting, the Southeast Council developed closure language for the Makhnati Island area based on the working group report. The Southeast Council recommended the closure of waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area to non-federally qualified users when the forecast herring biomass is less than 35,000 tons for the Sitka Sound area, or when Amounts Reasonably Necessary for Subsistence (ANS), as set by the Alaska Board of Fisheries (BOF), are not met for two consecutive years (SERAC 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 Southeast Council's recommendation during a December 2007 public meeting as part of the deferred 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 ensure the continuance of subsistence uses (FSB 2007b).

On March 25, 2008, Fisheries Special Action Request FSA07-03 was received by the Board from the Sitka Tribe of Alaska requesting that waters under Federal subsistence fisheries jurisdiction 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 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 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 that 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 on March 28, 2008.

Proposal FP09-05, submitted by the Sitka Tribe of Alaska in 2008, requested the closure of waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area near Sitka to the harvest of herring and herring spawn except by federally qualified subsistence users. 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 (FSB 2009). The Board was particularly interested in whether herring spawning in Federal waters were a distinct population or stock.

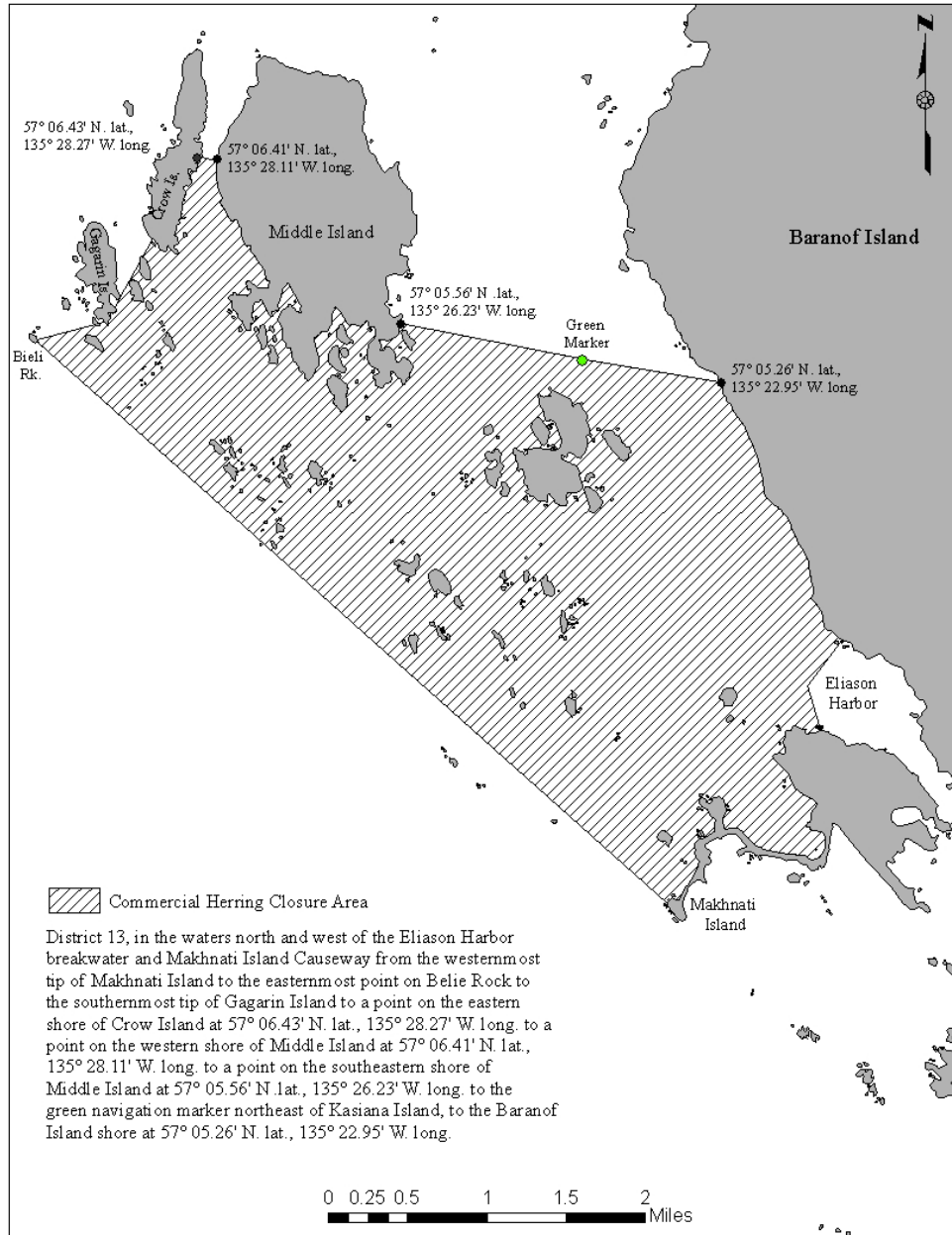
One research project detected a difference between adult herring in Salisbury Sound and Sitka Sound, but not among spawning herring within Sitka Sound, which includes the Makhnati Federal public waters (Meuret-Woody and Bickford 2009). The other research project examined the amount of subsistence use of herring roe in the Federal public waters near Makhnati Island (Fisheries Resource Monitoring Program project 08-651).

In 2010, immediately prior to the Southeast Council meeting, the Sitka Tribe of Alaska submitted a letter to the Board 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.)
2. The Sitka Tribe of Alaska wanted results of Fisheries Resource Monitoring Program 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.).

The Board subsequently deferred FP09-05 again in January of 2011, until no later than the next fisheries regulatory cycle (FSB 2011). In January 2013, the Board considered FP09-05 again 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 includes a large portion of the waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area. The Board also believed that a Federal closure would provide essentially no additional advantage for subsistence users (FSB 2013).



Map 3. Commercial Herring Fishery Closure Area created by AK Board of Fisheries in 2012 that included part of the waters under Federal subsistence fisheries jurisdiction in the Makhnati Island Area (Gordon 2014).

In 2015, The Sitka Tribe of Alaska submitted FP15-17, 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 subsistence 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 waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area (FSB 2015).

The closure adopted as FP15-17 was last reviewed as FCR21-22 during the 2021 fisheries regulatory cycle. The Southeast Council supported maintaining the closure at this time due to the cultural importance of herring roe harvest, the significant testimony heard from local users about recent difficulties meeting their subsistence needs for herring, and the generally depressed state of herring populations in Southeast Alaska. The Board reviewed and adopted maintaining the closure as part of the consensus agenda.

During a preliminary review of FCR25-03 at their March 2024 meeting, Southeast Council members expressed concern that it was too soon to open the Makhnati Island closure area to harvest by non-federally qualified users as herring were still not spawning enough in the area to allow for adequate harvest by federally qualified subsistence users (SERAC 2024). Southeast Council members also emphasized the historical importance of the Makhnati Island area as a refuge for herring and herring roe harvesters, where large seine boats are not as prevalent, and roe can be harvested safely by subsistence users (SERAC 2024). Southeast Council members also expressed concern about the accuracy of subsistence herring spawn harvest surveys, particularly with regard to the potential impacts of low response rates to these surveys (SERAC 2024).

State Regulatory History

The Sitka Tribe of Alaska submitted a proposal to the BOF in 2002, in response to a poor subsistence herring egg harvest the previous year. The proposal requested the commercial 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 and 13-B north of the latitude of Aspid Cape at 105,000 to 158,000 lbs. (5AAC 01.716(7) (b)) (Turek 2003).

In November 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, collect, and share data (STA 2006). The Memorandum of Agreement contained provisions for in-season collaboration that included daily contact between the Sitka Tribe of Alaska and ADF&G, and it 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 affected 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 be formally 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)].

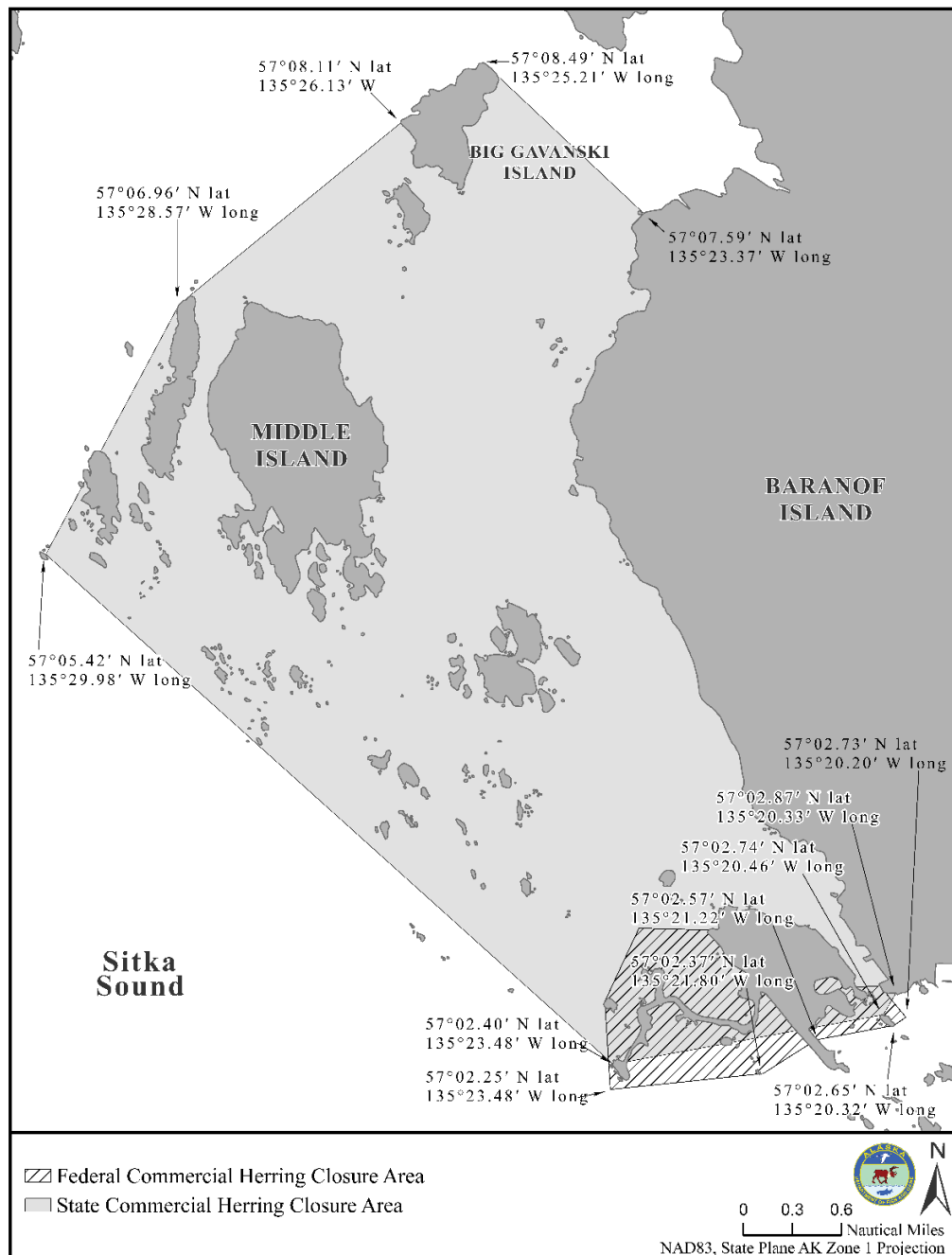
On February 28, 2012, the BOF passed a regulation to close a 10 NM² area to commercial herring fishing in Sitka Sound [5 AAC 27.150(a)(7)] to “reduce perceived conflict between the commercial fishery and the subsistence fishery” (Thynes et al. 2013; Dupuis et al. 2022). The area is defined as north and 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**).

In 2018, Proposal 94 requested the BOF reduce the amount of herring spawn reasonably necessary for subsistence (ANS) in Sitka Sound. This proposal was withdrawn by the proponent and the BOF took no action (AK BOF 2018). Also in 2018, Proposal 104 requested the BOF repeal the waters closed to commercial herring fishing in Sitka Sound. This proposal was withdrawn by the proponent and the BOF took no action (AK BOF 2018). Instead, the BOF carried Proposal 106, expanding the commercial herring fishery closure area in Sitka Sound by an additional 6.5 NM² (Dupuis et al. 2022). Waters closed to commercial herring harvest in Sitka sound currently encompass a total of 16.5 NM² (see **Map 4**; Dupuis et al. 2022). This closed area includes a large portion of the waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area addressed by this closure review.

In 2021, the BOF raised the subsistence spawn on kelp annual possession limits to 75 lbs. for an individual, and 325 lbs. for a household of 2 or more persons. Under the provisions of the Southeast

herring spawn on kelp subsistence permit, harvest reporting is required. Regulations also limit customary trade in herring spawn on kelp (5AAC 01.717 and 5 AAC 01.730 (g)).

In 2022, Proposal 160 requested the BOF reduce the size of the Sitka Sound commercial sac roe fishery closure to the 10.5 NM² area established in 2012 (see **Map 3**). This proposal was withdrawn by the proponent and the BOF took no action (AK BOF 2022). The current extent of the state commercial closure is shown in **Map 4** below.



Map 4. Current State Commercial Herring Closure Area in Relation to Federal Herring Closure Area in Sitka Sound (Dupuis et al. 2022).

Closure last reviewed:

2021 – FCR21-22

Justification for Original Closure

Section 815 (3) of ANILCA states:

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 waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area 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 (SERAC 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

As explained in 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 estimated biomass of mature herring returning to spawn in Sitka Sound (commercial purse seine catch + post season model estimates) has exhibited a variable, but generally increasing trend since approximately 1995 (ADF&G 2024; **Figure 1**). There was a period of decline beginning in approximately 2010, followed by a significant increase in 2019 (**Figure 1**). In 2018, the total amount of mature herring biomass returning to Sitka Sound was estimated at 58,114 tons, down from a high of 122,134 tons in 2009. In 2019, the total amount of mature herring biomass returning to Sitka Sound was estimated at 144,572 tons. Since 2019, the estimated annual mature biomass returning to Sitka Sound has been well above the average (83,122 tons) for the 1979–2023 period shown in **Figure 1**. Though the amount of herring biomass returning to Sitka Sound has been on the rebound in recent years amidst more conservative management, there are locals and scholars who argue that herring populations here are still being managed in a historically depleted state, which is the result of a shifting baseline whereby lower populations come to be seen as normal over time (Thornton et al. 2010a, 2010b; also DiNovelli-Lang 2010; SERAC 2007, 2014, 2024; STA 2019).

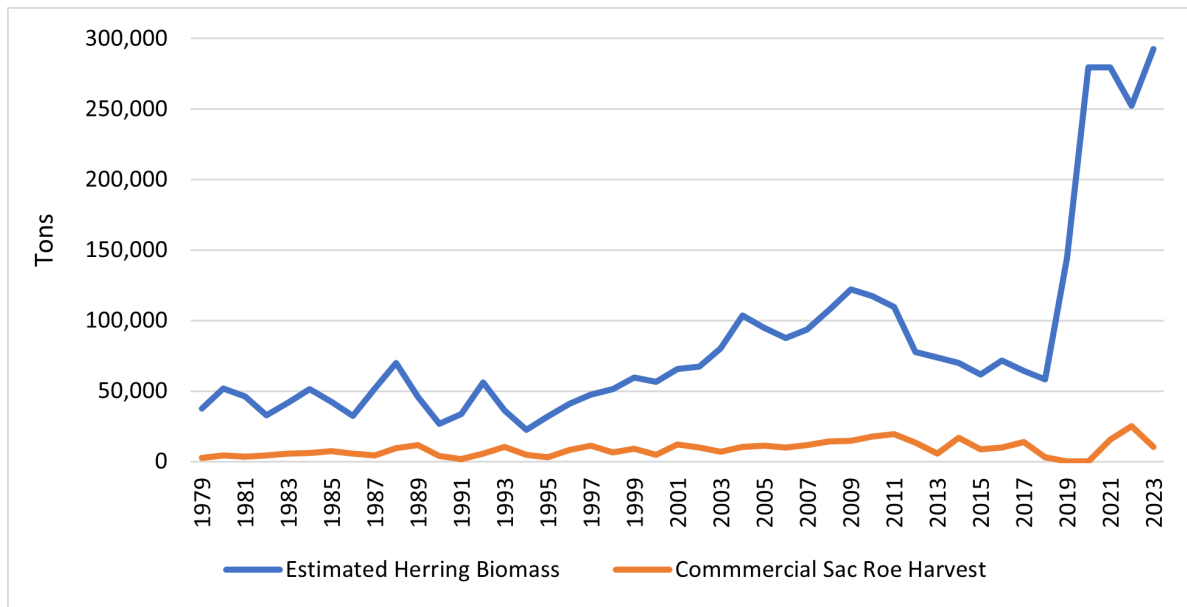


Figure 1. Annual estimated biomass of mature herring returning to Sitka Sound and commercial sac roe harvest from 1979 – 2023 (ADF&G 2024).

Cultural Knowledge and Traditional Practices

The community of Sitka is located on the east side of Baranof Island at the mouth of the Indian River. Sitka is the site of a Tlingit *Sheet'ka Kwaan* settlement where fish, wildlife, and plant resources have been harvested for generations. While salmon and other fish have generally accounted for the bulk of wild resources harvested for household use in this area, herring eggs or *yaaw* in Tlingit, are also an important part of the seasonal round. Oral histories and archaeological evidence confirm the affinity of Tlingit and Haida populations for settlement sites near high concentrations of herring or eulachon, especially near spawning areas (Thornton et al. 2010a: 83). Herring remains are present as early as 8,000 – 9,300 years ago in the archaeological record for Southeast Alaska, but become particularly frequent around 4,000 years ago, “when bones appear consistently in more than 75 percent of sites that were excavated with fine mesh screens” (Thornton et al 2010a: 83).

Herring eggs have been and continue to be harvested for household consumption, as gifts to be given to family and friends, and items to be traded for other valuable resources (DiNovelli-Lang 2010). Alaska Natives have traditionally been the primary subsistence harvesters and distributors of herring eggs in the Sitka area (Schroeder and Kookesh 1990). Historical and ongoing practices show that indigenous people in Southeast Alaska enhance herring production through practices such as habitat conservation (limiting disturbance of spawning areas); habitat cultivation (through placement of substrate such as western hemlock boughs for spawning); selective harvesting (e.g., of non-viable eggs lying too deep or shallow in the inter-tidal zone to survive) and avoidance of overharvesting; predator control; and transplantation of eggs to new habitats (Thornton et al. 2010a: 83).

The Tlingit traditionally traded herring eggs among themselves and with neighboring groups (Brock and Turek 2007). *Sheet'ka Kwaan* moved large quantities of herring eggs to Yakutat in order to trade

them with peoples in the Alaskan and Canadian interior regions. Herring eggs were a substantial source of *Sheet'ka Kwaan* wealth and prestige. While herring were eaten, their eggs were 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. Lately, the bulk of traded herring roe has been “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). Recent years have also seen higher rates of subsistence herring egg harvest and distribution by non-tribal members (Sill and Barnett 2023).

Sitka Sound is currently recognized as one of the few remaining reliable sources of substantial subsistence herring egg harvest in Alaska (Thornton et al. 2010a). Subsistence harvest occurs primarily on three substrata here: on hemlock branches placed in the water and on existing beds of *Macrocystis* kelp and hair kelp. The Federal waters encompassing the Makhnati Island area have historically been a particularly important location for subsistence herring roe harvesting activities in Sitka Sound (Meuret-Woody et al. 2010). In Tlingit, these lands are named *Aanya X'aat'x'i* and are referenced in the phrase *Shee At'ika*, which is the basis for Sitka's name today (Meuret-Woody et al. 2010).

The Makhnati area is a preferred subsistence herring roe harvesting site for several reasons. First, both hair kelp and *Macrocystis* kelp beds exist in the area, specifically along the northern edge of the Causeway in Whiting Harbor and along Japonski Island. During research in the 1980s and 1990s, many harvesters reported that naturally occurring kelp was the preferred substrate upon which to harvest herring eggs, as long as spawn were present (Schroeder and Kookesh 1990, Holen et al. 2011). Harvesting eggs from kelp allows fishers to complete their harvests in a single trip, whereas hemlock branches must be sunk and retrieved later. Herring eggs deposited on *Macrocystis* kelp can also be gathered in abundance compared to other substrata. 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 that increase the chances of harvesting high quality spawn safely. *Macrocystis* kelp is harvested using similar methods as hair kelp. During low 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 Makhnati Island waters are important herring roe harvest locations because they can be accessed even in inclement weather, which can prevent harvesting from other areas. For these reasons, Southeast Council members have emphasized the historical importance of the Makhnati Island area as a refuge for both herring populations and herring roe harvesters (SERAC 2024; see also DiNovelli-Lang 2010).

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 Sound (Schroeder and Kookesh 1990). However, in the 2000s, Meuret-Woody and colleagues' (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 yearly amount of spawn has generally diminished in multiple traditional harvest areas within the 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 (Meuret-Woody et al. 2010). However, since the mid-1990s, the commercial sac roe fishery has generally taken place before the subsistence herring egg harvest (Meuret-Woody et al. 2010). Yet, as DiNovelli-Lang explained in 2010 (156), the timing and efficiency of the commercial fishery still presents challenges for subsistence harvesters:

[Historically], every year in late March, the numbers of herring returning to Sitka Sound to spawn turn the whole bay silver, then milky white as they release their eggs onto shore-clinging vegetation like seaweed and submerged hemlock branches. Some of the latter have been placed beneath the surface by the Sitka Tlingit for the last several thousand years, who distribute the tiny eggs thus captured, clustered inches-thick among the soft needles, to rivals and relations in exchange for red seaweed, fishing trips, hooligan oil and, most often, nothing but honor. As a century of overfishing under US control has seriously depleted the herring stocks throughout Alaska, and as other highly valued foods such as seal have become significantly harder to find, the Sitka herring-egg fishery has only grown in significance, esteem, and rarity...

While [one method utilized in] the Tlingit subsistence fishery involves placing hemlock branches into the water before, and retrieving them after, the herring spawn, the commercial fishery takes place entirely in the moment immediately before the spawn, when the fish and the eggs within them are at their maximum possible density...Over the course of the last decade [2001-2010], commercial harvest totals have been generally increasing, along with the weight but not necessarily numbers of returning herring. However, the "Amount Reasonably Necessary for Subsistence," as the state Board of Fish puts it, has not been met in four out of those same ten years. The problem is not only that the subsistence fishery takes place after the commercial fishery, but that the commercial fishery can execute great precision with respect to the time and place of the spawn, while the subsistence fishery is confined near to shore where what is left over may never reach.

Sill and Lemons (2020: 22) provide further detail on the reasons for changing subsistence herring roe harvest amounts and locations in Sitka Sound:

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 (like Kruzof Island) were in poor locations for quality product.

As the Sitka Tribe notes in their comments on this closure review, more recent years have also seen large spawns on the southern shores of Kruzof Island, in areas that are generally not suitable to subsistence harvests due to large swells and strong currents.

Harvest History

Subsistence harvest

ADF&G and the Sitka Tribe began using household surveys to monitor subsistence herring roe harvests in Sitka Sound in 2002 (Brock and Turek 2007; Holen et al. 2011; Sill and Lemons 2012, 2014a, 2014b, 2015, 2017, 2020; Sill and Cunningham 2017, 2019a, 2019b, 2021; Sill and Barnett 2023). For years where data are available (2002–2022), the estimated average annual subsistence harvest of herring roe in Sitka Sound on all substrata is 124,204 pounds (Standard Deviation of 88,428 pounds) (see **Appendix A**). However, estimated harvests have been quite variable between years, ranging from a high of 381,226 lbs. in 2004, to lows of 25,862 lbs. in 2018, and 21,926 lbs. during the COVID-19 year of 2020 (**Figure 2** and **Appendix A**). Overall, subsistence herring roe harvests in Sitka Sound and the number of harvesting households has generally exhibited a downward trend since monitoring began in 2002 (**Figure 2**). However, substantial declines in catch per unit effort (CPU) witnessed between 2009 and 2018, the increasing importance of community harvester boats, and variable survey response rates could complicate this trend (see STA 2019; **Table 1**).

ADF&G researchers have defined successful community subsistence herring spawn harvests in Sitka Sound as those that attain the minimum yearly Amount Reasonably Necessary for Subsistence (ANS), noting that attaining the yearly ANS “depends not only upon people making the effort to harvest herring spawn, but also on the opportunity for the harvest of quality spawn.” (Sill and Lemons 2014a: 17). Shewmake (2013 *in* Sill and Lemons 2020: 22) has described some of the key influences on herring spawn harvest amounts in the core subsistence use areas of Sitka Sound, noting that three consecutive spawning days is generally considered the minimum threshold for providing a reasonable subsistence harvest opportunity:

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... 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 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.

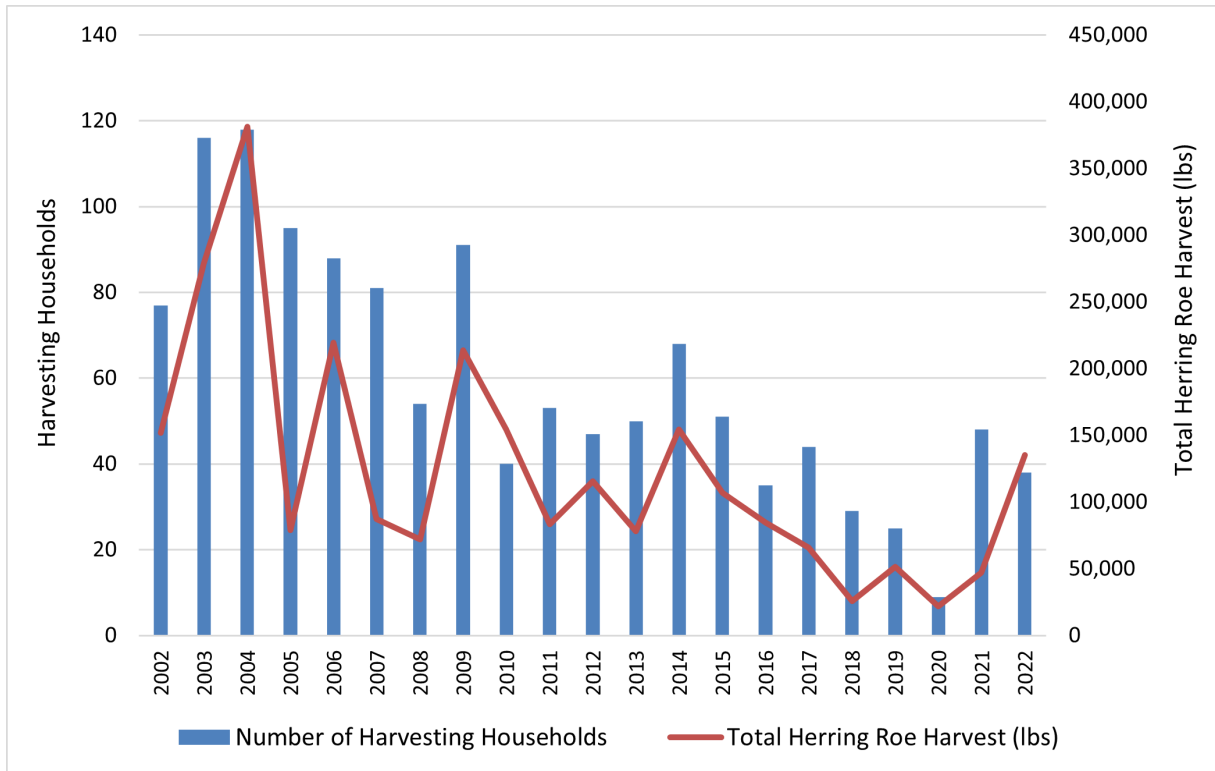


Figure 2. Number of Harvesting Households and Total Subsistence Herring Roe Harvest in Sitka Sound each year from 2002 to 2022 (Sill and Barnett 2023).

Similarly, as **Figure 2** illustrates, reductions in total subsistence harvests in years like 2005, 2007, 2011, and 2013, cannot always be easily explained by corresponding reductions in harvesting households. As Sill and Lemons (2012: 14) note for the 2011 study year, “There is no obvious explanation for this observed [subsistence harvest] decline, but there are a few possible reasons, such as a short and sparse spawn, changing harvest patterns, and low survey response rates (see also **Table 1**). One explanation that is not supported by the survey results is a lack of effort.” Furthermore, subsistence herring spawn “harvest ‘effort’ is difficult to compare within and between years, beyond the metric of number of households at any location, because there is no standard size of a subsistence herring egg ‘set’” (Sill and Lemons 2020: 24). Tracking and comparing harvest effort is also complicated by the impacts of rising fuel costs and the growing importance of community harvester boats (see Sill and Barnett 2023).

In most years since 2010, community harvester boats have been responsible for more than half of the total estimated subsistence herring roe harvest taken from Sitka Sound (Sill and Barnett 2023: 26). Community harvester boats are treated as individual households in ADF&G’s subsistence herring roe harvest reports (Sill and Barnett 2023). The difficulty associated with tracking and comparing harvest

effort is illustrated more specifically in **Figure 3**. There is a correlation between the number of harvesting households and total yearly subsistence herring roe harvests, but it is not as statistically strong as one might expect ($R^2 = 0.6327$).

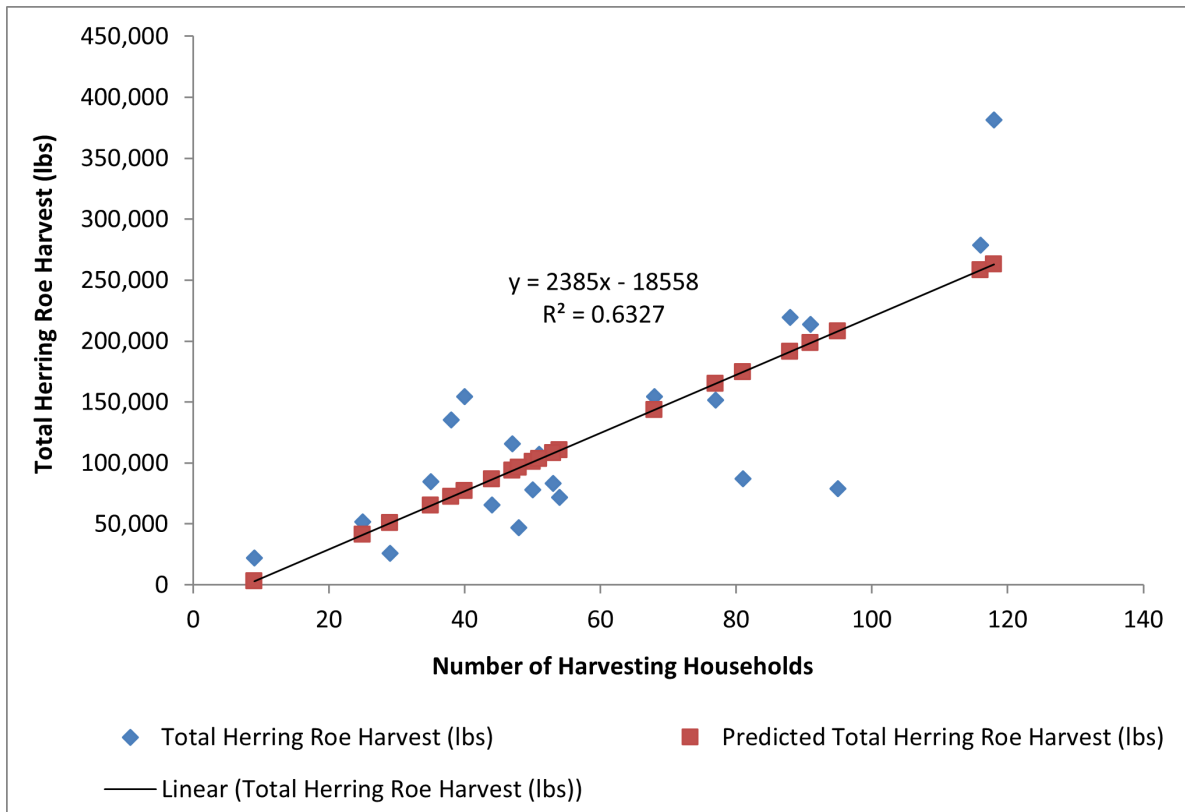


Figure 3. Total Subsistence Herring Roe Harvest as a Function of the Number of Harvesting Households from 2002-2022 (Calculated from Sill and Barnett 2023).

However, it should be noted that Sitka Tribe of Alaska was able to analyze trends in subsistence herring roe catch per unit effort (CPU) in Sitka Sound from 2009 – 2018, finding that CPU had declined substantially for both small and high subsistence harvesters over the course of this period (STA 2019). This decline in CPU corresponded with a similar decline in herring biomass returning to Sitka Sound over approximately the same time period (STA 2019; see **Figure 1**). As the Sitka Tribe notes in their comments on this closure review, “People are rational, and when the harvest does not justify the outlays of time, energy, and resources involved in the harvest, people will stop harvesting that resource and adapt in other ways.”

There is evidence that spawning locations might also be changing within Sitka Sound. Sill and Cunningham (2021: 28) observed that “in approximately one-third of the years since the first [herring spawn] closure went into effect [in 2015], there has been unusual spawning activity, generally bypassing the core [subsistence] area [in Sitka Sound].” Southeast Council members have also noted less spawning activity in the Makhnati Island area in recent years, potentially due to the activity of commercial seiners further offshore (SERAC 2024). Perhaps collectively, the changing location,

duration, amount, and density of the herring spawn, provides some explanation for why estimated subsistence harvests did not exceed the lower end of the State's ANS range in thirteen of the twenty-one years (~ 62%) since monitoring of herring spawn harvests in Sitka Sound began (i.e., 2005, 2007–2008, 2011–2013, and 2015–2021) (Holen et al. 2011; Sill and Cunningham 2017, 2019a, 2019b, 2021; Sill and Lemons 2012, 2014a, 2014b, 2017a, 2017b, 2020; Sill and Barnett 2023).

ADF&G and Sitka Tribe researchers have reported information on herring spawn harvesters' reasons for changes in household harvest levels during eleven of the thirteen years that subsistence harvests did not meet the lower end of the ANS range, beginning in 2011. Households' reported reasons for changing harvest levels included ecological, social, economic, and health related issues. The categories used to report these issues, however, are not always discrete. Further, the categories used to report these issues have changed somewhat over the history of the surveys, in ways that complicate long-term analysis of trends. The most regularly reported ecological conditions impacting households' subsistence herring spawn harvests during the years where harvests did not meet the lower end of the ANS range were issues of Resource Availability/Lower or Poor Spawn Abundance, Short Spawning Periods, and Poor Harvest Years/Poor Quality Eggs (Sill and Cunningham 2017, 2019a, 2019b, 2021; Sill and Lemons 2012, 2014a, 2014b, 2017a, 2017b, 2020).

Issues of Resource Availability/Lower or Poor Spawn Abundance were reported in nine of the eleven years for which this data is available, by an average of 38% of all harvesting households. Short spawning periods were reported in two of the eleven years where this data is available, by an average of 33% of all harvesting households, and Poor Harvest Years/Poor Quality Eggs were reported during four of these survey years, by an average of 23% of all households. Other ecological conditions impacting household harvests during these years included: Spotty Spawning reported by 48% of harvesting households during the 2012 harvest year (Sill and Lemons 2014a) and reports of Poor Weather conditions by 50% of harvesting households during the 2021 harvest year (Sill and Cunningham 2021).

Most recently, Sill and Barnett (2023) reported that 39 out of 62 potential harvesting households (63%) were successfully interviewed during the 2022 survey year. Of these 39 households, 25 reported (64%) attempting to harvest herring spawn in 2022. Of these 25 households that attempted to harvest in 2022, 24 reported harvesting herring spawn (Sill and Barnett 2023). However, 11 of these 24 households reported harvesting less spawn in 2022 than previous years, while 7 households reported harvested roughly the same amount, and 6 households reported harvesting more herring spawn (Sill and Barnett 2023).

Weather was the most commonly cited reason (27%) for households harvesting less herring spawn in 2022, followed by availability of the resource was lacking, spawn was too far away, it was too expensive to harvest, stolen sets (18%), and personal reasons (18%) (Sill and Barnett 2023). The most common reasons cited by the 14 households that did not attempt to harvest herring spawn in 2022 were: no boat or high fuel costs (43%), work commitments during the harvest season (29%), out of town (21%), or no need (7%) (Sill and Barnett 2023). Work commitments during the harvest season appears to a key factor limiting some households' ability to effectively engage in herring spawn

harvests each year, as harvesting herring spawn is a time consuming and potentially expensive process, and the specific location and timing of the spawn changes from year-to-year (Sill and Lemons 2020). As noted previously, anticipated catch per unit effort as plays a role in household's decisions on whether or not they attempt to harvest in any given year (STA 2019).

During the 2022 herring spawn survey, approximately 18 out of 20 harvesters questioned (90%) stated that they were able to harvest enough herring spawn for their household, and about 15 out of 19 harvesters questioned (79%) noted that they harvested enough to share with typical exchange partners in 2021 (Sill and Barnett 2023). However, it is not clear from the data whether respondents felt they had harvested enough to be able to share their harvests to a particularly meaningful or ideal degree. Approximately 5 out of 21 harvesters (24%) noted they could not fulfill additional requests for herring spawn in 2021. Further, it appears that these questions were only asked or answered by a subset of the 24 harvesting households in the 2022 survey (Sill and Barnett 2023). **Table 1** shows additional information on harvesters' yearly responses to questions about whether they were able to harvest enough herring spawn for their household, whether they harvested enough to share with others, and their perception of how their harvests generally compared to previous years. It should be noted that this information has not been reported for all herring spawn harvest study years, and not all interviewees agree to answer every question on the survey. It should also be noted that overall harvest survey response rates have averaged 61% for the 2011 to 2022 period shown in **Table 1**. Therefore, this information may not be representative of all herring spawn harvesters in Sitka Sound.

Though harvesting households' perceptions of their harvests changed from year-to-year, an average of about 49% of households reported harvesting less herring spawn, while 20% reported harvesting the same amount, and 26% reported harvesting more spawn each year (**Table 1**). Yet, in years where data are available, an average of approximately 80% of harvesters reported that they were able to harvest enough herring spawn for their own households, while an average of about 86% reported that they were able to harvest enough to share with others (**Table 1**). As Sill and Lemons (2020) explain, this information is important because it illustrates the important cultural function of herring egg harvest and distribution. As the researchers note, "Even in poor harvest years, people will share some amount of herring eggs with a core set of relationships; in better harvest years, more will be shared and with more people" (Sill and Lemons 2020: 7). Further, the generally lower percentage of households shown meeting their own needs in **Table 1** "could indicate that sharing obligations to family and friends take precedence over the harvester's own usage needs" (Sill and Lemons 2020: 21). As some scholars and research respondents in Southeast Alaska have noted, "sharing is subsistence" (Haven 2022: 5; also DiNovelli-Lang 2010), and most herring spawn harvest is intended to be shared with others (Sill and Barnett 2023).

Table 1. Harvesting households’ general description of their herring spawn harvest, whether they were able to harvest enough to meet their household needs and share with others, and survey response rates, 2011 – 2022 (Holen et al. 2011; Sill and Lemons 2012, 2014a, 2014b, 2015, 2017a, 2017b, 2019, 2021; Sill and Cunningham 2019, 2021a, 2021b; Sill and Barnett 2023).

Year	Households Reporting Generally More, Less, or Same Amount of Harvest as Previous Years (%)	Harvested enough for Household (%)	Harvested enough to Share (%)	Survey Response Rate (%)
2011	-	92%	-	65%
2012	-	-	-	69%
2013	Less (41%); Same (38%); More (12%)	-	-	72%
2014	Less (19%); Same (15%); More (32%)	-	-	61%
2015	Less (37%); Same (23%); More (40%)	-	-	73%
2016	Less (80%); Same (15%); More (0%)	-	-	68%
2017	Less (81%); Same (13%); More (6%)	-	-	42%
2018	Less (94%); Same (0%); More (6%)	-	-	59%
2019	Less (46%); Same (15%); More (39%)	62%	77%	51%
2020	Less (25%); Same (38%); More (38%)	67%	100%	29%
2021	Less (18%); Same (18%); More (65%)	87%	87%	80%
2022	Less (46%); Same (29%); More (25%)	90%	79%	63%
Average	Less (49%); Same (20%); More (26%)	80%	86%	61%

ADF&G and Sitka Tribe researchers have asked Sitka Sound harvesters to identify the locations of their herring spawn harvests in 2006, 2009, and every year since 2011. Harvest in Makhnati Federal waters occurred in at least six of these fifteen survey years (40%), by an average of 1.4% of the harvesting households (range of 0% to 10%) who agreed to provide their harvest locations (see **Table 2**). No harvest was reported within the Federal Makhnati closure area in 2022 (Sill and Barnett 2023). It should be noted, however, that not all harvesters agree to provide researchers with their harvest location data, or the amounts that they harvest at these locations in yearly surveys (Sill and Barnett 2023). Therefore, the actual amount of subsistence herring spawn harvest activity taking place in the Federal Makhnati closure area may be higher. It is also important to consider that individual “harvesters are limited in their access to herring spawn locations and the herring do not spawn in the same location every year. A harvester’s assessment of the length of the spawn is localized to areas that are accessible to that harvester and therefore may not be the same as the [officially] documented length of the spawn, which is determined through aerial surveys that cover all of Sitka Sound” (Sill and Lemons 2012: 15). Furthermore, as Sill and Lemons note (2014a: 21), “Because of the limitations in

where quality subsistence harvests can occur, looking at the overall nautical miles of herring spawn in Sitka Sound does not give an accurate picture of the opportunity available to [subsistence] harvesters.”

Table 2. Reported herring spawn harvests and locations of harvests within the waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area (Holen et al. 2011; Sill and Lemons 2012, 2014a, 2014b, 2015, 2017a, 2017b, 2019, 2021; Sill and Cunningham 2019, 2021a, 2021b; Sill and Barnett 2023).

Year	Location within Makhnati Island Area	Number of Households Reporting Use of Location	Percent of Harvesting Households Using Location
2006	North Japonski/Whiting Harbor	2	2%
2009	None	0	0%
2010	North Japonski/Whiting Harbor	2	2%
2011	South Japonski/Mermaid Cove	6	9.8%
2012	South Japonski/Mermaid Cove	1	1.6%
2013	North Japonski/Whiting Harbor	1	1.9%
2014	None	0	0%
2015	None	0	0%
2016	South Japonski/Mermaid Cove	2	4.3%
2017	None	0	0.0%
2018	None	0	0.0%
2019	None	0	0.0%
2020	None	0	0.0%
2021	None	0	0.0%
2022	None	0	0.0%
2023	Pending	Pending	Pending
Average	-	0.93	1.4%

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 ADF&G forecasts 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 fisheries management actions to close waters to non-Federal uses would only take place in years for which the herring biomass is 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. This issue complicates management of both the subsistence and commercial herring and herring spawn fishery in Sitka Sound.

Commercial Harvest

Commercial harvest of herring began in Southeast Alaska in 1882, with a herring reduction plant located at Killisnoo, near Angoon (Thornton et al. 2010). Commercial production peaked in 1929,

when 78,749 tons of herring were harvested for reduction at one of eighteen reduction plants in the region (Thornton et al. 2010). Stock assessments identified Southeast herring as overfished in the 1930s (Thornton et al. 2010), with significant stock depletion resulting in herring fishing restrictions in 1939 (Schroeder and Kookesh 1990). The first commercial harvest quotas were put in place in the 1940s (Thornton et al. 2010). Still, “between 1920 and 1950, more than one million tons of herring were removed from Southeast Alaskan waters” (Thornton et al. 2010: 82). The Southeast Alaska Sac Roe Herring Fishery is now managed by ADF&G under a more conservative management plan (Salomone et al. 2020). Although the guideline harvest level (GHL) for forecasted biomasses above 45,000 tons is 20 percent, the commercial fishery rarely reaches that level of harvest. The forecasted annual biomass has been greater than 45,000 tons in 25 of the last 44 years, and the commercial harvest during those years averaged approximately 12 percent. As Woody and colleagues (2005) note:

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, almost all of which ends up in the Japanese marketplace.

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 area open to commercial sac roe herring fishing during eight out of these twenty-three years (1993, 1999, 2001, 2003, 2005, 2006, 2011 and 2014). Since the area of Federal public waters near Makhnati Island has been part of a larger area open to commercial fishing, there is no way to specifically account for the amount of commercial harvest taken only from this Makhnati Island area. However, most of the commercial harvest has been taken a substantial distance away from the Federal public waters near Makhnati Island and traditional subsistence harvest areas. Still, the lower range of ANS set by the State were not obtained in 2005, 2007, 2008, 2011–2013, and 2015–2022. The waters under Federal subsistence management jurisdiction in the Makhnati Island area have been closed to the harvest of herring and herring roe by all but federally qualified subsistence users since 2015. A larger state commercial closure zone has been in effect in the area since 2012 and was expanded in 2018.

Alternatives Considered

Modify the conditions of the closure: In 2015, the Southeast Council suggested that the Federal closure in the Makhnati Island area could be modified to close harvest of herring via commercial purse seine gear only. This modification would allow both federally qualified subsistence users and non-federally qualified users to harvest herring and herring roe via non-commercial methods in the Makhnati Island area. The Council explained in 2015 that the Makhnati area is a prime spawning location and important for the subsistence harvest of herring roe, noting that commercial harvesters posed the primary threat to continued, successful subsistence harvests in Sitka Sound. Therefore, the Council attempted to modify the original proposal to only exclude commercial harvesters (SERAC 2014; FSB 2015). However, this alternative falls outside the scope of the Board’s authority on closures. The Board can close or restrict non-subsistence uses on Federal public lands and waters, but it cannot choose which types of non-subsistence uses or which non-subsistence methods and means to restrict.

Modify the Closure Area: The current Federal closure area could be modified to only include the extent of Federal waters not encompassed by the larger State commercial closure zone (see **Map 4**). This modification would reduce the size of the Federal closure in the Makhnati Island area substantially, but effectively maintain the same commercial closure zone that has existed since 2018, when the State expanded its commercial closure to its current extent. However, this modification would allow for herring and herring roe harvest by other types of non-federally qualified users within the majority of waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area. This could potentially increase competition for, and harvest of, herring and herring roe in this reopened area. Modifying the closure to encompass only a small area of Federal waters could also result in enforcement concerns and user confusion regarding the boundaries of State and Federal jurisdiction. Further, if the State commercial closure were to be reduced or rescinded, the small remaining Federal closure area would provide very little conservation benefit or additional harvest opportunity.

Effects

If this closure remains in place, the harvest of herring and herring spawn in the Federal public waters of the Makhnati Island area will remain closed to all but federally qualified subsistence users. This would provide greater subsistence opportunities to federally qualified subsistence users by reducing competition for herring and herring spawn in a safe, traditional location for harvest. The closure could also continue to provide some conservation benefits by limiting harvest of herring and herring spawn that are not taken in the commercial fishery. If the closure is rescinded, federally qualified subsistence users and non-federally qualified users would be able to harvest herring and herring spawn in the waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area. Commercial harvesters would also be able to harvest herring in the portion of the Makhnati Island area not currently covered by the State closure. Rescinding the closure could increase the number of users in the Makhnati Island area and the amount of herring and herring spawn harvest taken from a population that has only recently begun to rebound.

OSM PRELIMINARY CONCLUSION

- Retain the Status Quo**
- Rescind the Closure**
- Modify the Closure to...**
- Defer Decision on the Closure or Take No Action**

Justification

The waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area remain an important location for traditional harvests of herring spawn. Local and traditional knowledge emphasizes the historical importance of the area as a refuge for herring and herring spawn harvesters, where eggs can be accessed relatively easily and harvested safely by subsistence users, even during periods of inclement weather. Though the estimated mature herring biomass returning to Sitka Sound has exhibited a strong increasing trend since 2019, this is a short period of improvement that partially corresponds with minimal commercial harvests taking place from 2018 to 2020 due to lack of suitable

size fish. Further, it has been noted that the metric of mature herring biomass returning in any one year is not a particularly good predictor of subsistence harvest amount, as issues such as spawning location, duration and density of spawn, quality of spawn, and the amount of spawn intercepted by the commercial fishery before it reaches locations accessible to subsistence harvesters complicates predictions of subsistence harvest success. Overall, local knowledge holders assert that herring spawn is generally not as dense here as it was further in the past, spawns are shorter in duration, and the yearly amount of spawn is typically smaller in multiple traditional harvest areas within Sitka Sound. Though subsistence herring spawn harvests in Sitka Sound and the number of harvesting households appear to have decreased since monitoring surveys began in 2002, this could be an indication that it is becoming increasingly difficult and time-consuming for subsistence users to harvest sufficient spawn to make it worth the effort and expenditure. Subsistence harvests have not exceeded the lower end of ANS range in thirteen of the twenty-one years (~ 62%) since monitoring of herring spawn harvests in Sitka Sound began. There is evidence of substantial declines in subsistence catch per unit effort in many of the years where the lower range of ANS was not met.

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 in 2012 (**Map 3**), and then increasing the area of this commercial closure in 2018 (**Map 4**). This closed area includes most of the waters under Federal subsistence fisheries jurisdiction in the Makhnati Island area. However, there have been proposals to reduce or rescind the State commercial closure area in recent years, and it is unclear how long the closure might remain in place. Commercial harvesting activity in Sitka Sound appears to be the primary factor impacting successful subsistence harvests here. However, closing the Federal public waters of the Makhnati Island area to commercial harvesters or commercial harvest methods only is a modification that is outside the Board's authority on closures.

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Appendix A

Table A-1. Estimated subsistence harvest and distribution of herring roe on all substrates in Sitka Sound, 2002-2023 (CI 95%) (Sill and Barnett 2023).

Year	Number of Households Attempting	Number of Households Harvesting	Percentage of Harvesting Households Giving Herring Spawn	Estimated Total Roe Harvest (lbs.)	Lower Range of Harvest Estimate (lbs.)	Upper Range of Harvest Estimate (lbs.)
2002	N/A	77	95%	151,717	116,701	186,734
2003	117	116	88%	278,799	225,704	331,895
2004	120	118	93%	381,226	312,224	450,229
2005	111	95	82%	79,064	72,272	85,856
2006	93	88	91%	219,356	176,484	267,228
2007	92	81	89%	87,211	67,702	106,720
2008	59	54	73%	71,936	67,764	76,708
2009	91	91	84%	213,712	193,623	233,801
2010	40	40	85%	154,620	139,872	169,367
2011	57	53	94%	83,443	79,719	87,166
2012	50	47	84%	115,799	102,332	129,265
2013	52	50	86%	78,090	70,075	86,102
2014	68	68	87%	154,412	135,054	173,769
2015	52	51	57%	106,998	84,664	129,333
2016	38	35	75%	84,554	50,028	119,079
2017	53	44	74%	65,691	49,268	82,114
2018	39	29	94%	25,862	17,914	44,148
2019	27	25	100%	51,687	26,447	102,764
2020	11	9	73%	21,926	8,051	89,128
2021	49	48	100%	46,950	35,856	58,045
2022	39	38	87%	135,231	95,282	244,768
2023	Pending	Pending	Pending	Pending	Pending	Pending
Average	63	60	85%	124,204	101,287	154,963
Standard Deviation	31	29	10%	88,428	75,076	101,526

WRITTEN PUBLIC COMMENTS



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April 18, 2024

RE: FCR25-03

Dear Members of the Southeast RAC,

I write on behalf of the Sitka Tribe of Alaska (STA), tribal government in Sitka, Alaska, with over 4,500 tribal citizens. As a tribal government, STA is responsible for the health, safety, welfare, and cultural preservation of its tribal citizens. STA opposes the Office of Subsistence Management's preliminary conclusion to rescind the closure of the Makhnati Island area federal public waters.

Sitka Sound remains the only reliable source for substantial subsistence herring egg harvest in the state of Alaska. Sitka eggs are distributed widely throughout the United States. The SE RAC is well aware of historically important subsistence herring populations throughout the region that are currently depleted and show little sign of returning to their former prominence, including Auke Bay, Kah Shakes, and smaller populations throughout Chatham Strait.

The Makhnati Island federal waters are still important for harvesters who cannot access eggs in more distant and exposed waters. In an STA survey, 19% of respondents had harvested in the area in the past and 19% knew others who also attempted to harvest in the area (Meuret-Woody et al. 2010). Survey respondents also said the area had historically had strong spawn and was home to considerable herring egg harvest and processing (Meuret-Woody et al. 2010). OSM's own review shows harvest in the Makhnati area in 40% of years with available data!

OSM's justification lists three reasons to rescind the closure: 1) the biomass is increasing; 2) the exploitation rate has been low in recent years; 3) participation in the subsistence fishery has declined; and 4) the Alaska Board of Fisheries closed waters reduces the importance of the Makhnati Island federal closed waters. STA would like to share some additional context with the SE RAC.

Herring biomass is not the best metric to evaluate opportunity for subsistence herring harvest. For subsistence harvesters, where, when, and for how long spawn occurs is far more important than the biomass of herring. Recent years have seen large spawns on the southern shores of Kruzof Island, including over 75% of eggs in 2023. However, this shoreline is exposed to large swells and strong currents and is not suitable for subsistence harvest. Branches are tumbled in strong currents and eggs become sandy and inedible. Furthermore, harvesters in small skiffs frequently cannot reach this area. It is important to preserve the most accessible and suitable herring egg harvest habitats to ensure all harvesters have areas where they can obtain eggs. This is especially important, given the sporadic and erratic nature of herring spawn in recent years.



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The spatiotemporal distribution of spawn is the most important variable affecting subsistence harvest and it has changed substantially in contemporary times - traditional knowledge holders are in universal agreement on this point. The spawning season is shorter in duration, occurs over a contracted area (particularly at the southern end), and has shifted westward to less accessible and suitable habitat. STA suggests a mapping study to see just how much spawn in accessible and suitable habitat meets the “three consecutive day” threshold for good subsistence harvest outlined by Shewmake (2013) and Thornton et al. (2010). Some years, like 2017 and 2018, would show virtually no spawn in the accessible waters near town; several elders reported these years as the worst herring egg harvest they were aware of.

It is highly likely that exploitation rate of Sitka herring will increase in future years, making closed areas more important. The Commercial Fisheries Entry Commission and the Alaska Board of Fisheries recently convened a Herring Revitalization Committee with a primary goal of finding new product forms and markets for Alaska’s herring. The ten-person committee has seven seats for various commercial interests, two seats for the Board of Fisheries, and a single subsistence seat. This could mean turning Alaska’s herring into fish meal and fish oil, effectively a return to the reduction era that decimated so many other Southeast herring populations. The recent increase in Sitka herring biomass and reduced exploitation rate are not likely to be sustained in the face of new fisheries.

While OSM discusses many of the possible confounding factors and alternative interpretations around estimates of participation and subsequent subsistence harvest, it does not discuss harvest efficiency. It is well understood in subsistence hunting, fishing, and gathering that participation will decline when harvest efficiency declines. People are rational, and when the harvest is not large enough to justify the outlays of time, energy, and resources involved in the harvest, people will stop harvesting that resource and adapt in other ways. STA believes that catch-per-unit-effort analyses can be conducted on subsistence herring egg harvest. While there is variability in what constitutes a “set” for herring egg harvesters, this variability is not so different than trolling (e.g., depth, speed, bait/lure, etc.). It is reasonable to assume that harvesters of a given “size” set similar sized branches over time. In 2019, STA analyzed the catch-per-unit effort (CPUE) of subsistence harvesters by grouping harvesters into strata based on ADFG’s methodology. Harvesters in each strata showed substantial correlation in CPUE, especially individual “Small” and “High” harvesters (Figure 1). There are very few “Community” harvesters, so if the CPUE for the “Small” and “High” harvesters declines below the threshold needed for them to stay in the fishery, the participation will decline substantially, even if the effect is not as marked on the total subsistence harvest.



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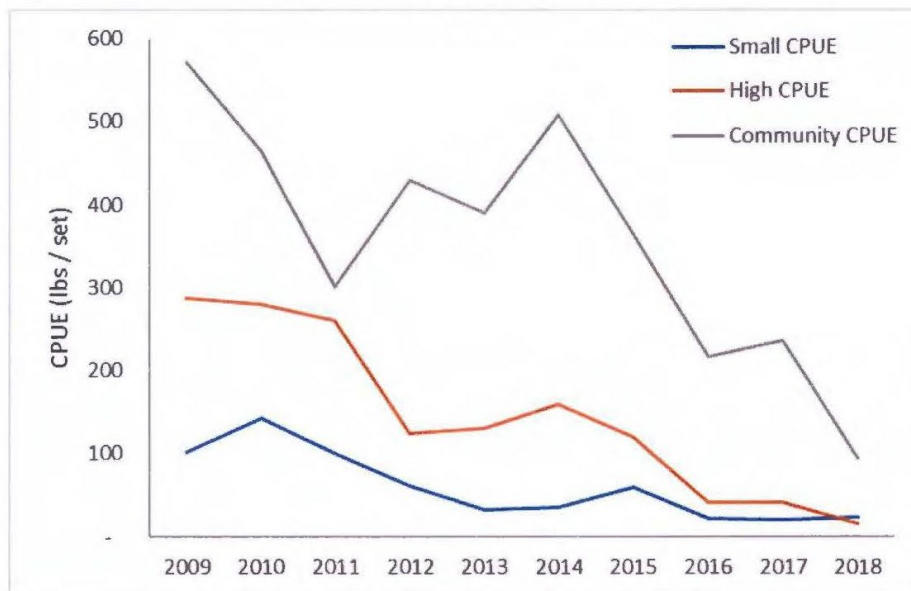


Figure 1. CPUE for subsistence herring egg on branch harvesters in Sitka Sound, 2009-2018.

The state closed waters are not a good justification for rescinding the federal waters. This closure will be under threat at every Board of Fisheries meeting for the foreseeable future. There were industry proposals to rescind the closed waters at the 2018 and 2022 Board of Fisheries meetings. Historically, the Board of Fisheries has not taken subsistence harvest issues as seriously as the SE RAC and Federal Subsistence Board. If the federal closed waters are rescinded, the Alaska Board of Fisheries may use that as justification to rescind the state closed waters. Coupled with the strong possibility of new and expanded fisheries developing on Alaska herring, this would be a disastrous outcome for everyone who eats subsistence herring eggs.

Lastly, STA would like to add some context to the interpretation of herring egg harvest surveys administered by STA and ADFG. While OSM states that an average of 86% of households harvest enough to share with others, this only means that a harvester shared a single herring egg with a single person. This does not mean that they harvested enough herring eggs to share the quantity of eggs they wanted to share or eggs that others requested. Of course, for traditional harvesters, it would be unfathomable not to give herring eggs to a grandmother or



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beloved auntie, no matter how poor the harvest was. Harvesters in our herring egg survey have frequently stated that they cannot share as many eggs with as many people as they would have liked and that they are often asked for herring eggs later in the year that they cannot provide.

Sitka Sound is the last remaining major source of subsistence herring eggs in Alaska. It is imperative to protect that harvest so as not to lose any more of our irreplaceable heritage. Sitka Tribe of Alaska requests that the SE RAC and the Federal Subsistence Board uphold the Makhnati Island area federal closed waters.

Respectfully,


Lawrence Widmark
CHAIR, TRIBAL COUNCIL