The Thorniest Catch

Managing fisheries in the twenty-first century is hard, but it is especially challenging in Sitka, Alaska, where 90 percent of the haul is bycatch.

Sitka, Alaska resident Jim Michener knows that spring has arrived by the sentinel smell of a natural phenomenon he compares to stampeding herds in the Serengeti or bygone sky-darkening flocks of passenger pigeons over the Midwest. After a long winter, Michener will awake one morning in late March or early April and detect “the first whiff of the ocean” he’s had in five months. What’s caught the nose of this 44-year-old former charter fisherman and wilderness survival instructor for the US Coast Guard is an age-old hallmark of Sitka, the subtle tang of the annual herring spawn: the smell of dormant waters rebooting with life. This spawn, loosed from hundreds of millions of herring, inundates bays and shoreline waters with roe and milt, turning them milky white. Plankton bloom and mix with the spawn in the Alaskan waters Michener now uses in other months for his salt-making business, coloring the normally incredibly clear seawater a mesmerizing Caribbean green.

Whales and sea lions and bald eagles come to Sitka to prey on the herring. As do an elite group of fishermen who annually vie in a high stakes, multiday competition that sometimes takes place in the harbor immediately offshore Sitka’s downtown on Baranof Island in Southeast Alaska. On such occasions, stores close their doors, not because the shopkeepers have gone fishing, rather because they’ve gone to watch fishing. Spectators line the shore and stand shoulder to shoulder on the town’s bridge to watch the frenzied action of a fishery unlike any other, a precisely timed, macho haul of massive schools of ready-to-spawn fish nowadays captured in YouTube videos with titles like “The Shoot Out,” a fishery still basking in the glow of the single set that netted a lucky boat nearly a million dollars.

High overhead, a dozen or more spotter planes, many assisting multiple captains, radio where they see dark masses of fish. The sound teems with boats. Four-dozen permitted commercial fishing vessels, many outfitted with custom engines capable of 22 knots, jockey for position, awaiting the countdown from the Alaska Department of Fish and Game (ADF&G), which oversees the fishery. Most of these boats are 58-foot seiners. Each has a small seine skiff that dashes off on a huge arc, bearing one end of a 200-fathom-long purse seine that soon rejoins the countercircling mother boat, fashioning an aquatic lasso big enough to surround a football field. That’s only about half of the boats in play. About a dozen Boston Whalers dart about like water bugs in the manner of roving pit crews, assisting with net closures and filling buckets with test samples for the processing plants. Standing by are dozens of tender boats. When the call comes, one will pull...
alongside a bulging purse seine, lower a hose the diameter of a municipal water pipe into the churning, silvery catch, pump ton after ton of fish aboard, and then shuttle them to shore for brining and flash freezing for shipment to the Far East. To monitor the catch, ADF&G staffs five boats. The spectacle even has a frame: nearby snow-capped mountains, including the blown volcanic top of Mt. Edgecumbe.

A day’s fishery might last an hour or two. Or as little as fifteen minutes, should ADF&G’s on-the-fly assessment of the collective haul reach the handling capacity of the three local processors or, say, on day two or three, the guideline quota for the annual harvest. Word will go out over VHF radio. “Five minutes.” Then, “Ten, nine, eight…” Like a basketball loosed after the buzzer, an unsecured seine net, post-countdown, goes for naught. It must relinquish its prey.

All this for a smallish, oily, bony, coastal-spawning forage fish most Americans have never eaten, or maybe eaten once, and think of mostly as bait: in these waters, *Clupea pallasii*, the Pacific herring. So why the big fuss? New Year’s celebrations in Japan, where *kozunoko* is an essential offering in traditional *osechi* presentations. And that’s only one chapter in a knotty, globe-circling fish story that surfaces when one casts a net beyond the ready-for-reality-TV drama of Sitka’s commercial herring fishery. This second catch includes cultural foodways and fisheries at odds with each other and catch management policies for a keystone forage fish called in question by marine biologists unearthing centuries-old fish bones and researchers citing the “traditional and local knowledge” of Alaskan native tribes. Not to mention the budding efforts of two local startups headed by husband-and-wife foodies with different designs on the local resource.

If Sitka’s annual herring harvest were to have a theme song, it might be a rewritten round called “Roe, Roe, Roe Your Boat.” For it’s not the fish the Japanese covet, but rather the ripe, three-to-four-inch-long, intact roe sacs of soon-to-spawn females. *That’s* what the Japanese call *kozunoko*.

“Whether you like to eat it or not, *kozunoko* has to be part of your New Year’s celebration in Japan—sort of like cranberry sauce or pumpkin pie at Thanksgiving in America. You’ve got to have it,” says Elizabeth Andoh, who has joined me on a recent visit to her native New York at the counter at Sugiyama on West 55th Street in Manhattan to sample two herring roe dishes specially prepared for us by owner-chef Nao Sugiyama, using products flown in from Japan. Andoh, an American expat who has lived in Japan since the 1960s, runs a culinary arts program in Tokyo called A Taste of Culture and teaches small groups there how to prepare home-style Japanese meals.

“*Kozunoko* is numerous, and *ko* is literally children,” she says, explaining that the dish bears a New Year’s wish not just of fertility but also prosperity. A New Year’s celebratory meal without *kozunoko*, she says, borders on the unthinkable.

“Most places in Japan recognize the New Year holiday through the 7th, though when I first came to Japan, it was a fortnight,” says Andoh, explaining that despite food industry efforts to expand the consumption of herring roe throughout the year, by coloring the eggs in the manner of *tobiko*, *kozunoko* isn’t consumed much beyond the first few days of January. “So there’s a limited [sales] window of opportunity, but an almost 100 percent market.” But that percentage seems to be shrinking. It’s widely believed that many Japanese gen-Xers are weaning themselves off the dish, which demands time and technique in the kitchen: several soakings of the heavily

**FIGURE 2:** Forty-eight licensed seiners, most aided by spotter planes, compete for a closely-monitored catch—almost all of which is bound for Japan. Photograph by Kevin Fisher © 2014

**FIGURE 3:** Freshly caught Pacific herring, *Clupea pallasii*, typically about 12 inches long and about one-third of a pound. Photograph by Kevin Fisher © 2014
brined roe sacs to remove the salt, then preparing a dashi broth in which to marinate and serve the kozunoko. Chef Nao, who speaks little English, tells Andoh in his native language that he has shaved dried bonito flakes atop the dishes he sets in front of us, with a bow.

Andoh has told me that while she dutifully prepares and eats kozunoko each year, she doesn’t exactly crave it. I’ve eaten sturgeon roe, salmon roe, paddlefish roe, and trout roe, but nothing like this. The taste is mild, mostly dashi, but that’s secondary to the sensory experience. The herring roe doesn’t deliver the expected, moist caviar pop. It essentially detonates inside my mouth. Each chew triggers a resounding, over-the-top percussive crunch that seems to travel internally, jawbone to inner ear. When I comment to this effect, Sugiyama’s maitre d’, San Duong, smiles: “The crunch,” he says, “chases away the evil spirits.”

Even more visually pleasing is the next herring roe preparation, komochi kombu, or roe on kelp. Harvested in the wild and also by penning ready-to-spawn herring with awaiting kelp, it’s even dearer at the register than kozunoko, costing as much as 6,000 yen per kilogram, or more than $25 a pound. Crosscut slices display thin rectangles about the size of a credit card bearing a wavy green line lengthwise down the center. That’s the kelp, of course, a complimentary sliver of umami separating layers of herring eggs, each about a dozen eggs deep. Chef Nao first presents the komochi kombu plain, with soy sauce as a condiment. But I prefer his next offering of the delicacy atop rice, sushi style, in part because the rice mutes the crunch of the roe.

Most of the herring roe eaten in Japan these days comes from herring caught elsewhere. Japanese fish processors send buyers to claim most of the catch in Sitka and Togiak, Alaska, and also import herring from British Columbia and Russia. They do so for the simple reason that they overfished their local supply, collapsing first the fishery in Western Hokkaido in the late 1950s, then a decade later the fishery in Eastern Hokkaido. Breeding programs are attempting to rebuild the local supply. Since the 1980s, the Japanese have counted heavily on herring from Sitka waters.

Clearly, timing is everything for an annual seining often referred to by a synecdoche — sac roe fishery — that verbally bypasses a classic case of overkill. After all, half the fish in the nets are males. In fact, more like 90 percent of the actual catch is effectively bycatch. To determine when and where to metaphorically fire the starter’s gun, ADF&G rigorously monitors the arriving herring. It pulls the trigger when small, representative test hauls determine the weight of the extracted roe sacs have reached at least 10 percent of the total weight of the netted male and female herring in the samples.

In 2014, with a guideline harvest limit of 16,300 tons and sac roe test weight percentages topping 12 percent, Sitka’s herring fishery opened on March 20. The boats netted 4,998 tons in about two-and-a-half hours before ADF&G called it a day. The fishery reopened on March 23. And again on March 26 and March 29. Those hauls — 4,644 tons, 3,654 tons, and 3,935 tons — brought the herring catch to 17,231 tons.

Around the time the commercial fishermen are stowing their nets, a second, very different subsistence harvest quietly takes place. Much as they’ve done for centuries, now using small motorized boats in place of canoes, members of the local Sitka Tribe, a mix of tribal citizens of Tlingit, Haida, Aleut, and Tsimsian heritage, submerge small hemlock trees and large branches in traditional spawning areas and return a few days later after layer upon layer of sticky herring roe has accumulated on the needles. This harvest is called “roe on branches.”

I hitch a ride on a tribal boat out to waters north of town between Middle Island and Kasiana Island, part of an area designated off-limits to commercial boats, a kind of aquatic reservation set aside for the subsistence harvest. At the wheel in the water-level pilothouse stands Jeff Feldpausch, resource protection director for the tribe. Feldpausch grew up on a farm in Iowa, met his future wife while attending college in Sitka, and married into the native culture. He isn’t much of a fish eater and has never really taken to the Native Alaskan ways of eating the roe right off the hemlock needles or topping the tiny golden eggs with soy sauce or seal oil or adding mayonnaise and chopped celery and onions to clumps of the roe to make a salad. But he understands the importance of the harvest to the Tlingits, for whom traditional foods are sacred;
we’ve barely left the dock before he’s sharing tribal concerns about the annual herring spawn.

“Five of the last seven years, our ANS needs have not been met,” says Feldpausch, explaining that the roe on branch harvest and roe on kelp harvest fell short of the 136,000–227,000 pound range allocated by state regulation as the Amounts Reasonably Necessary for Subsistence. There likely were times that an abundance of herring eggs helped stave off starvation (as in Japan after World War II, when, unable to afford meat or even rice, many ate what they called *barako* mounded in a bowl like rice and topped with soy sauce). But nowadays, the annual roe on branch harvest in Sitka keeps alive traditional Native Alaskan foodways. In fact, it does so well beyond Sitka, for about one-third of the harvest is sent to family and friends statewide by members of the Sitka Tribe, which locally numbers about 4,000, roughly half of Sitka’s souls. This time of year, the cargo holds of most outbound Alaska Airlines flights are piled high with boxes marked perishable containing iced herring roe still clinging to hemlock branches.

The tribe annually surveys roe on branch participants, noting how much they bring back to shore. And it weighs and totals the hauls from some 12–20 sets a year by the tribal boat, much of which is given to tribal elders and others who stop by for the free bags that are distributed out front of the tribe’s headquarters building on the waterfront near two of Sitka’s fish processing plants. “If the annual total doesn’t meet that ANS,” says Feldpausch, “we can go to the state and say, ‘Look our needs are not being met. You need to change the way you manage the fishery.’”

The tribe takes issue with the ADF&G’s current policy of allowing the commercial herring fishermen to take up to 20 percent of the department estimate for the biomass of the arriving schools of fish. At minimum, they’d like to see the take reduced to 10 percent; ideally, they’d like to see the commercial harvest suspended to allow the stocks to rebuild.

Feldpausch interrupts his tutorial and points skyward on a bright sunny day. “See the eagles circling. There were about thirty or forty of them out here yesterday, riding the thermals right over that island. At low tide, it comes to life out here.”

Throttling down as the boat reaches a cove dotted with bobbing plastic milk jugs, Feldpausch finishes his earlier thought. “Herring are forage fish. They transfer energy from phytoplankton up the food chain. If you screw it up, there are huge implications all the way up the food chain. I’ll give ADF&G credit. They do a fairly good job of managing their fisheries, but this one scares the heck out of me.”

He shuts off the motor and glides to one of the milk jugs. The boat’s stern folds down like the back of a pickup truck, making it easier for Feldpausch and Sitka Tribe biologist Jessica Gill to tug aboard the first of several stone-anchored, heavily laden branches. Armed with pruning shears, they snap
limbs from trunks and smaller branches from bigger limbs to make a more orderly pile atop a blue tarp.

Pulled from a branch, the translucent roe glistens in the palm of my hand. It tastes pleasantly salty. And delivers a more subdued, less aggressive crunch when chewed than the around-the-world *kozunoko* I ate in Manhattan. In one of the branches I spot a snagged chunk of roe-covered *macrocystis* kelp: *komochi kombu*, unprocessed, undecorated, straight from the sea. I tear off a small piece of the beaver-tail-shaped kelp fragment and eat that too. Maybe subsistence is the right word. I believe I could live on this pure, briny marriage of animal and plant life.

Alas, this subsistence harvest is not altogether pristine. It’s become a key, ironically braided rope in an ongoing tug of war between the commercial sac roe fishermen and the Sitka Tribe, who, this year, for the first time, displayed protest signs during the commercial harvest. “Save the Yaaw,” said one sign, employing the Tlingit word for herring, which echoes the sound of a hungry seagull circling the spawn. As Feldpausch suggested, unmelted ANS levels can be evoked by the tribe as leverage against the sac roe harvest. Little wonder that many in town allege the Sitka Tribe doesn’t set enough branches—intentionally or otherwise.

“The natives can still get their eggs if the younger generation would get off their lazy derrieres,” says Joan Dunnavant, owner of the 4Js coffee shack in the Eliason Harbor parking lot during a momentary lull between serving and chatting up her dock regulars. “I’m not Alaskan native, but I’m native—a Sioux. It’s like anywhere else, the younger generation doesn’t follow through with it.”

In an intriguing twist, none other than the permitted commercial herring fishermen now aid the subsistence harvest, which might otherwise be used as a lever against them. Chipping in $1,000 per captain, they fund a local commercial fishing boat to set supplemental branches and efficiently winch them aboard. The April 1 edition of the *Daily Sitka Sentinel* runs a photo captioned “Sharing the Bounty” and tells of the three-day giveaway of branches to anyone who wants them at the Eliason Harbor dock.

By then, Sitka-based ADF&G biologist Dave Gordon is already concentrating on herring biomass estimates that will set the guideline harvest limit for the 2015 fishery. Gordon, whose brown beard, unflecked with gray, belies his twenty-eight years with the department, has been in Sitka since 1984. He began as a technician monitoring a salmon weir. Then switched to monitoring the rockfish and sablefish industries. Since 1996, he’s been hooked to herring, first as an assistant management biologist; since 2005, he’s been in charge of the commercial herring fishery. It’s his voice on the VHF radio countdown. His phone that rings when somebody wants to complain that the harvest level is too high—or too low. Gordon has a private pilot’s license, but this time of year, after the last herring have been netted, he typically sits in the front passenger seat of a small seaplane that takes him high above miles of Baranof Island coastline and the shores of the nearby subsistence harvest area islands, and north to Salisbury Sound. He stares out the window, noting areas of spawn by inking corresponding red lines on a map of Sitka Sound. From above, the spawn is dazzling, a kind of oceanic Northern Lights of shore-clinging white and spreading swaths of aquamarine, sometimes in the shape of current-swirled pinwheels of nascent sea life a few hundred yards offshore.

Back at his office, Gordon transfers the red lines of his aerial, shoreline spawn count to a mapping program on his desktop computer, employing a different color for each day of the spawn. At spawn’s end, typically after a week and sometimes two (and occasionally with a secondary spawn of about a week), the scattered lines become aggregated into a final view and total. Last year, Gordon tabulated 61.3 miles of spawn. That’s about midway between the high—80 miles in 2004—and the low—40 miles in 2005—over the last decade and a half.

“We’re at 33 miles,” he says on April 3, two days after an apparent peak day of 25.8 miles and a good start to a spawn that generously blanketed the subsistence harvest areas. “But we’re going to need more.”

The ADF&G actually assesses not just the shoreline length of the spawn, but by dispatching divers also gauges the width, and the density of the eggs attached to the various kelp- and seaweed-laden substrates. Via gathered samples, it then extrapolates an annual spawn biomass. All this to forecast the
amount of herring coming the following year — and establish the harvest quota for the fishermen.

“I want to show you this graph,” says Gordon, “because I know you’re also talking to the tribe, and you’re going to get a whole different story.” He calls up on his computer screen a bar graph. “This is the data from our modeling.”

Red-tipped bars of varying heights rise upward, running left to right from 1971 to the present. The red tips show the catch as a percentage of total biomass of the herring. Total biomass was well below 20,000 tons in the 1970s; rose and fell, essentially between 25,000 and 60,000 tons until 2000; and has mostly trended upward ever since, with peak numbers upward of 100,000 tons in the years 2008 to 2011.

It was in 2008, in the Shoals Point area about eleven miles west of Sitka, that the commercial herring fleet caught 9,500 tons on a single day, and one boat circled its net around 1,500 tons, an amount that in other waters on another day might well have capsized the boat. In this case the water was shallow and the heavily laden net rested on a smooth, sandy bottom, and wind was not a factor. At that year’s price off the boat of $600 a ton, the one set was worth $900,000.

“The tribe is kind of grumpy about the sac roe fishery. A lot of people don’t like it. I kind of get it,” Gordon says. “There’s a perception out there that if we were to stop harvesting, this thing would grow to some giant, massive population. But then you go, ‘What part of the ecosystem is broken here?’ If you saw herring tracking down in stock size, and other species were tracking down, you might have an argument. But we’re not seeing that. Herring have been going up. We’re having the highest salmon production in Alaska that we’ve seen in history. The whale population has been going up, up, up. The seal population is going up, up, up.”

The 20 percent catch quota, he stresses with a point to the far right end of the bar graph, is not sending biomass totals down, at least not on his watch in the last two decades. Gordon further justifies that catch percentage as generally applicable in the case of short-lived fish, like herring, which typically live ten or eleven years, as opposed to low-single-digit catch levels for other species, such as rockfish, which can live well past 100 years. As in annually cutting 20 percent of old-growth trees, after only a few years, nearly all of the bigger, more cherished specimens would be gone: aquatically clear-cut.

“What if two years in a row you saw lousy spawning numbers?” I ask.

“Yes, we would shut the fishery down,” he says.

“I’m a fisheries manager, not a biometrician,” Gordon says a few minutes later, evoking the guiding principle of maximum sustained yield: “the harvest rate you would use to get the greatest economic benefit.”

Clearly, the economic benefit extends beyond the fishermen and their crews and the pilots of the spotter planes. “This two-week window of having 500 people come to town,” says Gordon, “is a nice shot in the arm after a long winter of very little activity before the summer season.”

Pacific herring, however, are an anomalous fishery. Unlike salmon or halibut or crab, where demand is wide and no one market can restrain prices, the Japanese essentially dictate the price paid in Sitka for herring. That number can vary greatly year to year, especially if a good portion of the previous year’s processed kozunoko sits unsold in food industry freezers in Hokkaido, or if a smaller catch decreases the supply. The 2013 harvest came to 5,700 tons, just shy of half the guideline 11,500 tons. That earned Sitka herring fishermen $780 a ton, or $4.4 million. If the 48 boats split that evenly (which they most certainly did not, some boats managing only “water hauls” and no paychecks), that would come to $92,625 per boat. This year the processors alerted the fishermen to much leaner times, guaranteeing only $150 per ton up front, with possibly more to come. This year’s catch of 17,231 tons at, say, an optimistic eventual price of $220 a ton, would average $71,795 per boat.

As the tribe points out, that would be less money to the fishermen for taking three times as many fish. Feldpausch, in pressing such a point, generally converts annual herring catches into pounds, speaking of those 17,000 tons as 34 million pounds of fish. Do one more calculation, figuring roughly three herring to the pound, and you reach a different perspective on this year’s commercial harvest: it took 100 million Clupea pallasii out of Alaskan waters.

So what becomes of the 50 million male herring? And millions of pounds of female herring flesh stripped from the “popped” roe? There’s certainly value in the “bycatch.” Some of the fish protein may go for human consumption, but herring isn’t widely eaten these days in most regions of Japan, according to Andoh and others. Nor is much of the catch even processed in Japan anymore. A lot of it now goes to Vietnam and Thailand and China, where labor is cheaper. The easiest way to monetize the 90 percent of the catch the Japanese do not covet is to pass it off to a reduction plant, which turns it into fish oil products such as omega-3 tablets.

“The market for fish meal is pretty strong,” says Robert Katsura, director of sales for frozen roe products at Vancouver-based Canfisco, a processor of B.C. herring roe. “Anecdotally we hear that on the Japanese side, when they are working with roe herring, in some cases, the carcasses go to aquaculture.”

This likely endgame vexes the Sitka Tribe and locally based trollers. “We’re a little frustrated that a lot of the herring
harvest is probably going into fish meal,” says Feldpausch. “Anchovy stocks are in great decline off South America and fish meal prices are skyrocketing because of incredible demand. What’s frustrating for some of us here in Alaska is seeing the food source for our kings and cohos being taken out of the water to feed farm fish.” And possibly a competitive product at that, stresses a Sitka salmon troller who prefers his name not be used because he fears possible backlash from his local processing plant, which also moves herring.

“I think the majority of trollers are concerned with the management, which is pretty steadfast in thinking they can take their 20 percent,” he says. “But I don’t know if that’s a recipe for disaster or not. It would be easy to make a mistake. You have to be careful. They’ve got this little model they’re running, but maybe there’s an ocean change and half of them are wiped out. Now you’re beat down 70 percent.”

A more conservative management policy for forage fish such as herring was in fact one of the key recommendations of a 2012 report issued by the Lenfest Ocean Program managed by the Pew Charitable Trust. “It’s possible for a species to be caught at a level that sustains its population, but not at a level that sustains other predators that depend on that species,” says Dr. Ellen K. Pikitch, executive director of the Institute for Ocean Conservation Science and chairperson of the Lenfest Forage Fish Task Force responsible for the report, Little Fish, Big Impact: Managing a Crucial Link in Ocean Food Webs. “We found many examples where you need more fish in the water to feed these other species than has typically been understood. Overfishing can be of one of two types: you can overfish the harvest species in terms of its own fishery, but you can also overfish it in terms of the ecological role it serves in the broader system.”

Pikitch cites the findings of a study off Vancouver Island on the importance of Pacific herring in the diets of key commercial fish that would interest Sitka trollers. “Chinook salmon: 62 percent of their diet consists of herring; coho salmon: 58 percent; Pacific halibut: 53 percent; lingcod: 71 percent. These are big numbers. More than half the diet of these species is being caught and transported to another part of the world.”

Plus, it’s not only ocean dwellers that are impacted by decreases in forage fish populations. “Seabirds tend to be extremely sensitive to fish abundance. For many, 75 to 95 percent of their diet consists of forage fish. It matters whether there is a great abundance or a small abundance,” Pikitch says. “Think of it as if you’re eating a bowl of Cheerios and you’re able to pour from the box and you fill up your bowl. Then what if somebody takes that box of Cheerios and disperses it all across the room. In the second case, it’s going to take a lot more work for you to get enough food to eat. We’ve seen it for animals like penguins, when the food supply is low, they lay eggs, but the chicks don’t survive. And when food is very abundant and adults don’t have to go very far to get it, they produce two chicks per year.” Pikitch says fisheries managers are only beginning to weigh such considerations when setting catch limits. “It’s kind of a new era, and it’s going to take a while for management to catch up.”

One night during my week’s stay in Sitka I attend a community potluck supper put on by the Sitka Tribe to anchor a first-ever Herring Festival. I eat roe on branches and roe on kelp and several salmon preparations and then listen to two invited speakers whose research projects offer a far longer historical look at Alaskan herring populations than the ADF&G biomass graph. The point stressed by both: herring populations in Sitka may be up considerably from the 1970s and 1980s and lately holding steady, but the fishery is currently being managed in “a shifted baseline status.” In other words, what seems like a lot of fish these days only scratches the surface, literally in fact, of what once was.

The first speaker, Madonna Moss, PhD, was part of a team that excavated and cataloged nearly a half-million fish bones at 171 sites in the Pacific Northwest, including Southeast Alaska and Sitka. Moss, a professor of anthropology at the University of Oregon in Eugene and curator of zooarchaeology at the university’s Museum of Natural and Cultural History, explains the bones were preserved in the high pH environment of shell middens, one dating as far back as 10,000 years. Herring bones turned up—and in quantity—virtually everywhere they dug. “They were the most ubiquitous fish—incredibly geographically widespread,” says Moss. “And they show up in places archeologically that herring don’t show up today.”

What happened? It’s pretty clear that a century before the modern sac roe fishery a completely unregulated and, as it turns out, aptly named reduction fishery did a number on Alaskan herring populations. The decline began in the 1880s when a plant in Chatham Strait near the town of Angoon switched from processing whale oil to herring oil because of the abundance of herring. In a time before oil wells and petroleum products, herring oil was used as an industrial lubricant and shipped worldwide. Moss reads an 1895 account of “herring schools stretching for miles and miles” in the strait. But overfishing decimated those schools as well as other herring populations near other reduction plants, where the fish were crushed for their oil and the residue sold as fertilizer. The annual harvest graph that she displays for all at the potluck supper shows statewide catches
from the years 1925 to 1938—mostly bound for the reduction plants—between 50,000 and 70,000 tons, spiking beyond 80,000 tons in 1929. In 1941, the catch bottomed out at 5,000 tons. Thereafter, herring harvests rose and fell, though at levels well below previous highs, until the reduction fishery was discontinued in the mid-1960s.

“When settlers first came to Alaska, herring was something that was just there, something so super abundant, that it’s becoming stressed or depleted seemed incomprehensible. How could there ever not be a lot of herring?” says the next speaker, Thomas Thornton, PhD, just off a plane, having traveled from England where he is now director of the masters program at the Environmental Change Institute at the University of Oxford.

On the back of the business card Thornton now carries appear three Native Alaskan characters and the ‘Tlingit’ words they denote: Yaan Ijyeet Gaax. It’s an honorary name that was given to him in a tribal adoption ceremony. The name belonged to the deceased uncle of a tribal elder in the audience this evening, Harvey Kitka, who chairs the Sitka Tribe’s herring committee. The name means Crying Because Hungry.

Thornton spent a considerable amount of time in Southeast Alaska when teaching at Oregon State University. He collaborated what came to be called the Herring Synthesis Project. The resulting 700-page report integrates the archeological findings of Moss and her colleagues with ethnological, historical, and biological records, and draws heavily upon local and traditional ecological knowledge collected through scores of oral histories conducted with tribal elders.

“Herring don’t appear on anybody’s list of charismatic species,” says Thornton. “But Native Alaskans have referred to it as ‘our buffalo,’ as important to them as the bison to the Plains Indians.” Indeed, they ate its flesh. They, too, crushed herring for oil. And in the spring, after their shoreline waters turned milk white, they harvested the roe on hemlock branches and on kelp, eating it fresh and drying it by hanging the branches and kelp sheltered from the rain. Moreover, Native Alaskans recognized the importance of herring in the food chain—notably its importance to another species key to traditional subsistence living.

“The herring are important, not only for eating, not only for their eggs; they’re important for harbor seals,” explains Harvey Kitka, one of those quoted in the Herring Synthesis Project, over morning coffee in a downtown Sitka restaurant. “We render the fat down to oil, and the oil is something that has been part of our life almost forever. We filtered and filtered it through snow until it was clear as vegetable oil. You’d cook your food in it and preserve salmon and meat and cockles and clams in the oil to carry you through the winter.”

Kitka, 72, has a full head of gray-pushing-into-white hair brushed back from his temples and a gentle, thoughtful manner. Except for four years in the Air Force, he’s lived his entire life in Sitka. Kitka has witnessed many local changes in this keystone species, and from stories told by his ancestors knows of more.

“The herring used to be here all the time,” he says. “We had a resident stock that lived in all the bays and there were always some going through our channel. If you were hungry for fish, you could go down to the dock and cast and catch a few, right where the bridge is. It was always there and available. Now the only stock is the one that comes in from the ocean to spawn.”

Kitka says the biggest resident stock used to reside in nearby Silver Bay, which, like many places in Alaska, no longer lives up to its name, in this case, evoking waters once teeming with silver-sided herring. “Near Craig, there’s Herring Eggs Island, but no herring anymore,” he says. “Our Indian name for Silver Bay was Loon Bay. The loons were there because they were herring feeders, and we had migrating fur seals that would come in and feed along our shores. Now we don’t see those either. Silver Bay’s darkest chapter came in the 1960s when a toxic leak from the since-closed pulp mill killed everything it touched.

Kitka’s earlier, boyhood memories echo those of many other Native Alaskans interviewed for the Herring Synthesis Project. He recalls a raucous sound he would hear on the shore, like a heavy slapping rain or hail on a tin roof, but which was in fact the merging of resident herring with arriving schools of soon-to-spawn herring in such incredible numbers that the water audibly writhed with them. A former tool employed by his grandfather, a herring rake, underscores the bygone abundance. The Sheldon Jackson Museum in town has one. Shaped differently than a yard rake, it’s a thick pole more than a dozen feet long with a row of nails protruding at one end (bones were the initial barbs of choice). Time was, filling a canoe with herring took no more effort than indiscriminate paddle-like strokes of a rake like this. It was fish in a barrel and the barrel was Sitka Sound.

When the spawn came, recalls Kitka, “Everything would be white. What you saw earlier this week used to cover the whole sound, somewhere close to 200 miles of spawn. And it’s not just the change in size of the spawn, it’s the change in duration that’s our big concern.” He remembers a spawn in the 1980s that continued for thirty days.

I ask about the tribe’s efforts to lower the herring catch limit.
“I get emails from almost all the native tribes up and down the coast,” he says. “Several years ago I went down to Simon Fraser University [in British Columbia] and gave a talk to the native people and the professors down there. I told the native people they have to band together to make a stand. We need more natives elected and more legislators friendly to the cause. It’s going to take time.”

Interestingly, one of the commercial herring fishermen uses only slightly different words—“It’s a long road”—to characterize his dream of establishing a new market for Pacific herring roe. Bryan Howey, 45, grew up in Sitka. He and his wife are a rare couple who fish commercially together, ranging as far south on the Pacific Coast as Southern California. They catch squid, salmon, black cod, halibut, and for the last thirteen years, herring in Sitka Sound.

“Since I was a kid, I wanted to be involved in this fishery,” says Howey. “I love this fishery. The best fishermen on the West Coast, from Kodiak to San Diego, come up here. It’s direct and utter competition. When I was a kid, it got up as far as $2,500 to $3,000 a ton. A hundred and fifty dollars a ton is what we’ll get this year. You can still make some money doing this, but your 22-knot boat isn’t good for anything else—you’re burning more fuel all the time with those kinds of engines. A lot of this fishery, though, isn’t about making sense. Raw ego is really what drives this fishery.

“This year, I only got a couple hundred tons. That basically did not pay for my time on the water. Just to send the net up here and back was $10,000. I came because I have a house here, and it’s a great time to be here. It’s kind of the gathering place of the West Coast elite fishermen. I just want to be a part of it.” “It” includes VIP status at the venerable Pioneer Bar, where fishermen who cut each other off and sometimes even bang hulls during the day drink together at night.

Howey’s wife, Dana, is Danish and knows and loves Northern European cuisine, which features many kinds of fish roe. The roe of capelin, a small Atlantic and Arctic Ocean smelt, if not a highlight of twelve-course tasting meals in the world’s top restaurants, is in much demand. Often colored orange and called masago, it’s mounded atop sushi, increasingly so, as a cheaper alternative to tobiko, or flying fish roe. “Read the ingredients on the one-kilogram package of masago,” says Howey. “It often says herring eggs.”

With their four-year-old Sitka-based company, the Howeys envision a way to start leveling the playing field by processing herring roe in Sitka using a traditional Danish recipe, branding the product as Alaska Gold Caviar, and selling it in small jars. “The Japanese have gotten down to three buyers,” he says. “The industry has a little party and they decide what they’re going to pay. We have no bargaining power—none whatsoever.” But they could have power if Sitka’s herring roe had other places to go, say into American specialty food stores. And, especially on a much grander, industrial scale, as a substitute for capelin in food processing. “You don’t realize it, but capelin eggs are in a lot of sauces and dressings,” says Howey. “In Northern Europe you almost can’t get a plate of food—breakfast, lunch, or dinner—without a scoop of some kind of fish eggs on the side. They’re served as a condiment, like coleslaw.”

Howey has an ownership stake in one of the Sitka fish processors, Silver Bay Seafoods, which operates out of the old pulp mill plant. When he was there earlier this year, hand processing his herring roe caviar, he was privy to calls coming in from European seafood brokers desperate for herring roe to substitute for capelin eggs, which were in short supply. He says a small request was fifty tons of herring roe. “Things are changing,” Howey says, “literally as we speak.”

Howey looks to a time, eyeing herring roe sales into markets beyond Japan, when the Sitka sac roe fishing rodeo could...
he'll have an eager expert taster in Blaine Wetzel, chef at the
a second attempt. But now he's ready to try again, and knows
Michener was too busy bootstrapping the business to make
herring salt—I could really see that.`` The next few springs
out, so to be able to serve a piece of sashimi with a perfected
fish, of course, but the salt in the soy is what really brings it
makes sushi or sashimi so fantastically good is spectacular
tured the herring salt on a crudo or a piece of sashimi. What
lacking,`` he says. ``I tasted the ocean in the spring and pic-
wasn't crystal clear, but full of spawn, and made a batch of salt
on that occasion he took water from the bay that
spawn has led him to return to an experiment he tried a few
years ago: herring salt.
Though home to some of the freshest seafood on the
planet, Sitka suffers for good restaurants. After Ludvig's Bistro,
early open four nights a week, and Larkspur Café, in the
shadow of the bridge, the year-round dining establishments
aren't visited much by local food lovers.
``The joke is, you go to Ludvig's or you cook your own
meal,`` says Michener, who calls Sitka a town of accom-
plished home cooks with exceptionally well-stocked home
freezers. ``Right now in our freezer there's Dungeness crab,
king crab, and venison. We're out of duck, but there's some
pleasant that I traded for. And there's king salmon, rockfish,
halibut, lingcod, and black cod.`` What Michener didn't trade
for, he caught or shot himself.
``Having lived here for twenty-plus years, really lived
here, making a living on the ocean and being a wilderness
guide, climbing all the mountains, spending time in the
woods, and eating out of our freezer, really feeling this
intense sense of place, I wanted some way to celebrate the
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Well... Willows Inn on Lummi Island in Puget Sound. Wetzel not
only already uses some Alaska Pure salts in his highly
acclaimed kitchen, he's a rare North American chef in a
non-Japanese restaurant who has served roe on kelp. He's
even tasted it straight out of the water from the deck of
Michener's boat.
This time, in Alaska Pure Sea Salt's 1,400-square foot,
outsskirts-of-town production facility, Michener is experi-
menting with herring roe sacs and milt sacs. Not that he necessarily
thinks any other craft salt maker would take a run at a salt
infused with herring futures, but we'll omit a good many steps
and skip ahead to him bent over a bright yellow worktub. He's
wearing blue rubber gloves and is hand stirring several scoops of
a brined roe sac solution into about three pounds of his
fleur de sel. Then he cups a snowball-sized clump of the roe-
infused salt in his left hand and holds it under his nose.
``Wow, that's interesting,`` Michener says. ``There's a note
there I wasn't expecting. It's kind of earthy. Primal. Heading
into the fecund kind of . . . I'm not saying it smells like truffles,
but it's emoting that sense of something really lusty and pri-
mal. There's layers to the flavor. I'm liking this.``
Two days later, and after a walk with Michener on a beach
at low tide in search of herring eggs on the rocks, I return to
sample this test batch after it has dried.
``Remember when we walked down to the ocean yester-
day?`` says Michener.
``That's in there?``
``It is without question. That roe flavor is really coming
out. This has that fresh ocean smell.``
Several weeks later a package arrives from Sitka. Michener
had emailed that he'd made another batch of herring salt, this
time also incorporating thinly shaved shards of herring roe
bottarga he'd cured in his own salt.
I pour a bit of the off-white herring salt in the palm of
my hand, wet a finger, and taste. Having viewed Sitka's
herring spawn from high above, I can't help but picture
milk white and aquamarine Alaskan waters. The taste is
predominately salty, but also of the docks; alluring, at least
to this herring eater. So immediately I'm thinking of getting
a few plump, U-30 day boat New Jersey scallops, cutting
each horizontally into three slices, fanning them out on a
colorful plate, drizzling them with the best olive oil in my
pantry, adding a squeeze of lemon juice, and then
sprinkling each scallop round with a few grains of Micht-
ener's herring salt. Another taste of the salt snaps me back
to Alaska. I can't shake the image of that Tlingit herring
take and wonder if ever again Sitka residents will stand on
their shores and hear a tumultuous slapping of the water
that sounds like heavy rainfall.
Acknowledgments

I spent a week in Sitka, Alaska, in early spring of 2014 after being enthralled by Jim Michener’s description of the annual herring spawn. (I had called him, expecting only to write a short piece on his artisanal sea salt.) My thanks start there, with the window he provided into a riveting, particularly tangled food story and his many insights into the culture and workings of his hometown. I thank, too, Alaska Department of Fish and Game biologist Dave Gordon, who invited me along for an unforgettable aerial view of the herring spawn and patiently explained the state’s management policies. I am equally indebted to Jeff Feldpausch and others with the Sitka Tribe, especially tribal elder Harvey Kitka. Not that I need reminding of Sitka’s many charms, but since my stay, the screensaver on my smartphone has glowed with a view of snowcapped Mt. Edgecumbe.

REFERENCE