Jessica Gill
February 23, 2015
RC #60

Dear Mr. Chairman and Board of Fisheries,

I would like to address some concerns I have about the Southeast Alaska Pacific herring (*Clupea pallasi*) population. I am a fisheries biologist with the Sitka Tribe of Alaska. I support proposals 114, 115, 118, 121, and 125. I oppose proposals 116, 117, 119, 120, and 122. After observing this stock, listening to Tribal elders, and collecting information from commercial fishermen, I feel there is need for concern and conservative management measures to protect this stock, and its importance to the marine ecosystem.

Since the start of the commercial sac-roe seine fishery in Sitka Sound in 1971, there has been controversy between subsistence harvesters collecting herring eggs on hemlock branches and kelp and commercial seiners harvesting herring for their roe. Each user group has brought concerns for the health of the stock, harvest allocations, and closure areas to the Board of Fisheries. This year, the proposals brought forth by each side of the argument seem even more contentious than previous years. After over 40 years of arguing, I feel it is time for both sides to come to the table and decide what is the best for the sustainability of the stock, the commercial fishery, subsistence fishery, and the maximum benefit for all Alaskans.

I request that the Board of Fisheries take into consideration the ecosystem and the inherent risk in harvesting forage fish. Herring are eaten by the majority of animals that can fit them in their mouth—herring make up 62% of the diet of Chinook salmon (*Oncorhynchus tshawytscha*), 53% of the diet of Pacific halibut (*Hippoglossus stenolepis*), 32% of the diet of harbor seals (*Phoca vitulina*), and 18% of the diet of sablefish (*Anoplopoma fimbria;* Fisheries and Oceans Canada, Nanaimo, B.C.). Humpback whales (*Megaptera novaeangeliae)* can consume up to 4,300 tons of herring in a winter season (Heintz et al., 2010). Whales, salmon, and halibut are all as or more important to the Southeast economy as herring are due to the direct benefits of commercial and sport fishing and the indirect benefits of tourism. These species depend on oil-rich herring; there is no viable herring substitute in the Southeast marine ecosystem.

Healthy ecosystems, which includes healthy herring populations, are more resilient to change from perturbations and ocean conditions. With climate change expecting to warm waters and bring in additional warm-weather species to feed in the waters in Southeast Alaska, it is imperative that the ecosystem has robust herring populations to avoid any impacts from these changes. Southeast Alaska also boasts some of the highest risks in the state for adverse economic, ecological, and sociological effects related to ocean acidification (Mathis et al., 2014). As with overall climate change, it is still unknown what havoc these rapid ocean changes will directly wreak on herring populations, but the effects are highly unlikely to be positive. If we can expect increased pressure on herring populations in the near future, we should begin to build up our stock size now.

During my public testimony, I mentioned the differences between the age-structured analysis and the forecast biomasses that the Alaska Department of Fish and Game uses to set their guideline harvest levels in the Sitka Sound sac-roe seine fleet. In 2009, the age structured analysis estimate (the pre-season estimate) was forecasted to be the largest biomass on record at almost 118,000 tons, but their post-season estimate was lower than the previous year. In 2012, the reverse was true; the ASA estimate was below the 10-year average, but it resulted in the forecasted biomass of 144,000 tons (Figure 1). Even more astonishing is that the actual return for the biomass was estimated to be at 76,000 tons—an error of 53%!

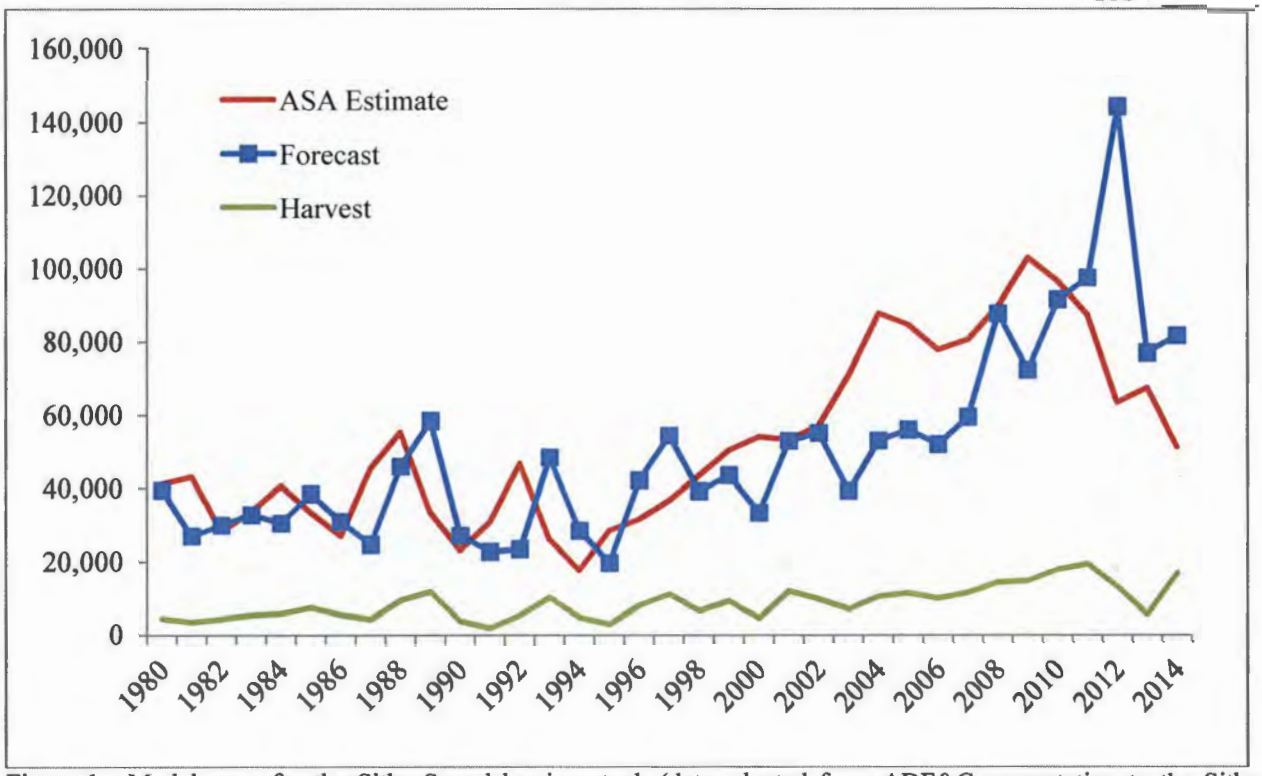

Figure 1. Model error for the Sitka Sound herring stock (data adapted from ADF&G presentation to the Sitka Advisory Committee).

The effect of this error can vary. In 2012, the estimated biomass of 144,143 tons allowed for a 20% harvest of 28,829 tons. As previously stated, the estimated biomass did not show up. If the entire quota was harvested, it would have resulted in a harvest of 38% of the biomass. This is much higher than ADF&G would think a sustainable level for forage fish populations. World fisheries managers would agree.

Driving our uncertainty about stock sizes and actual harvest rates home, only one of the six sac-roe fisheries is open this year. Many of the smaller stocks tend to bounce above and below thresholds put in place. Proposal 116, which would require a fishery whenever the stock is above the minimum biomass threshold by changing the language of the fisheries management plan, would remove ADF&G's flexibility when managing such fragile stocks. Sitka Tribe's proposal to keep stocks that are below their threshold for five years from being fished (proposals 114 and 115 protects the stock from being over harvested. If the stock stays above its threshold, it will likely result in better economic sustainability for the commercial fishery. I believe that ADF&G managers do the best they can with the information given after spawn deposition surveys, model estimates, and harvest estimates have been synthesized. However, I would like them to exercise more caution when estimating herring populations in southeast Alaska given the high uncertainty even after all of their surveys. This resource is too valuable to the ecosystem to risk overharvesting.

My last thought on the herring populations in southeast is a personal one. I understand many of the Board members are fishermen, both sport and commercial. You likely have a personal connection with the fish you see often, but have probably not seen herring spawning events up close. I have never seen anything as amazing as herring spawning. The fish swim through the water, on top of kelp and through branches, depositing their eggs on the substrate. It

is astonishing to see the life that herring spawning events brings to the Sound—whales, eagles, sea lions, other fish, and harvesters of all types come to utilize the fish and eggs.

I implore the Board to review the data, and keep conservation thresholds in place for the Sitka Sound herring stock. Removing the commercial closure area in Sitka Sound (proposals 119 and 120) would remove a protected area for herring to spawn unperturbed and allow for herring larvae to utilize the waters surrounding Middle and Kasiana Islands as a rearing area. I would also request the Board to keep in place the 25,000 ton biomass threshold for Sitka Sound (proposal 122) to avoid harvesting this stock below a level at which it can repair itself.

I will be available for the Committee of the Whole if needed, and available for questions if you might have them. Thank you for your time and commitment to this Board. I appreciate your contribution.

Best Regards,

Jessica Gill
jessica.gill@sitkatribe-nsn.gov
907-738-5528