

RC 26

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Oct 15, 2018 -

RE: New Information regarding ACR 10

Dear Board of Fisheries,

Thank you for your consideration of the submitted ACR on closing the Sitka Sound sac roe herring fishery until stocks have rebounded and we have a better understanding of the scale of stress that the fishery causes on such a critical component of regional marine ecosystems. **I am in support of ACR 10.**

I would like to share two things with you now. One features **new information from a recent (2018) study about how herring learn migration behavior from their elders** - it is VERY important, as it explains a lot about the discrepancy between local observation/TEK and ADF&G studies/industry claims. The other is a bit of historical research that I did around the reduction fishery earlier this year, and the US congressional discussions that occurred around closing the wasteful fishery - I believe it to be instructive in a few ways. I'll start with the new study:

Go With Older Fish (A Heuristic Model of Socially Learned Migration Behavior)

The Ocean Modeling Forum participants (including Herring Synthesis author Tom Thornton and SHCA lobbyist Steve Reifenstahl) co-authored a very important paper this year, *A Heuristic Model of Socially Learned Migration Behavior Exhibits Distinctive Spatial and Reproductive Dynamics* (from ICES Journal of Marine Science, fsy 091). The paper basically explores something that crops up a lot in Herring Synthesis in interviews with Tlingit elders and subsistence harvesters, about how young herring recruits learn how and where to spawn from older fish. It explores two models - one in which new recruits will latch on to groups of older fish (Go With Older Fish / GWOFF), and one in which new recruits will adopt spawning sites near their natal site (Diffusion / DIFF). The latter is the model that is assumed by ADF&G research, but the paper makes a good case for assuming the GWOFF model is more true. The paper describes that "The GWOFF model is able to produce nearly all of the peculiar and problematic properties of herring populations described by Dickey-Collas et al (2009). The GWOFF mechanism also is consistent with the peculiar phenomenon of multiple stock components simultaneously using the same spawning site, as reported by Johannessen et al (2009)."

There are at least two serious implications of GWOFF. The first is that recruits will abandon sites of low productivity and will latch on to larger groups of fish. This could explain why biomass still looks good in Sitka - that population represents a stronghold and an orphanage of sorts. The second implication is that elders are really important for herring; in a fishery where the eldest fish are targeted, herring could be losing their own sort of cultural memory. This year, almost all of the regional spawning happened in sandy areas - not only is this a very bad thing for subsistence, but thought by some to be bad for natal survival. What if that's true? Even if the biomass looks large, it may be struggling to spawn at a high rate of success. If this is happening and we are misunderstanding it, then we are managing the fishery in a highly vulnerable state.

Reduction era history

In 1909, having heard from concerned halibut fishermen in Ketchikan (who had noticed that it was becoming more difficult to find bait herring three decades into the herring reduction fishery), Millard Marsh, and John Cobb, agents of the Bureau Of Fisheries, filed the *The Fisheries of Alaska in 1909*, in which they explained "The principal food of the king salmon is herring... no condition that adversely

affects it should be permitted to exist. There is little question that the serious depletion of the herring schools would correspondingly impair the abundance of king salmon".

In response, the Committee on Fisheries of the United States Senate held hearings in 1912, considering the possibility of prohibiting the harvest of herring for fertilizer or oil as soon as 1914. The Department of Commerce and Labor had the first word at the hearings, and, disbelieving of the fishermen, argued against them, saying only that "At present, the department is not in possession of statistics which fully prove serious depletion of the supply of herring". The Alaska Oil & Guano Company (the operators of the only reduction plant at the time) had the second word at the hearings, saying that a prohibition of herring reduction was unnecessary, given that "It is a universally known fact that of all sea fish the herring is most abundant." *They even said with pride that they avoid harvest during the spawning period, admitting that "during the spawning period all fishing should be prohibited. While the spawning period may not be definitely known and may not be uniform throughout the waters of Alaska, enough is known of the habits of this fish to at least inaugurate an effort at regulation."* (emphasis is mine) You know that a practice is ecologically destructive if even the reduction fishery avoided it.

The Alaska Oil & Guano Co made it clear that legislation against continued reduction of herring would prompt the ruin of their young company and asked if perhaps they could continue their practices for just 15 or 20 years more. To read the minutes of those meetings, it is clear that stewards of the fishery and congressional representatives all found the fishery to be ridiculous and wasteful - and yet they allowed it to continue, and the conversation faded with the war, the fishery expanded, and, now, in hindsight, we regret it. 1912 was the moment to stop a dangerous practice. Imagine the benefit to today's salmon industry if we had. The time to deal with this problem is now. Not in 2 years; not in 10 years, but now, before the 2019 herring spawn fishery.

It is important to remember that fisheries management of herring in Southeast Alaska has been an ongoing disaster for the last 130 years. Archaeological evidence makes this as clear as the anthropological and anecdotal evidence does. The reduction era crashed the herring stocks in Chatham Strait and South Baranof island; sac roe fisheries have crashed the Ketchikan region, Auke Bay and Lynn Canal, Prince of Wales. The continued existence of herring in Sitka Sound should not be accepted as an affirmation of the sustainability of the fishery; the evidence suggests that we should find ourselves lucky that we still have herring here, and that we should do everything in our power to ensure their continued survival. Right now, that means closing this fishery. There is too much that we don't understand; there is too much at risk.

Back in January, you heard from dozens of community members who have been watching our waters for a long time and who believe that this is a reckless fishery which is causing undue harm to ecosystem health and human subsistence, threatening healthy economies and cultures alike. I hope that you will remember their voices and all of the information that they provided to you as you make your decision.

Thank you,

Peter Bradley