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My name is Jim Armstrong. I'm in support of Proposal 6 which I believe provides a needed conservation check on the Dutch Harbor cod fishery.

I live here in Anchorage where I work as technical advisor for the Freezer Longline Coalition. Our vessels, use hook-and-line gear and are majority Alaska-owned, that majority is CDQ.

I started my fisheries career as a stock assessment scientist. Before I got hired by FLC, I worked as staff for the North Pacific Council I was on the plan teams where assessment models are reviewed. And I'm in constant communication with the Pacific cod stock assessment scientists.

While much of the testimony has focused on allocation, I don't believe that's the only issue involved.

As you know, the Dutch Harbor GHL is based on a percentage of the Bering Sea cod ABC. That ABC is the product of a very complicated population modeling process that is driven primarily by federal survey catches of cod from throughout the Bering Sea and the Northern Bering Sea.

The Pacific cod life cycle includes two major distributional phases for mature fish

1. aggregate at spawning locations in late winter and
2. spread out across the continental shelf during the summer.

The survey that informs the federal cod stock assessment occurs in the summer.

The assessment has been plagued for years by conflicting signals between the survey and the fisheries. It's gotten to the point where no single population model is currently being used and instead, federal scientists are calculating ABC using an ensemble of several models – sort of like how weather forecasters use several models to predict storm tracks.

One reason for this issue may be that the summer survey catches fish from several spawning populations. Different spawning populations will vary in terms of year class strength and growth rate. This contributes to uncertainty when they're combined as a single stock, so scientists are trying to understand just what spawning populations the survey is catching.

They've initiated genetic sampling to see where cod come from and have deployed satellite tags to see where cod go.

At the September plan team meeting we heard the latest results from these efforts which can be summed up by saying right now we are at a crossroads – the stock definitions for cod in and around the Bering Sea are very much in question. The lead scientist for the Bering Sea cod assessment has proposed reviewing alternative stock definitions as early as next fall.

We now know that some cod move over much greater distances than previously thought – from south of the Aleutians through Unimak Pass across the Bering Sea and up into the Arctic Ocean. On the other hand, there are genetically related cod that tend to stay nearshore

We know that under certain climate conditions Unimak Pass serves as a primary conduit for northward movement of current and fish from the GOA and that some fish in the GOA can relocate when they are impinged by unfavorable water conditions. Cod tagged in the Gulf have been recovered in US and Russian waters of the Bering Sea. Clearly cod don't care where we draw lines on our maps.

So why am I saying Proposal 6 would provide a conservation check?

It really centers around the enormous size of the Bering Sea and the total amount of cod that it supports contrasted with the very limited size of the DH Subsection and the amount of fish that can be taken from there.

The DHS comprises less than ½ a percent of the portion of the Bering Sea that is defined for setting the ABC. As the GHL continues to increase automatically it will get closer and closer to the point where the limited area of the subsection can support it.

How will we know when that has been reached? Declining fishery catch per unit of effort especially when coupled with declines in fishery participation is always a cause for concern. A rough measure of Fleetwide CPUE for the DHS fishery (catch per vessel-landings taken from the FMRs and posted 2022 landings) has declined since 2018. My communication with a NMFS cod assessment author supports the apparent decline in cpue. Participation has declined since 2020.

Whether the drop in CPUE is driven by a reduction in cod abundance locally or competition over fishing grounds is not clear. Anecdotal reports indicate fishing was increasingly difficult this year and effort was at the edges of State waters. Fishery CPUE is typically late to respond to a population decline since fishermen tend to go where the fish are, until, of course, they can't. And in this case, they can't.

I think it's reasonable to expect that if there is a resident subpopulation, it would be represented by fish caught in State waters which would tend to put them at a higher risk of localized overharvest. Geneticists are currently working on a backlog of samples from the cod spawning site north of Unimak. Additional satellite tag studies need funding to help us understand the proportion of the overall population that moves through or stays in the DHS area during the winter.

What about fish that are passing through, i.e., that are GOA fish, not BS fish? If the fishery is catching fish from other stocks, then setting the GHL as a % of BS ABC is inappropriate. To be clear, we do not know what proportion of the DHS catch is represented by other stocks, but the proximity of the DHS fishery to the major conduit for cod movement between the BS and GOA means it is very likely to occur. Additionally, because these fish are transient, the proportions are likely to change from year to year.

I think we Alaskans want our fishery managers to at least explore the biological factors affecting the stocks we fish on. When it comes to the rapid growth of this fishery with no analysis supporting the GHL, we need to exercise caution. We've seen some sobering developments in other fisheries recently (snow crab, Bristol Bay red king crab) and we don't want to go down that road. Now would be a good time to practice caution by adopting proposal 6 or taking some action to halt the automatic GHL increases.

Thank you for allowing me this opportunity to share my perspective with you.

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