GOA Chinook salmon bycatch in groundfish trawl fisheries

Chinook salmon are an integral part of subsistence, recreational, and commercial harvests in Alaska. Over the past decade, Chinook salmon runs have experienced major declines in most Alaskan rivers. While there are many reasons for these declines from changing ocean conditions to increases in marine predators, bycatch in groundfish fisheries has also been identified as an area of focus. Chinook salmon are a prohibited species in the Gulf of Alaska (GOA) groundfish fisheries. In the GOA groundfish trawl fisheries, the majority of Chinook salmon bycatch occurs in the directed pollock fishery though fisheries for flatfish, rockfish, and Pacific cod also intercept Chinook salmon.

Maximum Limits on Salmon Bycatch

In 2012, Amendment 93 to the GOA Groundfish Fishery Management Plan (FMP) established prohibited species catch (PSC) limits for the GOA pollock trawl fisheries. The total Chinook salmon PSC limit of 25,000 fish for the directed pollock fisheries is apportioned between the Western GOA (6,684 fish) and Central GOA (18,316 fish) management areas. Full retention of all Chinook salmon PSC is required on all pollock vessels. The PSC limits are managed in-season by the National Marine Fisheries Service (NMFS).

Beginning in 2015, Amendment 97 to the GOA Groundfish FMP established a separate Chinook salmon PSC limit for the non-pollock trawl fisheries of 7,500 fish. This limit was apportioned to trawl catcher processors (3,600 fish) and trawl catcher vessels participating in the Rockfish Program (1,200 fish), and trawl catcher vessels fishing other species besides pollock or rockfish (2,700 fish). Combined with the Chinook salmon PSC limit from Amendment 93, the total Chinook salmon PSC limit for GOA groundfish trawl fisheries is 32,500 fish.

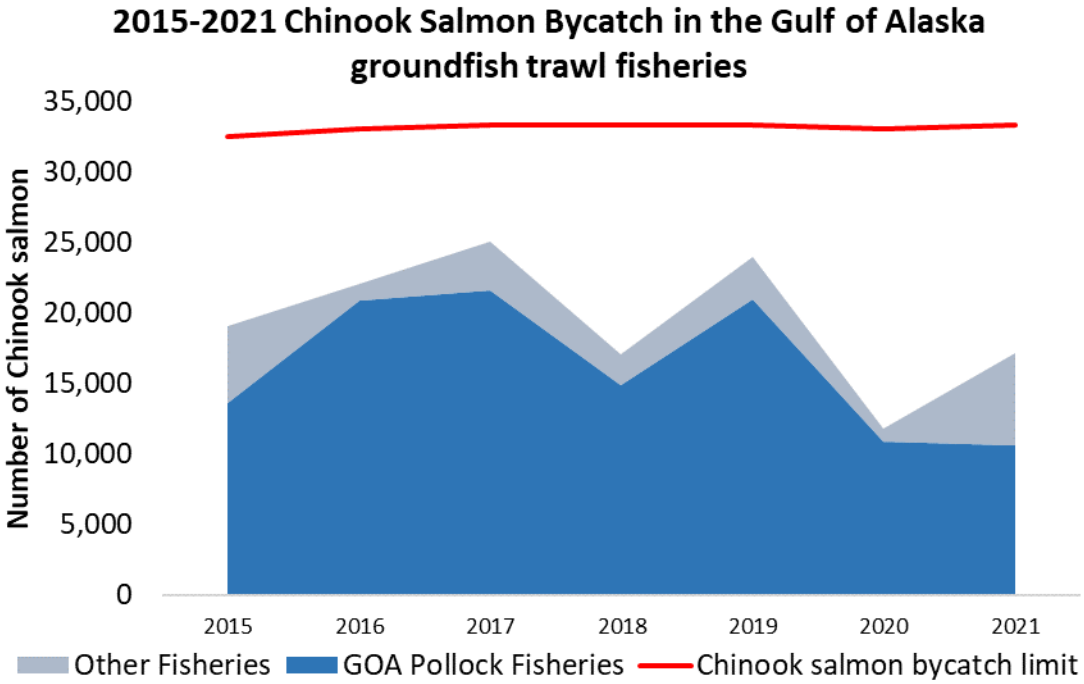

Figure 1. Chinook salmon bycatch in GOA groundfish trawl fisheries, 2015-2021. From NOAA Fisheries, Fisheries Catch and Landings Reports in Alaska, GOA Chinook Salmon Mortality Estimates.

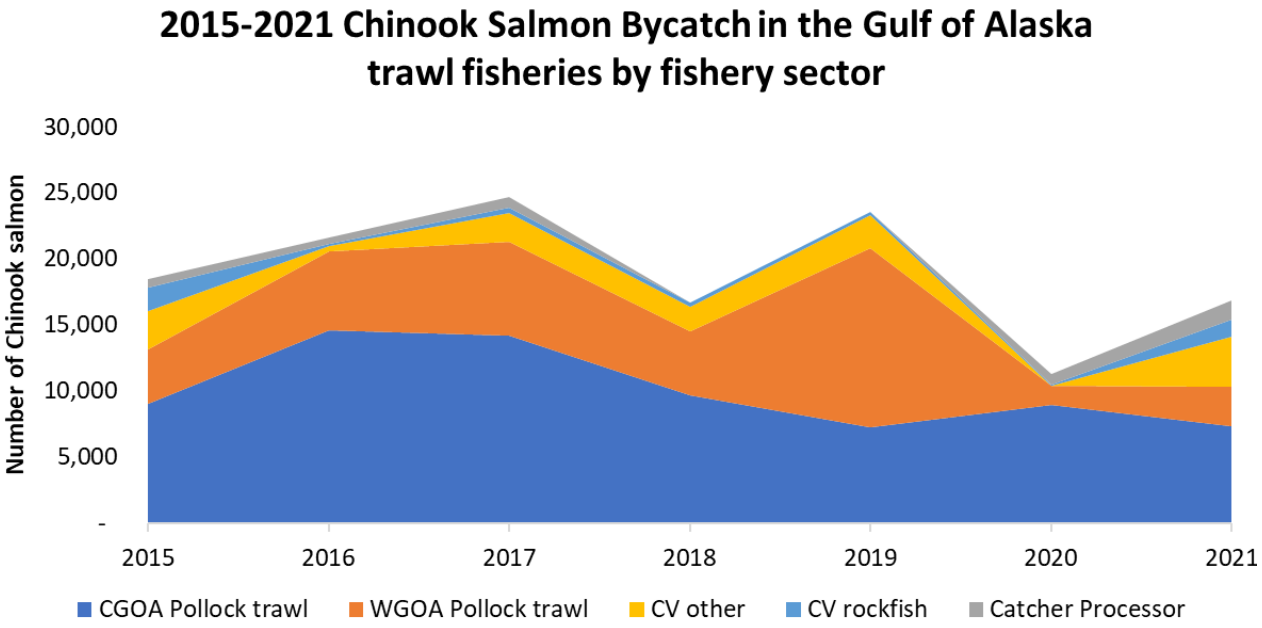

Figure 2. Chinook salmon bycatch in GOA groundfish trawl fisheries by fishery sector operating under a bycatch limit. From NOAA Fisheries, Fisheries Catch and Landings Reports in Alaska, Chinook and non-Chinook PSC. Over this time period Chinook salmon PSC has ranged from a high of 21,576 fish in 2017 to a low of 10,595 fish in 2020.

Amendment 103 to the GOA Groundfish Fishery Management Plan provides fishery managers the ability to reapportion unused Chinook salmon PSC between pollock and non-pollock trawl fisheries. This was done to help avoid fishery closures and optimize utilization of groundfish resources without exceeding the overall Chinook salmon PSC limit or negating the existing caps under Amendments 93 and 97. On or after October 1, the NMFS Regional Administrator may reapportion Chinook salmon PSC to the non-Rockfish Program catcher vessel sector if more than 150 Chinook salmon are available in the Rockfish Program PSC limit. The Rockfish Program catcher vessel sector PSC limit must retain at least 150 fish, so only the fish above that amount can be reapportioned to other sectors. This amendment also limits the amount that can be reapportioned between sectors to no more than 50% of a sectors' initial Chinook PSC allocation.

Chinook salmon bycatch numbers and stock composition

A genetic analysis of samples from the Chinook salmon bycatch from the groundfish trawl fisheries has been conducted annually to estimate stock composition within the bycatch of those fisheries. This program began in 2013 following Amendment 93, which required all Chinook salmon caught as bycatch be retained. Sampling of Chinook salmon in GOA pollock fisheries has been systematic and is more comprehensive and representative as a result of these retention requirements. Prior to 2014, samples were randomly collected and may not have been representative of the actual bycatch.

On average, from 2014 through 2019, over 78% of the GOA Chinook salmon bycatch is composed of stocks originating from British Columbia and the US West Coast (Figure 3). Chinook salmon from Southeast Alaska represent an average of 14% of the bycatch, stocks from the NE gulf coast and

Copper River represent an average of 1%, and stocks from the NW gulf coast average 5.6%. Appendix A provides information on the Chinook salmon populations used in the genetic baseline and the regional designations.

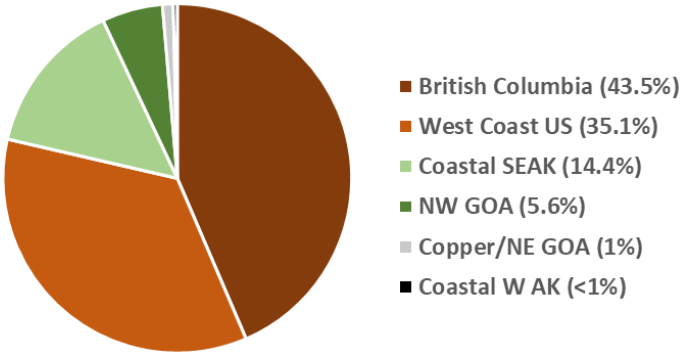

Figure 3. Average genetic stock contribution of Chinook salmon bycatch in GOA pollock fisheries, 2014-2019. Data complied from NOAA Fisheries Salmon Bycatch reports[1].

Since 2014, total Chinook salmon PSC in the GOA pollock fisheries has ranged between 10,595 fish and 21,576 immature fish. Although we do not have comprehensive run reconstruction information for many GOA Chinook salmon runs, bycatch in the GOA groundfish trawl fisheries represents a very low proportion of known removals from Alaska-origin Chinook salmon stocks. Total bycatch of Alaska-origin Chinook salmon from 2014 to 2019 is estimated at a low of 2,252 fish in 2015 to a high of 5,983 fish in 2019 (Figure 4). Genetic stock composition results from the bycatch samples collected in the 2020 groundfish fisheries will be presented at the June North Pacific Fishery Management Council meeting.

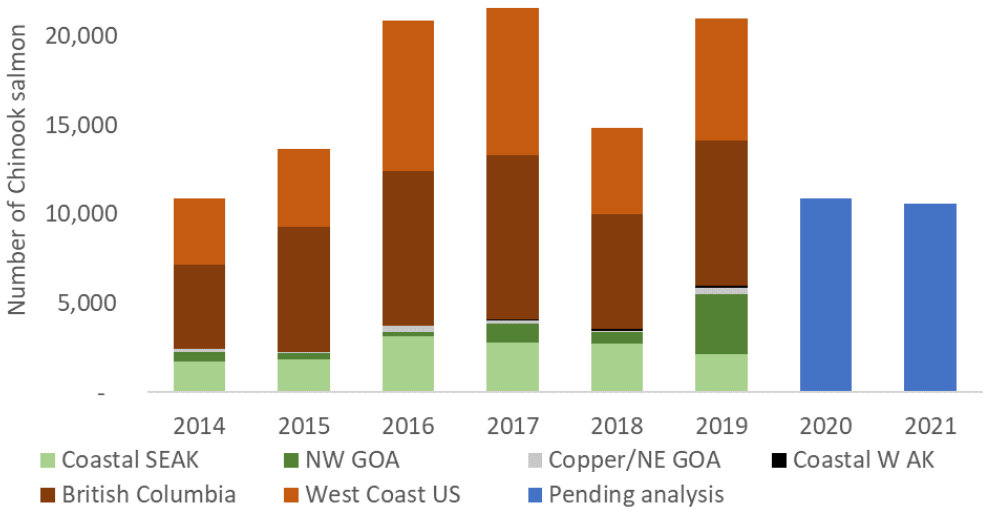

Figure 4. Genetic stock contribution by sample year applied to total annual Chinook salmon bycatch in GOA pollock fisheries for 2014-2019. Genetic stock identification information from bycatch samples taken in 2020 and 2021 have not yet been published. Results for the 2020 samples will be reported in June.

[1] Genetic stock composition analyses of Chinook salmon bycatch samples from the Gulf of Alaska trawl fisheries can be found on the NOAA Fisheries Genetic Research at the Alaska Fisheries Science Center webpage.

Appendix A. Chinook populations in the genetic baseline with regional designations

NW GOA: Anchor River, Ayakulik River, Benjamin Creek, Chignik River, Crescent Creek, Crooked Creek, Deception Creek, Deshka River, Funny River, Juneau Creek, Karluk River, Kasilof River mainstem, Kenai River mainstem, Killey Creek, Ninilchik River, Prairie Creek, Slikok Creek, Talachulitna River, and Willow Creek.

Copper: Bone Creek, E. Fork Chistochina River, Gulkana River, Indian River, Kiana Creek, Manker Creek, Mendeltna Creek, Otter Creek, Sinona Creek, Tebay River, and Tonsina River.

NE GOA: Big Boulder Creek, Kelsall River, King Salmon River, Klukshu River, Situk River, Tahini River, and Tahini River - Pullen Creek.

Coastal SE Alaska: Andrews Creek, Blossom River, Butler Creek, Chickamin River, Chickamin River-LPW, Chickamin River Whitman Lake, Clear Creek, Cripple Creek, Crystal Lake Hatchery, Dudidontu River, Genes Creek, Hidden Falls Hatchery, Humpy Creek, Kerr Creek, Keta River, King Creek, Kowatua River, Little Tatsemenie River, Macaulay Hatchery, Medvejie Hatchery, Nakina River, Tahltan River, Unuk River-Deer Mountain, Unuk River – LPW, and Upper Nahlin River.