

Division of Commercial Fisheries
Sam Rabung, Director

Anchorage Office
333 Raspberry Road
Anchorage, AK 99518



Alaska Department of Fish and Game
Doug Vincent-Lang, Commissioner

Headquarters Office
P.O. Box 115526
Juneau, AK 99811-5526
www.adfg.alaska.gov

Advisory Announcement

Date Issued: December 14, 2020

Time Issued: 12:00 p.m.

Contact Information

Greg Buck, Area Research Biologist

Sara Miller, Biometrician

Stacy Vega, Assistant Area Research Biologist

Phone: (907) 267-2355

Fax: (907) 267-2442

2021 TOGIAK HERRING FORECAST

The 2021 Togiak herring forecast and harvest allocations are listed below for the Togiak District sac roe and spawn-on-kelp fishery, and the Dutch Harbor food and bait fishery. The gear group allocation specified in the *Bristol Bay Herring Management Plan* 5AAC 27.865(b)(5) is 80% purse seine and 20% gillnet in the Togiak District. The following represents the allocations and quotas based on updated regulations and a 20% exploitation rate.

Table 1.—The 2021 Togiak District Pacific herring biomass and harvest forecast and allocation by fishery and gear.

	Biomass (Short Tons)	Harvest (Short Tons)
Biomass Estimate	236,742	
Total Allowable Harvest (20% exploitation rate)		47,348
Togiak Spawn on Kelp Fishery (Fixed Allocation)		1,500
Remaining Allowable Harvest		45,848
Dutch Harbor Food/Bait Allocation (7% of remaining allocation)		3,209
Togiak District Sac Roe Fishery		42,639
Purse Seine Allocation (80%)		34,111
Gillnet Allocation (20%)		8,528

The 2021 mature herring biomass forecast is 236,742 tons and is the highest forecast since 1993 when the age-structured assessment model was implemented (Table 1 and Figure 1). Under a 20% exploitation rate, the 2021 potential harvest is 47,348 tons in all fisheries and 42,639 tons in the Togiak sac roe fisheries (purse seine and gillnet). The increase in forecast biomass for 2021 compared with previous years is due to the high percent of partially mature age classes (ages 4 through 7 fish) observed in 2020. These cohorts are projected to comprise an even larger portion

of the population in 2021 due to increasing maturity (Figure 2). The forecast percent age composition of the mature population in 2021 is mostly comprised of ages 5 through 8 fish both by number (33%, 14%, 18%, and 11% respectively) and by biomass (27%, 14%, 18%, 13%, respectively; Figure 2). The forecast average weight of a fish in the 2021 mature population is 291g (Figure 2), whereas the average weight of a fish that is vulnerable to the commercial purse seine fishery is 314g.

Conditions were sufficient for the department to obtain an aerial survey estimate of peak biomass in 2019 and 2020 with confidence ratings greater than zero. There is considerable expected uncertainty in the 2021 forecast due to uncertainty in the large estimated age-4 recruitment in 2020. The survival and the overall magnitude of that year class (2016 year class) is highly uncertain, and it remains to be seen if the large age-4 recruitment event results in a large increase in the expected number of mature age-5 fish in 2021 relative to the number of mature age-4 fish in 2020.

The assessment model used to forecast the Togiak herring population utilizes time series of catch, age composition of the purse seine harvest, age composition of the mature population, and aerial survey biomass estimates plus catch data from 1980 forward. Samples from the entire commercial purse seine harvest are used to estimate age composition of the seine harvest. Samples from the commercial purse seine harvest near in time to the peak survey and the post-fishery survey are used to estimate age composition of the mature population biomass. Peak aerial survey biomass and post-fishery aerial survey biomass estimates are combined with pre-survey harvest to estimate mature biomass. The assessment model uses between-dataset weighting and variable weighting within the aerial survey dataset to reflect the confidence staff has in the respective datasets and the confidence staff has in the individual aerial survey estimates. Confidence in the individual aerial survey estimates is based on the number of surveys, timing of surveys, weather, and water conditions. The forecasted average weight-at-age of herring for 2021 was calculated as the most recent two-year average from the commercial purse seine samples.

Herring are detected in our sampling when they recruit into the fishery; a process that begins around age-4 and may not be fully complete until approximately age-9. Large recruitments in this population generally occur every eight to ten years and typically last one or two years. Recent biological sampling suggests the 2013 and 2014 year-classes (age-6 and age-7 fish in 2020) as well as the 2016 year-class (age-4 in 2020) may be new large recruitment events. It is difficult to measure contributions of young age classes because these fish are not fully recruited (available) in the harvest and often arrive on the spawning grounds near the end of, or after, the fishery.

Under Alaska's Health Orders 5, 6, and 8, commercial fishing is an Essential Business and is part of Alaska's Essential Services and Critical Infrastructure. Commercial fishermen should ensure that all travel and other activities in support of commercial fishing operations follow protocols in Alaska COVID-19 Health Orders. COVID-19 Health Orders may be found here: <https://covid19.alaska.gov/health-order/>

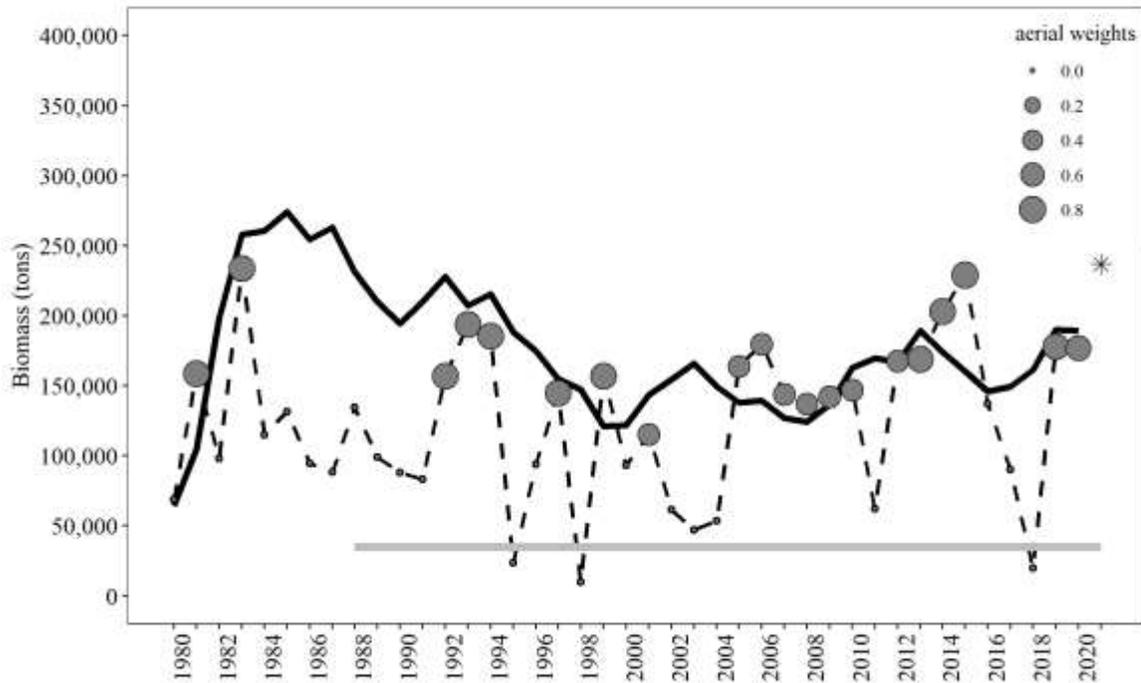


Figure 1.– Aerial survey-estimated biomass plus pre-peak catch that were included in the model (grey points), model-estimated mature biomass (black solid line), and model-estimated mature biomass forecast (black star). The size of the grey points along the dashed line reflect the confidence weighting of each aerial survey estimate in the model based on weather, number of surveys, quality of surveys, and timing of surveys relative to the spawn (ranging from 0 = no confidence to 1 = perfect confidence). The confidence ranking in 2020 was 0.70. The grey line denotes the threshold of 35,000 tons.

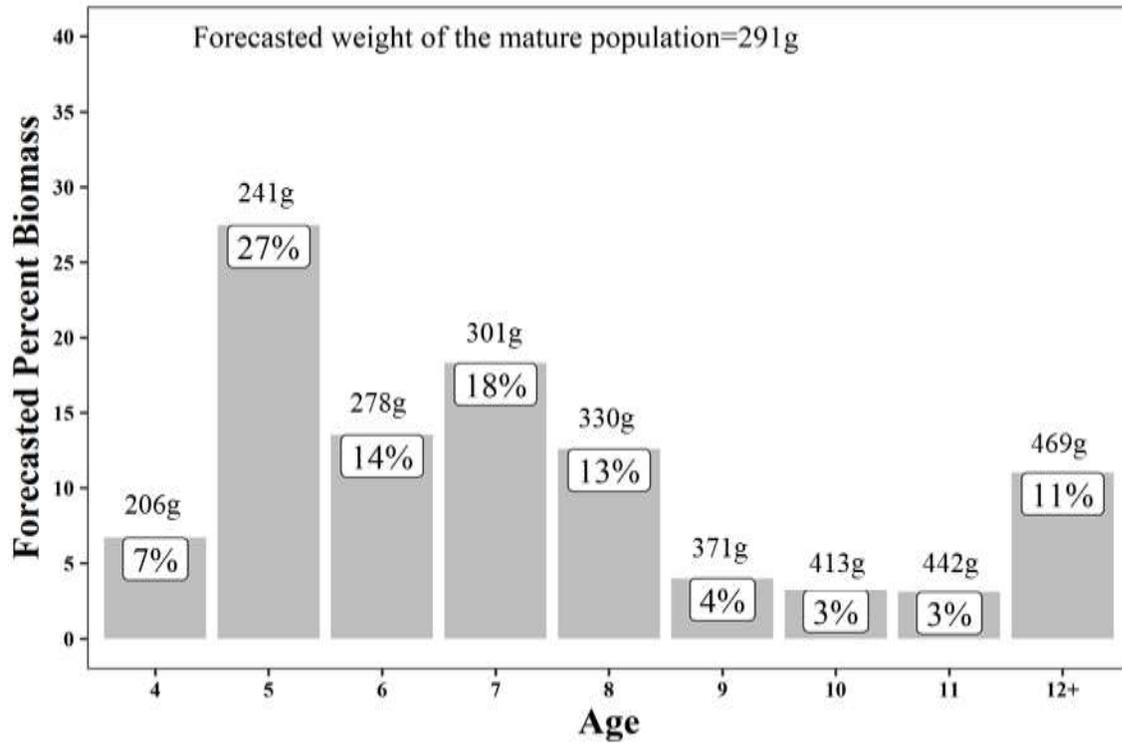


Figure 2.— Forecasted percent mature biomass by age with average weight (grams) for each age class as well as the average weight of the forecasted 2021 mature biomass as a whole (291g).