

**ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE**



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2016 TOGIAK HERRING FORECAST

The 2016 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. This forecast is based on a maximum 20% exploitation rate of the projected biomass as defined in regulation 5 AAC 27.865 Bristol Bay Herring Management Plan.

Table 1.–2016 Togiak District Pacific herring biomass and harvest forecast and allocation by fishery and gear.

	Biomass (Short Tons)	Harvest (Short Tons)
Forecasted Biomass	162,244	
Total Allowable Harvest (20% exploitation rate)		32,449
Togiak Spawn-on-Kelp Fishery (Fixed Allocation)		1,500
Remaining Allowable Harvest		30,949
Dutch Harbor Food/Bait Allocation (7.0% of remaining allowable harvest)		2,166
Remaining Allowable Harvest for Togiak District Sac Roe Fishery:		28,782
Purse Seine Allocation (70.0%)		20,148
Gill Net Allocation (30.0%)		8,635

2016 TOGIAK HERRING FORECAST SUMMARY

The Pacific herring spawning biomass in the Togiak District was estimated at 228,807 tons in 2015 and is forecast to be 162,244 tons in 2016 (Figure 1). Age 9–11 herring are expected to comprise 48% of the biomass with the remainder expected to be ages 4–8 (44%), and ages 12+ (8%) by weight (Figure 2). The 2016 individual average weight is forecast to be 350 g.

A spawning biomass of 162,244 tons would be very similar to the recent 10-year average. The total allowable harvest at a 20% exploitation rate results in a potential harvest of 32,449 tons in all fisheries and 28,782 tons in the Togiak sac roe fisheries (purse seine and gillnet). A harvest of this size would be ~127% of the recent 10-year average harvest.

An age-structured analysis (ASA) model is used to forecast the Togiak herring population. This model utilizes catch and age composition data as well as total biomass estimates. Currently, the ASA model integrates data from purse seine fishery age compositions (1978–2015), total spawning age compositions (1978–1995, 1997, 1999, 2001, 2005–2010, and 2012–2015), and aerial survey biomass estimates (1981, 1983, 1992–1994, 1997, 1999–2001, 2005–2010, and 2012–2015). Samples from non-selective gear (commercial purse seine) are used to assess age composition of the total biomass when a total biomass is estimated. Commercial purse seine catch samples from 2015 ranged from age-3 to age-18. The model calculates the average weight of age-4 herring for 2016 as the most recent four-year average while simple linear regression of historical trends are used to forecast average weights of remaining age classes.

A temporal change in age composition from older to younger herring typically occurs during this fishery. In 2015 spawning biomass age composition was fairly stable and consisted largely of age-8 herring until around 4 May when a pulse of age-6 appeared and persisted through the remainder of the season. Age-8 herring were the most numeric age class in 2015 and accounted for 23% of the total commercial purse seine harvest by both weight and numbers of fish.

The biomass of the Togiak herring spawning population has been estimated with aerial surveys since the late 1970s, concurrent with development of the sac-roe fishery. Estimating the peak inshore biomass is a necessary precondition for estimating total biomass. Surveys were flown between 16 April and 18 May 2015 with peak biomass observed on 4 May. Across all surveys, 52% of the biomass surveyed occurred in Togiak Bay (TOG) with 17% to the west in the Tongue Point (TNG) survey section and 5% in the Hagemeister (HAG) section while to the east Nushagak Peninsula (NUS) and Kulukak Bay (KUK) sections each accounted for between 5 and 10% of the total biomass surveyed (Figure 3).

Herring are detected in our sampling effort when they recruit into the fishery; a process that we believe begins around age-4 and is fully complete by age-9. Large recruitments in this population generally occur every eight to ten years and typically last one or two years. The last large recruitment event experienced by the Togiak herring population occurred in 2004 and 2005 and was detected in 2008 and 2009 when the proportion of age-4 fish increased. A modest recruitment event may have occurred in 2009 as indicated by increased proportions of age-6 fish seen this year. It should be noted that measuring contributions of younger age classes is difficult because these fish are not fully recruited (available) in the harvest and often arrive on the spawning grounds near the end of the fishery.

There is always uncertainty in forecasting the Togiak District herring biomass. The forecast mean percent error (MPE) has been relatively stable at ~20% for years with reliable total run biomass estimates (Figure 1). The historical forecast accuracy or mean absolute percent error (MAPE) between 1994 and 2015 using the ASA model has been 19%. Using this historical forecast error, the forecast range for 2016 is between 110,358 tons and 214,090 tons. The department considers this population to be healthy and sustainable.

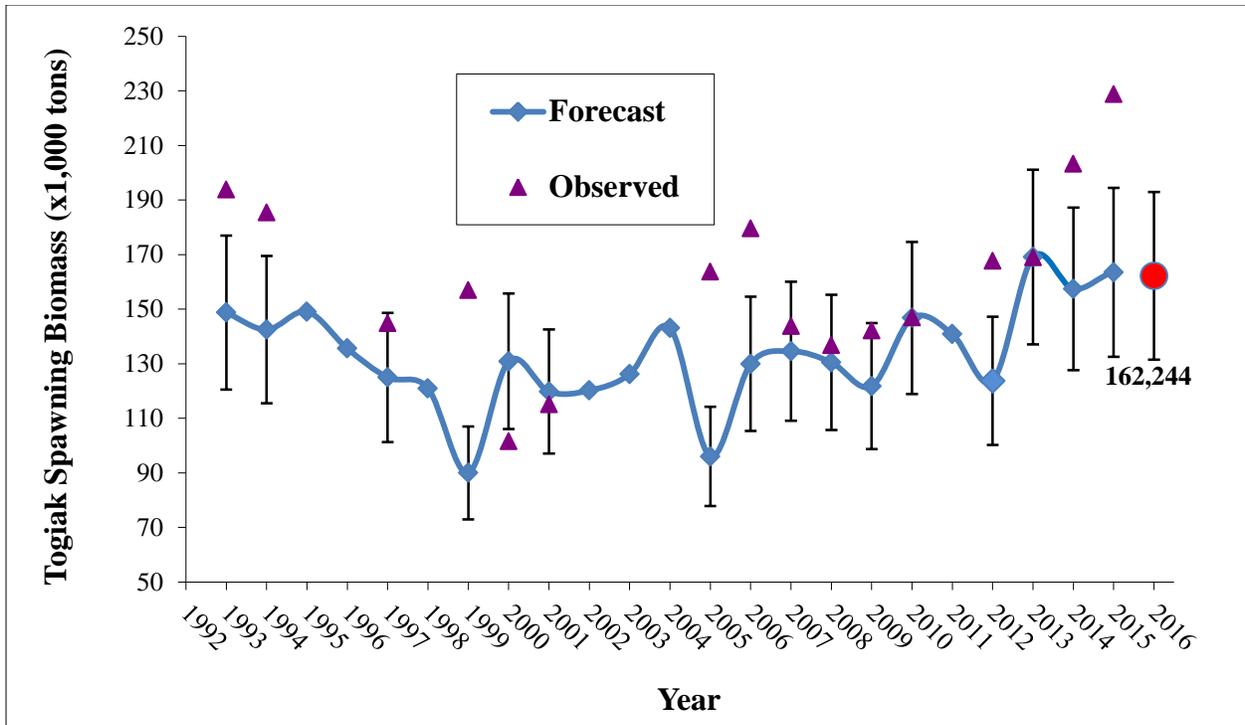


Figure 1.—Annual observed Togiak herring total run biomass estimates and preseason forecasts based on the ASA model. Mean absolute percent error (MAPE) of 20% around the forecast is shown for years with a reliable total run biomass estimate.

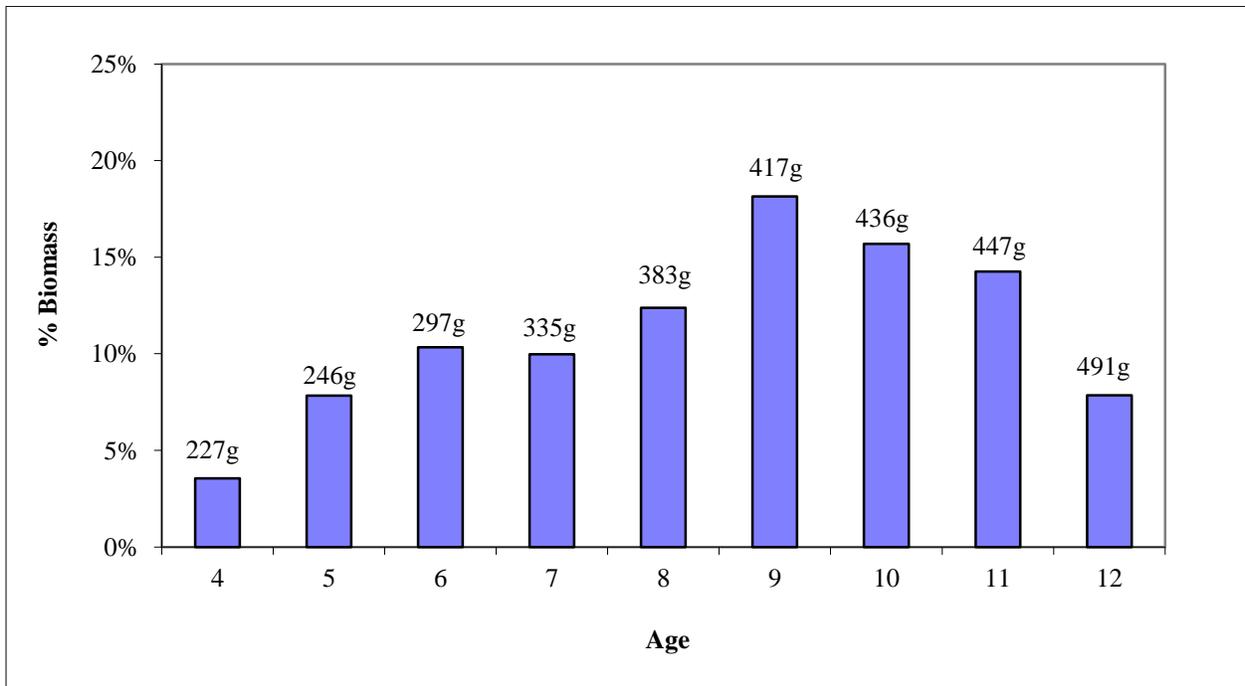


Figure 2.—Forecasted age composition and average weight (grams) for the 2016 Togiak spawning biomass.

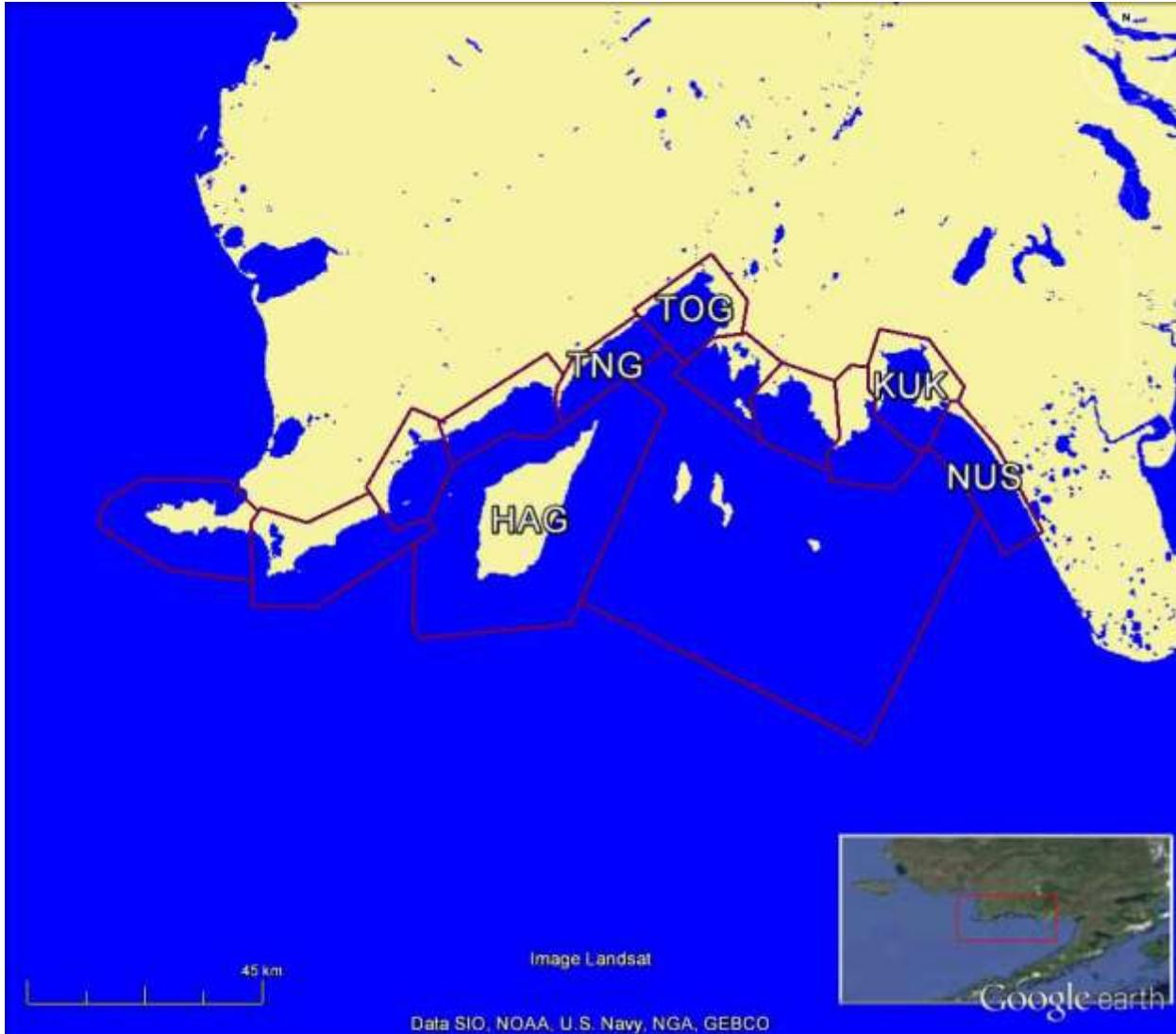


Figure 3.—Togiak District aerial survey sections. Sections with 5% or more of the total biomass surveyed in 2015 are labeled (HAG=Hagemeister, TNG=Tongue Point, TOG=Togiak Bay, KUK=Kulukak Bay, NUS=Nushagak Peninsula).