

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



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2014 TOGIAK HERRING FORECAST

The 2014 Togiak herring forecast and harvest allocation are listed below for the Togiak District sac roe and spawn-on-kelp fishery, and the Dutch Harbor food and bait fishery, given a maximum 20% exploitation rate of the projected run biomass (Bristol Bay Herring Management Plan 5 AAC 27.865):

Harvest Allocation of the 2014 Forecasted Pacific Herring Run Biomass, Togiak District, Bristol Bay

	Biomass (Short Tons)	Harvest (Short Tons)
Forecasted Biomass	157,448	
Total Allowable Harvest (20% exploitation rate)		31,490
Togiak Spawn-on-Kelp Fishery (Fixed Allocation)		1,500
Remaining Allowable Harvest		29,990
Dutch Harbor Food/Bait Allocation (7.0% of the remaining allocation)		2,099
Remaining Allowable Harvest for Togiak District Sac Roe Fishery:		27,890
Purse Seine Allocation 70.0%		19,523
Gill Net Allocation 30.0%		8,367

2014 TOGIAC HERRING FORECAST SUMMARY

The Pacific herring spawning biomass in the Togiak District was estimated at 169,020 tons in 2013 and is forecast to be 157,448 tons in 2014 (Figure 1). Age 9–11 herring are expected to comprise 48.2% of the biomass in 2014 (Figure 2). The remainder of the run is expected to be comprised of herring ages 4–6 (10.7%), ages 7–8 (35.5%) and ages 12+ (5.6%) by weight. The forecasted individual average weight of herring in the harvest biomass is 372 g.

A run biomass of 157,448 tons would be ~103% of the recent 10-year average. A biomass of this size has the potential to produce an overall harvest of 31,490 tons in all fisheries and 27,890 tons in the Togiak sac roe fisheries (purse seine and gillnet). A harvest of this size in the Togiak sac roe fisheries would be ~131% 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 run biomass estimates. Currently, the ASA model integrates data from purse seine fishery age compositions (1978–2013), total run age compositions (1978–1995, 1997, 1999, 2001, 2005–2010, 2012 and 2013), and aerial survey biomass estimates (1981, 1983, 1992–1994, 1997, 1999–2001, 2005–2010, 2012 and 2013). Samples from non-selective gear (commercial purse seine) are used to assess age composition of the total run biomass when a total run biomass is estimated. Commercial purse seine catch samples from 2013 ranged from age-4 to age-15. The average weight of age-4 herring for 2013 is estimated as the most recent four-year average while simple linear regression models 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. However, the 2013 inshore spawning biomass age composition was fairly stable and consisted largely of age-8 herring. This age class accounted for 30% of the total commercial purse seine harvest and 29% of the total harvest by weight.

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 run biomass. Surveys were flown between 28 April and 29 May 2013 with peak biomass observed on 13 May. Most of the biomass surveyed occurred in the center of Togiak Bay with smaller concentrations to the east and smaller still out to the west (Figure 3).

Herring become visible to 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. The last large recruitment event experienced by Togiak herring saw relatively large numbers of age-4 herring entering the fishery in 2008 and 2009. 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 forecasted 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 1993 and 2013 using the ASA model has been 18%. Using this historical forecast error, the forecast range for 2014 is between 128,824 tons and 186,072 tons. We consider this population to be healthy and sustainable.

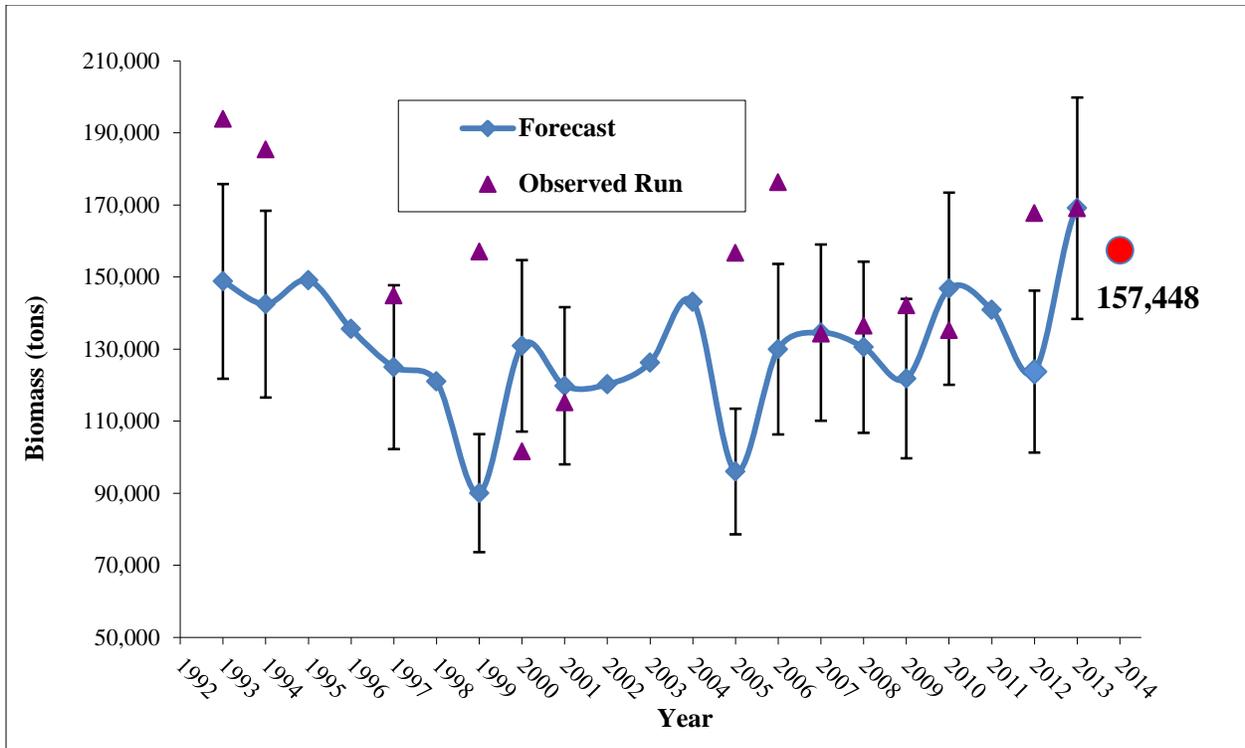


Figure 1- Annual observed Togiak herring total run biomass estimates and preseason forecasts based on the ASA model. Mean absolute percent error (MAPE) of 20% around the forecast is also shown for years with a reliable total run biomass estimate.

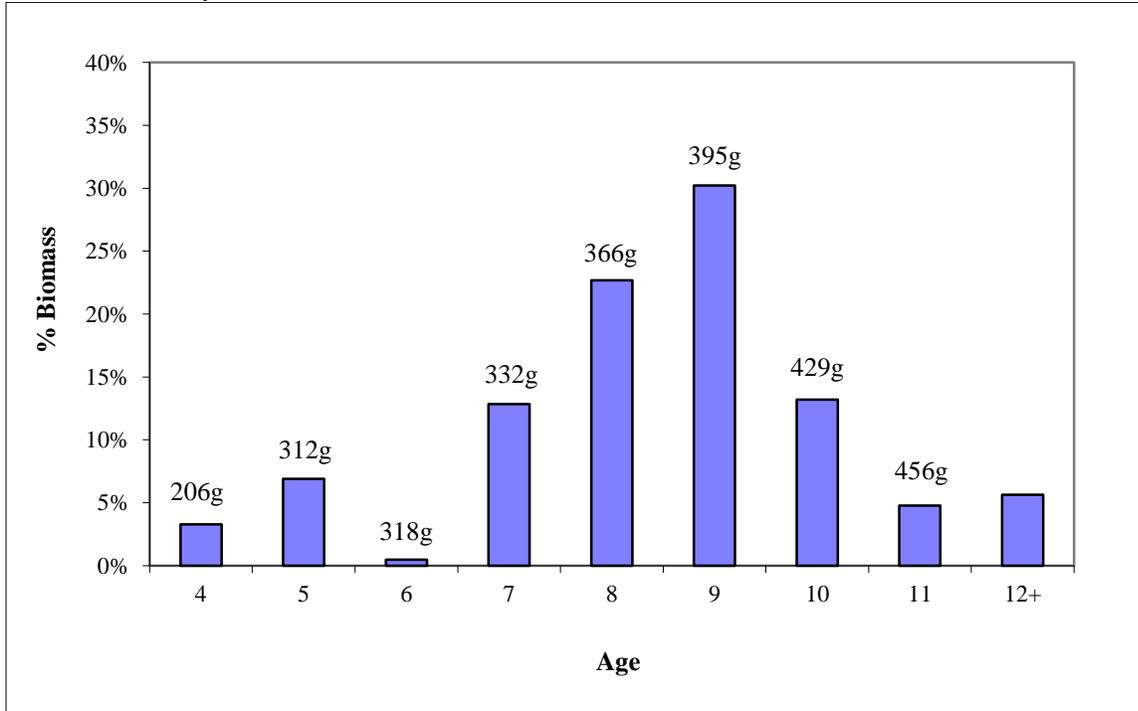


Figure 2- Forecasted age composition and average weight (grams) for the 2014 Togiak herring return.

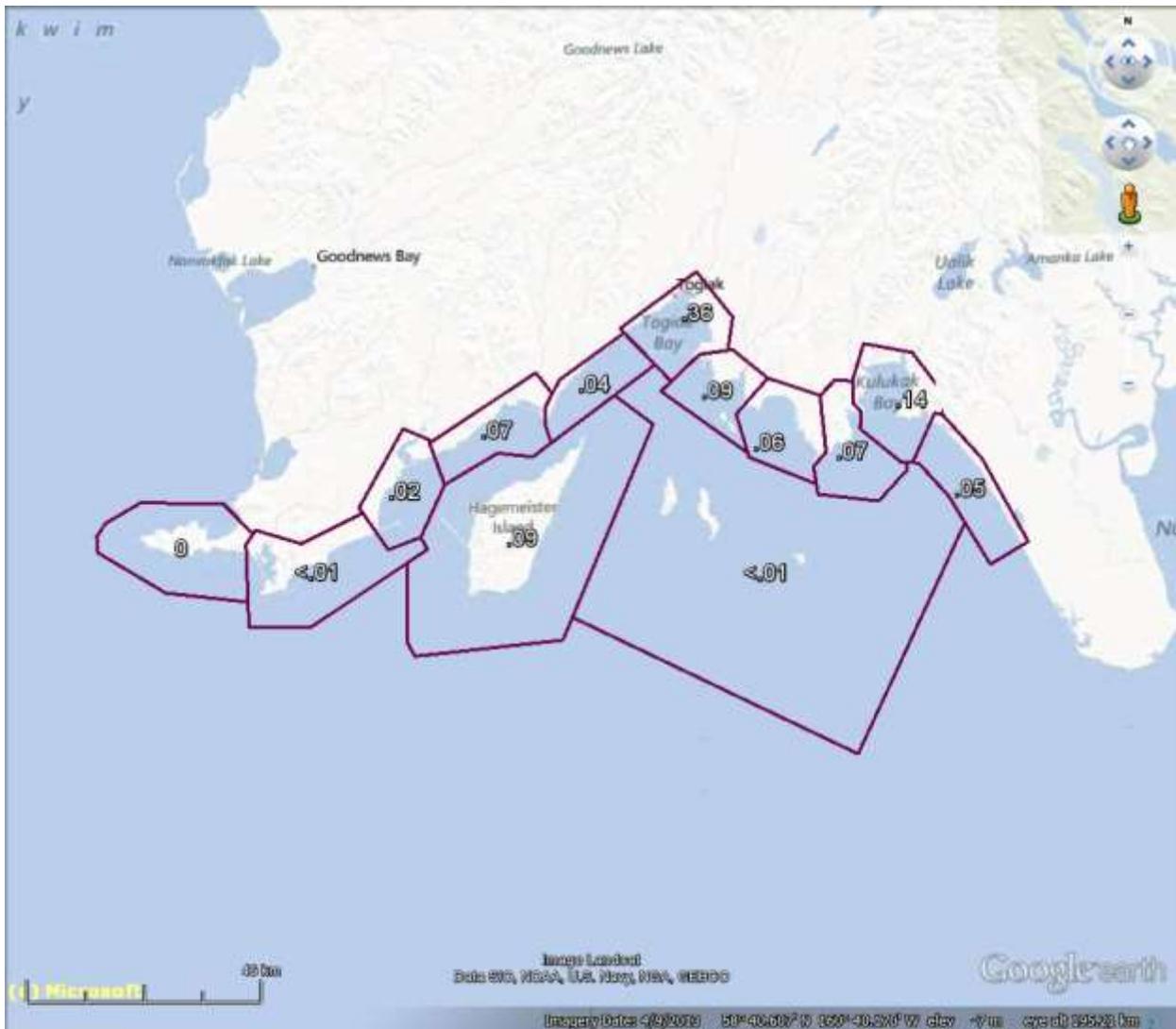


Figure 3- Togiak district aerial survey sections showing proportion of total biomass observed across all 2013 surveys.