

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



*Cora Campbell, Commissioner
Jeff Regnart, Director*



Contacts:
 Greg Buck & Fred West, Asst. Area Research Biologists
 Chuck Brazil, Area Research Biologist
 Phone: (907) 267-2355
 Fax: (907) 267-2442

Anchorage Regional Office
 333 Raspberry Road
 Anchorage, AK 99518
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2015 TOGIAK HERRING FORECAST

The 2015 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 2015 Forecasted Pacific Herring Run Biomass, Togiak District, Bristol Bay

	Biomass (Short Tons)	Harvest (Short Tons)
Forecasted Biomass	163,480	
Total Allowable Harvest (20% exploitation rate)		32,696
Togiak Spawn-on-Kelp Fishery (Fixed Allocation)		1,500
Remaining Allowable Harvest		31,196
Dutch Harbor Food/Bait Allocation (7.0% of the remaining allocation)		2,184
Remaining Allowable Harvest for Togiak District Sac Roe Fishery:		29,012
Purse Seine Allocation 70.0%		20,309
Gill Net Allocation 30.0%		8,704

2015 TOGIK HERRING FORECAST SUMMARY

The Pacific herring spawning biomass in the Togiak District was estimated at 203,267 tons in 2014 and is forecast to be 163,480 tons in 2015 (Figure 1). Age 9–11 herring are expected to comprise 50% of the biomass in 2015 while the remaining run is forecast to be ages 4–6 (17%), ages 7–8 (27%) and ages 12+ (6%) by weight (Figure 2). The weighted forecasted individual average weight of herring in the 2015 harvest is 383 g.

A run biomass of 163,480 tons would be ~110% of the recent 10-year average. A biomass of this size has the potential to produce an overall harvest of 32,696 tons in all fisheries and 29,012 tons in the Togiak sac roe fisheries (purse seine and gillnet). A harvest of this size would be ~117% 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 (1978–2014), total run age compositions (1978–1995, 1997, 1999, 2001, 2005–2010, and 2012–2014), and aerial survey biomass estimates (1981, 1983, 1992–1994, 1997, 1999–2001, 2005–2010, and 2012–2014). 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 2014 ranged from age-3 to age-16. The model calculates the average weight of age-4 herring for 2015 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. However, the 2014 inshore spawning biomass age composition was fairly stable and consisted largely of age-8 herring. This age class accounted for 27% of the total commercial purse seine harvest by 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 run biomass. Surveys were flown between 22 April and 23 May 2014 with peak biomass observed on 2 May. Most of the biomass surveyed occurred in the center of Togiak Bay with a smaller concentration to the east in Kulukak Bay (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 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 fishery experienced elevated age-4 catches. 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 1994 and 2014 using the ASA model has been 18%. Using this historical forecast error, the forecast range for 2015 is between 133,842 tons and 193,118 tons. We consider this population to be healthy and sustainable.

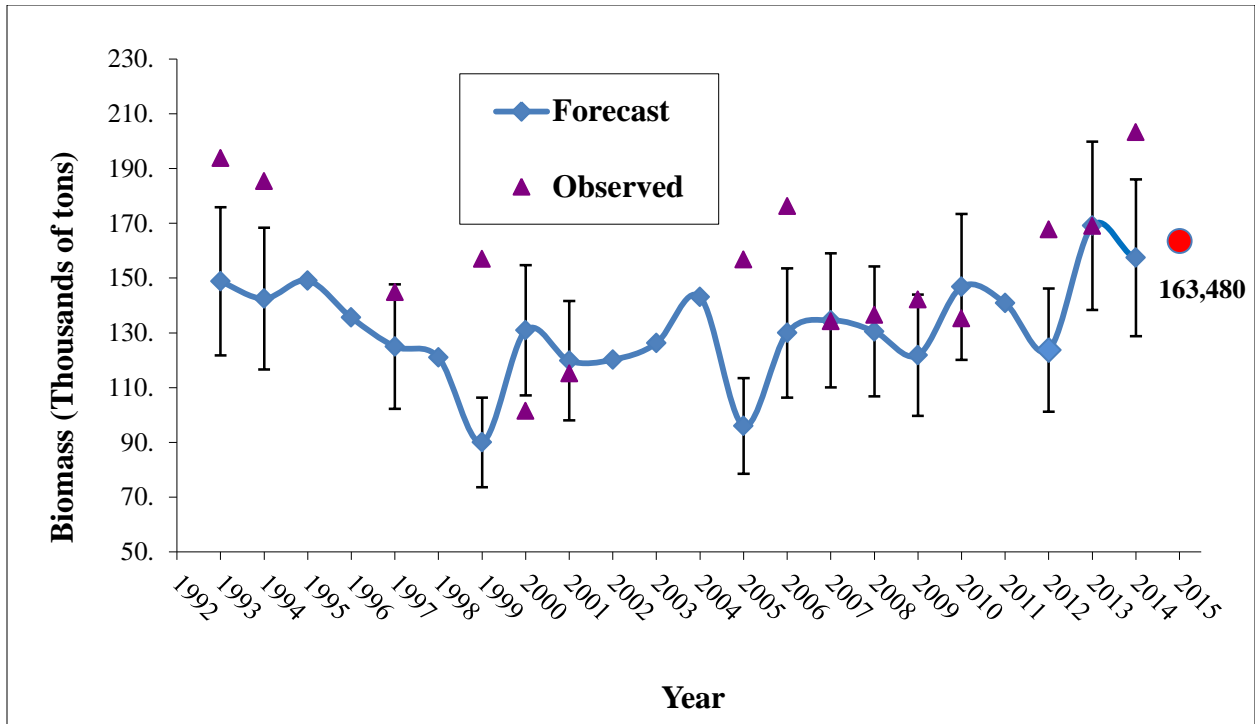


Figure 1- Annual observed Togiak herring total run biomass estimates and preseason forecasts based on the ASA model. Mean absolute percent error (MAPE) of 20% around the forecast is shown for years with a reliable total run biomass estimate.

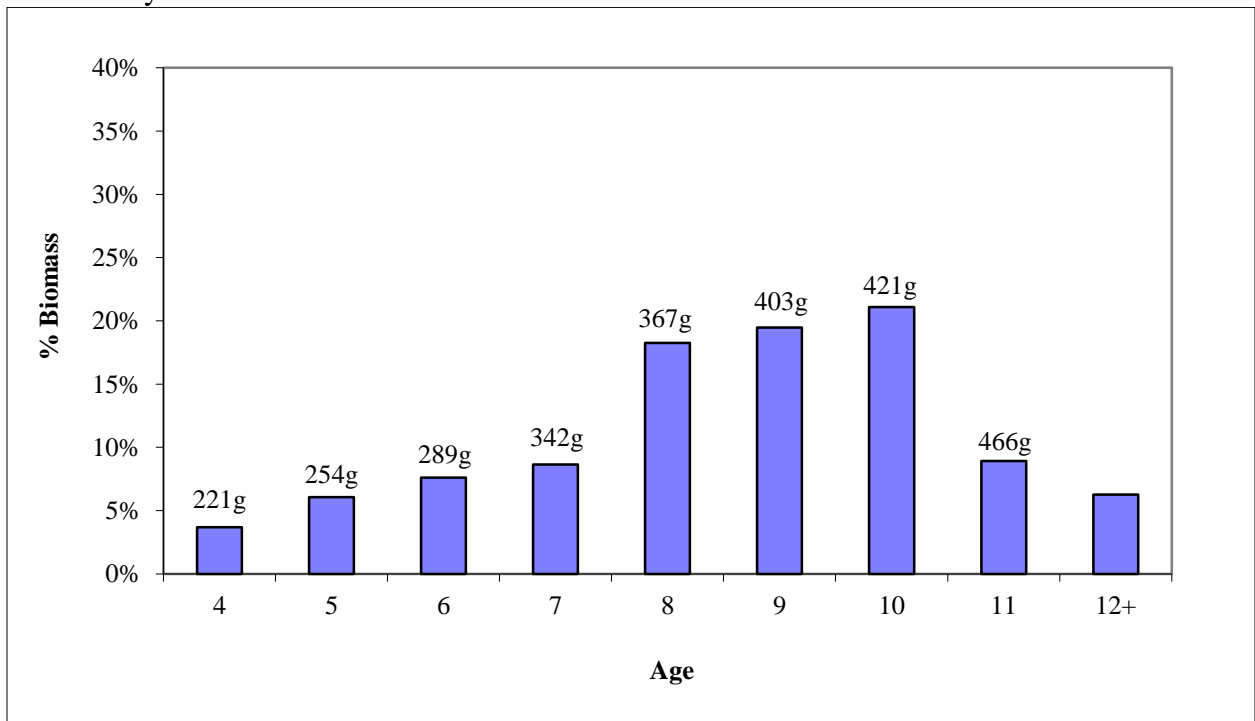


Figure 2- Forecasted age composition and average weight (grams) for the 2015 Togiak herring return.

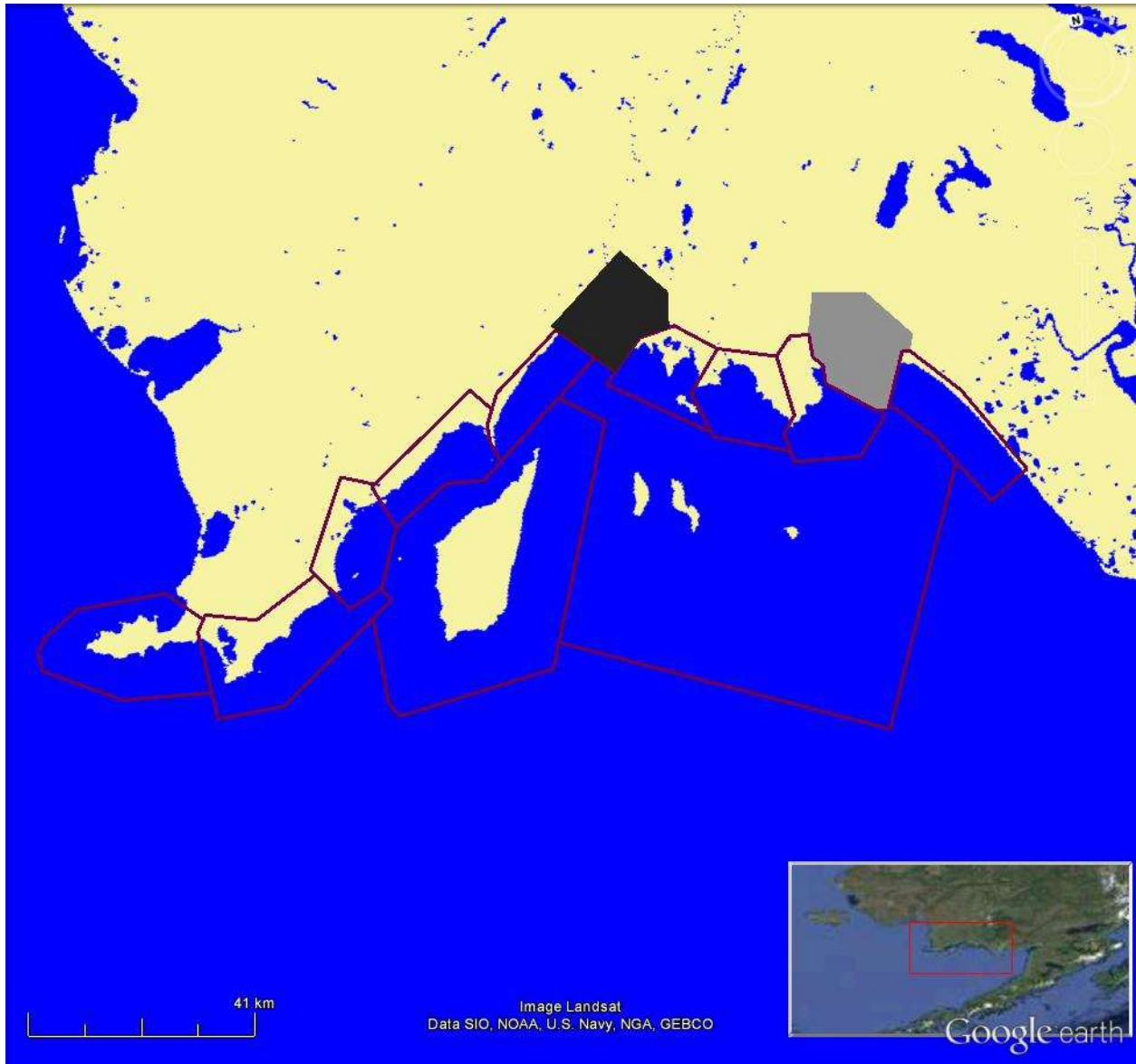


Figure 3- Togiak district aerial survey sections. Survey section shaded grey (Kulukak Bay) had 27% of all biomass surveyed in 2014 while Survey section shaded black (Togiak Bay) had 44%. All other sections had <10%.