



# Prince William Sound Herring Survey: Trends in Seabird Predation of Juvenile Herring

## PRINCIPAL INVESTIGATORS

Mary Anne Bishop, Ph.D.  
PWS Science Center  
mbishop@pwssc.org

Kathy Kuletz, Ph.D.  
US Fish & Wildlife Service  
kathy\_kuletz@fws.gov



## RESEARCH PERIOD

2009-2013

## FUNDING

Exxon Valdez Oil Spill  
Trustee Council

This project is part of the *Prince William Sound Herring Survey*. The purpose of this comprehensive study is to better understand the factors limiting the recovery of the Pacific herring in Prince William Sound, Alaska.

Prince William Sound  
Science Center  
PO Box 705  
300 Breakwater Ave  
Cordova, AK 99574

907.424.5800

[www.pwssc.org](http://www.pwssc.org)

## BACKGROUND

Juvenile herring are critical to the diet of overwintering seabird populations in Prince William Sound. Occurring at shallow (<30 m) depths, juvenile herring are heavily predated upon by about twenty species of seabirds, including marbled murrelets, black-legged kittiwakes and common murre. Predation of juvenile herring by birds, mammals, and fish has been identified as a potential factor limiting the recovery of herring populations in Prince William Sound. By understanding changes in seabird population we increase our understanding of how seabird predation limits herring recovery.



*A marbled murrelet floats on the water.  
Photo by R. Lowe, U.S. Fish & Wildlife Service*

## METHODS

In March 2007 Mary Anne Bishop of the Prince William Sound Science Center began conducting seabird surveys in Prince William Sound during the August, November and March juvenile herring hydroacoustic surveys. During daytime transects, observers document the number and species of seabirds

and their behavior while feeding on schools of juvenile herring. Key characteristics of the juvenile herring schools, such as location, age and size composition and energetics, are used to determine what variables appear to be important for seabird predation.

## WHAT WE WILL LEARN

These seabird surveys will increase our understanding of if and how herring recruitment is effected by the density and distribution of seabird predators. This study examines the spatial correlation between herring and seabird predators and provides data that can be used for herring recruitment models. Additionally, seabird distribution data will help identify potential locations for herring restoration efforts – areas not frequented by seabirds.



*Research assistant Bobby Hsu counting seabirds during the March 2012 juvenile herring cruise. Photo by Dave Janka, Auklet Charter Services*