



# Prince William Sound Herring Survey: Growth and Energy Allocation in Overwintering Herring

## PRINCIPAL INVESTIGATOR

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## RESEARCH PERIOD

2009-2013

## FUNDING

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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.

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## BACKGROUND

In winter, low plankton productivity means that herring are unable to obtain all the energy needed for metabolism through foraging. In order to survive, they must rely on energy stored in the form of fat. The energy that herring obtain from feeding contributes to growth of both fat and muscle, but the allocation of that energy



*Size range of herring caught in November 2010.*

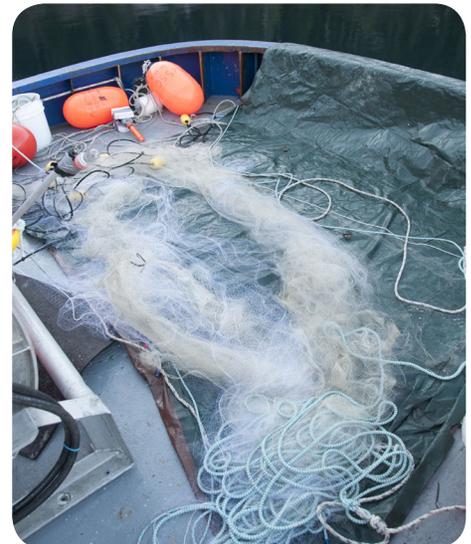
varies throughout the year. For example, as herring feed on abundant plankton in the fall to prepare for winter, a higher proportion of their food energy is stored as fat. Therefore, herring populations that have the highest rates of growth in the fall may have the highest likelihood of surviving the winter.

## METHODS

Ron Heintz is leading a study to determine fall growth rates of juvenile herring and how their energy is allocated to fat and muscle. In the fall and spring, researchers collect age-0 herring from bays throughout Prince William Sound. The herring are analyzed to determine the amount of muscle and fat they contain, as well as their rate of growth. Their stomach contents are also examined to see if the amount and types of food the herring are eating correlate with the prey available in their habitat.

## WHAT WE WILL LEARN

This study will help us learn whether fall growth is an indicator of winter survival. By comparing data from both fall and spring, we will be able to see how much of their fat stores juvenile herring use during the winter. Comparing results between different bays in PWS will help identify if certain areas are better herring habitat than others because of growth and food availability. Results from this study will also help test models of overwinter survival and aid in predictions of how herring populations may respond to changing environmental conditions.



*Herring gillnet ready for deployment.*