Adjusting Lake Trout Ages Versus Otolith Mass Relationships for Variable Growth

Craig Stafford, Division of Biological Sciences - University of Montana, 32 Campus Drive Missoula, MT 59812

Dale Hanson, Green Bay National Fish & Wildlife Conservation Office - USDI Fish and Wildlife Service, 2661 Scott Tower Drive, New Franken, Wisconsin 54229

Otolith weight holds considerable promise for increasing speed and consistency of age estimates relative to otolith thin sections, especially for species such as lake trout (*Salvelinus namaycush*) where age and otolith weight are highly related. Using known age lake trout from Lake Michigan we demonstrate that the age versus otolith mass relationship is dependent body growth rate, reducing the utility of otolith mass alone for estimating age when growth rates vary between samples. To compensate for this growth bias we developed a correction procedure. This procedure uses otolith weight versus total length relationships to estimate the body growth rate difference between samples, and then estimates the bias in the age versus otolith mass relationship. Using the correction procedure we successfully adjusted the Lake Michigan age versus otolith mass relationship to the more slowly growing Flathead Lake fish, revealing a pattern of declining body growth rates through time in the Flathead Lake population.