Can Otoliths be Used to Estimate the True Age of Kiyi

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Introduction

- Kiyi (*Coregonus kiyi*) are found only in Lake Superior
- Scale-derived ages are lower than otolith-derived ages for many Coregonids
- Only scale-derived ages have been published for Kiyi

Objectives

- Compare ages estimated from scales and otoliths (*scale results not shown*)
- Attempt to validate ages

Methods

- Kiyi were sampled at 21 sites across five regions of Lake Superior during Summer, 2014
- Total length and sex were recorded for all sampled fish
- Scales and sagittal otoliths were removed from a subsample of fish
- Ages were estimated from scales and thin-sectioned otoliths (Figure 1)
- Age-bias was assessed with 62 paired otolith and scale ages
- Age-bias and precision of otolith ages were assessed between two readers
- Length frequency histograms were examined for evidence of strong year-classes

Results

- There was 72% agreement and a low CV of 2.8 between readers for otolith ages
- Two distinct modes were evident for otolith ages (Figure 2)
- Length frequency histograms (Figure 3) showed strong 2003 and 2008 year-classes– i.e., ages 6 and 11 in 2014
- Similar observations for all five regions of Lake Superior

Can you guess the age?

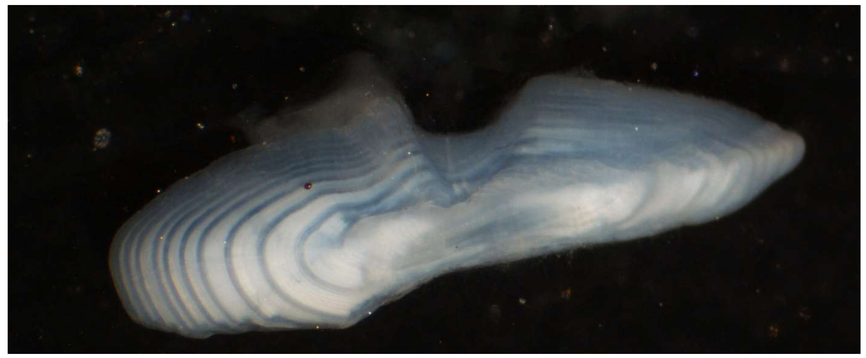

Figure 1. Sectioned otolith from a 206-mm Kiyi.

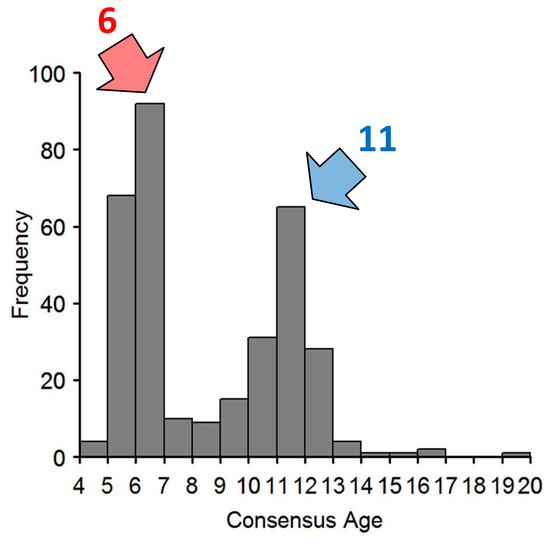

Figure 2. 2014 otolith age frequency. Note peaks at age-6 and age-11.

Conclusions

- Kiyi exhibit sporadic recruitment (only two major year-classes since 2003)
- Sporadic strong year classes allow validation of Kiyi ages
- Otoliths may provide accurate ages for Kiyi
- Scale ages are lower than otolith ages

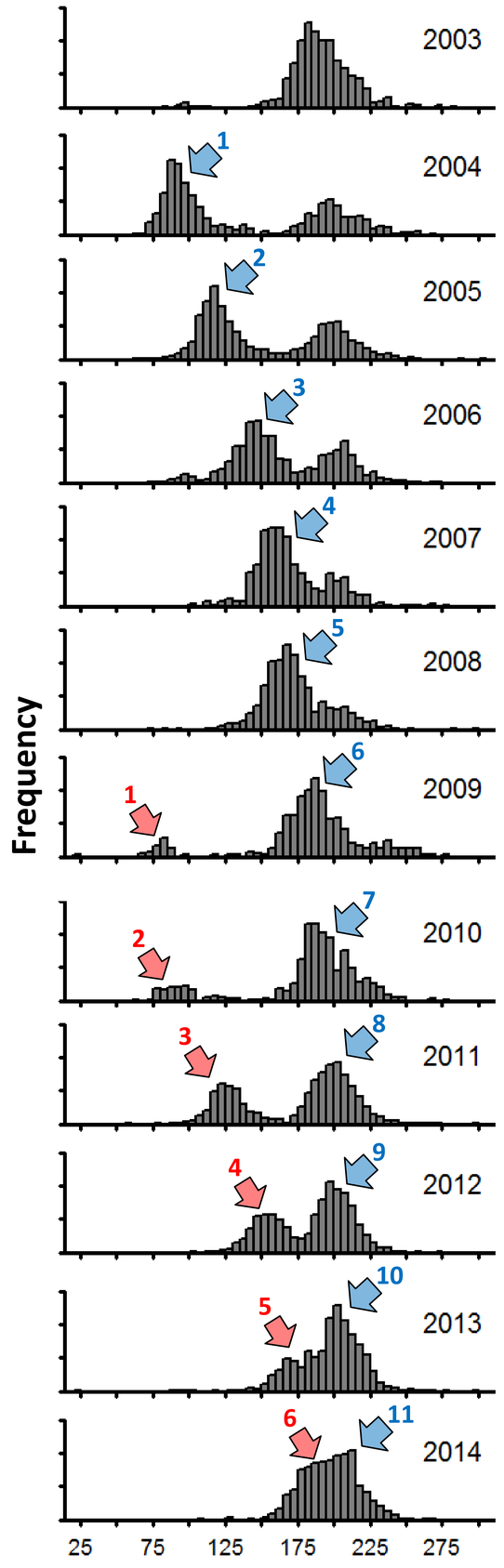

Figure 3. Kiyi length frequency from 2003-2014. Arrows denote the mode and ages of the strong 2003 (blue) and 2008 (red) year-classes.