Effects of Habitat Fragmentation on Walleye in Lake Champlain
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Introduction

Habitat fragmentation can affect population genetics, movement and behavior.

- Dams, and possibly causeways, can fragment aquatic populations.
- Causeways constructed in Lake Champlain beginning in the 1800s may hinder fish movement.
- Walleye, a mobile and popular sport fish, may be negatively affected by these barriers.

Methods

- 15 walleye were captured in fall 2014 and early spring 2015 and implanted with VEMCO acoustic transmitters (tags) (Figure 1).
- 27 receivers were placed in the lake to detect tag transmissions.
- Detection data were analyzed in R
  - Data were summarized by residence time, frequency of approach, and passage through causeways.
- Mark-recapture data from state tagging program were also used to assess walleye movement among basins (Figure 2)

Results

- 6 of 15 acoustically tagged fish (40%) travelled between basins; only 1 fish (6.7%) travelled to all 5 basins (Figure 3).
- The most heavily trafficked passageway between basins was through Carry Bay and Alburg Passage.
- 20.1% of angler-caught walleye were recaptured in a different basin than where they were originally tagged.

Conclusions & Discussion

- Walleye move between the Lake Champlain basins.
- Causeways may cause delays.
  - Some fish made short but frequent unsuccessful attempts to pass through a causeway (Table 1).
- Behavior illustrated in Figure 3 suggests that fish may be temporarily "trapped" in basins by causeways.
- Generalizations are limited by small sample size (N=15)

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