



## Predation and Downstream Movement of Age-0 Lake Sturgeon in the Saginaw River Basin

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*Caption: Age-0 Lake Sturgeon on a surgery table. Photo credit: Max Majinska*

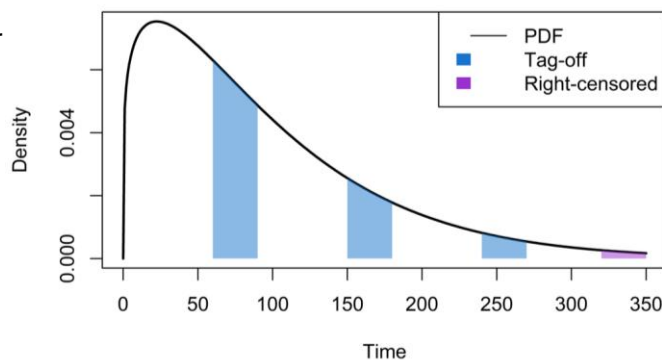
**Goal:** Evaluate post-stocking predation and downstream movement dynamics of age-0 Lake sturgeon in the Saginaw River Basin between non-natal streamside and traditional hatchery reared fish

- Objectives:**
1. Estimate the proportion of predated fish over 1-year post-stocking
  2. Determine the necessary sample sizes to detect differences in effect sizes of the proportion of predation between two groups
  3. Determine the timing of when fish exit their release tributary and the Saginaw River
  4. Estimate the distribution of when exit events occur
  5. Compare predation, downstream movement timing, and the distribution of movement events between hatchery types

**Management Implications:** No evidence to suggest differences in the proportion of predated fish or the downstream movement dynamics between hatcheries. Total predation was 17% (9 of 52 detected fish) over two years. Fish that left the tributaries and the Saginaw River did so quickly and in a pulse.

- Methods:**
- Active and passive acoustic telemetry
  - Conducted a power analysis to determine per group sample sizes for two treatment groups
  - Used Fisher’s exact test to evaluate differences in predation between hatcheries
  - Maximum likelihood estimate

- Key Findings:**
- Study small fishes is still hard
  - Developed and applied a framework to account for transmitter-off intervals
  - Estimated predation
  - 80% power for a 10% effect size would require 440 detected tagged fish for two treatments



*Caption: Weibull distribution probability density curve with shaded regions representing transmitter-off and right censoring intervals.*

**Deliverables:** Majinska, M. 2025. Predation and Downstream Movement of Age-0 Lake Sturgeon in the Saginaw River Basin. M.S. Thesis, Michigan State University, East Lansing, MI, 83 p.

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