Post-surgery behavior of walleye in Lake Huron: Evidence of a tagging effect?

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Assumptions

No tag effects
- tagging process (capture, handling, surgery, release)
- presence of transmitter
- tagged individuals = untagged individuals

Laboratory
- healing of tag attachment
- overall condition
- swimming performance
- activity

Field studies
- true control group unavailable
Staggered release

Multiple release groups
– recently tagged vs. previously tagged
– ‘pseudo’ control group
– temporal trends

framework for assessing tag effects in the field
Question

Does intracoelomic tag implantation influence downstream movement of post-spawning walleye?

Short-term (< 1 year)
2011 release vs. 2012 release – 2012 spawning event

Long-term (> 1 year)
2011 release vs. 2012 release – 2013 spawning event

Generalized Linear Model
• predictors – length, sex, release year
• response – elapsed time - downstream movement
Walleye (*Sander vitreus*):

**Biology:**
- support sport, commercial fisheries
- adfluvial spawning migrations
- broadcast spawn – 4-6° C

**Tagging:**
- Tittabawassee River
- spawning condition
- Vemco V16 transmitters (3.5 yr life)
- ~200 (2011), ~59 (2012)
- stream-side surgery
- electroshock, electroanesthesia, ventral incision, sutures, recovery
Laurentian Great Lakes
Saginaw Bay

Release

30 km

3 receivers

3 receivers
walleye detections

<table>
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<th>sex</th>
<th>release</th>
<th>N</th>
<th>2011</th>
<th>2012</th>
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Downstream movement

To travel 30 km:

hours (95% CI)

2011

release year

2012 (Just tagged)

receivers = 30 km

2012 spawning event
Downstream movement

To travel 30 km:

- 2012 spawning event
  - 2011: ~40 hours (95% CI)
  - 2012: ~60 hours (95% CI)

- 2013 spawning event
  - 2011: ~60 hours (95% CI)
  - 2012: ~80 hours (95% CI)
Conclusions

2012 spawning event:
- walleye released in 2011 moved downstream 33% faster than walleye released in 2012

2013 spawning event:
- no difference in downstream movement time for fish released in 2011 and 2012
- no sex or length effect

Evidence of temporary tagging effect
Discussion

- Biologically relevant tag effect?
- Tagging process

- Other studies - mixed results
  tag size important
  tag burden

- next step
  - reproductive success?
Downstream movement

2012 spawning event

hours (95\% CI)

1 year after tagging

To travel 30 km

Just tagged

2011

2012

release year

149x490

222x276

518x276

336x249

552x359

141x357

494x431

560x431

583x431

518x105

222x105

82x319

2012 spawning event

2011

2012

release year

1 year after tagging

To travel 30 km

Just tagged