

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

Todd Hayden, Alex Wilson, Christopher Vandergoot, Richard Kraus, John M. Dettmers, Steven J. Cooke, Charles Krueger



MICHIGAN STATE
UNIVERSITY



Carleton
UNIVERSITY



 **USGS**
science for a changing world

Great Lakes
RESTORATION 

Acknowledgements

- Great Lakes Restoration Initiative
- Great Lakes Fishery Commission
- Michigan Department of Natural Resources
- Ohio Department of Natural Resources
- Carleton University
- USGS – Hammond Bay Biological Station

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

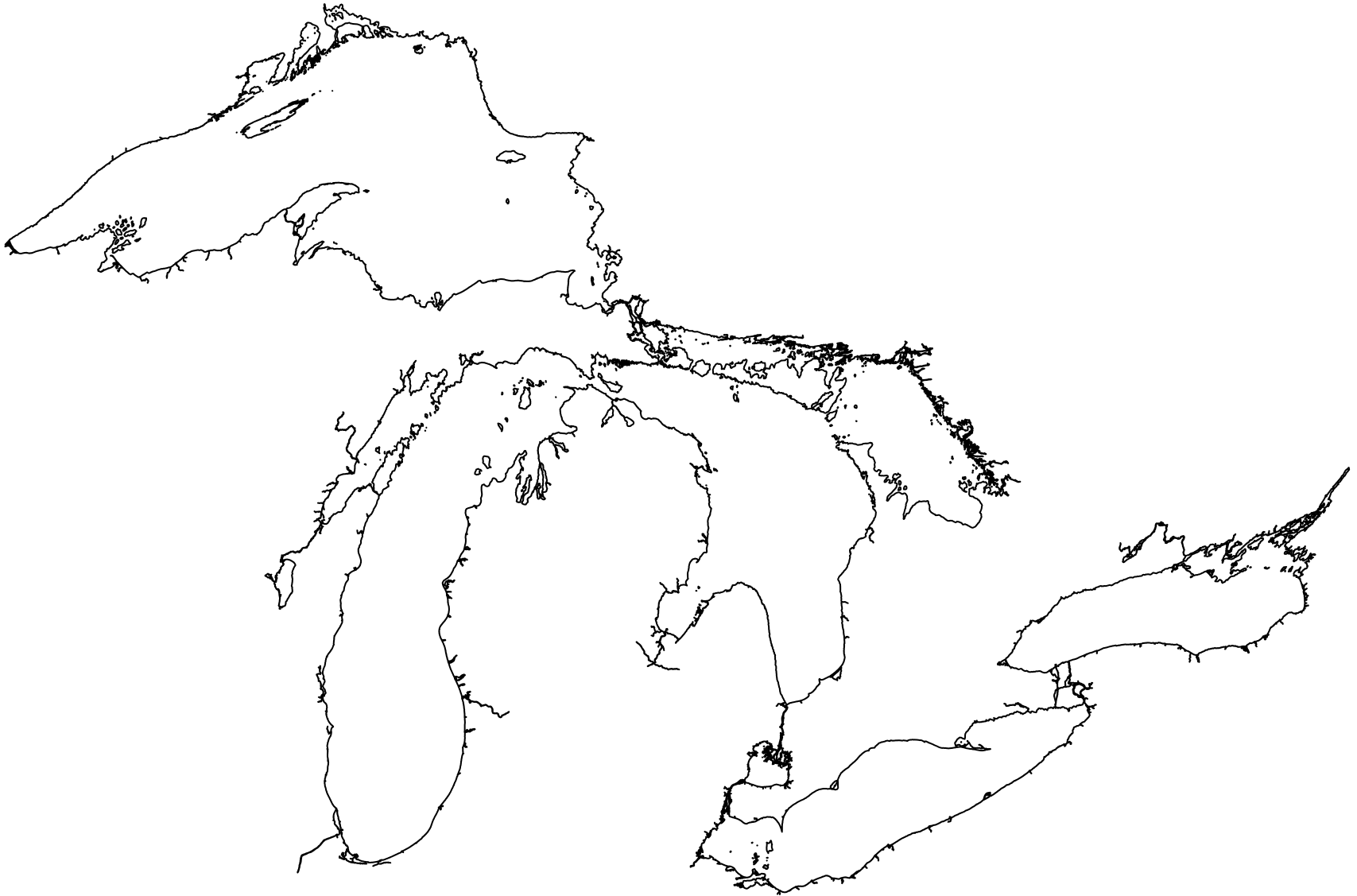


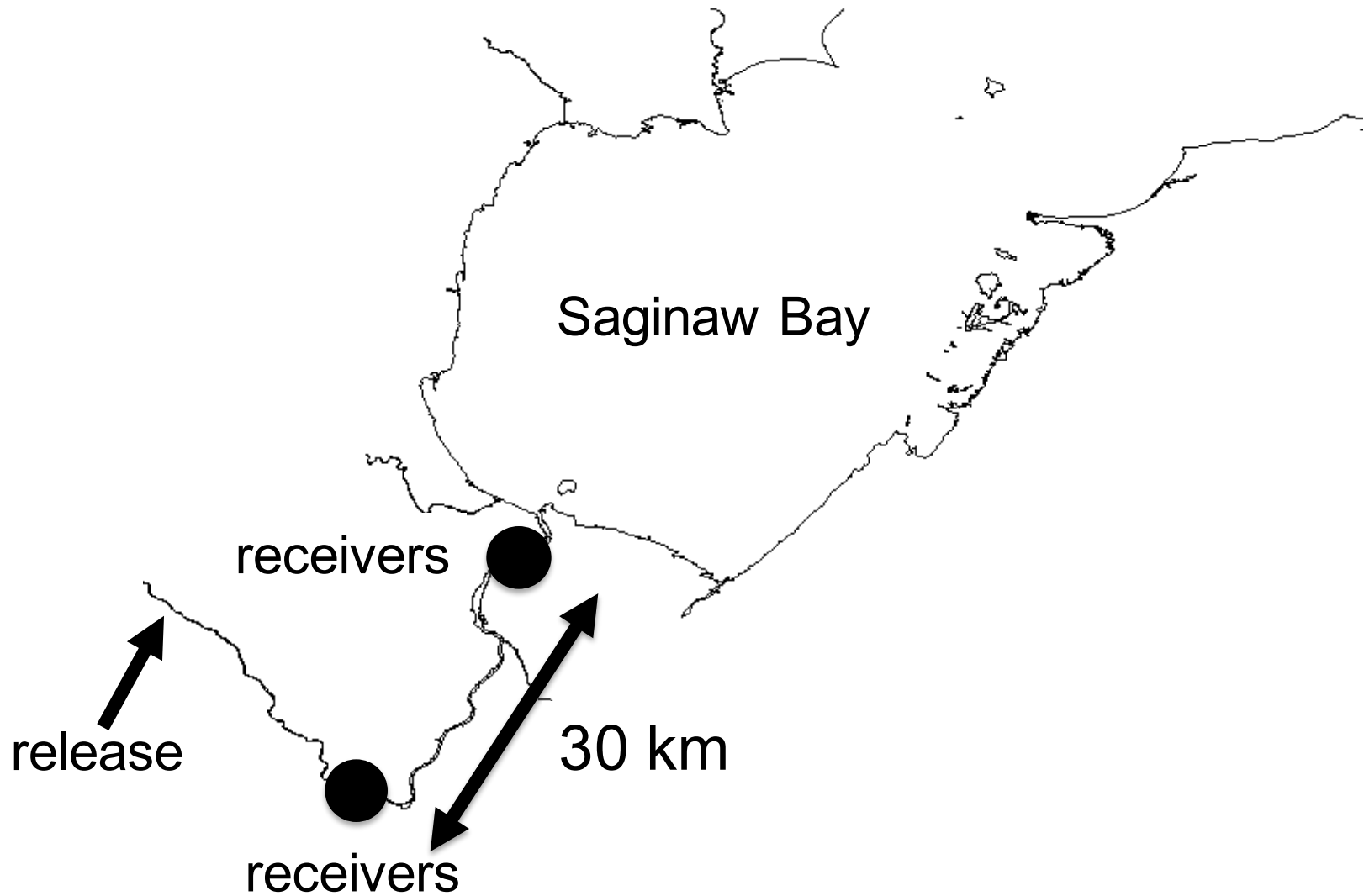
Tagging:

- 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



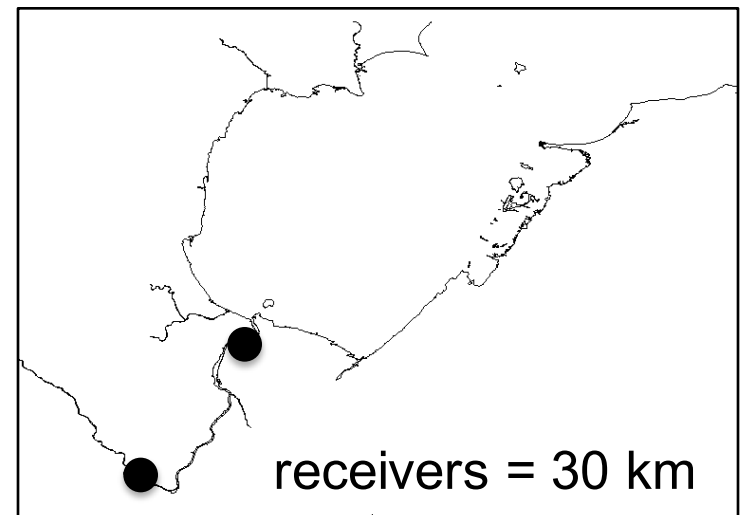


walleye detections

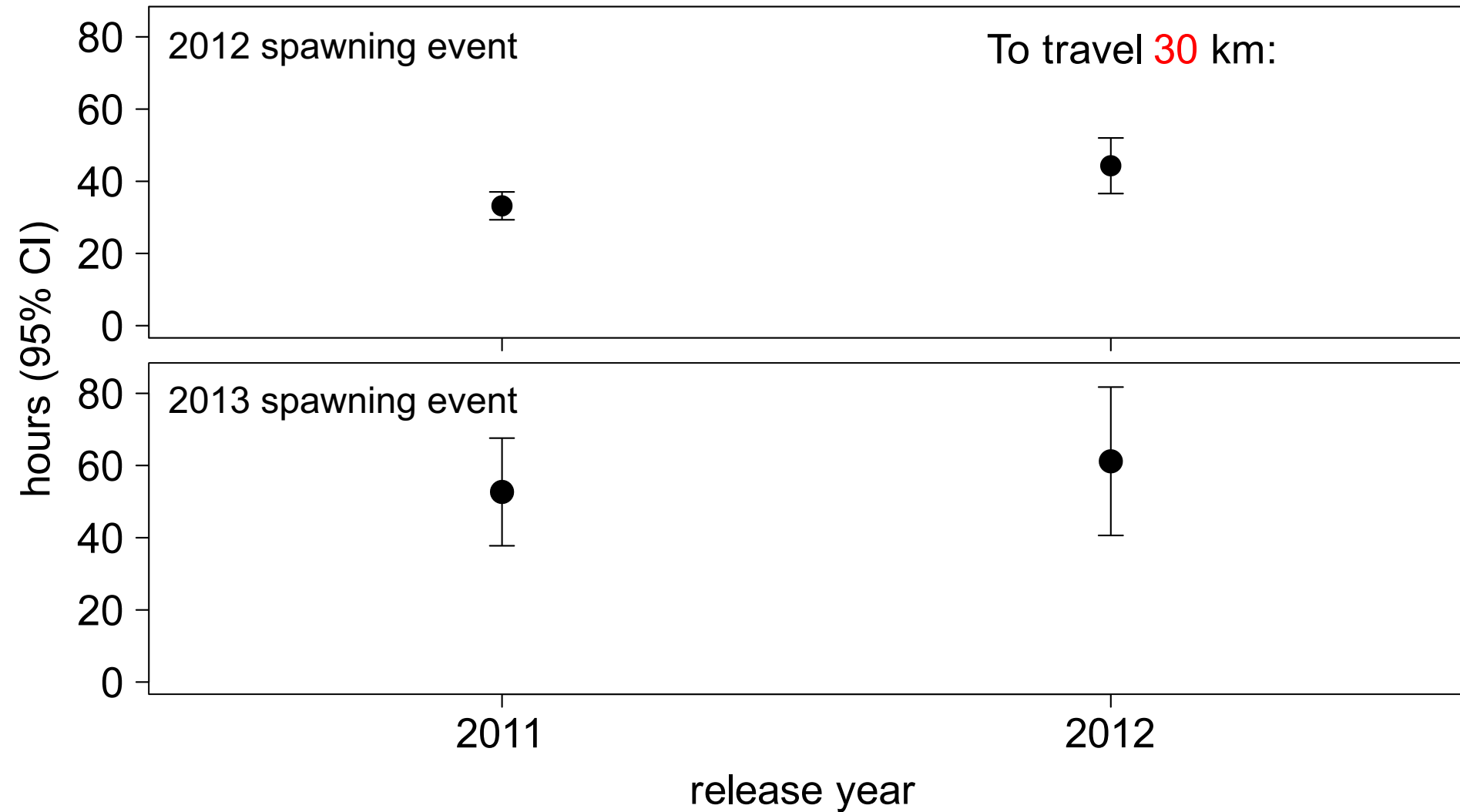
sex	release	N	2011	2012	2013
F	2011	101	98	60	37
M	2011	98	92	42	27
F	2012	30		28	16
M	2012	29		29	19



Downstream movement



Downstream movement



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

