



Higgins Lake Property Owners' Association Annual Meeting - July 13, 2019





Shout Outs/Huge Thanks!



Michigan
Swimmer's Itch
Partnership

Partnerships
&
Collaborators



Crystal Lake &
Watershed Association



Our Team of 5 Ph.D.s



Dr. Dave Jude

Dr. Randy DeJong

Dr. Ren Tubergen

Dr. Harvey Blankespoor Dr. Curt Blankespoor

SPECIALIZING IN EDUCATION AND CONTROL

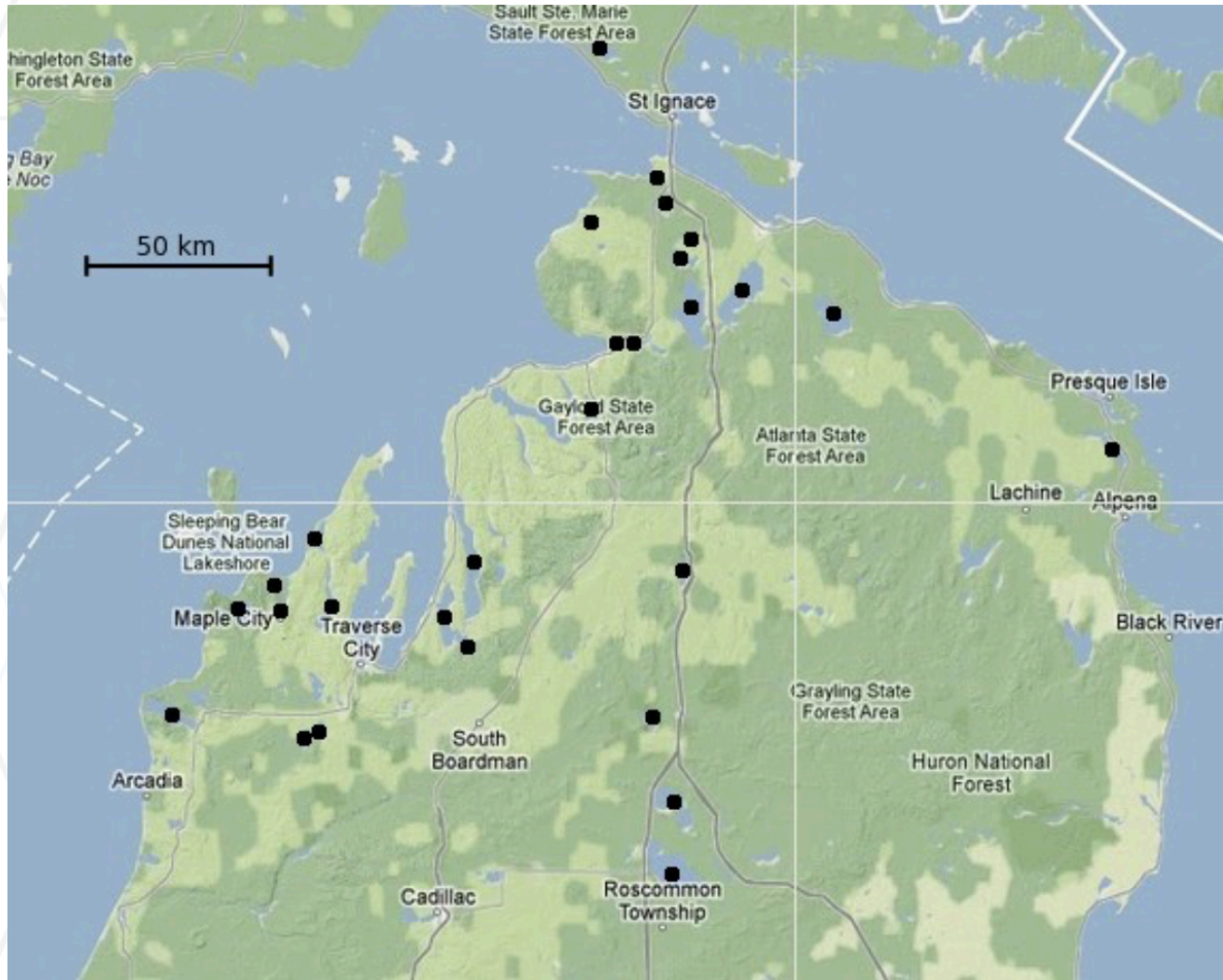


WWW.SWIMMERSITCHSOLUTIONS.COM



Experience that is Unrivaled

28 Lakes since 2012



- Higgins
- Crystal
- Platte
- Douglas
- Larks
- Black
- Elk
- Skegemog
- Torch
- Walloon
- Charlevoix
- Burt
- (more)





WARNING

SWIMMER'S ITCH

The Parasite Causing Swimmer's Itch May Be Present In This Lake.

Shower Or Towel Dry Immediately After leaving The Water.

For more information, or to report a case of swimmer's itch, please contact the Kitsap County Health District at (360) 337-5245.

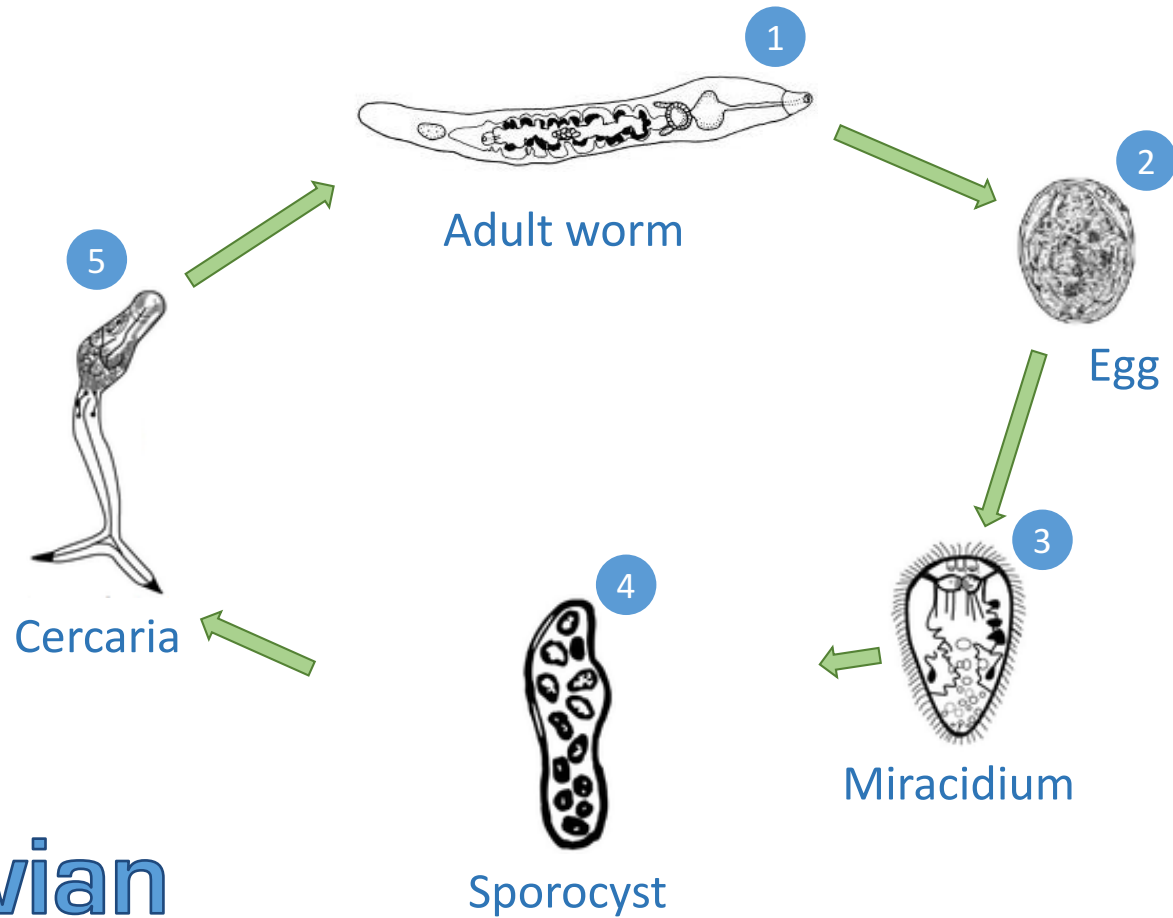


Pop Quiz

Who's to blame for swimmer's itch?

- a. All the snails in a lake
- b. All the ducks on a lake
- c. The *Stagnicola* snails in a lake
- d. The mergansers on a lake
- e. A and B
- f. C and D
- g. The Michigan DNR
- h. None of the above

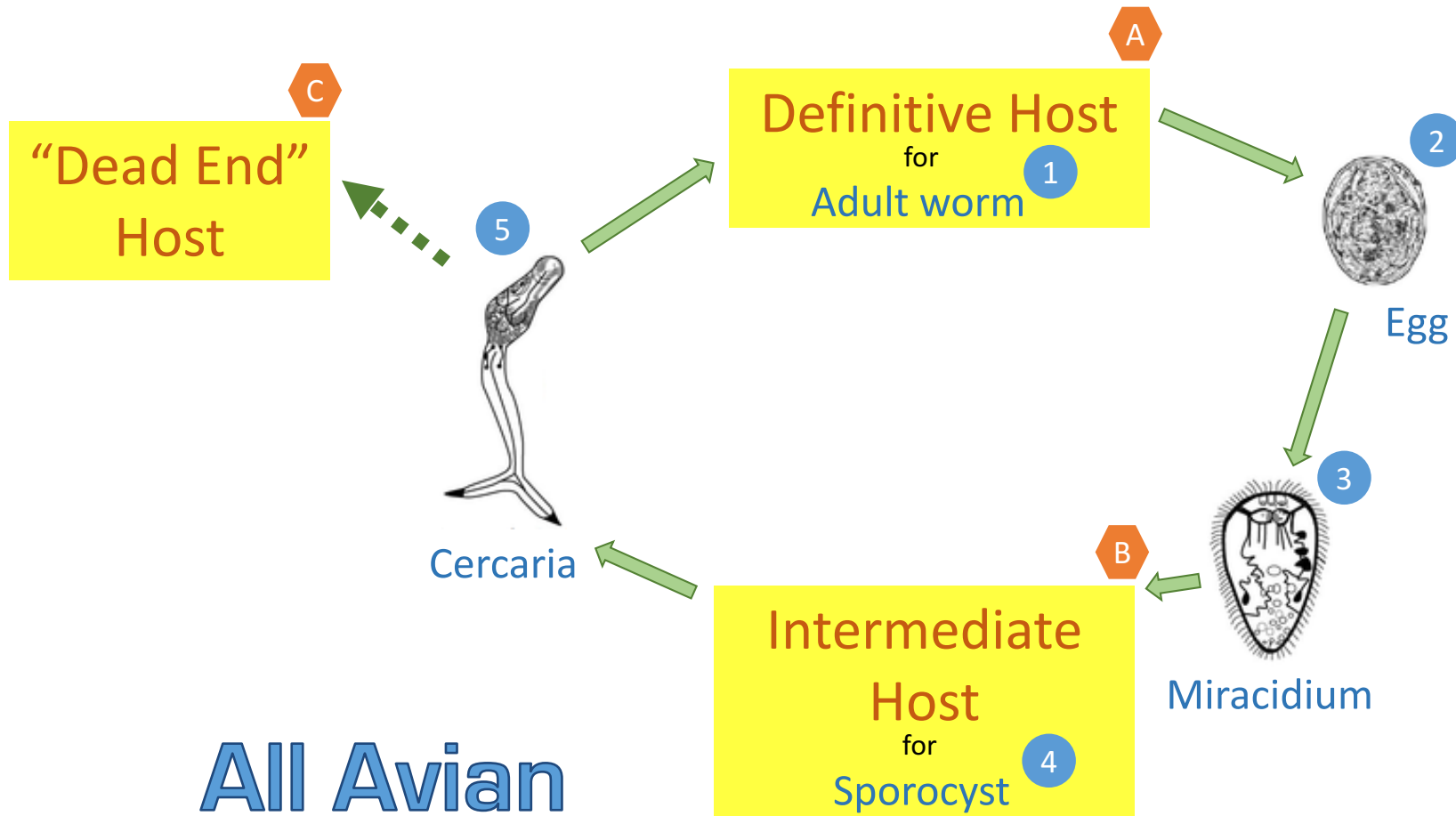
General Parasite Life Cycle



All Avian Schistosomes



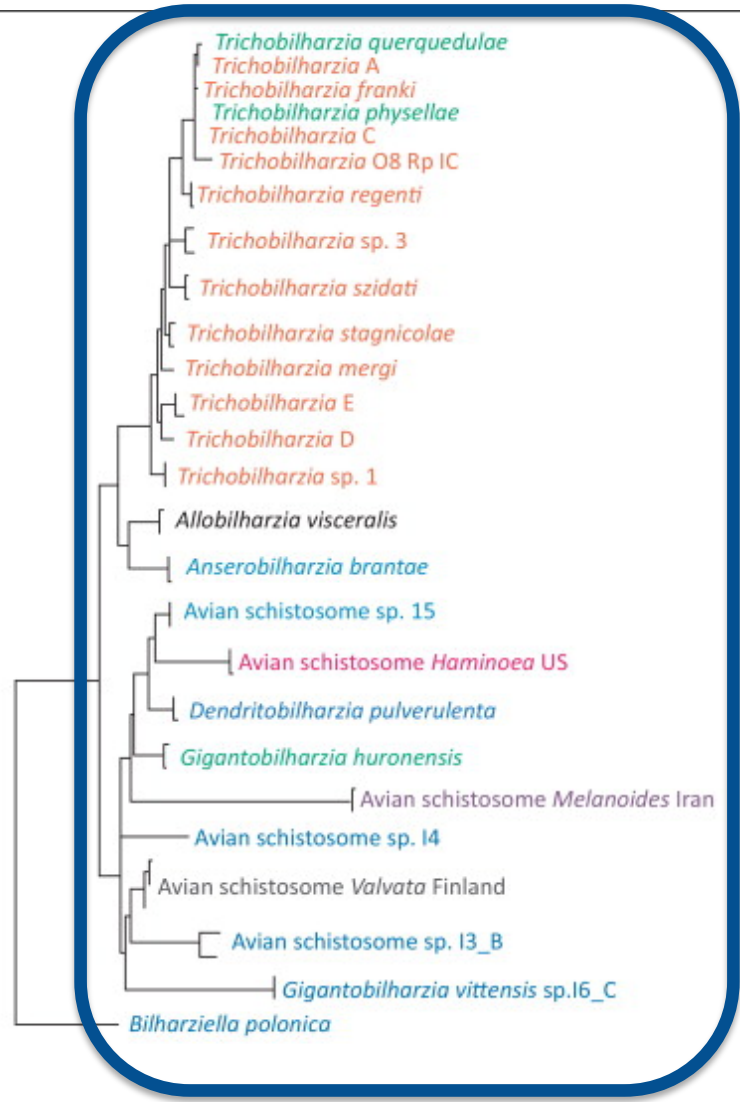
General Parasite Life Cycle



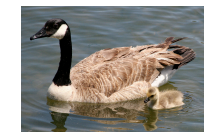
All Avian Schistosomes



SI Parasites & Their Hosts



Physidae: *Physa*



Lymnaeidae: *Stagnicola*



Lymnaeidae: *Radix*



Planorbidae: *Gyraulus*, *Anisus*, *Planorbis*, *Biomphalaria*



Haminoeidae: *Haminoea*



Thiaridae: *Melanoides*

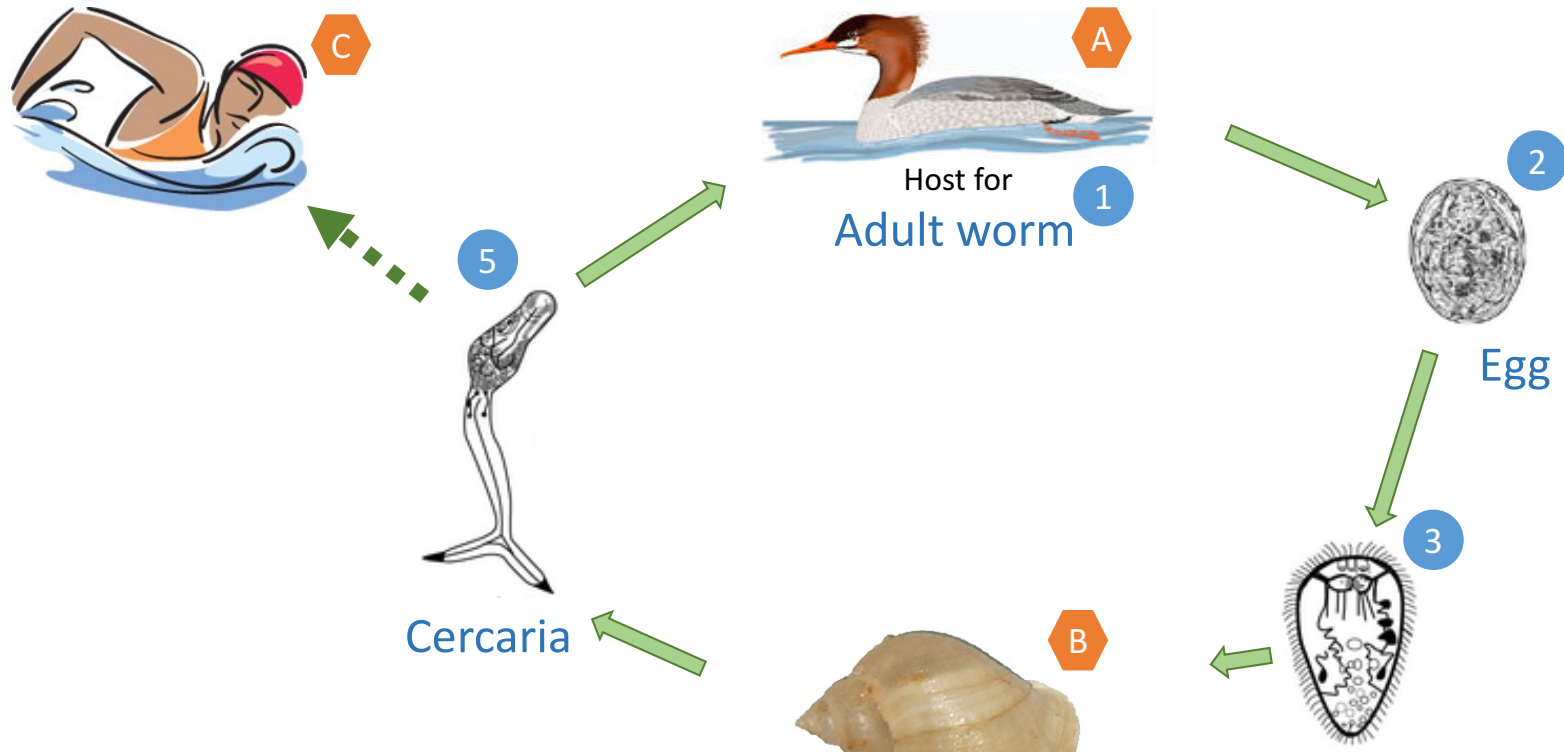


Valvatidae: *Valvata*

TRENDS in Parasitology



The Major Culprit on Higgins



*Trichobilharzia
stagnicola*

Copper Sulfate

NOTICE Do not remove posting signs for 24 hrs. post treatment or until after all restrictions have expired, whichever is later.

This area of Higgins Lake was chemically treated on Mon. June 29th, 2015
WATERBODY MONTH/DAY

for the control of an aquatic nuisance under: (select one of the following)

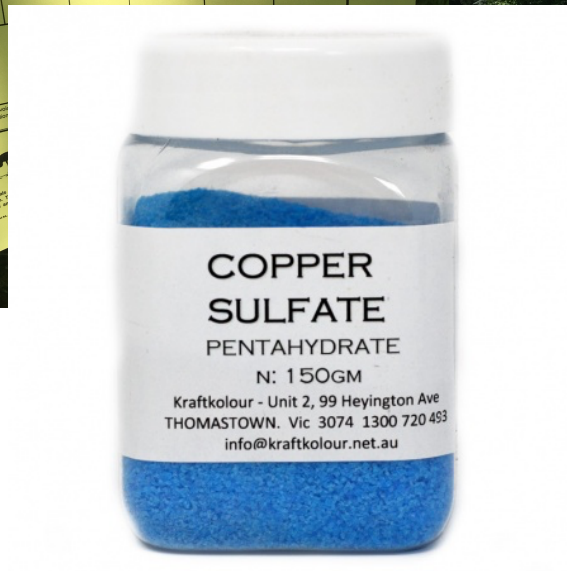
DEQ Permit No. ANC - 97 - 015 ADVANCED POSTING TREATMENT TO TAKE PLACE ON DATE SHOWN

or DEQ Certificate of Coverage No. ANC - 9 - 7 -

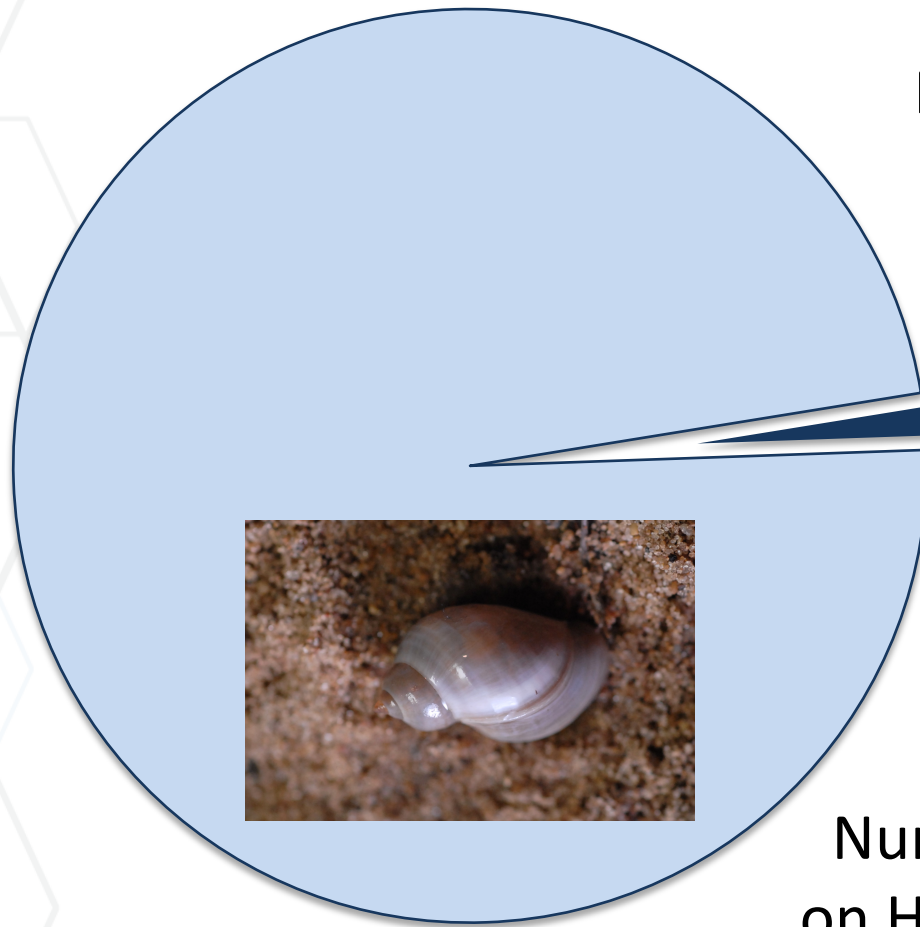
Permit by Rule, pursuant to S324.3303(2)

The following water use restrictions apply through the expiration date indicated below:

Check All That Apply	Chemical Product/Active Ingredient	Chemical Trade Name(s)	DO NOT use this water for swimming and bathing until	DO NOT use this water for ornamentals or turf irrigation until	DO NOT use this water for domestic purposes or agricultural irrigation until	DO NOT use this water for livestock watering or similar purposes until
<input checked="" type="checkbox"/>	Copper Sulfate	Copper Sulfate	July 1	n/a	n/a	n/a
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						



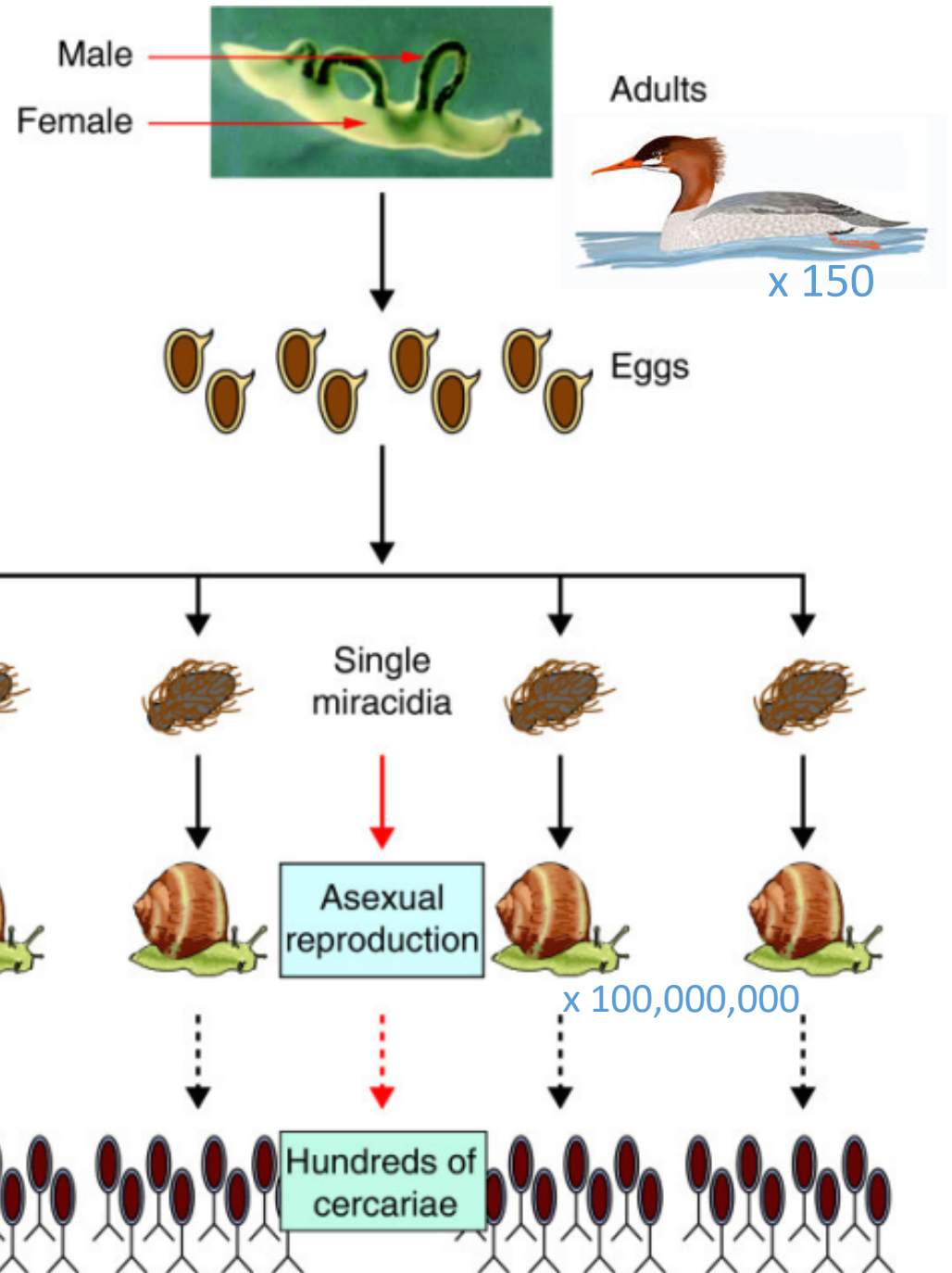
The Math of SI Control



Number on Common Mergansers
on Higgins Lake = 100-150
(Infection > 90%)



Number of *Stagnicola* snails
on Higgins Lake > 100,000,000
(Infection < 3%)



The Math of SI Control

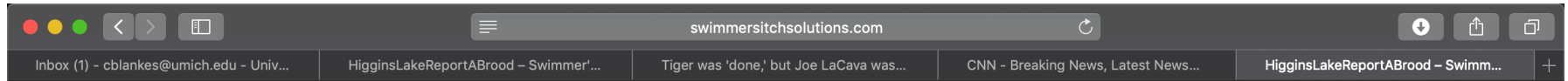
(continued)

150 vs. 100,000,000

>90% vs. <3%

10mi vs. 100ft

Brood Reports



WHO WE ARE

WHAT WE DO

OUR CLIENTS

SWIMMER'S ITCH 101

REPORT A CASE

REPORT A BROOD – HIGGINS LAKE

Look closely at the images below.

The two on the left are photos of common mergansers. The two on the right are photos of mallards.





SWIMMER'S ITCH
SOLUTIONS

Trapping COME Broods



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SWIMMER'S ITCH
SOLUTIONS

Trapping COME Broods



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SWIMMER'S ITCH
SOLUTIONS

Trapping COME Broods





Relocating COME Broods



2015-18: Results

❖ 2015 Totals

9 broods/88 total birds

❖ 2016 Totals

6 broods/47 total birds

❖ 2017 Totals

4 broods/56 total birds

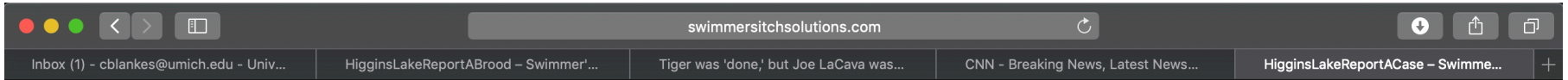
❖ 2018 Totals

2 broods/18 total birds





SI Case Reports



[WHO WE ARE](#) [WHAT WE DO](#) [OUR CLIENTS](#) [SWIMMER'S ITCH 101](#) [REPORT A CASE](#)

REPORT A CASE – HIGGINS LAKE

Fields marked with an * are required

Your (Reporter's) Contact Information

First and Last Name (optional)

Email (optional)

How certain are you that the infected individual has swimmer's itch? *

Infected Individual's Information



SI Case Reports

swimmersitchsolutions.com

Inbox (1) - cblankes@umich.edu - Unive... HigginsLakeReportABrood - Swimmer's... Tiger was 'done,' but Joe LaCava wasn'... CNN - Breaking News, Latest News a... HigginsLakeReportACase - Swimmer'...

SWIMMER'S ITCH SOLUTIONS LLC

WHO WE ARE WHAT WE DO OUR CLIENTS SWIMMER'S ITCH 101 REPORT A CASE

Date individual contracted swimmer's itch *

Time of day when individual was in water *

Total minutes individual spent in shallow (i.e., < 2 feet) water *

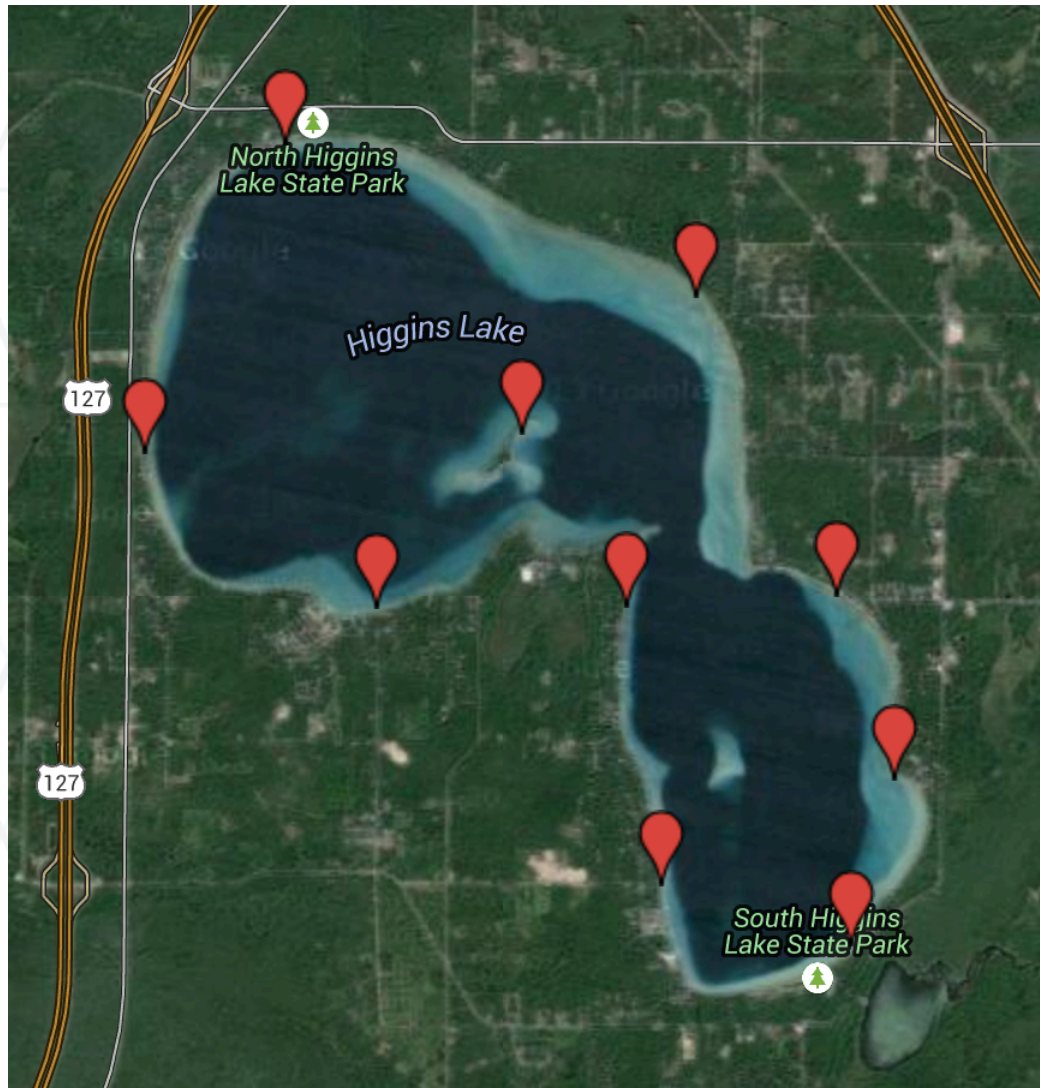
Number of papules (i.e., "itchy spots") on individual *

What, if any, swimmer's itch preventative measures did individual take? (check all that apply) *

- None
- Only went in deeper waters
- Applied a swimmer's itch preventative cream/lotion
- Applied a sunscreen cream/lotion
- Toweled off immediately after getting out of water
- Showered immediately after getting out of water
- Other (please specify in comments box below)



Program Assessment



Snail Collection Sites

1. Dragonfly House
2. Detroit Point (South)
3. Yacht Club
4. Sam-O-Set Park
5. West Boat Launch
6. North State Park
7. Gerrish Township Park
8. Kelly Beach
9. Columbine Lane
10. South State Park



2015: Higgins Lake Snail Infection Levels

Location	June 9-10	June 24-July 2	July 10-17	July 24-27
Dragonfly House	0.5% (200)	1.7% (179)	4.2% (167)	4.0% (200)
Detroit Point	0.0% (192)	2.0% (200)	3.5% (200)	3.2% (156)
Yacht Club	0.0% (200)	0.0% (200)	0.5% (200)	0.0% (200)
Sam-O-Set Park	0.6% (168)	2.5% (200)	2.0% (200)	3.5% (200)
West Boat Launch	1.6% (187)	4.5% (200)	5.5% (200)	4.5% (200)
North State Park	1.7% (177)	1.0% (200)	1.9% (155)	5.0% (200)
<u>Gerrish</u> Township Park	7.4% (94)	12.7% (181)	6.2% (113)	5.0% (200)
Kelly Beach	3.5% (172)	7.7% (65)	2.5% (122)	3.8% (158)
<u>Almeda</u> Beach	1.0% (200)	0.5% (200)	0.5% (200)	1.5% (200)
South State Park	1.1% (189)	8.0% (200)	3.5% (200)	8.0% (200)
Lake-wide	1.4% (1779)	3.7% (1825)	2.9% (1757)	3.9% (1914)

SI Infection Level

- = Ideal (<0.24%)
- = Tolerable (0.25-0.49%)
- = Moderate (0.5-0.9%)
- = Severe (1.0-1.9%)
- = Epidemic (>2.0%)

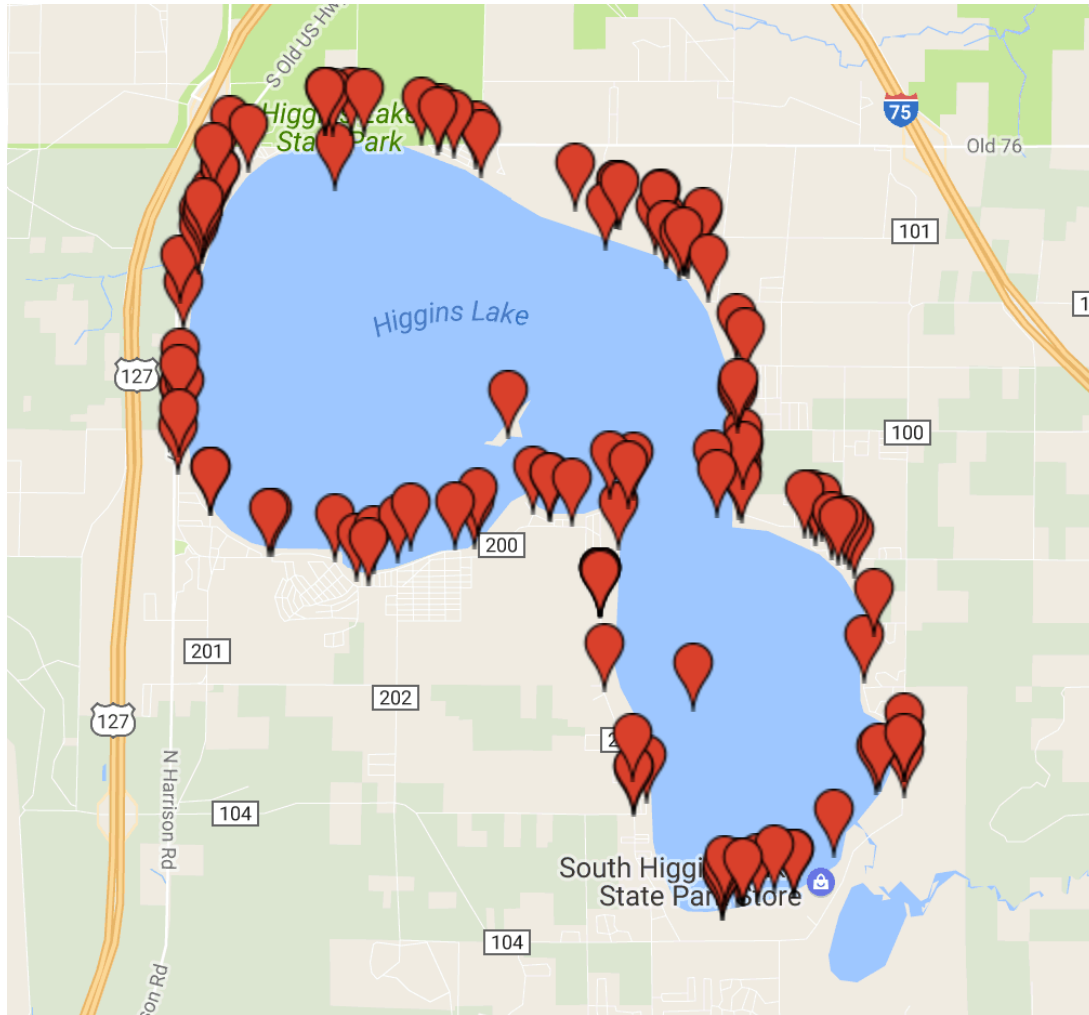
Lake-wide Entire Summer

3.01%
(7734)





2015: Higgins Lake Reported SI Cases



Lake-wide
Entire Summer
3.01%
(7734)



2016: Higgins Lake Snail Infection Levels

Location	June 9-10	June 17-29	July 11-12	July 20-24
Dragonfly House	0.0% (200)	0.25% (400)	0.0% (200)	0.0% (250)
Detroit Point	0.0% (200)	1.1% (366)	0.0% (200)	0.5% (200)
Yacht Club	0.0% (200)	0.0% (322)	0.0% (200)	0.0% (200)
Sam-O-Set Park	0.5% (191)	0.25% (400)	0.5% (200)	0.0% (200)
West Boat Launch	0.0% (200)	0.0% (381)	0.5% (200)	0.0% (170)
North State Park	0.0% (200)	0.25% (400)	0.0% (200)	0.0% (200)
<u>Gerrish Township Park</u>	1.0% (200)	0.0% (400)	1.0% (200)	0.0% (250)
Kelly Beach	0.0% (200)	0.25% (400)	0.0% (200)	0.0% (181)
<u>Almeda Beach</u>	0.5% (200)	0.8% (400)	1.0% (200)	0.5% (200)
South State Park	0.0% (241)	0.0% (396)	2.0% (200)	0.5% (200)
Lake-wide	0.2% (2032)	0.3% (3865)	0.5% (2000)	0.1% (2051)

SI Infection Level

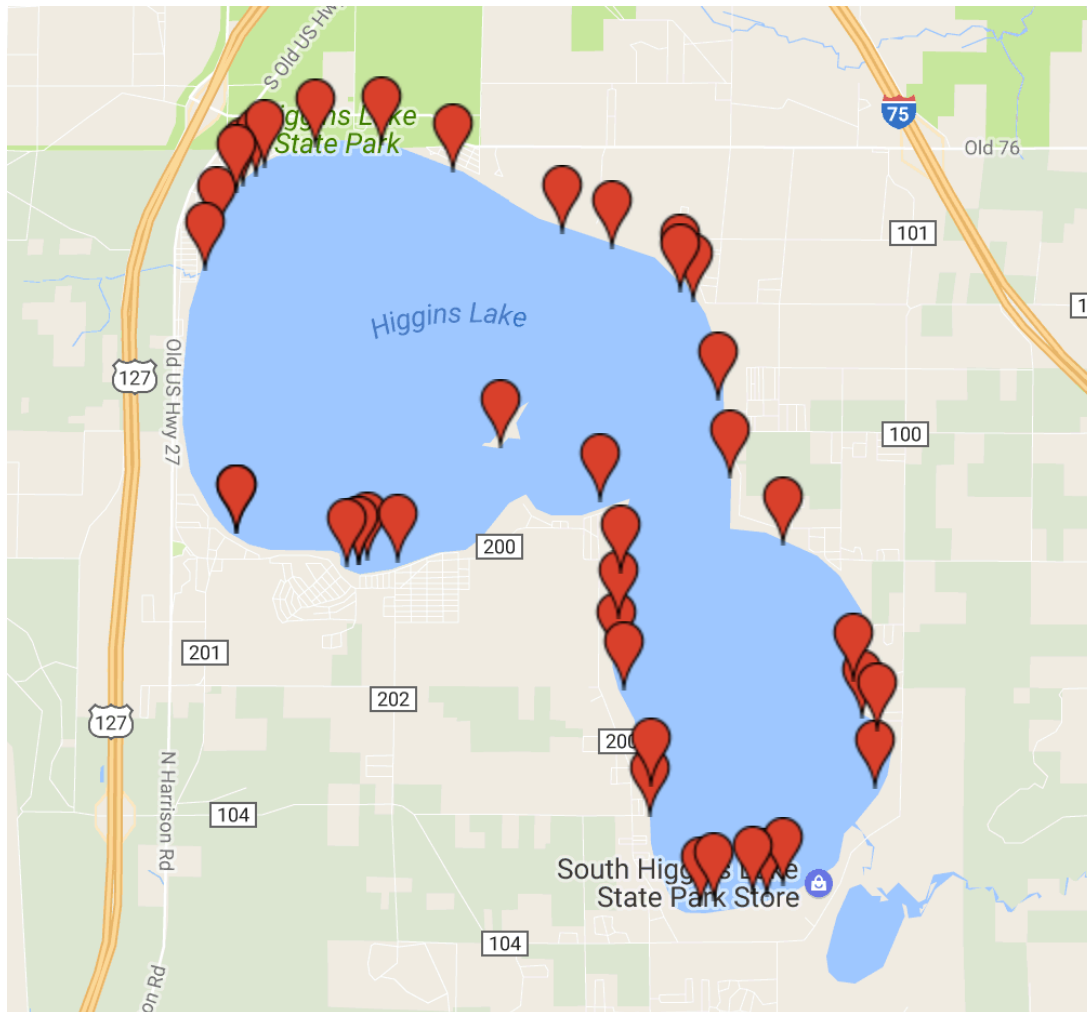
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- = Tolerable (0.25-0.49%)
- = Moderate (0.5-0.9%)
- = Severe (1.0-1.9%)
- = Epidemic (>2.0%)

Lake-wide Entire Summer

0.28%
(9948)



2016: Higgins Lake Reported SI Cases



Lake-wide
Entire Summer

0.28%
(9948)



2017: Higgins Lake Snail Infection Levels

Location	June 13	June 28	July 10-11	Late July
Dragonfly House	0.0% (200)	0.0% (244)	0.0% (222)	0.0% (150)
Detroit Point	0.0% (200)	0.0% (171)	0.47% (214)	0.0% (250)
Yacht Club	0.0% (200)	0.0% (232)	0.0% (196)	0.0% (190)
Sam-O-Set Park	0.0% (200)	0.0% (212)	0.0% (202)	0.0% (161)
West Boat Launch	0.0% (200)	0.0% (220)	0.48% (210)	0.48% (208)
North State Park	0.0% (200)	0.0% (218)	0.0% (225)	0.0% (234)
<u>Gerrish</u> Township Park	0.0% (200)	0.0% (212)	0.40% (253)	0.0% (200)
Kelly Beach	0.0% (200)	0.0% (206)	0.0% (208)	0.0% (200)
<u>Almeda</u> Beach	0.0% (200)	0.0% (208)	0.0% (216)	0.0% (221)
South State Park	0.0% (200)	0.0% (197)	0.0% (239)	0.0% (239)
Lake-wide	0.0% (2000)	0.0% (2120)	0.14% (2185)	0.05% (2053)

SI Infection Level

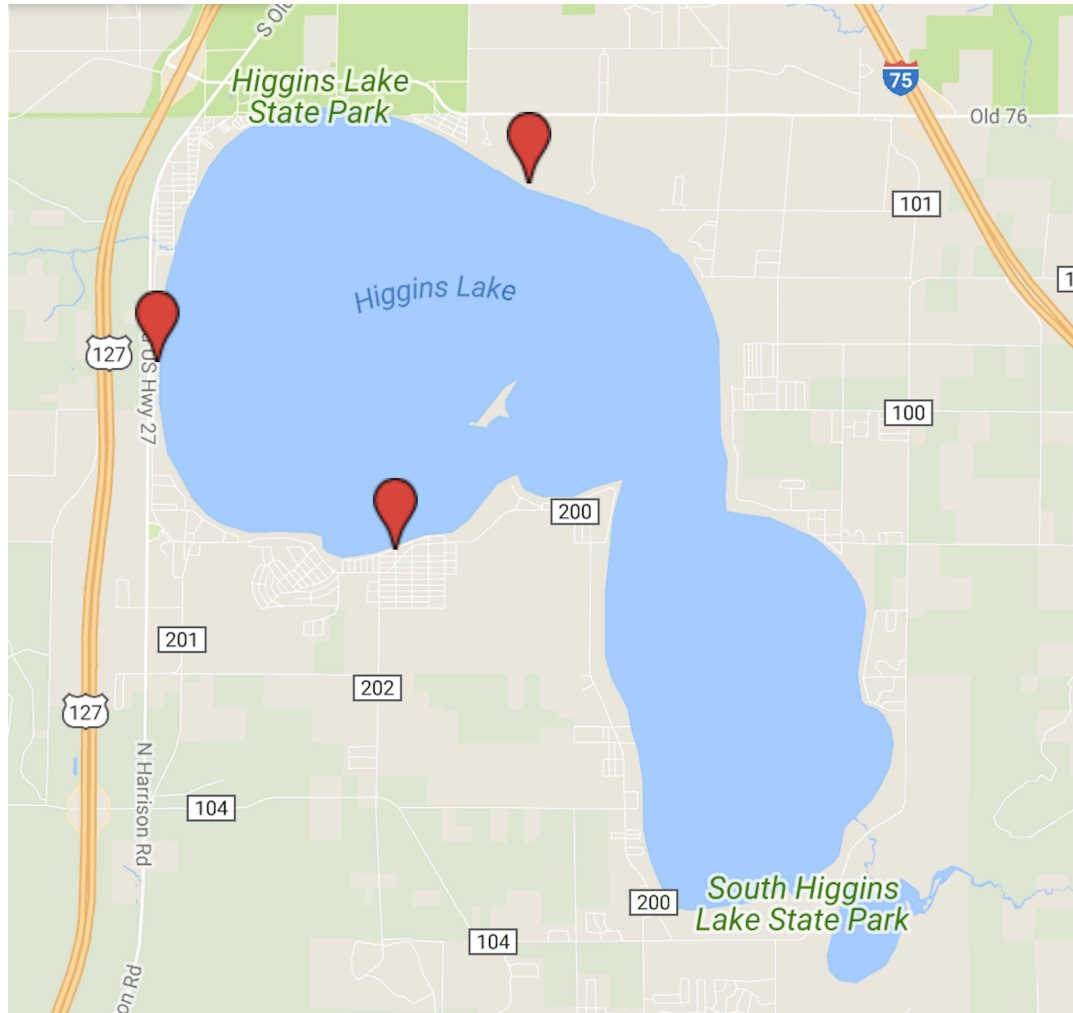
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- = Severe (1.0-1.9%)
- = Epidemic (>2.0%)

Lake-wide Entire Summer

0.05%
(8358)



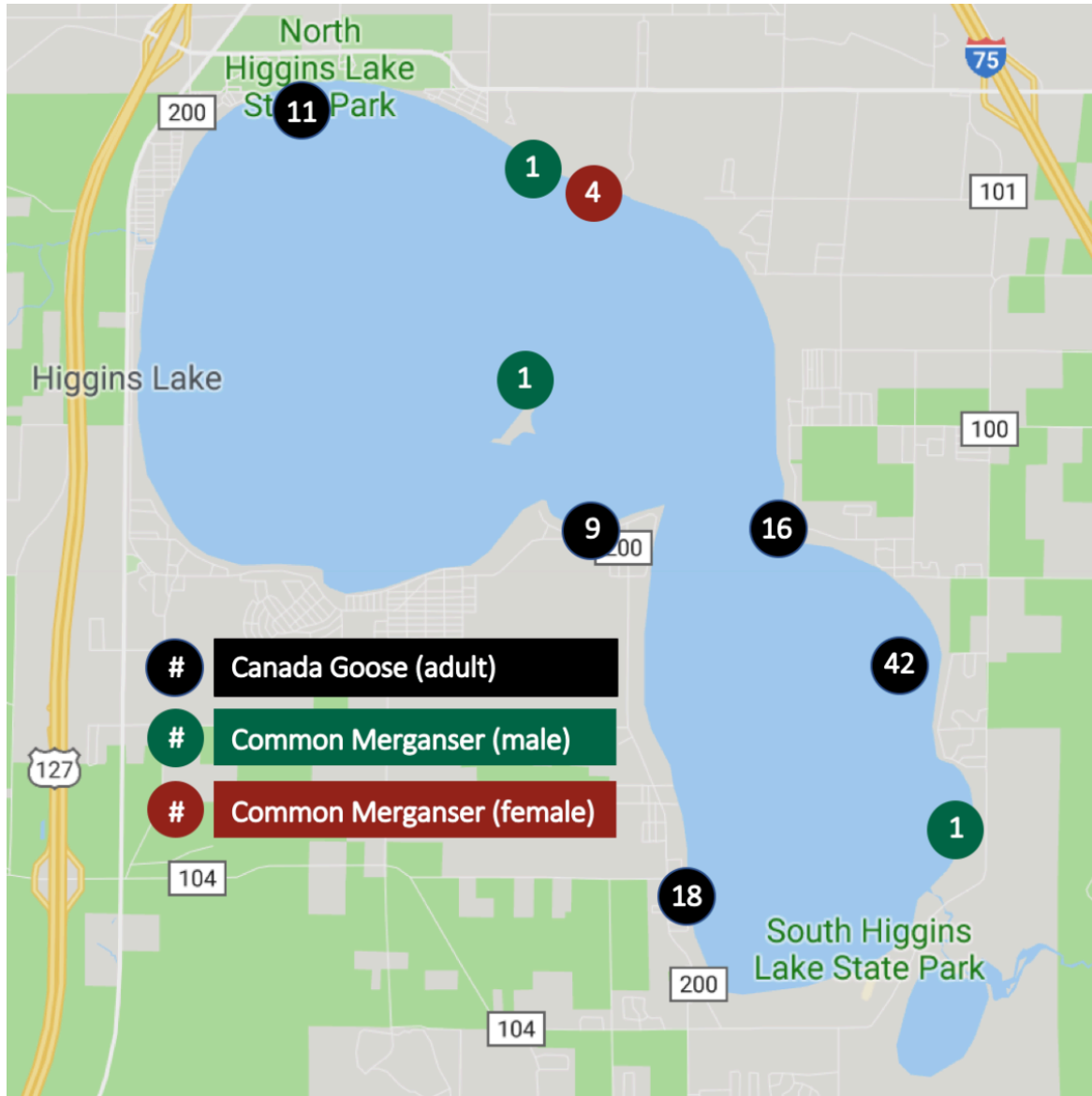
2017: Higgins Lake Reported SI Cases



Lake-wide
Entire Summer

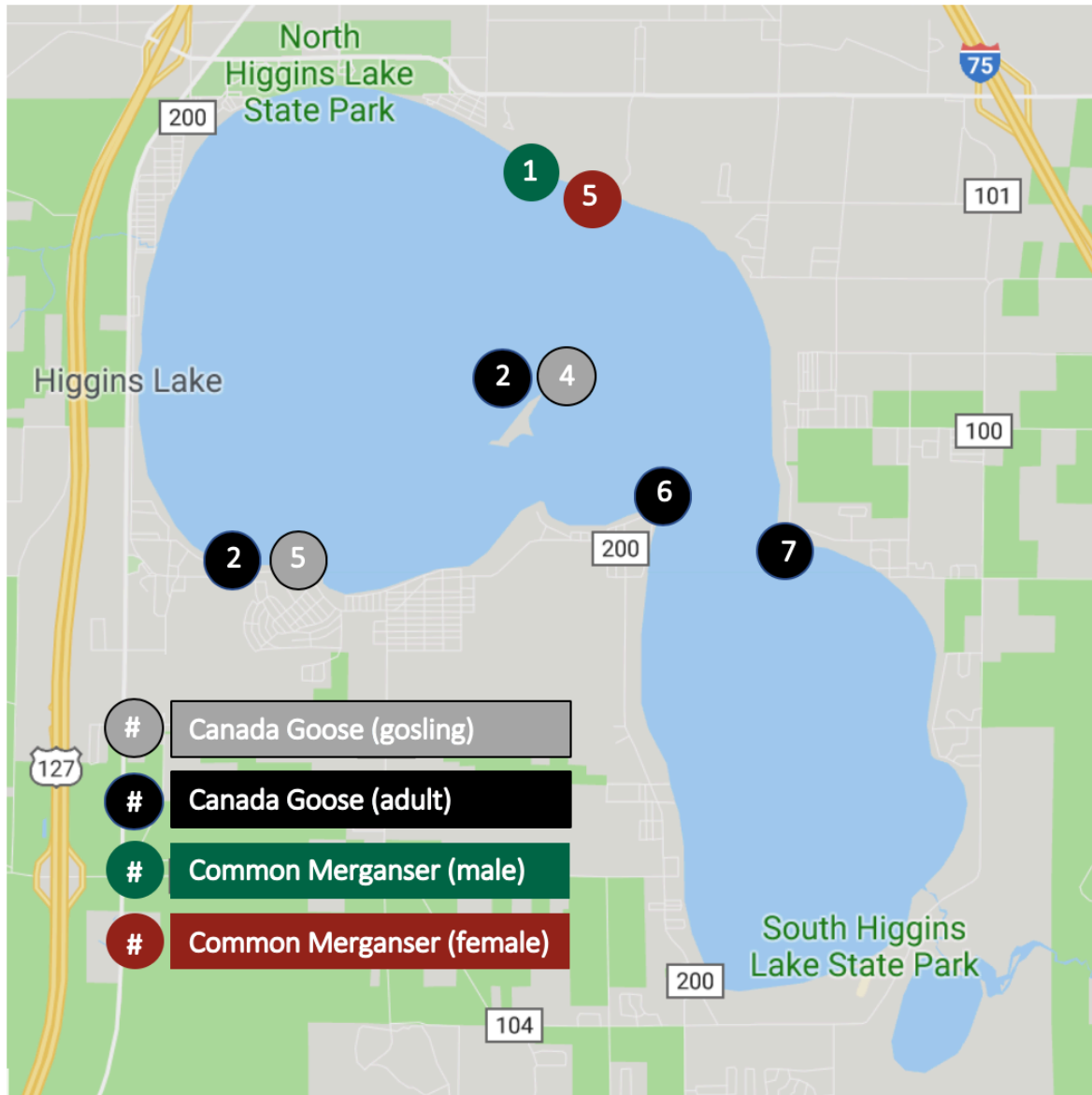
0.05%
(8358)

2019: Bird Surveys



June 7

2019: Bird Surveys



June 18

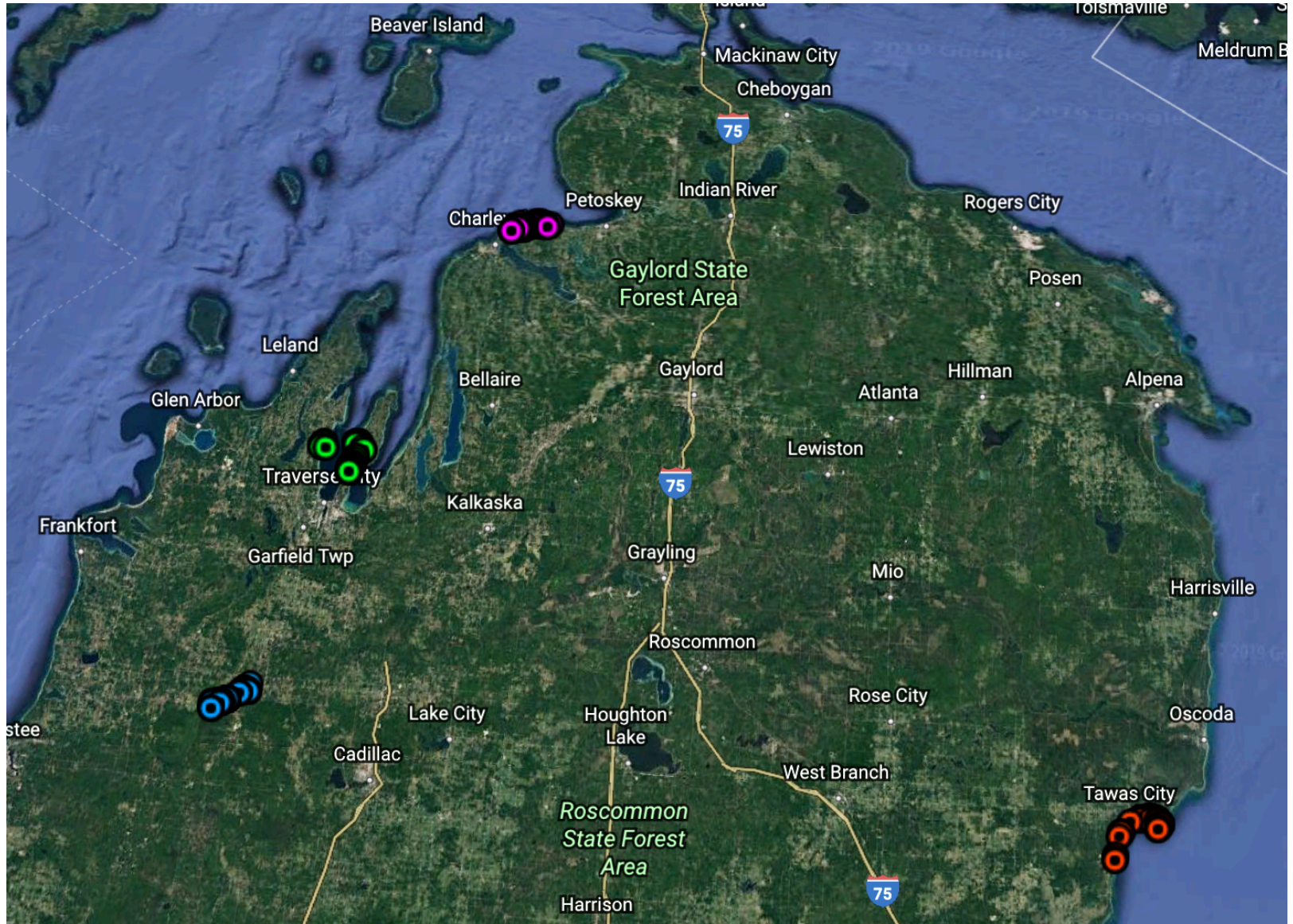


GPS Tag on a COME Hen

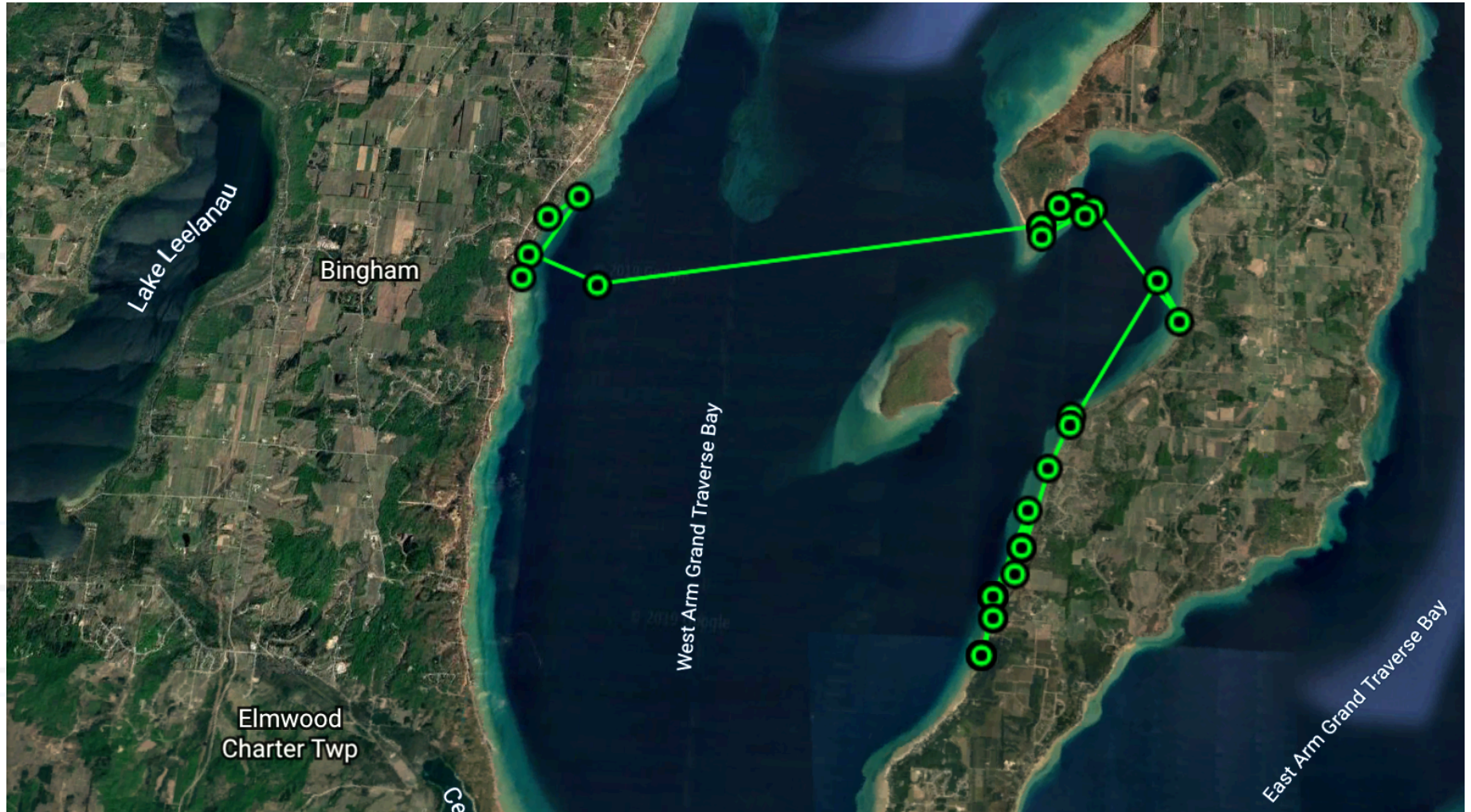




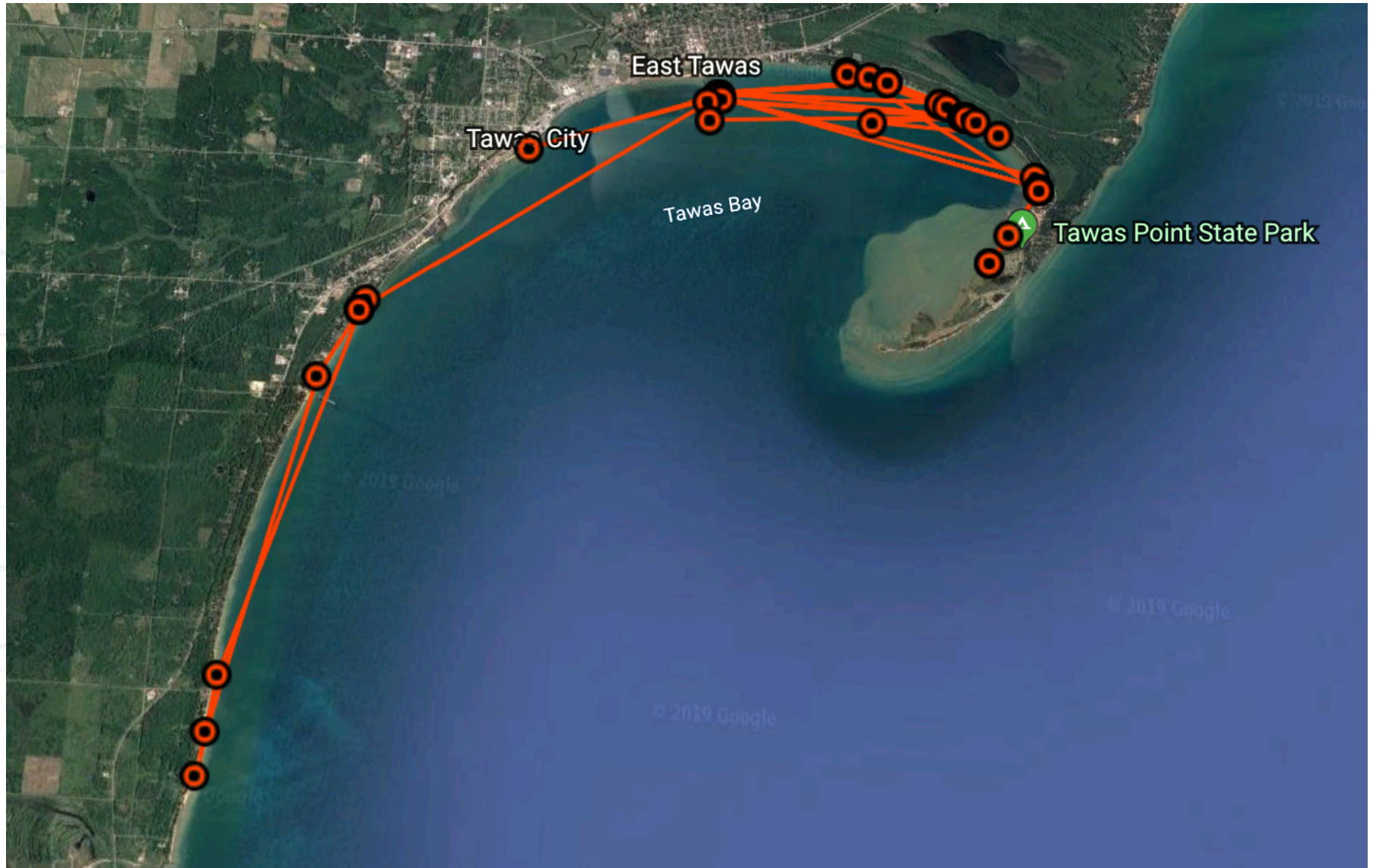
2019: GPS Study



2019: GPS Study



2019: GPS Study



2019: GPS Study





Higgins Lake Shout Outs

- Pioneer Hills Marina
- Dave and Karen Jordan
- Bob and Dianne Wagner
- Herb Weatherly
- Bob Hoffman
- Bill Demmer

