

2018 Annual Meeting – Biologist Report on Swimmers' Itch Activities

Summary: The effectiveness of a swimmers' itch control program is assessed directly by measuring snail infection rates, and the concentration of cercariae (worms) in water with a technique call qPCR. It can be assessed indirectly by collecting swimmers' itch reports, and counting the number of common mergansers removed from a lake. Lake Leelanau conducts three of these activities; removing mergansers, measuring the worm concentration, and collecting swimmers' itch reports. This report focuses primarily on swimmers' itch reports, and the number of mergansers removed. Recall we have controls in place on North Lake (i.e. removing mergansers). The data on North Lake are trending in a positive direction. We are still trying to determine what bird and snail species may be causing swimmers' itch on South Lake. The common merganser is not the primary carrier on South Lake. Unfortunately, the number of swimmers' itch reports (and individual swimmers' itch cases) increased on South Lake this summer. Therefore, it is imperative that we raise funds to determine the causes, so a control program can be proposed to the state. To donate go to our website: <http://lakeleelanau.org/membership/>.

Sixty-four (64) reports were made as of July 22, 2018. Thirty-seven (37) were from North Lake and 27 from South Lake. The numbers of individual swimmers' itch cases included in these reports totaled 113 for North Lake and 76 cases for South Lake. When one contrasts the number of cases in 2018 and 2017, we find 192 cases were reported for North Lake and 25 cases for South Lake in 2017. While the year is not complete this represents a reduction of 79 cases for North Lake. This is positive information. However, we also have an increase of 51 cases for South Lake from 2017 data.

No conclusions can be drawn from this partial year dataset. All swimmers' itch report data, water sampling data, and merganser removal program data will have to be examined to make an accurate assessment. This information is just a snapshot. Stay tuned for more information in the fall. It is again important to remember that we have a control program in place on North Lake, but not on South Lake. More research is needed on South Lake.

Thanks to our spotters on North Lake, the Glen Lake trapping crew was able to remove five broods of mergansers totaling 50 birds. The broods were trapped near the Leland River, the far north end of the lake, and Houdek Creek. The birds were released in Suttons Bay. The state has approved this site because it contains no *Stagnicola* snail. The absence of the snail assures us that no swimmers itch problems will be created in Suttons Bay.

While not part of LLLA's swimmers itch program, I've made favorable progress on my field testing of a swimmers itch repellent sunscreen. Three field trials were all about 96% effective. If you want to track progress on this testing send an email to leelanaubound@gmail.com.

AND REMEMBER.....KEEP REPORTING THOSE SWIMMERS' ITCH CASES.....AND DONATE TO SWIMMERS ITCH!! Thanks for all your help and donations!

Report Details

North Lake: We have had 37 reports from North Lake as of July 22. This is down from the 72 reports in 2017. The reports represented 192 individual cases from 2017 and 113 cases this year. Figure 1 shows the number of reports and number of individual swimmers' itch cases. This year (2018) is clearly reduced. While the numbers are down we still have about one month to go to close out the season. We also recorded severity of the worst case for each report. The categories are mild < 10 pustules, moderate 11-99, and severe >100. Figure 2 shows the distribution of case severity by numbers. However, if evaluated as percentages, the severity of cases also shows positive results (Figure 3). We had a higher percentage of mild cases this year than in 2017 (35%-2018 vs 17%-2017) and a lower percentage of severe cases than in 2017 (16%-2018 vs 18%-2017). Beyond the decrease in numbers the "rate" of severity is a positive trend.

Figure 1

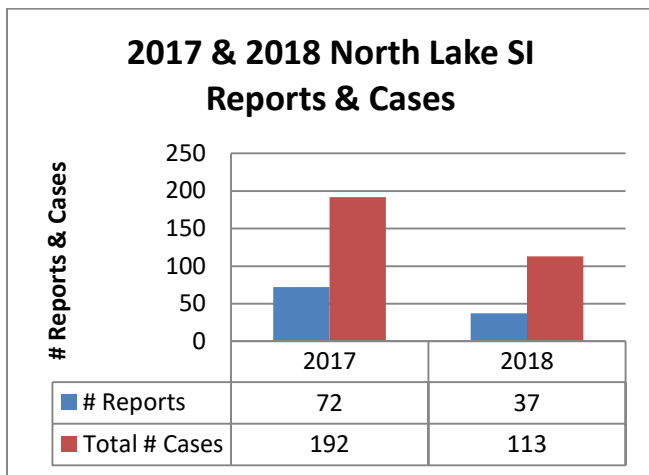


Figure 2

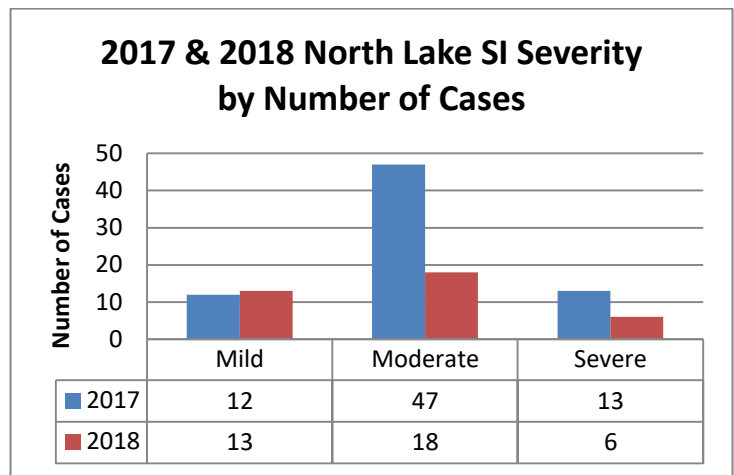
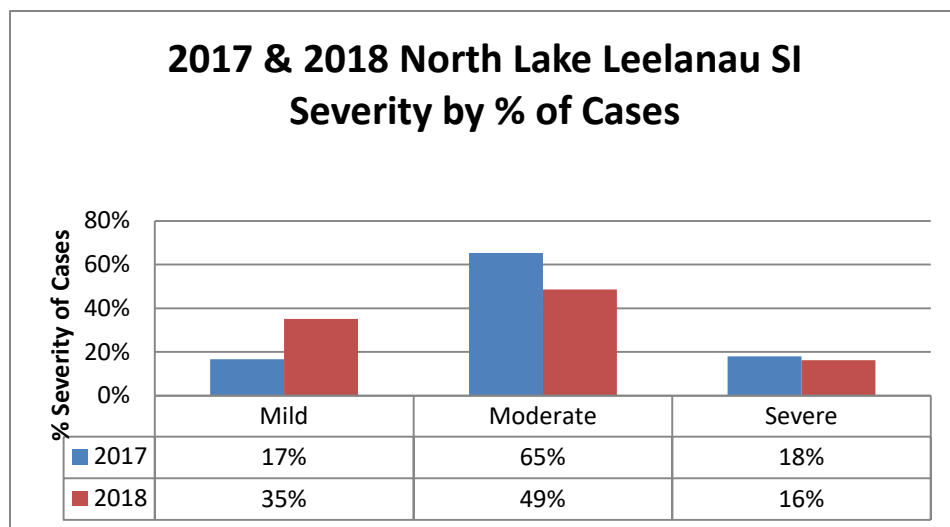


Figure 3



Figures 4 and 5 show where cases occurred during 2017 and 2018. Each pin shows severity by color: Blue=mild, yellow = moderate, red = severe. In 2017 thirteen cases were reported from Nedows Bay, whereas only one has been reported this year. Schneiders Beach and Sleuzer Park both had seven cases in 2017, followed by areas around the Leland River and the beaches on the south side of Leland with five and four cases, respectively. The only location with seven cases this year was the northeast corner of the lake. Only two areas near the north end of the Narrows had three reports each. All remaining locations had two or less reports.

Figure 4

2018 North Lake Leelanau Swimmers' Itch Report

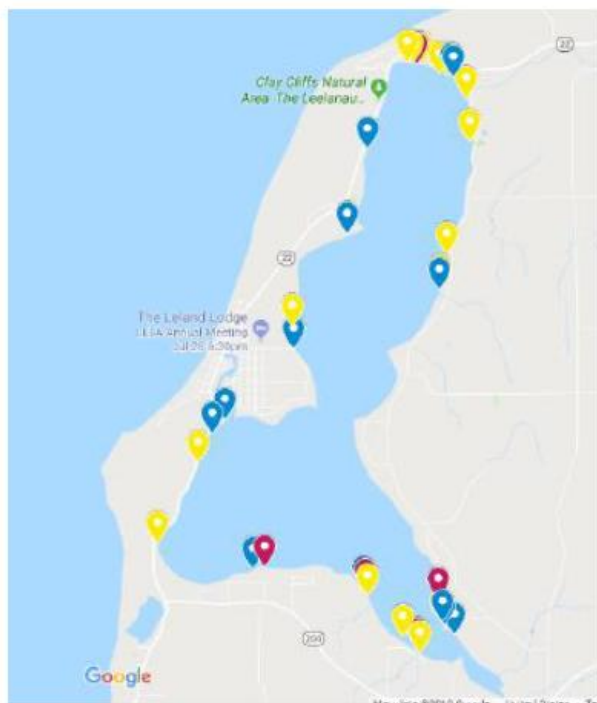
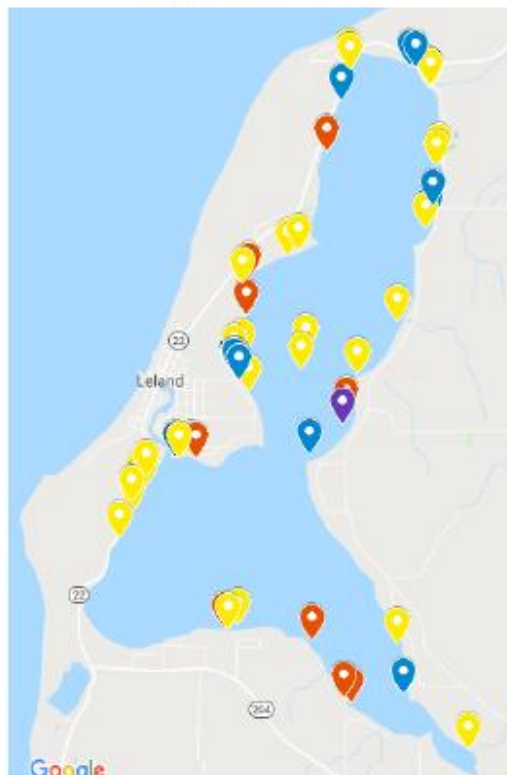


Figure 5

2017 North Lake Leelanau Swimmers' Itch Reports



(Note: You may access these maps any time at: <http://lakeleelanau.org/swimmers-itch/>)

South Lake: We've had 27 reports from South Lake as of July 22. This is up from the 10 reports in 2017. These reports represented 25 cases in 2017, but 76 cases this year. Figure 6 shows the number of reports and number of swimmers' itch cases from each year. We also recorded severity of the worst case for each report. The categories are mild < 10 pustules, moderate 11-99, and severe >100. Figure 7 shows the distribution of case severity by numbers. While the number of reports more than doubled this year, the percentage of case severity declined somewhat in 2018 (Figure 8). This is positive. Moderate cases decreased from 50% in 2017 to 44% in 2018. Severe cases decreased from 10% in 2017 to 8% in 2018. The decline in these two categories resulted in the increase of mild cases this year to 48% from 40% last year.

Figure 6

2017 & 2018 South Lake SI Reports & Cases

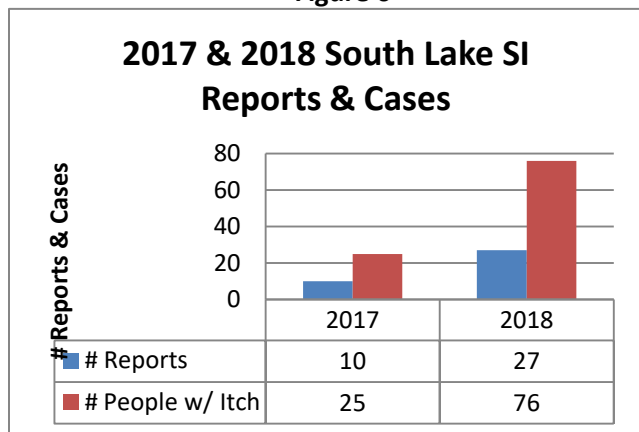


Figure 7

2017 & 2018 South Lake SI Case Severity

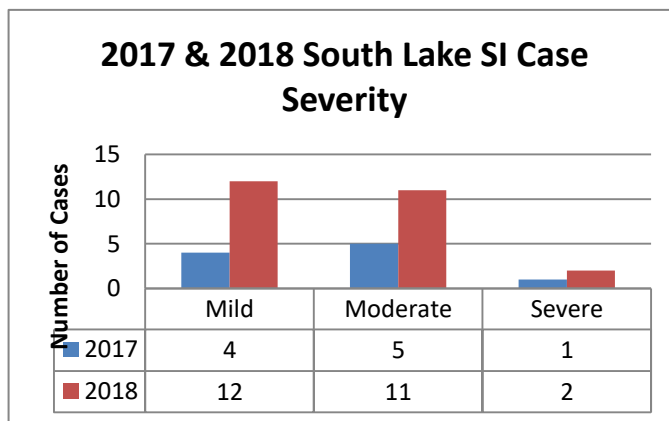
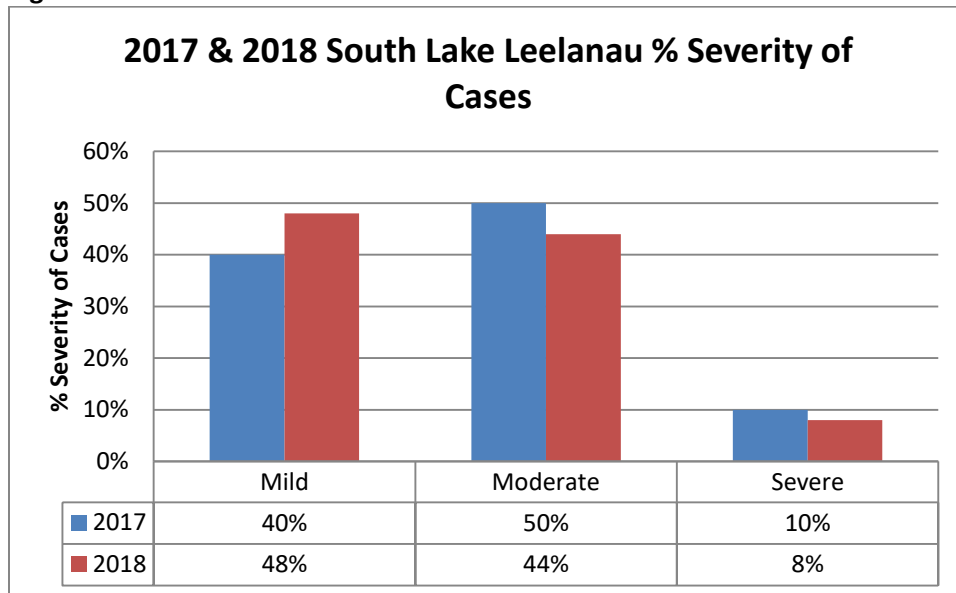


Figure 8



The distribution of swimmers' itch cases in South Lake between 2017 and 2018 is shown in Figures 7 and 8. South Lake reports have increased this year, but are balanced somewhat by a decrease in severity of cases. It should be noted that we do not have a control program implemented on South Lake. Our contractor Freshwater Solutions is trying to determine which waterfowl and snails are the main culprits. It is clear from the increase in reports that the solving this puzzle is critical to finding a long-term solution for swimmers' itch control on South Lake. All data (water sampling) have not been analyzed and reported yet. We will have to wait until the data is available to identify possible causes. With these unknowns about what is happening in South Lake, it is very important to continue studies and funding of the studies. Once the bird specie and snail are identified, a control strategy will have to be developed and presented to the state for approval. This could be a several year process, so patience in needed.

Figure 7

2018 South Lake Leelanau Swimmers' Itch Reports



Figure 8

2017 South Lake Leelanau Swimmers' Itch Reports



(Note: You may access these maps any time at: <http://lakeleelanau.org/swimmers-itch/>)

Swimmers' Itch Report System Assessment. The effectiveness of our swimmers' itch reporting system is important for two reasons. First, it gives us an indirect measurement of our North Lake control program and seeing that South Lake is in need of some type of control. Secondly, and probably more important is that the state requires information that swimmers' itch is getting "worse" in order to get a merganser removal permit. In fact the state issue is the primary purpose of the detailed analysis above. It is to empirically determine if the state requirement of showing an "increase" in swimmers' itch is a reasonable "measure" for a totally voluntary reporting system. But with the state requirement in effect, it is important to "MAKE SWIMMERS' ITCH REPORTS!!"

We use Questionpro.com, a robust survey tool to collect swimmers' itch reports. To simplify reports this year we limited it to only five questions: date, lake, lake location (picked from Figures 9 and 10 below), how many got itch, and worse case. Reports could be made from computer, ipad, or cell phone. But even with this simplification we had more people simply look at the survey start page than completing reports. A total of 251 individuals "viewed" the survey through July 22. Seventy-five (75) started the survey, 64 finished it, and 11 of the 75 dropped out. WE THANK EACH OF THE 64 INDIVIDUALS WHO TOOK THE TIME TO COMPLETE THE REPORT! It's valuable to know we have a much wider problem in South Lake than we've experienced in prior years.

What about the 176 people who "viewed" the survey and did not submit a report? As an optimist, I believe they were curious about the process, checked out how to access the survey, and perhaps even saved the link in their phone. But the truth is, we simply do not know. So it bears repeating: PLEASE COMPLETE A SWIMMERS' ITCH REPORT if you get the itch. Here is this year's link to save in your cell phone: <https://2018-iklee-si.questionpro.com/>

	A	B	C	D	E	F	G	H	I	J	K	L	M	
0									I0	J0				0
1								H1		J1	K1			1
2								H2						2
3								H3			K3			3
4								H4			K4			4
5							G5	H5		J5	K5			5
6						F6	G6			J6				6
7						F7				J7				7
8						F8			I8	J8				8
9						F9		H9	I9					9
10						F10	G10		I10					10
11					D11	E11	F11	H11						11
12				C12	D12			H12						12
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14				C14					I14					14
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Swimmers Itch Repellent Trials

Field trials continued on Duck Lake at Interlochen State Park. Rather than just show offensive pictures of trial results I have changed to measuring papules per square inch of skin. But with the saying that a picture is worth a thousand words, let me include one trial result conducted May 30th on Duck Lake. My right leg (Figure 11) with 143 papules did not get any treatment, and my left leg (Figure 12) with 5 papules received the SiLotion treatment. On a papule per square inch basis those numbers translate to 96.6% effectiveness. Results on May 30 were 98.2% effective, and on June 22 were 100% effective. Field testing continues and well as lab testing.

Figure 11



Figure 12



For questions please contact me at leelanaubound@gmail.com

Wayne Swallow
Watershed Biologist
Lake Leelanau Lake Association