

ESLA NOVEMBER 2018 NEWSLETTER

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President's Message



Elk-Skegemog Lakes Association
November 2018

Greetings ESLA
Riparians:

In addition to showing off my adorable granddaughters, there are 2 key messages that the picture above represents to me.

First, the message written on my shirt, "Leave It Better than you Found It". As ESLA riparians,

we need to always be looking for ways to protect and enhance our pristine lakes, rivers streams, and environment.

Second, my granddaughters represent the 5th generation of my wife's family to be blessed with the opportunity to live by and experience

beautiful Elk Lake. I cannot think of a better legacy for ESLA riparians than to leave our wonderful waterways "better than we found them" for future generations to enjoy!

This Newsletter provides updates on ELSA's swimmer's itch remediation project and the ongoing invasive species control project, assisted this year by ESLA's Summer Intern, Bethany Dickerson. Another key article addresses the issue of light pollution and maintaining our Northern Michigan dark skies. It should be noted that the Milton Township Planning Board is currently considering the expansion of

the Township lighting ordinance to include residential properties.

After reading this Newsletter, please let us know (elk-skegemog.org) how Newsletter can be improved and Any other issues that you would like see information on.

Finally, note that ESLA has a new website — see <http://elk-skegemog.org>

Best Regards,

President

Gary Chenoweth

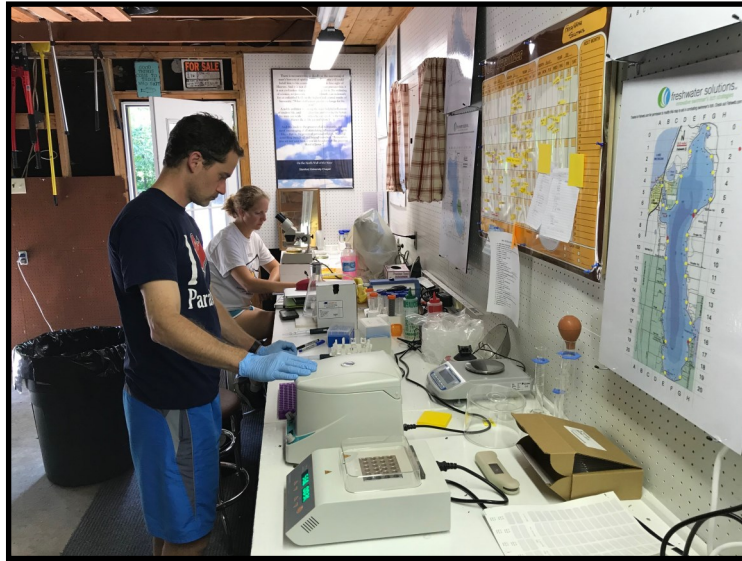
Swimmer's Itch Update

This summer ESLA contracted with Freshwater Solutions (FWS) to complete an assessment which might be useful in developing a plan of action to reduce the incidence of swimmer's itch in Elk and Skegemog Lakes. The resulting report, just recently transmitted to ESLA, contains detailed empirical information regarding factors associated with Swimmer's itch in Elk and Skegemog Lake, as well as recommendations for possible follow-up. The ESLA Board will be considering those recommendations in meetings later this year. Below are portions of this report, including the executive summary and the four recommendations.

Executive Summary

Freshwater Solutions (FWS) conducted a comprehensive survey of the schistosomes that are causative agents for swimmer's itch on Elk and Skegemog Lakes in 2018. Included in the survey were biodiversity assessments of the vertebrate waterfowl hosts, the invertebrate snail hosts, and the

parasites, through cercariae and miracidia shedding and DNA barcoding. Additionally, the magnitude of the swimmer's itch problem was assessed through qPCR analysis of swim-



Analyzing samples taken from Elk and Skegemog Lakes

mer's itch-causing cercariae.

Common mergansers and Canada geese were the only definitive hosts found to harbor patent adult schistosomes. Mergansers harbored *Trichobilharzia stagnicola*, as predicted, and a few geese were very lightly infected with an unknown species. The only snails with patent schistosome infections were *Stagnicola emarginata*. All harbored the same species of schistosome, *Trichobilharzia stagnicola*.

Water sampling and qPCR analysis showed relatively high numbers of cercariae in the water. In fact, Elk Lake showed the highest cercariae levels of all 11 lakes assessed by FWS in 2018. Skegemog Lake showed a much lower infection level, yet had pockets of higher levels.

The good news is that trapping and relocating common mergansers should provide some relief a year after a control program begins.

That's because *Trichobilharzia stagnicola*, the parasite cycling through mergansers, was the only parasite identified in both the intermediate snail and definitive merganser hosts. Little evidence was found implicating other species of schistosomes.

We encourage ESLA to continue its engagement in the statewide battle against swimmer's itch and recommend the following action items for 2019: •Begin a merganser trap and reloca-

Swimmer's Itch Update

tion program •Establish a yearly monitoring program •Support new research unique to Elk and Skegemog Lakes

FWS continues to empower lake associations to become as independent and self-sufficient as possible to help reduce yearly costs for swimmer's itch control. We were the first to offer training for merganser trapping (a huge cost savings) and lead the world in qPCR techniques for measuring avian schistosome cercariae in the water column. qPCR provides a more reliable, less expensive, and more easily teachable metric for assessment and we plan to offer interested lake associations mobile equipment and training for these techniques in 2019. ESLA will be included in those efforts and more details will be available soon. Finally, we continue our pursuit of bringing federal money to the fight with the submission of a grant proposal to the National Science Foundation. If successful, some of those monies will help pay for continued work on Elk and Skegemog Lakes in 2019. The following document describes, in detail, our comprehensive assessment work in 2018.

Recommendations

Elk Lake, in particular, showed relatively high levels of cercariae in the collected water samples. This metric (#cercariae/25L) directly measures the risk of contracting swimmer's itch when bathing in the lake. While Skegemog Lake showed much lower levels, there were still enough cercariae to indicate a problem exists.

Although no control effort will completely eliminate swimmer's itch from a lake ecosystem, knowing the complexities of the parasites involved allows us to make educated recommendations about how to best control swimmer's itch.

Recommendation #1: Apply for and obtain an MDNR permit to trap and relocate common mergansers beginning in 2019. You should contract with a company specializing in trapping and relocating mergansers to remove the common mergansers from Elk Lake (and Skegemog if present) beginning in 2019. You are not obligated to work with FWS but we would be happy to continue our work with ESLA with this work. Consider ways to reduce long-term costs by having ESLA associates trained in trap and relocation methods so they can help with the efforts in 2019 and take over

the trapping program in 2020.

Based on what we discovered in 2018, trapping and relocating common mergansers should reduce your swimmer's itch, at least in some areas. One complicating observation was the surprisingly few common merganser broods observed, especially considering the large size of Elk and Skegemog Lakes. Since the parasites found were *Trichobilharzia stagnicolae*, a species that commonly cycles through common mergansers, it could be possible spring and fall migratory mergansers are also significantly contributing to the problem. Also note, by removing the common mergansers but not a brood of red-breasted mergansers, transmission could still occur if red-breasted mergansers carry *T. stagnicolae*. There is currently no state permit given to trap and relocate red-breasted or hooded mergansers.

Recommendation #2: Implement a yearly assessment plan beginning in 2019. To assure control dollars are being well spent, it is important to have yearly metrics in place to gauge success. Since ESLA volunteers have been trained in proper water collection protocol, they can collect samples in coming

Swimmer’s Itch Update

years to help reduce costs. qPCR analysis of water samples can be done by FWS or any other lab specializing in schistosome analysis.

FWS plans to mobilize qPCR in Michigan beginning in

Recommendation #3: Continue educating Elk and Skegemog Lake riparians on ways they can personally reduce their chance of contracting swimmer’s itch. Project ’17 and ’18, FWS research funded largely by

report all swimmer’s itch cases in future years. This service is free and provides valuable data for us to garner additional state and federal funds for battling swimmer’s itch.

Table 12 – Swimmer’s Itch Severity Index

# Cercariae/25L	Severity Index
0-10	Light
11-30	Medium
31-100	Heavy
100+	Severe

Table 13 – Assessment Initiative Participants Comparison

qPCR Values - All Lakes Comparison			
Lake	% Sites >30 Cer./25L	% Sites <30 Cer./25L	Ratio >30/<30
Charlevoix	19.23	80.77	0.24
Elk	48.39	51.61	0.94
Big Glen	37.50	62.50	0.60
Little Glen	25.00	75.00	0.33
SL Leelanau	22.72	77.28	0.29
NL Leelanau	45.45	54.55	0.83
Lime	25.00	75.00	0.33
Long	13.33	86.67	0.15
Skegemog	14.29	85.71	0.17
Walloon	19.44	80.56	0.24
White Sand	12.50	87.50	0.14

Tables 12 and 13 —Elk Lake showed the greatest percentage of sites with heavy or severe concentrations of cercariae from all the lakes participating in FWS’s 2018 Comprehensive Assessment Initiative, while Skegemog Lake showed one of the lowest. Skegemog Lake’s lower numbers may be due to an absence of summer resident mergansers passing on the

2019 using the successful model developed by Dr. Hanington in Alberta, Canada. ESLA should seriously consider joining this mobilizing initiative, possibly with the help of summer interns. This would provide fast results and allow ESLA to join the front lines of our fight against swimmer’s itch.

lake associations in Leelanau County (Glen, Lime, Leelanau), provided discoveries into innovative site-specific control options as well as cercariae behavior. This knowledge can help riparians reduce their risk of contracting swimmer’s itch.

Recommendation #4: Promote the use of “swimmersitch.ca” to

Editor’s Note:
If you wish to have a complete copy of this report, contact dean.ginther@gmail.com with FWS Report as the subject.

What Happened to the Milky Way?

If you have lived in Northern Michigan for a while you may remember walking out on a lakefront dock or into the backyard on a moonless summer night, looking up into the night sky, and being

Looking toward the south end of Elk Lake at night. Can you see the Milky Way rising from the horizon? It is barely visible just to the left of the massive vertical light plume from Acme and Traverse

cause human vision can no longer discern their presence due to the increasing levels of ambient light produced by man-made lighting. Essentially, while the overall brightness of the stars remains



amazed by the sight of the dense band of visible stars in our galaxy known as the Milky Way. These days, the Milky Way is still visible most nights in Northern Michigan but it does not appear to be nearly as bright as in the “old days”. See the picture below, which was taken recently looking toward the south end of Elk Lake.

City. Also, notice the various bright lights along the southern shoreline of Elk Lake. Photography by Dean Ginther.

Is some cosmic phenomenon gobbling up the stars and wiping out the night sky? That would be big astronomical news, if true, but it is not. The stars appear to be disappearing largely be-

consistent (with considerable variation from star to star), increasing ambient light levels overwhelms our visual capacity to detect the less bright stars. The brighter the ambient light, the fewer stars we can detect. In many areas of the United States, very few stars are visible at night.

What Happened to the Milky Way?

In addition to an increasingly bright night sky, there are additional negative effects of being surrounded by artificial night lighting. Many people find it difficult to get to sleep at night, particularly as they age. Some suffer from sleep deprivation due to insomnia, which has many negative health effects. If you live next to or across from nighttime lighting, research shows that your sleep may be disrupted. The same is true for animals, whose diurnal patterns of activity can be adversely affected by nighttime lighting.

Artificial night lighting may have other serious health effects. In a study published by the Asian Pacific Journal of Cancer Prevention (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5454613/>) the conclusion was:

Artificial light at night is significantly correlated for all forms of cancer as well as lung, breast, colorectal, and prostate cancers individually. Immediate measures should be taken to limit artificial light at night in the main cities around the world and also

inside houses.

Unnecessary night lighting also is very wasteful. The following quote is from the International Dark-Sky Association (IDA):

The IDA estimates that at least 30 percent of all outdoor lighting in the U.S.



Unnecessary architectural lighting

alone is wasted, mostly by lights that aren't shielded. That adds up to \$3.3 billion and the release of 21 million tons of carbon dioxide per year! To offset all that carbon dioxide, we'd have to plant 875 million trees annually.

So, is there a way to get better sleep at night, avoid potential conflicts with your neighbors, save money, and be able to appreciate the beautiful northern night

sky? Of course – and it is largely under your control. Even better, it an easy act to perform.

If you are not outside at night, then don't leave your outside lights on.

How easy is that? It requires just a flick of the light switch.

If you do venture outside at night and turn on your outside lights for greater visibility, make sure that your lighting:

- is aimed down and illuminates only the smallest area needed for visibility and safety;
- uses a luminaire (i.e; a complete light unit) which is shrouded so no light is emitted horizontally;
- uses a luminaire which has wattage/power/brightness no greater than needed for immediate visibility and safety;
- uses a luminaire which has a color temperature and intensity which does not produce harsh glow;
- uses a luminaire which

What Happened to the Milky Way?

does not allow light to trespass into your neighbor's property.

Dock Lighting

Private docks and piers should be lighted only when residents are present. It is particularly important that dock lighting be shielded, not produce reflections on the water or shine into the water, be of low wattage/power, and be of a color/temperature, such as amber or yellow, which reduces glare. For those concerned with dock – boat collisions at night, which are extremely rare, reflectors and flags are excellent alternatives to lighting. Michigan law requires boats when operating above no wake speeds to stay at least 100 feet away from docks. Boats approaching or departing dockage at night should be equipped with hand held lighting to illuminate docks and hoists, as needed.

Solar Lights

With the advent of LED lighting, solar lights have become widely and relatively cheaply available. Most solar lights have light sensors to turn the light on at dusk and turn it off at dawn.

Unfortunately, most solar lights cannot be manually turned off during the night. For this reason, outdoor solar lights which cannot be turned off when residents are absent are not recommended. If solar lights are used, they should be shielded, of low power, and connected to a switch.

Lighting and Security

Many people believe that adding outdoor lights or increasing the intensity of existing lighting will deter the likelihood of trespass or break-ins. In an article written by Paul Bogard for the Minneapolis Star Tribune in 2014 (<http://www.startribune.com/the-tension-between-nighttime-lighting-and-public-safety/241561501/>), he notes:

When the goal is to improve our safety at night, installing brighter lights is rarely the answer. Because some light at night can undeniably improve our safety, we too often assume that ever-increasing amounts of light will make us ever more secure. Unfortunately, there is almost no research to support this belief. What research we do have on the relationship of light at night and crime is equivocal at best, and as often suggests

that reducing lighting levels rather than increasing them improves safety most.

For example, a study done in West Sussex UK indicated that adding all-night lighting to a residential area helped residents feel safer but actually resulted in a 55% increase in crime compared to control areas and the country as a whole. Other studies also indicate that adding nighttime lighting does not necessarily result in reduced crime (see <http://cescos.fau.edu/observatory/lightpol-security.html>). Marcus Felson, a professor at Texas State University and an expert in criminal justice, states that:

The lights would only help robbers see their actions. If you're in a rural area, you're basically in a secluded area — you're better off turning off because the lights would help an intruder actually see.

A good way to reduce home burglaries, according to Felson, is to introduce yourself to your neighbors so they'll be familiar with who goes in and out of the house.

Purple Loosestrife Treatment Update

submitted by Bethany Dickerson, ESLA Intern summer 2018

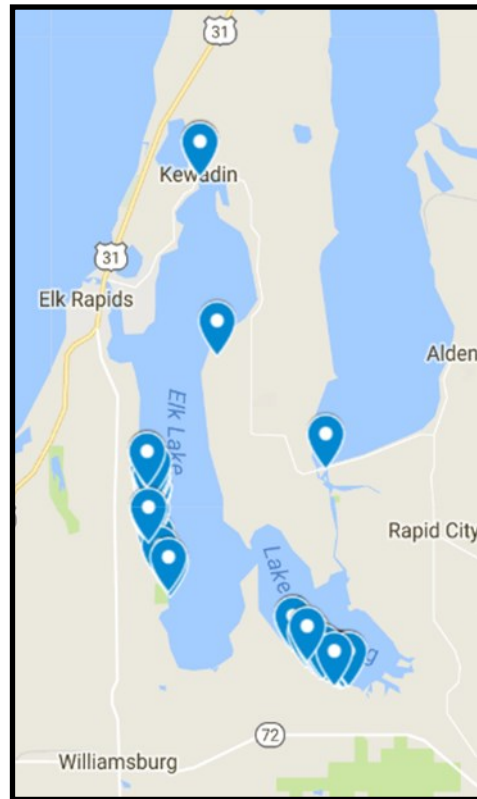
In cooperation with ESLA and CAKE-CISMA (Charlevoix-Antrim-Kalkaska-Emmet Counties Cooperative Invasive Species Management Area), PLM Lake and Land Mgt



Corp treated Purple Loosestrife on 41 properties along the shorelines of Elk and Skegemog Lakes. PLM treated the plants with herbicide in August. ESLA identified the locations during a 2017 shoreline survey of the lakes. CAKE-CISMA and ESLA jointly funded this project. The accompanying map shows the locations where treatment was performed

Purple Loosestrife (*Lythrum salicaria*) is a beautiful flowering plant native to Europe and Asia. It may have been

introduced in North America in the early 1800's by settlers who brought them for their flower gardens. Alternatively, its seeds may have been in the soil used as ballast in European sailing ships that were then discarded in North America. In North America it



has escaped cultivation and invaded our wetlands and lake edges. It is a very hardy perennial that aggressively outcompetes native vegetation and degrades wetlands which are habitat for 100's of species of mammals, reptiles, fish, waterfowl and insects.

If you should happen to see the plant in the area or on your property, please contact ESLA board member Dale Claudepierre by email: gini-dale70@gmail.com or phone: 248-644-7614 at your earliest convenience so that it can be treated next summer.

If you attempt to remove purple loosestrife yourself, you will need to be certain to remove the entire root system, which can be quite large in a mature plant. Otherwise, it will grow back. The plant should be burned or disposed of in a black plastic bag and taken to a landfill, not composted. Likewise, any flowers, pods, or seeds need to be handled carefully to prevent spilling on the soil or water. A permit is required to spray herbicides near public waters or wetlands. It would also be helpful to advise Dale if you have already removed the purple loosestrife plants from your

property or have determined that the plant is not located on your property. (See the accompanying picture provided to assist you in confirming the plant's presence on your property.)

Thank you for your help in protecting our lakes!

The Effects of Sediment on Aquatic Ecosystems

submitted by Bethany Dickerson, ESLA Intern summer 2018

What is Sediment?

Sediment is sand, silt, clay and other soil particles transported by weathering, erosion and gravity. Most of the sediment that is filling up our lakes comes from run-off from roads, bridge crossings, hard surfac-

Harbor community public access into Elk Lake,

Why is it a problem?

Inorganic toxins bind to fine sediments. Sediment is the most common pollutant in rivers, streams,

lead to a decline in habitat quality.

Lakes are sediment sinks and are closed systems for sediment. Once polluted, a lake is difficult to clean.

Lakes go from oligotrophic to eutrophic due to the delivery of sediment and nutrients, which causes the lake to fill in and become shallower. This raises the temperature and increases biologic productivity.

Sediment can result in odor and taste problems in drinking water. Sediments clog fish gills which lowers growth rates, reduces resistance to disease and affects fish egg and larvae development.

Fine sediments in the water column:

- Increases turbidity.
- Limits light penetration, affecting biologic productivity.
- Reduces primary productivity causing impacts on the food chain.
- If extreme, fine sediments can:
 - Smother a riverbed.
 - Kill aquatic flora.
 - Increase invertebrate drift.
 - Reduce available habitat for benthic organisms.
 - Degrade the fish population.
- Fine sediment is also crucial to the ecosystem, the problems occur when change is accelerated. Erosion from hillslopes are the source of most sediment introduced into streams.



es/driveways, house drainage, and run-off from agriculture and turf grass. See the picture below of erosion created by storm water runoff at Maple

lakes and reservoirs. An increase in suspended solids and sedimentation in rivers and streams from construction, mineral extraction and poorly managed agricultural practices can

The Effects of Sediment on Aquatic Ecosystems continued

What can be done?

Stop it at its source.

Accelerated erosion needs stabilization and revegetation of slopes.

Timing of agriculture, forestry, and construction operations with weather patterns and maintaining at least minimal levels of residual plant material on the ground are important for reducing sediment delivery to stream channels.

Minimize hard surfaces near lakes and streams.

Do not direct run-off from residences into the lake.

Design roads and bridge crossing so run-off does not go into nearby streams and lakes.

Lessen human activity that increases sediment delivery and accelerates eutrophication.

Create a buffer zone, a vegetated area adjacent to a waterbody to protect streams and lakes from pollutants from sedimentation

Fish Creel Survey Reminder

By Ken Krentz

This past March a DNR fisherman's creel survey was sent to all riparian's with the annual membership letter. This is a friendly reminder to please fill out the survey each time you catch fish in Elk Lake. This survey, along with other DNR netting and non-lethal electroshocking surveys, will help guide stocking and management decisions.

ESLA has partnered with the DNR in the past and will continue to do so to promote fisheries management. The more surveys that are returned will not only enhance the fish database, but will communicate the amount of fishing activity to the DNR. More fishing activity will raise the DNR's level of priority on supporting our lakes.

If you need more of the survey log sheets, they are available in self-serve containers at the DNR launch sites on Elk Lake. If you're not a fisherman, please pass the survey on to one.

ESLA Provides over \$9000 in 2018

This year ESLA provided monetary support to a variety of local, regional, and State environmental groups and to local government, including: the Waterfront Alliance, Tip of the Mitt Watershed Council, Paddle Antrim, Freshwater Future, Milton Township, Boater Safety, and Adopt A Stream. Thanks to all ESLA members for your continued support of our efforts to educate the public, to support local, regional, and State environmental groups which assist our mission, and to preserve and protect our lakes, rivers, and watershed.

ELK-SKEGEMOG LAKES ASSOCIATION

July 1, 2018 – June 30, 2019

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WE WANT YOU!

Please join or
renew your
membership in
ESLA at:
[http://elk-
skegemog.org](http://elk-skegemog.org)

If you are a cur-
rent member,
thank you for
your continued
support.