

May 11, 2026
CAC Monthly Meeting

CAC Members Present: Karina, Breck, Andrew, Hilary, Alison, Eric, Bob, Lori, Denise

Public: Paul Trahan (Board of Friends of Northern Lake Champlain), Mark Naud, Joe Rosen, Kent Hendersen

DEC: Ethan Swift, Karen Bates, Chris Rottler, Sarah Coleman,

Presenters: Ellen Martinsen

Presentation from Ellen “ Investigation into diversity, distribution, and prevalence of emerging heterosporis parasites in lake champlain yellow perch”

Ellen

- Runs Wildlife Pathogens Lab at UVM
 - Parasite and pathogen programs like including ticks
 - Runs internship program at the university of Vermont natural history collection
 - Professor at UVM
- Tom Jones, Matt Bodnar at VTFW, Emma Privett and Sarah Helms at UVM, and collaborator in NH
- Emerging diseases in fish is a focus of the lab
- Spores and vesicles form within the skeletal muscle cells, ultimately rupturing the cells
- Muscle tissue is replaced by connective tissue resulting in an emaciated or concave appearance
- Damage to the skeletal muscle can be expansive
- Many species of fish in the great lakes are can be infected with heterosporous suthelandae
- Hetersporis parasites in lake champlain
 - First found in 2014 numbers have been increasing since then
- Recreational and commercial anglers both fish for yellow perch, and they are highly consumed, around 400,000 pounds of yellow perch sold annually
- Research Objectives
 - Document distribution
 - Same or different from parasite in great lakes
 - Pathology of infection
 - Fish health
- Utilized bycatch to contribute infected fish to the study
- Screen 400 fish so far, have more to sample frozen
- Six sampling sites across lake champlain
- Measured, weighed, tissue sampling, imbedded in formulin,
- Methods - DNA extraction - parasite screening - DNA sequencing - parasite identification
 - and compare to other identified heterosporous infections

- Results
 - These parasites produce millions of spores, which gradually destroy and replace muscle cells and tissue. Healthy tissue are destroyed and liquified.
- Distribution - found infections in northern lake, but not in or south of Burlington Bay with a visual examination with fillet, but PCR positive fish may not have visual damage, so there is likely more fish that are infected
- Why do some fish show signs of disease and some don't? They are exploring this
- In lake champlain we have the same invasive heteroporis sundalae is the same as in the great lakes, so it has traveled here from the great lakes
- Poorer body condition may be correlated with the infection
- Could lead to 10% mortality rate, 30% reduction in yellow perch yield, 10% reduction in mean catch weight
- Restricted pathogen
- Reportable pathogen or a disease of concern
- Hasn't spread beyond Lake Champlain into Vermont yet
- Effects on commercial fishers and recreational anglers, angler tours, fish markets, have been seeing it get worse and spread throughout the lake.
- Prevention
 - Do not move live fish from water bodies
 - Infected fish should not be put back in the water
 - Don't spread water - spores could be in the water
 - Clean, drain, dry, disinfect equipment
- Breck - is there a human threat?
 - We can not get the infection from eating infected fish.
- Andrew - How did it get to the great lakes originally?
 - It is unknown, it could be from aquarium fish that were released into the great lakes. More common in southeast asia and other parts of the world. Found in eels and aquaculture. First documentation of heterosporous in North America, so thought to be from the release of ornamental fish.
- Bob - I know how difficult it can be to spores, is putting it in the trash a good idea? Leachate will eventually return to the WWTF.
 - In experimental studies the spores can persist in water for months. Curious to know if it could last long enough to be transmitted through a wastewater treatment facility
- Breck - is this pathogen on the list of invasives in Lake Champlain?
 - No it's not.
 - It may not be on the list yet because it is newly identified. This research has showed that it is the same as the great lakes species which can put it on the invasive list
- Breck - Can you send the list of fish pathogens to Karina?
 - Yes
- Paul - I know study is on the yellow perch, do you know how it is impacting other species?

- So far only been visually documented in walleye, but it could be in others. In great lakes they have done RCR screening and found it in many fish. We know it's circulating around in lake champlain in the water column, so other fish are certainly exposed, whether or not they are infected they would like to pursue.
 - As well as birds
 - Many birds love to eat yellow perch. Ellen has a background in bird pathogens, so have thought about it but haven't been looked into yet.
- Hilary Solomon - Update on CWSP program South Lake Case Study
 - TMDL - regulatory and non regulatory approaches to achieving the TMDL targets
 - CWSPs are part of the non-regulatory projects
 - Each land use sector has an associated reduction requirement
 - Some basins can't account for all the phosphorus removal, so that extra was put in the forest sector
 - CWSP across the Lake Champlain Basin, many are RPCs
 - Poultney Mettowee and Rutland RPC has partnership for South Lake
 - PMNRCD identified, develops, and implements projects, RPC has financial, mapping, and data management systems
 - New funding delivery mechanism for clean water projects
 - BWQC guides decisions, CWSPs implement the projects
 - ANR created the CWSPs and defines the formula, provides technical assistance and evaluates the CWSPs
 - CWSPs follow grant guidelines, staff and facilitate BWQC meetings, oversee all project completion, develop partnerships and run grant rounds, provide O&M, report progress to DEC
 - South Lake CWSP area aligns very well with PMNRCD area plus the South lake direct drainage, also includes otter creek NRCD and addison county rpc so work with them as well
 - BWQC - two RPC, Two conservation, 2 watershed groups, 2 conservation group, 2 municipalities members
 - Sources of Projects
 - Assessments
 - Stormwater master plans
 - Geomorphic assessments
 - Scoping studies
 - Landowners with drainage or erosion concerns - easier because it already has landowner support
 - Towns with runoff issues
 - CWSPs follow CWIP funding policy which can be challenging
 - Every year runs a grant round, with a simple application with multiple rounds of vetting with DEC, BWQC votes on which projects to pursue based on
 - Cost efficiency by sector (highly weighted factor)
 - \$21,600 per Kg of P
 - Life expectancy

- Complexity of O&M
- Value of project to basin
- co -benefits (second highest weight)
- Recently revised targets and they were in total 49% reduction in targets so the South Lake CWSP is now not as far behind on targets, after doing a lot of projects and the targets being reduced
- South Lake has to find projects in the forest sector, but that can be harder to find
- Project development, ag (river plantings), developed lands, forest lands (forest roads), streams/wetlands (floodplain reconnection, dam removal, river plantings)
 - Can sometimes be difficult to differentiate between ag and streams, and they have very different cost effective formulas
 - Don't have a lot of developed lands in the formula, but have found projects in that sectors
- O&M helps get land owners on board to know someone will maintain it and verify that it is functional. This is an exciting development in the program.
- Early stage funds
 - Quick assessment of projects and if it makes sense for the CWSps to pursue or other funders
- Project Adoption
 - South Lake CWSP has adopted 3 existing projects - adopt P credits and O&M
- Funded 4-7 projects per year in the last 3 years, completed 1-6 projects per year in the last 3 years.
- Finding projects, getting groups to apply for the CWSP funds is a big part of the work

Challenges

- Complicated program based on the modeling of the TMDL and funding tied to phosphorus reduction at the state agency level - ANR, AAFM VTrans
- DEC is risk adverse
 - Projects such as gully stabilizations aren't eligible, wish that DEC would allow projects to be funded and work out the credits afterwards
- CWSPs get 15% for administration, but that doesn't get passed to the implementers, so the CWSP may have to hire staff to complete projects

Positives

- South Lake CWQC is engaged and developing own programs and projects to overcome constraints
- DEC is generally very responsive
- Pace is increasing
- Desire to grow capacity for project implementers is consistent to help support network capacity
- DEC has an action list to add more project types.

Breck - how do you calculate cost efficiency for project development project type?

- The formula grant has a portion for project development, South Lake doesn't have a lot of organizations to supply projects.
- Cost efficiency can be hard to meet, many projects are not cost effective to do

Bob - applaud you for O&M

Andrew - Co-benefits could be a way to get more partners involved

- If a project is not mainly a phosphorus project it would probably fit better into the Enhancement Grant program through DEC. Hoping that the crediting system can allow for SGA to be a fundable project.

Breck - What are the one or two top priorities that we should be asking the legislature for?

- Making sure we can use the program efficiently, can be hard to meet the CWIP funding policy, so trying to streamline and efficiency. Wish DEC would allow projects to be funded without guaranteed credits while they are developed.
 - Is that for the legislature, or for DEC?
 - Probably for DEC?

Breck - Does any one know the intersection between LCBP for implementation projects to duplicate or compliment projects that the CWSPs do?

- For co-funded projects the Funding Policy clarifies that credits will go to the CWSP. CWSPs can put in an amount of money based on the kgs reduced by the project

Karen - sometimes LCBP will fund a project type, so then the clean water funds won't go to those places. DEC can claim credits associated with LCBP funded projects.

Sarah - In the CWIP performance report there are several state and federal partners to meet the TMDL including NRCS, LCBP, VHCB, NRCS. The CWSPs report their phosphorus credit from the whole project rather than proportional to their piece of funding. But it ultimately all gets reported into one report.

Paul - How did you discover the project that you adopted, and are there others projects that are available to adopt?

- Through WPD where all clean water projects are recorded

Bob - each sector has challenges to meet their requirements. WWTF sector is removing a lot of phosphorus and could be asked to do more if other sectors don't meet their requirements.

Karina - dam removal projects that didn't go through because of phosphorus crediting, has that changed and projects should be reapplied?

- Hasn't changed from being mostly focused on phosphorus reduction, but the phosphorus may be more valuable now.

Project scoping, could dam removal project scoping be allowable?

- CWIP funding policy has the assessment type for each project type, so look their and talk to your CWSP
- Stream project development assessment requires a stream geomorphic assessment which can be expensive and difficult.

Karina - flexible funds seem really valuable, do other CWSPs have that?

- We were hoping that would be adopted by the other CWSPs, having some project assessment at the beginning is very helpful

MOA updates

- The steering committee meeting in April and discussed the MOU more, decided that a survey would go out to voting steering committee members to give input on 3 parts of the MOU. The terms of the MOU, the composition of the HAOC, and the role of the steering committee should have over the positions on the HAOC. The SAC received the

CAC comments and are planning to prepare a new draft based on survey results and comments at the June meeting. Also drafted three main points that the CAC's most concerned with in the MOU. Mark Naud also drafted an op-ed to be released soon.

Retreat Agenda

- What do we want on the agenda? Have the legislators back? Updates from DEC?
- Reflections?
- Denise - Purpose is to have a wrap up and reflections on the process. Having the legislators was really nice last year. Also planning for next year, what actions to take, plan for next year starting over the summer. The Action Plan starts in earnest after that meeting and what should be included. The Chlorine bill was vetoed so could have an update on that. Educational items - nothing pressing now.
 - Lori - having the chairs back and doing an update on the issues that are in the action plan. What can we do to have better performance success for our priorities? What came out of the presentations that we heard over the last year? Taking information from the presentations and building it into our priorities could be helpful.
 - Could get a summary of all the presentations to summarize what actions we want to take next.
 - Andrew - honest conversations about what's working, are we reaching people? Is information getting used in decision making? Process improvements the CAC should make going forward.

Mary will ask the chairs to attend the retreat.

Lori - been spending a lot of time on the MOU, wondering if the MOU subcommittee can participate in the CAC retreat.

Mark - Discuss how well the CAC is engaging the citizens of the State so we are addressing the issues of the people and do better with our charge as the CAC. Didn't participate in the Act 181 and Act 250 discussion that was going on during the legislative session.

Motion to adjourn - Denise, Lori seconds.