

**Lake Champlain Basin Program
Technical Advisory Committee meeting
June 3, 2026, 12:30pm-3pm
Held remotely**

Approved TAC meeting summary

TAC Members: Wade Bastian, Jennifer Callahan, Sarah Coleman, Bryan Dore, Brian Duffy, Chris Smith for Laurie Earley, Neil Kamman, Steve Kramer, Margaret Murphy, Tony Prestigiacomo, Quinn Rufa, Andrew Schroth, Jamie Shanley, Daniel Tremblay, Colette Ward

LCBP + Lake Champlain Staff: Mae Kate Campbell, Emma Janson, Meg Modley, Matthew Vaughan, Sonya Vogel, Erin Vennie-Vollrath, Sarita Croce, Jim Brangan, Ryan Mitchell

Guests: Laura Klaiber, Madeline Cotter, Marli Rupe, Roe Stuart

1. Updates, announcements, public comments

- Jamie (USGS): I wanted to share an overview of USGS activities within the basin. I'd be happy to give a longer presentation on a future agenda. Projects we're working on include:
 - A harmful algal blooms (HABs) study linked to an existing hydrodynamic model
 - Providing laboratory services for the ongoing emerging contaminants study with Stone Environmental
 - An unmanned underwater vehicle study led by Andrew Schroth. The vehicle will travel around the lake underwater, with sensors, looking at blooms.
 - We have a low-flow study just starting up. This project includes developing equations to predict low flows in all of VT. It could be helpful in assessing drought conditions and responses.
- Jamie: We want to provide support and be called on for science initiatives. I will be retiring at the end of September. We will discuss a new USGS representative to the TAC.
- Brian (NYSDEC): We have announced a HAB research grant opportunity using the New York State Department of Environmental Conservation (NYSDEC) HAB Roadmap and Research Guide.
- Erin (NYSDEC): Other ongoing grant opportunities include water quality improvement projects (WQIP) program, the non-agricultural, non-point source program, and municipal separate stormwater system (MS4) grant programs. There are additional opportunities for implementing resilience projects identified in our current report, and we will be holding a kickoff for the Poultney-Mettowee Resilient NY study with SLR leading that study. Through LCBP, we are also offering a request for proposals (RFP) for wetland and floodplain restoration work in the NY portion of the Lake Champlain basin.
- Andrew (UVM): The Carmi platform has been deployed. We are not seeing a lot of biological activity, and stratification is starting to set up. Weather station data is not functioning properly currently, we are working on it.

- Neil (VT ANR): The Vermont General Assembly has adjourned for the year and has approved the final State budget, including all Clean Water funding.
- Maddy (VT ANR): I started with the Vermont Department of Environmental Conservation (VTDEC) Clean Water Initiative program in April as the Clean Water Program Manager.
- Neil: DEC has hired a new Lake Champlain Basin coordinator.
- Marli (VTDEC): The new Coordinator is Katelyn Jones (maiden name) who will be returning to the program.
- Neil: We are excited to have brought Kate into the position, you will meet her soon.
- Matt (LCBP): I was on a hiring committee for the Long-Term Monitoring Program/Cyanobacteria Monitoring Program Lead position. Interviews went well, excellent candidates, and an offer has been made. More information will be announced soon. Thanks to TAC for accommodating the late afternoon meeting. Water quality monitoring buoys are being deployed for the season. We are planning to deploy the new Northeast Arm buoy the week of June 15th. The TAC will be on summer recess in July and August; our next meeting will be in September. The Lake Champlain Steering Committee will meet next week on June 10th and I will begin the process of soliciting research priorities for consideration in the Request for Research Pre-Proposals. This request will be made to the TAC as well. The Boat Launch Steward program has kicked off for the season after completing training.

Review and approve summary of previous TAC meeting

Motion: To approve the summary from the May 2026 TAC meeting

By: Margaret

Second: Steve

Vote: All in favor

2. Informational presentation: *Agricultural Drainage Research Plots for the Evaluation of Conservation Practices* (Laura Klaiber, William H. Miner Agricultural Research Institute)

Laura shared a presentation on the agricultural research plots project at Miner Institute.

- Background: Limited research on impacts of best management practices (BMPs) on agricultural practices in the study region, target nutrient reductions have not been met, and there is a need to build resiliency to extreme weather events. With LCBP funding, the Miner Institute has set up research plots that can be used to test BMPs
- Outcomes/outputs: 12 fully instrumented drainage research plots, articles in the Miner Institute's Farm Report newsletter
- Methods:
 - Study location: Chazy, NY
 - Research plot design: 12 plots 90'x90', tile drains within the plot and surface drains surrounding each plot drain into a manhole at the interior plot corner, space between plots managed as grass
 - Year-round monitoring of surface runoff during runoff events and baseflow periods using autosamplers
 - Future work:

- Characterizing baseline period
- Change treatment period
- Change calibration period

Discussion

- Neil: What is planned for initial experiments?
 - Laura: First we will undertake a baseline period to understand what is happening in the plots without any experimentation. We want to assess how much variability is occurring amongst the plots, etc., before we impose any treatments. It will be a boring baseline period just with corn, but it will be exciting to jump into more tests in the future.
 - Andrew: How long do you expect the experimental setup at these plots to functionally last? Do you anticipate any maintenance?
 - Laura: We expect the setup will last a long time. We expect periodic ditch maintenance to be needed, but that is relatively easy to keep up with. The main impact on longevity of the system comes down to the life of the equipment. ISCO's can be variable. Other things can fail sooner than you expect, too.
 - Brian: Can you explain why designing the experimental setup to test treatments at the plot scale is more efficient than testing them at the field scale?
 - Laura: It comes down to statistics used to assess the effects of treatments. The downfall is that in larger projects you see more weather events. More replicates allow us to complete more test in a shorter amount of time.
 - Neil: I am looking forward to seeing how things go and wouldn't be surprised to see research funding requests come through from this!
3. Informational presentation: *Exploring the water quality impacts of flooding and drought in the Lake Champlain Basin* (Dr. Matthew Vaughan, LCBP)
- Matt shared a presentation. Matt provided summary information on the 2023 flood event and 2025 drought event.
 - A major takeaway from recent data is that the timing and magnitude of flow events is changing. For instance, spring tributary flows are generally increasing, but the magnitude of those flows are decreasing. Summer shows generally increasing tributary flows, fall is generally decreasing, whereas in winter flows are increasing throughout much of the magnitude.
 - The 2023 flood delivered the fourth largest phosphorus load to Lake Champlain in record, whereas in 2025 very little phosphorus was delivered to the Lake over the course of the drought event.

Discussion

- Neil: If these are quantiles, how is it that this looks like discreet data when it should be binned?

- Matt: Every dot represents a regression. If you take the highest flow for each year and do a Mann-Kendall regression on that, that's what these dots are representing. This data visualization technique was developed by the USGS.
- Andrew: I'd be curious to see how dissolved organic carbon (DOC) flushes play out in different years. There's always some of this happening in the fall.
 - Matt: We don't have a long record of DOC in-lake concentrations, and the fall is the time of year the field teams are wrapping up. I did look at the limited record and these observations were unusual.
- Neil: What does a 'slug' of DOC mean in terms of in-lake conditions? At nominal levels of phosphorus and nitrogen, is that just substrate?
 - Andrew: I think you're right that it depends on what the 'slug' is carrying with it.
 - Matt: These can be complexes with other compounds adsorbed. Inputs like this can impact light absorption, and could have impacts to lake temperature, stratification, etc.
- Neil: When we looked at broken-down plots of quartiles, the regression of slope, I wonder if there's something to learn by looking at the commonalities of the shapes of those plots vis-a-vis land use change in a particular watershed? For example, the Lewis Creek watershed seemed unique on this plot.
 - Matt: All those plots and results are on my list to write up. If you have ideas on how to team up and dig into writing this up, I'd be interested.
- Tony: The story of total dissolved phosphorus being more related to lake phosphorus and lake chlorophyll is interesting. I know that's a bigger issue, but it's something I'm interested in diving in on. With the graph you presented showing phosphorus loading in 2011, have you taken a look and seen how many years fit into that 2011 load?
 - Matt: There's all sorts of ways you can contextualize that amount of loading. Part of the exercise for me is understanding the impacts of these episodic events but also how resilient the lake is.
- Andrew: I posted an article we published years ago with weighted regressions on time, discharge, and season data for Irene. Question - it was odd to see the winter of 2025 was the lowest recorded flow into Lake Champlain in recent years, but the overall lake level wasn't as low. Do you think that's a relic of the way USGS is publishing their data?
 - Matt: Do you mean it's a function of missing data?
 - Andrew: I mean that for lots of rivers, they are modeling flows during that time of year.
 - Matt: It's a good question. I am totally relying on USGS's rating curves for the winter period. It is all approved discharge data, but it's possible that ice impacted things. I also did a small amount of interpolation. Even if there's a small amount of error there, flows were really low. The lake level also dropped in that period, but it was still high from 2024.
 - Andrew: If you compared that to 2014/15, where it was a very similar winter, I'd be curious at what you'd see.
- Andrew: Did you compare July events from 2023 and 2024? The two flood events were a really different geography, I know.

- Matt: I have. 2024 was much flashier and had less of an impact on lake level. The lake rose 2 feet instead of 3. In terms of community impact, it was equally if not more impactful, but in terms of the lake, not as much.
- Andrew: Rain also was exposed to sediment from the 2023 event, so there could have been more sediment loading.

4. Final report review: *Could American eel predation be a natural control for sea lamprey populations?* (Dr. Roe Stuart, University of Vermont)

Dr. Roe Stuart joined the meeting and shared a presentation on the final report for the American Eel predation project.

- Hypothesis: The larval stage is the most fragile phase in the lamprey life cycle when benthic eaters like eels may be able to easily predate on sea lamprey.
- Research questions:
 1. Can eels predate on ammocoetes?
 2. Will eels choose to predate upon ammocoetes?
 3. Does predation happen in the wild?
- Experiment 1: 1 eel and 4 lamprey per tank, 16 or 48 hours. 23 eel trials, and 6 control trials with no eels.
 - 26% of eels in trials consumed the lamprey
- Experiment 2:
 - Trial 1: 21 fish + lamprey trials, 4 controls
 - Trial 2: 12 crayfish + lamprey trials, 3 controls
 - Across both trials, 42% of eels consumed something. No eel consumed more than 1 prey item. 21% of eels consumed a lamprey.
- Experiment 3:
 - Ausable/Saranac, South Lake focus. Wanted to collect eels where they would naturally interact with lamprey based on lampricide schedule.
 - 7 sites, 12 nights of boat shocking and fyke nets, 43 eels sampled
 - Gastric lavage was used to assess stomach contents. Eel is anesthetized in the field, tube inserted into fish mouth, and stomach contents flushed with water.
 - About 40% of the eels we collected in the wild had consumed lamprey.
- Challenges:
 - Didn't catch as many eels in the fyke net as expected
 - Impacted by the low water levels last year. Lake level was too low to get the shock boat in the water. Resulted in a smaller sample size than expected
 - When sediment is removed, the eels ignore the lamprey. We think this could be because eels are uncomfortable when there is no sediment to bury into.
- Conclusions:
 - 2.7 million glass eels were stocked between 2005-2010 in Lake Champlain, 1% survival to piscivorous size, and eels are not active when water is below 10°C and do not forage every night. That leaves 91 nights of predation, and if 15% of eel habitat overlaps with lamprey territory and the predation rate is ~21%, 79,000-151,000 lamprey are consumed by eels.

- Summary:
 - Eels can and do choose to predate on lamprey. They could be an important component of future lamprey management.

Discussion:

- Matt: Is it possible that the beef detection from one eel's stomach lavage is an error?
 - Roe: It's possible, but I wouldn't be surprised if it were from some human food. Eel will scavenge and eat what's available.
 - Neil: That could be from an eel consuming a dead cow that was floating downstream.
 - Roe: It was a small amount of the material, but an interesting finding for sure.
- Margaret: I had comments on the earlier draft of the final report, but your presentation covered a lot of the results I was looking for. This is good. Minor question - I was confused about the second task and the number of trials.
 - Roe: We did 15 trials, but 3 were controls.
 - Margaret: Detail in your report for the number of eels and lamprey per trial would be helpful.
- Meg: I think there are a few other US Fish and Wildlife Service comments that are coming in. I think we could conditionally approve the report when the comments are addressed. One thing is that folks want to be careful about the role of American Eel predation on sea lamprey and conclusions that are drawn based on these results. We can discuss.
- Neil: Roe, did you include that math in your report?
 - Roe: It is in our manuscript but not the final report.
 - Margaret: I would vote that it is not in the final report.
- Neil: You clearly answered the question this research set out to address, I appreciate that!
- Matt: Great work!
- Neil: Let's do a conditional approval and Meg can make the final call on when comments from the service are addressed.

Motion: To provisionally approve the final report pending the receipt of additional TAC comments.

By: Margaret

Second: Brian

Vote: All in favor