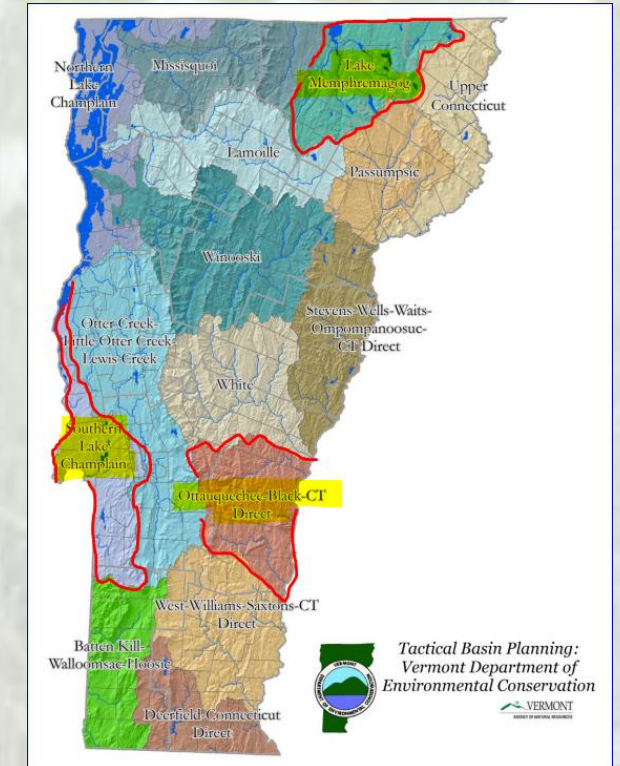


# Vermont Wetland Bioassessment Update

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# 2024 Monitoring Season Summary

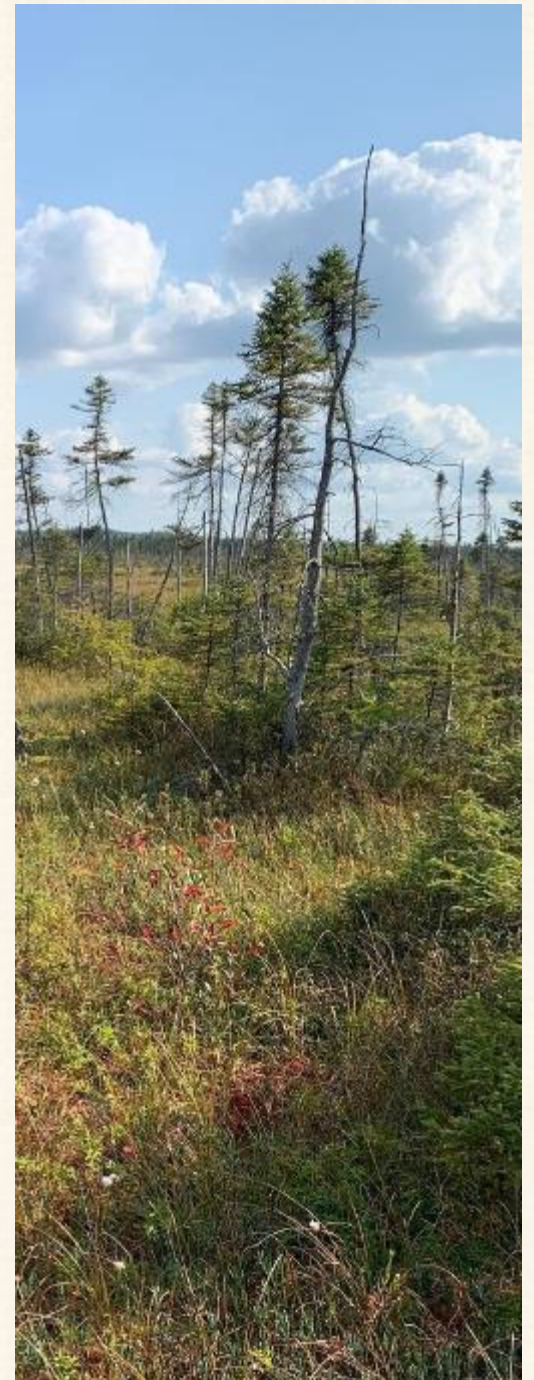
- **Rotational Basin monitoring**
  - Memphremagog, Ottaqueechee/Black, & Southern Lake Champlain basins.
  - Peatlands, floodplains, under-sampled types, revisits
- **Restoration site monitoring**
  - Focused in Memphremagog basin
  - Revisits of previously surveyed sites
  - Assessed several Dam Removal Sites
- **Probability monitoring**
  - Random stratified points visited in Lamoille River subwatershed
  - Issues with mapping, i.e. non-wetland sites
- **Class I candidate wetland assessments**
  - Conditional & functional evaluation of exemplary wetlands. Focused on targeted basins but included others around the state
- **Supported regulatory staff by providing technical expertise**
- **Site visits for landowners who requested ecological inventory**



# 2024 Monitoring Season Stats

## Level III Assessment

- 37 full vegetation plots and 67 additional site species lists.
- 8 water chemistry sites (less than some years due to focus on peatland and floodplains).
- Level II Assessment
  - 113 VRAM rapid assessments (and counting)
- Restoration Monitoring (Level II & III)
  - 7 veg plots, 24 VRAM, 8 species list, 6 revisits
- Probability
  - 4 random stratified sites
- 13 revisits to sites surveyed in the past.
- Class I candidate evaluations: 9 wetlands visited.



# Outreach and Collaboration

- Worked with Highschool faculty and students to provide experiential learning, wetland-focused workshops in Memphremagog Basin.
- Joint assessments with lake monitoring staff at sentinel lake sites
- Training & collaboration with dam removal restoration partners
- Continued collaboration and data exchange with Natural Heritage Inventory.
- Collaboration with regional watershed organizations
- Multiple site visits with landowners and land managers interested in their wetland.



# Wetland Mapping Updates

- NWI mapping is being updated for entire state
- Provided multiple ground truthing days and desktop review
- Detailed wetland maps created for bioassessment integrated into updated mapping.
- Desktop functional analysis with new maps will be linked to bioassessment.
- Topic to discuss: Wetland mapping requires that stream mapping comes with it, are other states experiencing this?




# Next Steps

- Winter will focus on data management, analysis, report writing, mapping, and planning for the next field season. QAPP to be revised and updated.
- New biocriteria including Tetra Tech multimetric index and program-created metrics will be used to conduct analysis.
- Continued dialog on Class I wetland candidate criteria.
- Increased integration of functional analysis into bioassessment.





# Success Stories

- **Integration of additional indices and assessment tools for biocriteria development**
  - **Robust wetland restoration monitoring project**
  - **Collaboration with other monitoring and inventory programs**
  - **Mapping & Bioassessment more interconnected**
  - **Wetland Functional Assessment Mapping Tool- coming soon**
- 
- **What indices/metrics are working for other States?**
  - **How to integrate conditional and functional assessments?**
  - **Regional network for long term monitoring**
- 

# Monitoring Challenges: Flooding

- Vermont was hit with multiple 100-year storm events in July, again.
- Existing roadway infrastructure is not designed to mitigate frequent enhanced rain events.
- Many communities heavily affected.
- Anthropogenic hydrologic disturbances appear to be amplifying flood impacts.
- Act 121: Flood Safety Act: comprehensive approach to flood resilience.
- Floods and severe thunderstorms completely disrupted logistics and caused field day cancellations.
- Positive aspect: opportunity to document new floodplain restoration sites in action.





# And... Climate Change

- Flooding is currently the biggest impact. Preliminary observations are that wetland impacts from flooding are mostly limited to areas with human watershed disturbance.
- UVM is studying 5 restored riparian wetland sites in VT. Have been able to monitor numerous flood events in recent years at these 5 sites including July 2023 flooding.
- Bioassessment is applying experimental metrics for measuring plant response to temperature – no changes noted yet.
- New LLWW mapping will help us find and survey more peatlands.
- New LiDAR products offer potential to see changes in wetland level from flood deposition, water levels, and changes in peat.
- Long-term monitoring of undisturbed peatlands may tease out climate change signals over time.
- Monitoring for carbon sequestration could highlight the importance of wetland restoration and protection. Ideas?

