

# The Lake Bomoseen Association on H.31, An act relating to aquatic nuisance control

*“You take the lake. I look and look at it. I see it’s fair, pretty sheet of water. I stand and make myself repeat out loud. The advantages it has, so long and narrow. Like a piece of some old running river, Cut short off at both ends.”*

*“I took my mind off doughnuts and soda biscuit To step outdoors and take the water dazzle A sunny morning, or take the rising wind about my face and body and through my wrapper,”*

**Robert Frost, “A Servant to Servants”**

Recognition - Lake Iroquois Herbicide Treatment Testimony to House Environment & Energy Committee on H31, Pat Suozzi, Lake Iroquois Association, March 15, 2023

To all VT Lake Associations

# Ecological Risk

- **Reference** - U.S. Fish and Wildlife Service, Ecological Risk Screening Summary, June 2015, Revised, April 2018, Eurasian Watermilfoil (EWM) (*Myriophyllum Spicatum*) *M. spicatum*, Level of Risk: **HIGH**
  - EWM spreads by attachment to boats, trailers, anchors, and water gear
  - Can out-compete and extirpate native plant species creating monocultures that can alter hydrology, change nutrient dynamics, alter food webs, increase water temperature, and reduce dissolved oxygen.
  - At high densities, abundance and diversity of invertebrates that provide food to fish and foraging space for predator fish are reduced.
  - Heavy infestations limit recreational activities and provide habitat for mosquitoes and parasites that impair swimming and other recreational lake uses.
  - Substantial financial investments have been made to limit the impact of this species in aquatic environments; \$1500to \$2500/hectare
  - Loss of property values averaging \$96,000/home on infested lakes
  - Certainty of this assessment rated HIGH. The overall risk assessment category is HIGH.





# On Eurasian Watermilfoil (EWM)

# EWM and Invasion Biology

- The concept of “Invasion Biology” began to emerge in the 1980’s
- Invasions were not a large component of the popular environmental movement, and no serious legislation existed concerning invasions beyond agricultural pests.
- In 1988 the exponential rate of scientific output on invasions itself increased, and the *Nonindigenous Aquatic Nuisance Prevention and Control Act* was written and passed, and invasions became a topic discussed in the media.
- ***Today biological invasions are described as the second leading cause of species extinction, behind habitat destruction.***
- Currently 48 of our 50 States have EWM infestations and laws regulating it as a high risk Aquatic Invasive Species.
- In Vermont, of our 800 lakes and ponds, 65 (or 8%) of our lakes are faced with EWM infestations
- Lake Bomoseen is one of those 65 lakes
- Of those affected, 10 lakes or 15% have received meticulous risk assessments orchestrated by the VT ANR/DEC to selectively apply the herbicide ProcettaCOR EC for EWM control.



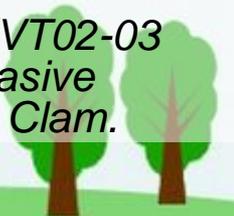
# The Problem with EWM and AIS

- It poses a high risk to all Vermont lakes and ponds (735) within the State
- Easily transported and is self-spreading/perpetuating with or without anthropogenic activity
- Very difficult to remove and maintain infestations using typical methods of control. Physical removal methods are very expensive due to the time required, limited availability of service providers, and proliferation of EWM by the very activities intended to control them. Size Matters! Much greater costs are required for larger lakes.
- A “Biological Pollutant”, yet not perceived as an equivalent threat when compared with chemical pollutants, yet presents a greater long-term habitat destruction potential.
- There are no specific criteria in the Vermont Water Quality Standards (2022) that address Invasive species impact or enforceable response criteria.
- Reference the State 2022 “Priority Waters” List, or identified surface waters having specific impairments and warranting specific actions. Six Classifications, Parts A thru F
- Part E, (reference EPA’s Category 4(C)) contains Surface Waters Altered by Aquatic Invasive Species.
- Lake Bomoseen is one of the (65) Category E impaired waters, and has the greatest number of AIS species (EWM, Zebra Mussels, and Asian Clams) of any VT lake with the exception of Lake Champlain.
- Control of EWM in VT is dependent on private citizens and organizations like the LBA



# Lake Bomoseen/Association

- The Lake Bomoseen Association has existed since the late 1950's
- Lake Bomoseen is the fourth largest lake in the State of Vermont, and the largest lake fully contained within the State (2400 acres/960 hectares; 65 ft. Max depth).
- Our membership typically fluctuates between 200 to 300 members
- Our recurring Lake Health Program includes:
  - A Greeter Program
  - Two harvesters used for EWM control and skimming activities
  - We were the first Lake to complete a Storm Water Management Program (SWMP)
  - We participate in the annual VT DEC Lay Monitoring Program
  - We are currently pursuing a permit to chemically control 620 acres (26% of the lake) of EWM infested areas over a three year period, or approximately 206 acres or 9% of the lake each year.
  - In 2023 we will be adding a boat wash to help address our continuing efforts to control AIS and a Lake Wise program to support riparian buffer zone development
  - The lake has both mesotrophic and oligotrophic attributes (*Considered a Cold Water lake; majority of other lakes around us are warm water lakes*).
  - Based upon the VT State Scorecard Bomoseen is moderately disturbed and it is in poor condition in the Scorecard elements of *Invasive Species and Shoreline Conditions*
  - *The Lake is classified as B2 (Vermont Water Quality Standards)*
  - *Based upon the State of Vermont, 2022 List of Priority Surface Waters, Lake Bomoseen (VT02-03 L05) is classified as a Category E Impaired Water; Surface Waters Altered By Aquatic Invasive Species. Primary Invasive Species include – Eurasian Watermilfoil; Zebra Mussels; Asian Clam.*



# LBA Goal and Challenges

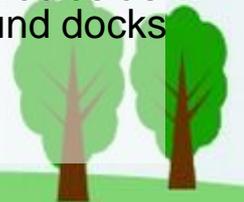
- LBA goal – Contain and control the dominant stressors (AIS/EWM) that threatens our water quality, jeopardizes our status as a Cold Water Lake and it's habitat, and impairs recreational use and property value.
  - We need all available tools to maintain or improve the current lake health
  - Physical forms of EWM removal are very expensive, ineffective in habitat restoration, and allow gradual degradation to a warm water lake, increased eutrophication, and species loss (Oligotrophic to Mesotrophic to Eutrophic to Lake Tipping Point and potential HABs).
  - The VT DEC in their four year review of the 10 lakes permitted to use ProcellaCOR EC have demonstrated it's effectiveness in meeting all of these requirements with minimal or no impact to non-target species and the public health.
  - The efficacy of ProcellaCOR was made clear in the ANR's October 2022, document, "Permitting Aquatic Herbicides in Vermont"; as is the testimony offered by those Lake Associations where ProcellaCOR EC was or is in application (Reference FOVLAP memberships and 2022 presentations).



# LBA Goal and Challenges

- **Challenges with EWM control:**

- Harvesting and cutting is similar to mowing your lawn. It only cuts the tops of the plants to a limited depth. Uncollected EWM cuttings, unlike grass cuttings, create new plants through vegetative propagation, (asexual) reproduction. It is effective for keeping high density EWM areas open for boat access and navigation, but not effective in reducing the presence and density of the invasive species from the lake.
- The LBA has spent the majority of it's budget over the last six years on harvesting operations (\$33,500/yr on average). Although it has improved boat access, it has done very little to help control the spread or reduce EWM presence in the lake.
- Harvestors cannot operate in shallow locations next to docks and shoreline.
- EWM does not die during winter months as the plant lies on the lake bottom, and regenerates upon exposure to sunlight (Reference – 7 Lakes Alliance YouTube video).
- Uncontrolled, EWM locations form impenetrable root masses, preventing hand pulling and Diver Assisted Suction Harvesting or DASH. Rotary subwater cutters have been used, but they greatly disturb the benthos and uncollected root fragments re-seed EWM.
- There are very few qualified DASH service providers in VT. The process is slow, and the high hourly cost can limit use and application. It is not effective in high density EWM root mass containing locations. Permitting is required and uses to date have only been conducted by private lake front property owners.
- Harvesting activities can actually proliferate the spread of EWM/AIS (asexual reproduction from cuttings previously addressed).
- Benthic barriers are limited in their area of application (small) and kill both native plant species as well as EWM, and bottom dwelling invertebrates. This can and often is, used in and around docks and lake fronts.



# The Problem with H.31

- It was intended to only focus on Lake Bomoseen, Eurasian Watermilfoil, and the potential impact on the Lakes Large Mouth Bass Sports fishery
  - It impacts the existing 10 Lakes permitted and successfully applying ProcellaCOR EC; halting their current control activities, and further advancement of all pending lake permits. This begs the question that if H.31 is implemented, what are the financial impacts and reimbursement strategies for the existing costs incurred by lake associations actively conducting or pursuing this accepted remediation method?
  - It would stop or stifle any existing or planned treatments to control other potentially serious lake water quality impacts to include contaminants such as phosphorus or nitrate containment and control, herbicide use for other AIS such as water chestnut, or other chemical agents needed to help stabilize hazardous algal bloom conditions.
  - H.31 would usurp the power of the three Vermont Agencies assigned and authorized to assess the risk, good or bad, impairing the existing highly respected and restrictive process contained in 10 VSA, Chapter 170.
    - Reference (October 2022, Agency of Natural Resources, Permitting Aquatic Herbicide Projects in Vermont;  
<https://dec.vermont.gov/sites/dec/files/wsm/lakes/ANC/docs/Permitting%20Aquatic%20Herbicide%20Projects.pdf>
  - The need for H.31 was based upon a currently successful campaign of misinformation developed by a once VT lobbyist and a Vermont State University educator alleging catastrophic impacts to lake habitats and more specifically, the Large Mouth Bass sport fisheries, if ProcellaCOR EC was used to control EWM.
    - Reference – 9 June 2022 letter from the VT DEC Lakes and Ponds Management Protection program to Cynthia Moulton, Ph.D.
  - The current H.31 language implies there is an existing problem with the current permitting process, rather than conduct an open, unbiased study to review the merits of the existing State controls and permitting processes for adequacy and recommendations for improvement
  - The current VT ANR/DEC working group appears to already be acting to review the existing legislative process for improvement.
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# Misperceptions

Chemical Control - The term “poison” is no longer used to define chemicals used in the control of unwanted pests, plants and insects. Terms now used are based upon the focused pest (Pesticides, Rodenticides, insecticides, fungicides and herbicides).

Those wishing to discredit the permitted use and safe application of chemicals will often use the term “Poison” and relate any chemical use to organochloride compounds such as DDT, the focus of Rachel Carson’s famous book, *Silent Spring*.

Antagonists from the group, “Keep Bomoseen Herbicide Free”, have used this as an example of how government controls, the EPA, and the Act known as FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) are ineffective in assessing and controlling these materials (FIFRA governs the registration, sale, use, and application of all pesticides in the U.S.)

The use of DDT was used in the U.S. since 1954. Carson’s book, and a national movement recognizing the impact of these classes of chemicals actually contributing to the formation of the EPA in December of 1970.

EPA’s formation was responsible for the banning of many organochloride pesticides (DDT) in the U.S. in 1972.

FIFRA and it’s risk-based approach to assessment and registration did not occur until 1988. The EPA and FIFRA are the primary reason for safe use of pesticides in the United States today.

The VT Agency of Agriculture is the Agency that reviews and controls pesticide use, sale, and application of pesticides in the State. Only FIFRA registered materials are considered for approval and use.



# Misperceptions

- One of the most important categorization of an herbicide is based upon it's mode or site of action (MOA).
- This allows for very specific targeting of individual species to minimize the effect on other non-target plant species. Without diving into heavy science here, it is sufficient to say that currently, herbicide MOAs fall into seven categories (examples – AC Case Inhibitors versus Auxin-like herbicides).
- Our focus lies on the Auxin like inhibitors as the herbicide proposed for use in our permit, ProcellaCOR EC uses an auxin based mechanism, mimicking the plant growth auxin like hormone to induce excessive and rapid growth, which ultimately kills the plant, Eurasian watermilfoil.
- Please note, auxin based herbicides were among the first produced and have been with us since the late 1940s. They are regularly used in other commercial applications to enhance root growth to enhance asexual vegetative reproduction of plant cuttings and shoots, increase the ripening of apples, tomatoes and citrus, and enhance the life and preservation of potatoes. ProcelleCor EC was chosen and demonstrated to be so effective because:
  - It has little or no impact on other naturally occurring aquatic plant species;
  - It has very little toxicity or impact on all other aquatic species to include invertebrates, fishes, mammals, and other vertebrates;
  - It's persistence in soil and water is very short, and it is rapidly neutralized by oxidation and sunlight shortly after it's application;
  - The dose to effectively combat EWM is very low, and has actually been proven effective at concentrations lower than the manufacturer's and EPA registered product recommended dose.
  - All of these factors were validated in the VT DEC's review of the past four years use and application in 10 Vermont lakes (October 2022, Agency of Natural Resources, Permitting Aquatic Herbicide Projects in Vermont;  
<https://dec.vermont.gov/sites/dec/files/wsm/lakes/ANC/docs/Permitting%20Aquatic%20Herbicide%20Projects.pdf>



# Misperceptions

- The VT Fish and Wildlife Department does not support the use of ProcellaCOR EC as a viable tool to help control EWM.
  - In 2018 and 2019, DEC and FWD collaboratively reviewed the new herbicide ProcellaCOR to determine how this herbicide might fit within an Aquatic Nuisance Control permit for the control of the aquatic invasive species Eurasian watermilfoil. The broader purpose of these collaborative discussions was to address FWD concerns about whole-lake herbicide treatments that were permitted up to that time. DEC and FWD agreed that it was beneficial to decrease treatment acreage, size, and/or percentage of littoral zone treated for future treatments so as not to create an unacceptable non-target impact on fisheries.
  - *“The result from that discussion was a permitting framework for Aquatic Nuisance Control permits for the management of Eurasian watermilfoil that was acceptable to both departments. Specifically, DEC and FWD collaborated to set an upper threshold for annual herbicide treatment areas for the littoral zone of lakes.”*



# Misperceptions

- The use of ProcellaCor presents an immediate health hazard to anyone entering an EWM treated location:
  - “VDH has on multiple occasions provided a more favorable review of ProcellaCOR compared to other older herbicides that have previously been approved and inert compounds in ProcellaCOR.”
  - *“Based on a review of the confidential statement of formulation, it is reasonable to conclude that human exposure to the inert compounds contained in ProcellaCOR at the concentrations that would result under the conditions proposed by the applicants, is not likely to result in an increase in the level of concern for public health. Thus, the proposed treatment of Lake Bomoseen with ProcellaCOR is expected to result in negligible risk to public health, from both the active and inactive compounds”*
  - “The DEC’s Drinking Water & Groundwater Protection Division (DWGWPD) acknowledges the presence of public and private drinking water systems that draw waters treated with ProcellaCOR as well as groundwater drinking water systems that may be adjacent to a treated. DWGWPD does not have concerns with the use of ProcellaCOR.”



# Misperceptions

- ***“...the idea that there is one person in the DEC with sole power to allow or disallow the addition of toxic chemicals into our lakes and streams is appalling.”***
- DEC Response - “I agree, it would be appalling if one person worked in complete isolation to review and adjudicate these applications” For the Lake Bomoseen ProcellaCOR application alone, I asked the following internal experts to review this application and provide me comments:
  - two scientists from the Department of Fish and Wildlife (DFW) Wildlife Division • three scientists from the DFW Fish Division
  - the DFW Public Access Area manager • two DFW staff that oversee the Keho Camp • two scientists from the Department of Health
  - one scientist from the DEC Drinking Water Groundwater Protection Division
  - the Department of Forests, Parks and Recreation regional State Parks manager
  - two scientists from the DEC Wetlands Program
  - one scientist from the DEC MAP Program that is an aquatic toxicologist and member of the Vermont Pesticide Advisory Council

That’s 15 internal experts assisting me and the other scientists within the Lakes and Ponds Program to review this application.



# Conclusions

- EWM is a significant threat to all Vermont Surface Waters both ecologically and economically
- The scientific research by all National and State recognized environmental protection organizations is unanimous on the threats posed by EWM to natural aquatic lake habitats
- Risk assessments conducted by both the EPA, multiple New England States and the Vermont Agency of Natural Resources, Agriculture, and the VT Dept of Health have concluded ProcettaCOR EC can be used safely for the control of EWM.
- The Vermont DEC permitting process is clearly a thorough risk based process and if not the best, potentially one of the best in the country
  - Their four year review of the 10 lakes (15% of all VT lakes containing EWM) being treated with ProcettaCOR have addressed all of the concerns intended for study by H.31 making it redundant and a waste of Vermont Legislator time and taxpayer monies
  - We need to recognize EWM, AIS and HABs in Vermont for what they are. Biological pollutants contributing the same level of risks as established TMDLs for contaminants such as phosphorus and other organic and inorganic toxicants.
- Any proposed moratorium on the waters of the State or individual lakes for that matter to limit any/all chemical applications aiding in the control of high risk lake health issues will only move VT lakes at risk closer to an environmental tipping point of no return,
- The current voices raised in opposition to the permitted control of selective herbicide use to control EWM is hopefully being offered as “mis-information”, rather than a voice of “dis-information.”

