

Hydrilla Status and Potential Remediation

Tri-County Lake
Administrative
Commission

Introductions

TLAC's Role

The Tri-County Lakes Administrative Commission (TLAC), the government agency representing the counties surrounding Smith Mountain and Leesville Lakes, includes an Environmental Committee responsible for overseeing management and remediation of invasive species.



What is Hydrilla & what are its impacts?



- ▶ Federally Noxious Weed under the Clean Water Act
- ▶ Invasive, nonindigenous submersed aquatic plant native to Africa
- ▶ Has no “natural” enemies
- ▶ Introduced to the US around 1960 via the aquarium trade
- ▶ Spreads vigorously via fragments & is often introduced as fragments by recreational boats, motors and trailers
- ▶ Rapidly expands to the surface forming a dense canopy that shades out desirable aquatic plants
- ▶ Provides breeding habitat for mosquitoes & other pests
- ▶ Can affect chemistry and oxygen levels in high density infestations
- ▶ Makes swimming, boating, fishing, & water skiing difficult
- ▶ Large infestations can eliminate fish habitat, cause stunting, and reduce the number of harvestable fish
- ▶ Can make it very difficult for anglers to access fishing spots

What does Hydrilla look like?



- ▶ Long, sinewy plant with small pointed leaves that are oppositely arranged, generally growing in whorls of five
- ▶ Leaves are sometimes serrated along the edges
- ▶ Flowers are tiny, white, and grown on long stalks
- ▶ Distinct tubers or turions are ¼” to ½” long, off-white to yellowish, potato-like structures that attach to the roots.

Hydrilla Prevention

Preventative Guidelines

The VA Department of Wildlife Resources & TLAC encourage you to follow the guidelines below to minimize hydrilla growth and spreading

Appropriate Fertilization

Only apply recommended amounts of fertilizer. Over-fertilizing lawns and gardens bordering the lake promotes excessive growth of aquatic vegetation

Clean, Drain & Dry

Thoroughly remove all mud, plants, bait, & animals from boats, trailers, fishing gear, & waders. Drain motors, bilges & livewells. Allow boats to dry completely in the sun (at least 24 hours) or wipe them down prior to entering a different body of water.

Hydrilla Problem

If left unmanaged, Hydrilla negatively impacts boating, swimming, and aesthetics at SML. Left unmanaged, Hydrilla could choke out the perimeter of SML and create access issues.



Resident photo



Resident photo



Resident photo



Hydrilla in Smith Mountain Lake: Current Situation

Hydrilla Reports to TLAC by Residents

2024 - 10

2025 - 82

Locations Confirmed by SMLA in 2025

Dive sampling program collected vegetation from 16 sites chosen based upon the historical presence of invasive vegetation. Invasive species, Hydrilla and Brittle naiad, were identified at 12 sites. The extent of the beds was observed to be significantly greater than in 2024.

Locations Confirmed by APCO in 2025

Kleinschmidt Aquatic Vegetation Survey conducted Sept. 15-17, identified 38 sites with Hydrilla

Impacts

Hydrilla verticillata forms dense, monotypic mats. The dense mats can clog boat propellers and impede navigation, shade and out-compete native plants, clog water intakes, and reduce oxygen levels as dead plant matter decays.

Poor Fertilization Practices Harm the Water Quality of Smith Mountain Lake



Beware!

Too much fertilization, or fertilizer applied at inappropriate times contributes to water contamination. Groundwater runoff carries nitrogen and phosphorus to the lake water.



Over-fertilization may cause:

Excessive aquatic vegetation and algae growth (including HAB's)
Depletion of the water's oxygen supply
Suffocation of aquatic life

Hydrilla Remediation at SML: Costs

2002-2013:
herbicide
treatment of
aquatic vegetation

2002-2013
Herbicide
Treatment Costs:
\$410,829.22

2013 Sterile Grass
Carp Stocking:
(SGC) Cost: 6,000
SGC \$32,880.00

Hydrilla Remediation at SML: Methods

2002-2013: herbicide
treatment of aquatic
vegetation

March 2013: 6,000
sterile grass carp were
stocked in the
Blackwater River
channel

Stocking
Considerations:
balancing water
quality, fishery health,
& long-term impacts

2026 Proposed Action and Dates

- ▶ TLAC, working jointly with the Department of Wildlife Resources (DWR), will finalize an agreement to introduce a maximum of 1,300 12”-14” Sterile Grass Carp into the lake and issue a request for proposal to approved suppliers. This initiative is part of a science-based strategy aimed at mitigating ongoing issues caused by invasive Hydrilla and ensuring long-term ecological stability.
- ▶ After discussing DWR’s recommendations with approved suppliers, the TLAC Environmental Committee concluded a targeted release date in late May is to be most effective. This timing aims for moderate water temperatures and sufficient Hydrilla growth compared to the March 2013 introduction, thus enticing the fish to remain concentrated in the desired treatment areas.



Stocking Guidelines



- ▶ In the Virginia, ideal stocking times for sterile grass carp are from **March through May** or **September through October**. Water temperatures support the best transition of the fish into the water body. The timeframe may vary by location and annual variations in water temperatures.
- ▶ Stocking non-native or exotic fish species such as triploid grass carp requires procurement from an approved hatchery as well as a permit from the Virginia Department of Wildlife Resources (DWR).
- ▶ TLAC will collaborate with DWR to ensure all regulations are observed.

Stocking Requirement



In VA, triploid grass carp may only be purchased from a certified triploid grass carp producer that is authorized to sell carp by The Virginia Department of Wildlife Resources. These vendors go through rigorous testing procedures to ensure that all the carp they sell are triploid (have an extra set of chromosomes) and cannot reproduce.



DWR Recommended Stocking Rates

- ▶ Stocking guidelines for grass carp have been established through many years of trial and error, and they are continually reviewed to determine appropriate numbers of carp to affect balanced remediation results.
- ▶ 2 fish/acre are recommended for plant infestations < 30% plant coverage of pond during the peak growing season (Aug. through Sept.)
- ▶ 5 fish/acre are recommended for moderate plant infestations, 30 – 60% plant coverage during the peak growing season (Aug. through Sept.)
- ▶ 10 fish /acre for heavy infestations > 60% plant coverage during the peak growing season (Aug. through Sept.)
- ▶ Some deviation from the recommendations may be determined to be necessary on a case-by-case basis. DWR advises stocking the minimal number of carp needed to prevent overgrazing, starvation, and fish migration. On rare occasions, high stocking rates of up to 15 fish/acre are permitted in VA if they are needed to control trouble vegetation (i.e. for filamentous algae or duckweed).

2025 Hydrilla in Smith Mountain Lake

Smith Mountain Lake Association 2025 Submerged Aquatic Vegetation Dive Sampling Report

D. Scott Bull, Ph.D.
21 November 2025

Figure 1

Dive Site Locations with Observed Vegetation



APCO/Kleinschmidt SML 2025 Aquatic Vegetation Survey

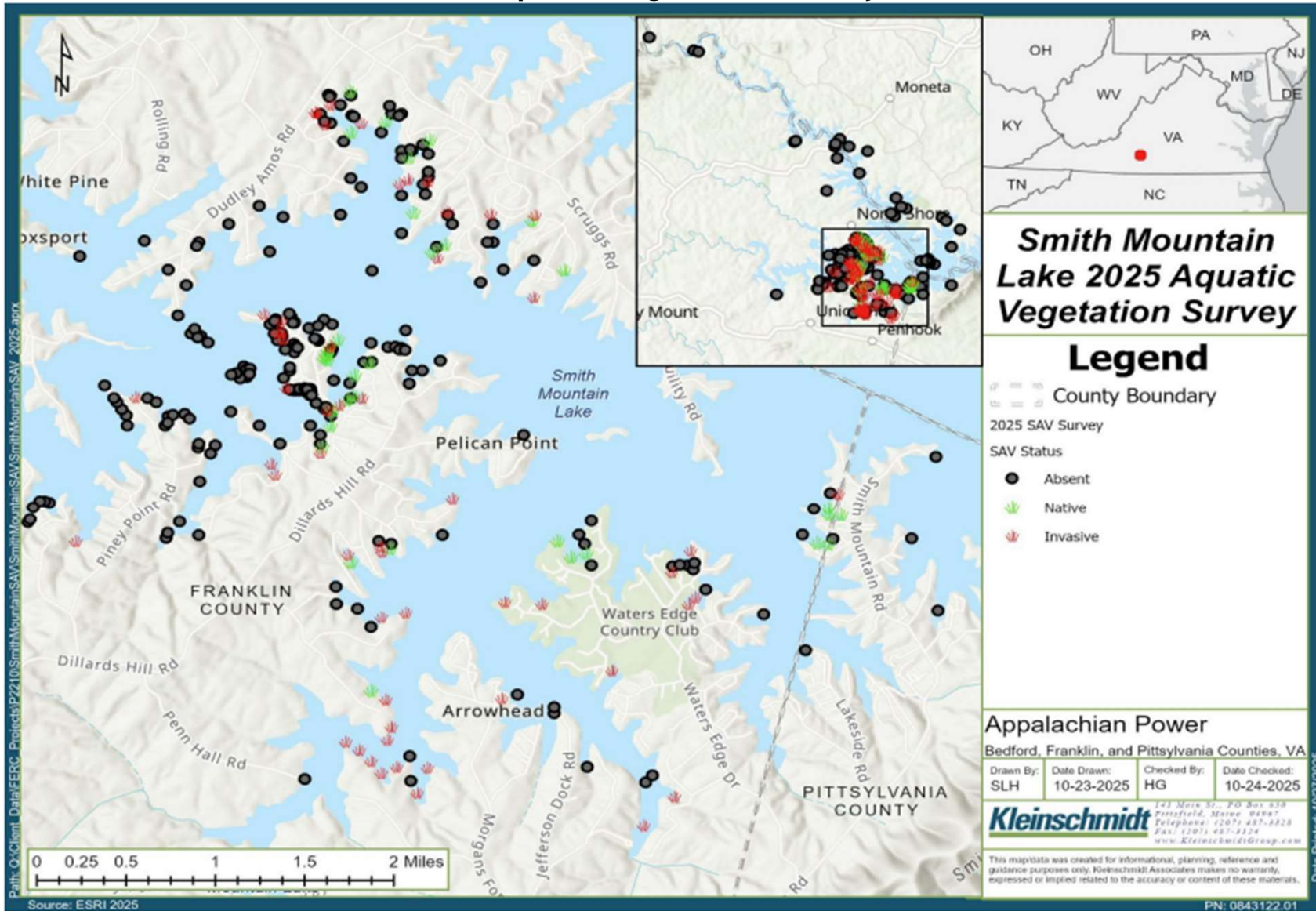


Figure 4-1. Presence/Absence of Submerged Aquatic Vegetation in Smith Mountain Lake in 2025

APCO/Kleinschmidt

SML 2025 Aquatic Vegetation Survey

Table 3-1. Definition of SAV Bed Size and Density Categories

Category	Measurement
<i>Bed Size</i>	
Very small	<0.25 acre
Small	0.25–2 acre
Moderate	2–5 acre
Large	>5 acre
<i>Bed Density</i>	
Low	<25% coverage
Medium	25–75% coverage
High	Covers bed and occupies water column

APCO/Kleinschmidt

SML 2025 Aquatic Vegetation Survey

Table 4-1. 2025 SAV Presence in Smith Mountain Lake

Species	Bed Size	Bed Density	2025 Count	2024 Count	2023 Count
Hydrilla	Very small	Low	23	1	0
	Small	Low	5	3	0
	Small	Medium	7	0	0
	Small	High	1	0	0
	Moderate	Medium	1	0	0
	Large	High	1	0	0
	Total			38	4
Brittle Naiad	Very small	Low	22	3	1
	Small	Low	6	4	0
	Small	Medium	4	0	0
	Moderate	Medium	0	1	0
	Total			32	8
Muskgrass	Very small/Small	Low	22	17	1
	Small	Low	0	5	0
	Small	Medium	1	0	0
	Total			23	22
Small Pondweed	Very small	Low	34	7	7
	Small	Low	4	1	0
	Small	Medium	1	0	0
	Total			39	8
Leafy Pondweed	Very small/Small	Low	0	1	1
Longleaf Pondweed	Very small/Small	Low	0	4	0

2026 Remediation Plan

Target Locations based upon SMLA Dives, APCO Survey & Resident Reports



- ▶ Main areas of Hydrilla infestation:
 - ▶ Blackwater: Little Bull Run & Bull Run
 - ▶ Other upstream areas of the Blackwater
- ▶ Estimated amount: 14.85+ acres based upon APCO/Kleinschmidt 2025 survey
- ▶ Outlying areas:
 - ▶ Roanoke arm - Channel Marker R42
 - ▶ Craddock Creek
 - ▶ Locations in Huddleston

Monitoring Strategies



SMLA and DWR will monitor weed growth & sterile grass carp dispersion through annual and as-needed surveys & provide data to TLAC.

SMLA will continue to deploy the volunteer dive team annually to identify species and document updates regarding aquatic vegetation.

The SMLA board of directors is considering utilizing drones to enhance the monitoring process.



The results of these efforts, as well as the results of a full-lake aquatic vegetation survey to be performed by APCO, will inform TLAC Environmental Committee planning for 2027.

Based upon the results, the committee will adjust fish quantities & implement strategies that best support the overall health of Smith Mountain Lake.

Conclusion

- Lesson Learned: Although the 2013 stocking numbers were based on a conservative approach, the fish cleared more vegetation than intended including both non-native invasive and native vegetation in the lake
- Proposed approach: Reduce the number of Triploid Grass Carp introduced from a single stocking of 6,000 fish to an initial stocking of approximately 1300 fish.
- Stocking Location: Blackwater area where Hydrilla is at highest concentrations
- Monitoring: At each year end, combine all data gathered (APCO survey, SMLA dive team survey & Resident reports) to determine subsequent years' stocking numbers
- Approach:
 - Stock lesser numbers of fish in 2028, 2029, & 2030 based on results obtained.
 - Reevaluate the program's success in 2030 and plan future stocking accordingly.

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Q & A

THANK YOU!