REPORT REGARDING THE STATE'S AQUATIC INVASIVE SPECIES SPREAD PREVENTION EFFORTS, AND HOW TO CONTROL THE TRANSPORT OF AQUATIC NUISANCES TO AND FROM LAKE CHAMPLAIN

2017 ACT 67, Section 11

Submitted to the

Senate Committee on Natural Resources and Energy
And
House Committee on Natural Resources, Fish and Wildlife

Vermont Agency of Natural Resources

November 15, 2017

2017 Act 67, Sec. 11. ANR REPORT; AQUATIC NUISANCE TRANSPORT; LAKE CHAMPLAIN

(a) On or before November 15, 2017, the Secretary of Natural Resources shall submit to the Senate Committee on Natural Resources and Energy and the House Committee on Natural Resources, Fish and Wildlife a report regarding how to control the transport of aquatic nuisances to and from Lake Champlain. The report shall include:

(1) an inventory of the boat decontamination facilities or other aquatic nuisance control measures currently employed at boat launches, marinas, or other areas on Lake Champlain;

(2) a summary of whether the current measures to control aquatic nuisance transport to and from Lake Champlain are adequate;

(3) a proposal for siting boat decontamination facilities or other comparable aquatic nuisance control measures at boat launches, marinas, or other areas on Lake Champlain, including where proposed facilities or other aquatic nuisance control measures would be located;

(4) a summary of how proposed boat decontamination facilities or comparable aquatic nuisance control measures would be staffed, including whether staff would possess sufficient authority to inspect a vessel entering or leaving Lake Champlain in order to require boat decontamination or another aquatic nuisance control measure;

(5) an estimate of the cost to implement proposed boat decontamination facilities or other aquatic nuisance control measures on Lake Champlain; and

(6) a recommendation of whether and how vessels leaving Lake Champlain should be quarantined from entering other waters of the State for a defined time period or until a specific condition is satisfied; and

(7) draft legislation that the Secretary determines is necessary to implement any boat decontamination facility or other aquatic nuisance control measure proposed in the report.

Summary

This report outlines current aquatic invasive species (AIS) management efforts in Vermont, and details activities occurring at Lake Champlain public access areas. The Agency currently maintains AIS signage and other informational materials at over 50 accesses on the Lake, and supports either watercraft inspection or decontamination efforts at seven locations. With additional resources, these efforts could be expanded to other high-priority areas as outlined in this report.

Increased spread prevention efforts at Lake Champlain accesses are a high priority for ANR and its partners. The Agency plans to continue to maintain and grow its messaging campaign on the need to control AIS in Lake Champlain and the surrounding basin. Additional measures, including the establishment of watercraft inspection and decontamination stations, would greatly strengthen overall efforts in the Basin. The highest priority locations for new stations, and costs associated with their installation and maintenance, are included in this report.

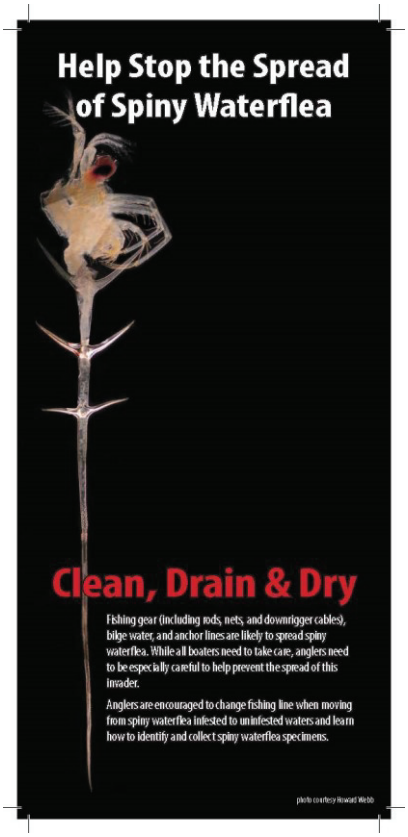
With the passage of Act 67 in 2017, there exists sufficient statutory support for current AIS spread prevention efforts on Lake Champlain and in the surrounding basin, and for augmented efforts contemplated by this report. As such, at this time, no new legislation is recommended. Instead, ANR and its partners should focus on outreach and education efforts, and on implementing other spread prevention measures as resources allow. If additional funding was available, then the Agency would work to enact the priorities laid out within. Specifically, new inspection stations would cost $7,500 or more for initial establishment, and appropriate staffing and other annual costs could surpass $30,000 yearly.

Current strategies to prevent the spread of aquatic invasive species to and from Lake Champlain and other Vermont waterbodies

Outreach and education efforts and other methods of public engagement are the primary strategies for AIS spread prevention in Vermont. While the State is also engaged in short-term and long-term control efforts of invasive species in limited instances, research has shown that spread prevention efforts are the most effective use of funds aimed at mitigating the effects of aquatic invasive species[1]. Spread prevention for aquatic invasive species is best achieved by changing public behavior, so the ANR program revolves around public engagement with several methods. Current public engagement efforts are outlined below.

Outreach and Education

Because of the role of human activities in spreading invasive species, education and outreach efforts have always been at the forefront of the Agency's management strategy. Agency staff communicate the threat of invasive species, and steps that can be taken to mitigate further spread, to the public in many ways. Staff often attend educational events, public meetings, and other forums to spread the message about invasive species. Recently, the Agency adopted the use of digital platforms to improve our ability to disseminate information about AIS. The Agency also circulates print media (examples below), and makes these materials available at bait shops, public access areas, and other locations.



Informational rack cards distributed by ANR to businesses and made available at public access locations.

[1] Leung, B., D.M. Lodge, D. Finnoff, J.F. Shogren, M.A. Lewis, and G. Lamberti. 2002. An ounce of prevention or a pound of cure: bioeconomic risk analysis of invasive species. Proceedings of the Royal Society of London B 269: 2407-2413.

Signage

The Agency maintains signage pertaining to aquatic invasive species at all State-owned public access areas to Vermont waters, and many locations owned by municipalities and the private sector. To date, there are over two hundred and fifty locations in Vermont that display at least one AIS sign, and that number continues to climb. All signage retains a similar overall message (Clean, Drain, Dry), but each was designed for a different audience or specific threat. The signs that are currently utilized are shown below.

Clean Boats Clean Waters

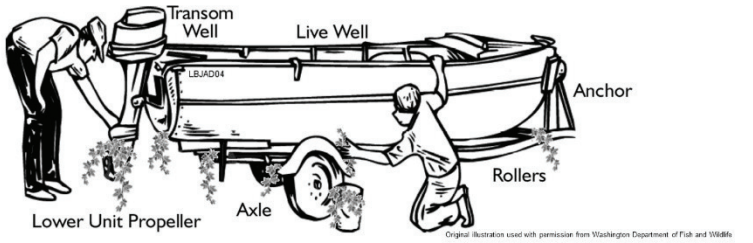
Before Launching AND Before Leaving

Clean off any mud, plants, and animals from boats, trailers, and equipment.

Drain your boat and equipment away from the water.

Dry anything that comes into contact with the water.

Never release plants, fish or animals into a body of water unless they came out of that body of water



Original illustration used with permission from Washington Department of Fish and Wildlife

State of Vermont Regulations as of 2017

pursuant to 10 V.S.A. § 1454, 23 V.S.A. § 3317, 6 V.S.A. § 1034, 1037 & 1038

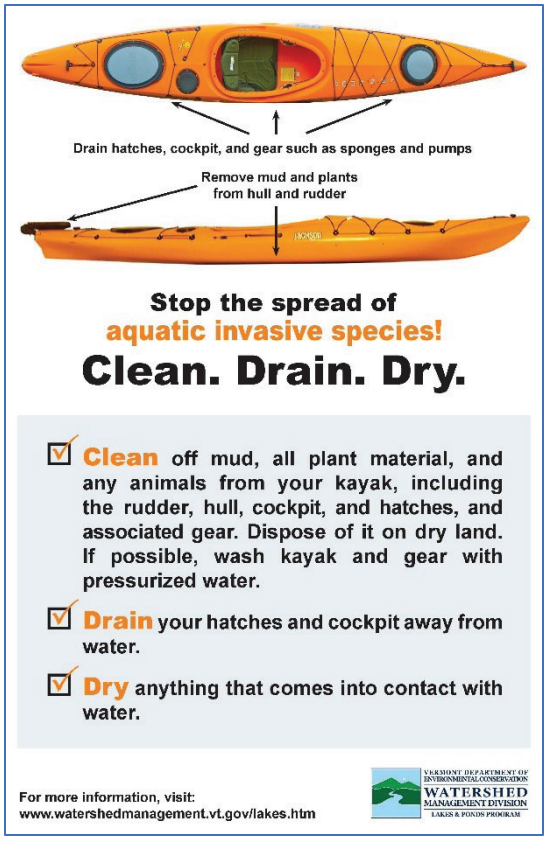
- **Boaters are required to inspect their watercraft before and after use, and remove all plants and aquatic animals**
- **Vessels and internal compartments must be drained when leaving a water, and drain plugs must remain out during transport**
- **Persons who transport aquatic plant material or invasive aquatic animals may be fined up to $1000**
- **It is a violation to refuse inspection and decontamination services at an authorized inspection station**

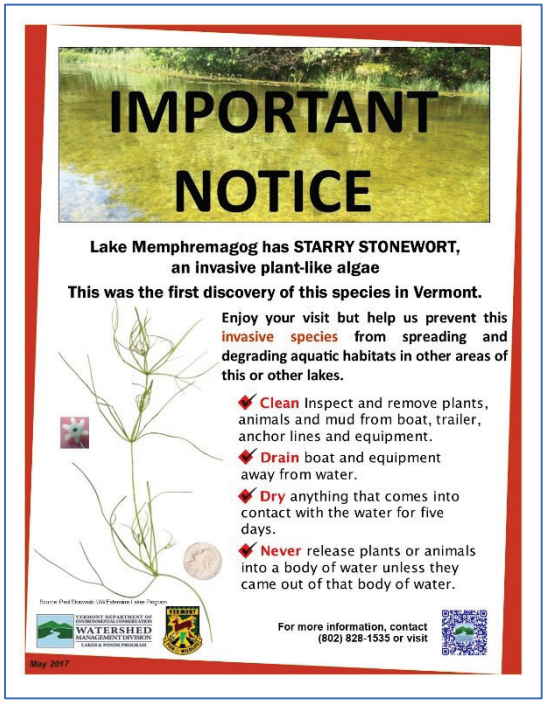
Please report suspected aquatic invasive species sightings to:

(802) 828-1535
dec.vermont.gov/watershed/lakes-ponds

VERMONT
AGENCY OF NATURAL RESOURCES

This sign is displayed at public access areas and marinas, was developed by Agency staff in 2017 after the passage of S.75 (Act 67), which made changes to 10 V.S.A. §1454.



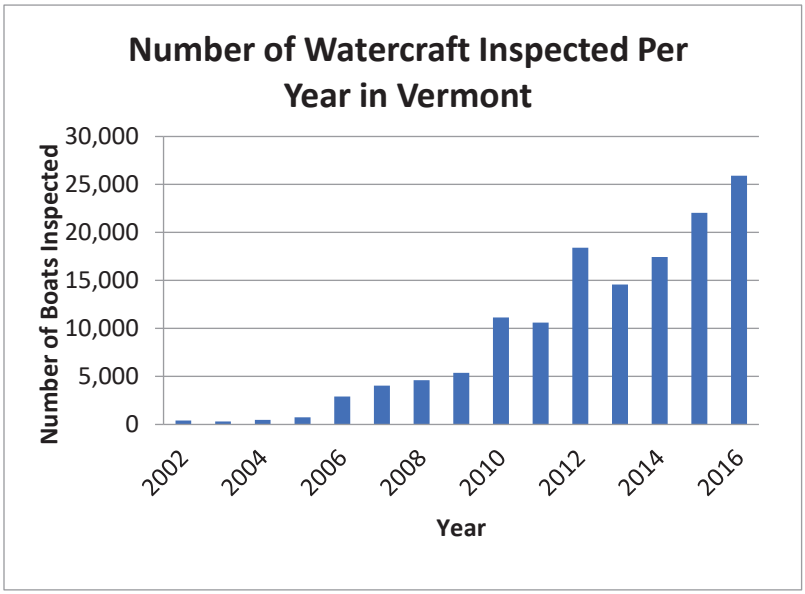


Other signage produced and displayed by ANR at various locations in Vermont.

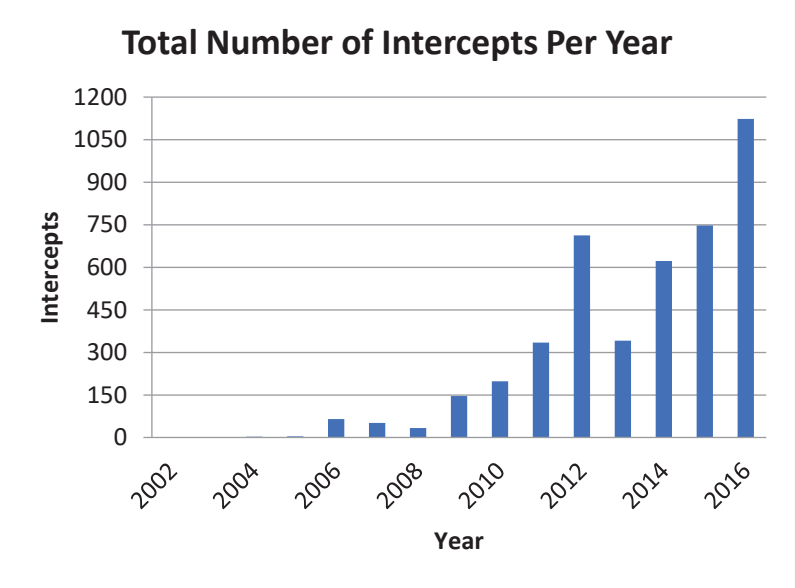
Watercraft Inspection and Decontamination

Because invasive plants and animals can be spread by watercraft and trailers moving between waterbodies, inspection of these equipment by trained watercraft inspectors can provide an additional layer of protection. Across the country, many states are now using watercraft inspection programs to supplement other spread prevention techniques. The first such program in Vermont began in 2002, when the initial Public Access Greeter Program was started at Caspian Lake in Greensboro. Since then, the program has expanded to include over 30 waterbodies, with new access areas covered each year. The program is complemented by the efforts of the Lake Champlain Basin Program, which also supports inspection, staffing, and decontamination services at select Lake Champlain access areas in Vermont, New York, and Quebec.

Each Public Access Greeter Program is operated by a municipality – either a town or conservation district, or by LCBP. ANR and LCBP provide training and training materials to program participants, as well as uniforms, necessary equipment, and technical support and expertise during the boating season. Traditionally, training entails a half-day session where attendees are taught the biology and identification of aquatic invasive plants and animals. Also provided is information on watercraft inspection for invasive species, how to determine a watercraft's risk of carrying invasive species, and how to interact with the public. The trained greeters then staff a public access on a lake or pond within the municipality, inspect watercraft for invasive species or vectors for invasive species, remove plant or animal material if necessary, and share information on invasive species with the public. ANR staff oversee the statewide Program, but the day-to-day operations of each individual program are handled by the municipality. LCBP directly manages their sites with seasonal LCBP staff. Information is routinely collected by greeters that can be used to document usage frequency, and the provenance of and next intended destinations for watercraft in Vermont.



Number of watercraft inspected by Public Access Greeter Programs in Vermont since its inception.



Number of watercraft inspected on which plant or animal material was found. The species found was invasive Eurasian watermilfoil in a majority of these instances. Each intercept can be considered a potential "save," emphasizing the value of inspections.

High-pressure, hot-water watercraft decontamination stations can provide an additional layer of protection against the spread of AIS, especially at locations in which watercraft carrying invasive species are likely to be encountered. The heated water component of these equipment is especially critical, as temperatures used have been demonstrated to kill all life stages of most invasive pests. Until 2016, only one such unit was in use in

Vermont at Shadow Lake in Glover. In 2017, eight units were in use – four by ANR staff and/or interns with the Lake Champlain Basin Program (LCBP), and four by locally administered Greeter Programs. When a decontamination unit is available, high-risk watercraft, those deemed likely to be carrying invasive species, are identified by inspectors for decontamination. The decontamination process then involves washing/flushing all areas of the watercraft where invasive species may be contained.

Although municipalities play a large role in overseeing active spread prevention programs, the State provides funding assistance through the Aquatic Nuisance Control Grant-in-Aid Program (10 V.S.A. §1458). Nearly all State funds for aquatic nuisance management (as distributed by 23 V.S.A §3319(b)(3)) are put towards this program, and an average of $440,000 has been distributed to municipalities each of the past three years. Over 35% of those funds have contributed directly to spread prevention projects (Public Access Greeter Programs, watercraft decontamination stations), with the reminder delegated for other control and management projects.

ANR seasonal staff member with watercraft decontamination unit and trailer at a local lake.

Current spread prevention efforts at Lake Champlain locations

Although messaging for AIS is important statewide, it is especially crucial at Lake Champlain accesses. Lake Champlain is currently inhabited by several problematic invasive species, including spiny waterflea, zebra mussels, and variable-leaved watermilfoil, that have an otherwise extremely limited distribution in Vermont. Due to this, and the relatively high use of Lake Champlain compared to other waterbodies, much of the Agency's spread prevention work occurs at Lake Champlain access areas, complementing that of LCBP. An inventory of efforts at Lake Champlain access points in Vermont is provided on the following pages.

Table: Lake Champlain Access Points

Lake Champlain Access Points and Level of AIS Spread Prevention Activity

Access Name	Ownership	Town	County	Signage	Inspections	Decons
Chimney Point	State of Vermont	Addison	Addison	Yes	No	No
McCuen Slang	State of Vermont	Addison	Addison	Yes	No	No
Button Bay State Park	State of Vermont	Ferrisburg	Addison	Yes	No	No
Fort Cassin	State of Vermont	Ferrisburg	Addison	Yes	No	No
Lewis Creek	State of Vermont	Ferrisburg	Addison	Yes	No	No
South Slang	State of Vermont	Ferrisburg	Addison	Yes	No	No
Chipmans Point	State of Vermont	Orwell	Addison	Yes	No	No
George Davis (Singing Cedars)	State of Vermont	Orwell	Addison	Yes	No	No
Mt. Independence	State of Vermont	Orwell	Addison	Yes	No	No
Lapham Bay	State of Vermont	Shoreham	Addison	Yes	No	No
Larrabees Point	State of Vermont	Shoreham	Addison	Yes	No	No
Burlington Bay	City of Burlington	Burlington	Chittenden	Yes	No	No
Converse Bay	State of Vermont	Charlotte	Chittenden	Yes	LCBP	No
Colchester Point	State of Vermont	Colchester	Chittenden	Yes	LCBP	No
Heineberg Bridge	State of Vermont	Colchester	Chittenden	Yes	No	No
Malletts Bay	State of Vermont	Colchester	Chittenden	Yes	LCBP	No
Sandbar Access	State of Vermont	Milton	Chittenden	Yes	No	No
Sandbar WMA	State of Vermont	Milton	Chittenden	Yes	No	No
Van Everest	State of Vermont	Milton	Chittenden	Yes	No	No
Shelburne Bay	State of Vermont	Shelburne	Chittenden	Yes	LCBP	VTANR/LCBP
Georgia Recreation Area	Town of Georgia	Georgia	Franklin	Yes	No	No
Rock River	State of Vermont	Highgate	Franklin	Yes	No	No
Killkare State Park	State of Vermont	St. Albans	Franklin	Yes	No	No
St. Albans Bay	State of Vermont	St. Albans	Franklin	Yes	LCBP	No
Charcoal Creek	State of Vermont	Swanton	Franklin	Yes	No	No
Larry Green	State of Vermont	Swanton	Franklin	Yes	LCBP	No
Tabor Point	State of Vermont	Swanton	Franklin	Yes	No	No
Dillenbeck Bay	State of Vermont	Alburg	Grand Isle	Yes	No	No
Horicans	State of Vermont	Alburg	Grand Isle	Yes	No	No
Kelly Bay	State of Vermont	Alburg	Grand Isle	Yes	No	No
Korean War Vet Access	State of Vermont	Alburg	Grand Isle	Yes	No	No
Ed Weed	State of Vermont	Grand Isle	Grand Isle	Yes	No	No
Grand Isle State Park	State of Vermont	Grand Isle	Grand Isle	Yes	No	No
Vantines	State of Vermont	Grand Isle	Grand Isle	Yes	No	No
Holcomb Bay	State of Vermont	Isle La Motte	Grand Isle	Yes	No	No
Stoney Point	State of Vermont	Isle La Motte	Grand Isle	Yes	No	No
Kings Bay	State of Vermont	North Hero	Grand Isle	Yes	No	No
Knight Point	State of Vermont	North Hero	Grand Isle	Yes	No	No
North Hero Fishing Access	State of Vermont	North Hero	Grand Isle	Yes	No	No
Stephensen Point	State of Vermont	North Hero	Grand Isle	Yes	No	No
John Guilmette	State of Vermont	South Hero	Grand Isle	Yes	LCBP	VTANR/LCBP

Table: Lake Champlain Access Points

Access Name	Ownership	Town	County	Signage	Inspections	Decons
Keeler Bay	State of Vermont	South Hero	Grand Isle	Yes	No	No
Benson Landing	State of Vermont	Benson	Rutland	Yes	No	No
Champlain Bridge Marina	Private	Addison	Addison	Yes	No	No
Tom's Marine Services	Private	Ferrisburg	Addison	Yes	No	No
Buoy 39 Marina Inc.	Private	Orwell	Addison	No	No	No
Chipman Point Marina	Private	Orwell	Addison	No	No	No
Plunder Bay Marina	Private	Orwell	Addison	No	No	No
Perkins Pier	Private	Burlington	Chittenden	No	No	No
Point Bay Marina	Private	Charlotte	Chittenden	Yes	No	No
Bay Harbor Marina	Private	Colchester	Chittenden	Yes	No	No
Champlain Marina	Private	Colchester	Chittenden	Yes	No	No
Coates island Marina	Private	Colchester	Chittenden	No	No	No
Fox Marina	Private	Colchester	Chittenden	No	No	No
Mallets Bay Boat Club	Private	Colchester	Chittenden	No	No	No
Marina at Marble Island	Private	Colchester	Chittenden	No	No	No
Moorings Marina	Private	Colchester	Chittenden	Yes	No	No
Saba Marina	Private	Colchester	Chittenden	No	No	No
Shelburne Shipyard	Private	Shelburne	Chittenden	Yes	No	No
Champlain Valley Cottages	Private	Swanton	Franklin	No	No	No
Campbell's Bay Campground	Private	Swanton	Franklin	No	No	No
Alburg RV Resort	Private	Alburg	Grand Isle	No	No	No
Goose Point Campground	Private	Alburg	Grand Isle	No	No	No
Ladd's Landing Marina	Private	Grand Isle	Grand Isle	Yes	No	No
Cozy Cottages	Private	Grand Isle	Grand Isle	No	No	No
Lakehurst Trailer Park	Private	Isle LaMotte	Grand Isle	No	No	No
New England Powerboat Svc.	Private	North Hero	Grand Isle	Yes	No	No
North Hero Marina	Private	North Hero	Grand Isle	Yes	No	No
Carry Bay Cottages	Private	North Hero	Grand Isle	No	No	No
Hero's Welcome	Private	North Hero	Grand Isle	Yes	No	No
Apple Island Marina	Private	South Hero	Grand Isle	Yes	No	No
Camp Skyland	Private	South Hero	Grand Isle	No	No	No
Keeler Bay Marina	Private	South Hero	Grand Isle	No	No	No

The above table inventories all Lake Champlain access locations in Vermont identified by ANR staff. The Lake Champlain Basin Program (LCBP) oversees watercraft inspection efforts at Lake Champlain accesses, and operate ANR-owned watercraft decontamination stations at specified locations. Note that similar efforts are underway at New York and Quebec accesses, not reported here.

Recommendations for strengthening Vermont's aquatic invasive species spread prevention efforts

The success of aquatic invasive species spread prevention efforts in Vermont over the last two decades is apparent. In the past two years, over 95% of boaters surveyed through the Public Access Greeter Program indicated that they were aware of aquatic invasive species and took steps to prevent spreading them. The number of new infestations per year is now a fraction of what it was in the 1990s. Watercraft inspectors now report that a large majority of stakeholders appreciate and support the program. Municipal financial support has also significantly increased, and the amount of municipal funds dedicated to spread prevention efforts has grown exponentially since 2002. With the resources available, ANR and its partners have taken great strides in mitigating the spread of invasive species.

More could be done, however. There are hundreds of public accesses across the state, and less than 40 have a watercraft inspection program. Less than a quarter of those have watercraft decontamination units at their disposal. Because of financial constraints, many of the accesses with inspection and decontamination stations are not staffed full-time, including all Lake Champlain accesses covered by the LCBP. If other resources were available, ANR and its partners would certainly expand spread prevention efforts accordingly.

Additional Inspection/Decontamination Stations on Lake Champlain

Because of its high use, and because it now contains over 50 non-native aquatic species, additional spread prevention efforts at Lake Champlain accesses are a priority. While messaging and sign maintenance is important at all Champlain locations, some would be ideal candidates for a watercraft inspection and decontamination program if additional funding was available. When considering locations for new sites, the amount of use the site receives, the physical characteristics of the site (available space), and the location of the site relative to other inspection locations are taken into account. The highest priority locations for new inspection and decontamination facilities are outlined below.

High Priority Locations for AIS Inspection and Decontamination Facilities

Access Name	Risk/Use	Feasibility	Priority	Notes
Shelburne Bay	High	High	Highest	Decontamination station already in use
John Guilmette	High	High	Highest	Decontamination station already in use
Colchester Point	High	High	Highest	Many boats going to other waterbodies
Malletts Bay	High	Medium	High	High priority, but limited space
St. Albans Bay	High	Medium	High	
Larry Green	High	High	High	
Larrabees Point	Medium	High	Medium	
Converse Bay	Medium	Medium	Medium	
Chimney Point	Medium	Low	Medium	Limited space
Benson Landing	Low	Medium	Medium	Priority because of southern location

Priority locations for establishment of watercraft decontamination stations on Lake Champlain. Risk/Use is determined by the number of boaters using a launch and the destination of those boaters when leaving Lake Champlain. Feasibility is determined by the amount of physical space available at the access.

Staffing and Costs

Municipalities on Lake Champlain are unlikely to contribute resources toward staffing new watercraft inspection and decontamination stations at Champlain accesses, so these locations would require ANR or LCBP staff. The estimated budget below represents the additional costs for one watercraft inspection and decontamination station. Note that different types of decontamination units are available, and would be selected based on the needs of each individual site. Physical conditions at each site will also determine costs associated with initial site preparation and site maintenance.

Expenditure	**One-time cost**	**Annual cost**
Two ANR Environmental Technician I positions @ 40 hrs/week for 20 weeks (mid-May through Sept) or Three LCBP Lake Champlain Basin interns @ 32 hrs/week for 20 weeks (mid-May through Sept)		$27,500 or $35,000
Watercraft decontamination unit, associated supplies, and on-site housing for unit and equipment	$7,500 - $25,000	
Site preparation and site maintenance (gravel, grading, maintaining proper drainage)	$0 - $2,000	$0 - $500
Annual operation supplies (fuel, equipment repair, lease of vehicle for unit transport)		$500 - $1,500
Total	**$7,500 - $27,000**	**$28,000 - $37,000**

Estimated budget for the establishment and long-term operation of one additional watercraft inspection and decontamination station at a Lake Champlain access.

Legislative Recommendations

Act 67 expanded statutory support for current AIS spread prevention efforts on Lake Champlain and in the surrounding basin. Prior to the passage of the Act, all efforts relied on voluntary cooperation of the boating public. Under the new legislation, boaters must inspect watercraft for AIS and remove plant and animal material and other debris, and remove drain plugs to allow for complete draining of water from watercraft. Both requirements provide substantial support to the State's messaging regarding invasive species.

As a result of Act 67, it is now a violation for a person transporting a vessel to refuse a vessel inspection and potential decontamination if those services are available at a launch site. While refusal of these services was already rare, there is now legal backing for the work occurring at inspection stations. Through Act 67, watercraft inspectors have authority to inspect vessels entering or leaving a waterbody, including Lake Champlain, and can require decontamination or another control measure. Watercraft inspectors can report violations of the Act to appropriate personnel, but enforcement of new regulations still belongs to ANR law enforcement and other certified peace officers. Enforcement officers have authority to respond to violations, and can now issue citations for AIS violations per changes in 10 V.S.A. §1454(h).

Although watercraft leaving Lake Champlain and heading to other waterbodies are a potential vector for transporting AIS to uninfested waterbodies, ANR does not recommend pursuing legislation that would require quarantine of these watercraft. The implementation of such legislation would be infeasible in terms of infrastructure and personnel needed for enforcement. There are nearly 100 formal access areas on the Vermont side Lake Champlain alone, and hundreds of other unimproved locations where watercraft can be launched. Appropriate facilities do not exist in which the State could quarantine watercraft for a period of time, and developing those facilities would be resource-intensive and would require additional staffing. The use of watercraft inspection stations and decontamination services is encouraged for all watercraft leaving Lake Champlain, but services are not yet widespread on Lake Champlain and in the surrounding basin, and are only capable of servicing a tiny percentage of the watercraft using the Lake annually. Such legislation would also cause significant backlash among the boating public, and could lead to a decrease in those willing to recreate on Lake Champlain and other Vermont waters, which could even pose an economic impact. All State funds for AIS management are derived from motorboat registrations, and a decrease in usership would also decrease available funds for spread prevention initiatives.

Conclusions

At this time, no new legislation is recommended. Current statute provides ample support for on-the-ground efforts to prevent the further spread of AIS. The focus of efforts now and in the future should be on outreach and education, and to prioritize the implementation of additional spread prevention measures at high-risk areas. ANR will continue to evaluate all potential options, and use available resources accordingly.

Should additional funding become available for AIS program support, ANR would expand its messaging campaign, and work towards establishing new watercraft inspection and decontamination stations in high-priority locations outlined above. We estimate that each new station would cost $7,500-$27,000 to set up, and that appropriate staffing and yearly supplies would cost $28,000-$37,000.