

# 2021 Adirondack Aquatic Invasive Species Surveys

## *Early Detection Team Report*



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**Background Cover image:** Field crew members Lura Johnson and Josh Young surveying on Lake Pleasant, Hamilton County. Lake map featured is of Lake Algonquin. Photo by Pat Bly.

## Executive Summary

Invasive species are any kind of living organism that is not native to an ecosystem and causes some sort of ecological, human health, or socio-economic harm. For over two decades, the Adirondack Park Invasive Plant Program (APIPP) and its partners have documented the distribution and spread of invasive species throughout the jurisdictional boundaries of the Adirondack Partnership for Regional Invasive Species Management (PRISM). In 2021, Adirondack Research, a private research and mapmaking firm constituted APIPP's Adirondack Aquatic Invasive Species (AIS) Early Detection Team. The team surveyed prioritized lakes and ponds in the Adirondacks and used data collected in the field to produce individualized maps documenting AIS distribution and abundance, vegetation biovolume, bottom sediment hardness, and bathymetry.

Between June 10 and September 5, 2021, 52 waterbodies (lakes and ponds) were surveyed with the objective of AIS early detection and data collection, and if discovered, management of Tier 1 and Tier 2 species. Two newly invaded waterbodies were discovered by the Early Detection Team in 2021 and two other waterbodies with previously identified invasive species discovered a new species in 2021. The most common AIS detected was *Myriophyllum spicatum* (Eurasian watermilfoil) in twelve lakes and ponds. No invasive mollusk infestations were detected.

In this report, we address the results of this year's work along with recommendations for continuing and adapting the survey strategy to enhance APIPP's early detection and rapid response capabilities as well as ways to continually improve ongoing efforts to address AIS impacts in the Adirondacks.



Figure 1: Illustration of the survey techniques utilizing a combination of sonar recording and manual rack toss.

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## Acknowledgments

The [Adirondack Park Invasive Plant Program](#) (APIPP), a program hosted by the Adirondack Chapter of [The Nature Conservancy](#), is one of eight [Partnerships for Invasive Species Management](#) (PRISMs) in New York State whose mission is to protect the Adirondack region from the negative impacts of invasive species. APIPP contracted Adirondack Research during the 2021 field season to conduct AIS early detection surveys in the southeastern portion of the Adirondack PRISM. Field work, data collection and the compilation of the narrative, maps and materials included in this report were conducted by Thomas Firkins, Joshua Young, Sydney Aveson, Lura Johnson, Timothy Murphy, Patrick Bly, Mark Privee and Dr. Ezra Schwartzberg, who constituted APIPP's Adirondack AIS Early Detection Team. Maps were produced in house by Adirondack Research. Project planning and lake prioritization was conducted by Brian Greene, APIPP's AIS Project Coordinator. This project was advanced by APIPP, under contract with Adirondack Research, with funding provided by New York State's Environmental Protection Fund as administered by the New York State Department of Environmental Conservation.



**Photo 1:** Research team pictured outside of office in Saranac Lake, NY, June 2021. Pictured left to right: Patrick Bly, Lura Johnson, Tim Murphy, Thomas Firkins, Josh Young, Mark Privee, and Dr. Ezra Schwartzberg.

### Special thank you

Completion of this project would not have been possible without the following members of lake associations, businesses and other agencies: Patrick Bly Photography, Saranac Lake Marina, Galusha Cottages, NYS DEC campgrounds, Peck's Lake Marina, Caroga Lake Marina and General Store, Adirondack Watershed Institute, SUNY ESF, Goodnow Flow Lake Association, Ridin-Hy Ranch, NYS DEC, Crystal Lake Preserve Home Owner Association, Town of Amsterdam. We are grateful for their role in protecting many of these important Adirondack lake ecosystems.

### Introduction

Since 2002, APIPP and partners surveyed over 450 Adirondack lakes and ponds and found 75.6% to be free of AIS. Since 2015, APIPP has deployed an AIS Early Detection Team to survey lakes for AIS within the Adirondack PRISM. By deploying an Early Detection Team, new infestations can be quickly

recognized, and appropriate management actions taken before significant impacts are observed. The Early Detection Team's annual AIS surveys rotate through three regions that comprise the Adirondack PRISM. Region 1 (see Figure 2 right), which was visited in 2018, constitutes waterbodies in the Upper Hudson River, South Lake Champlain, Sacandaga, and Mohawk watersheds. Region 2, which was visited in 2019, covers the Raquette, Black, Oswegatchie, and Grass watersheds. Region 3, which was surveyed in 2020, covers North Lake Champlain, AuSable, Saranac, St. Regis, Salmon, Chateaugay, and Great Chazy watersheds. The regions were divided in such a way to balance resources across the ~7 million-acre Adirondack PRISM and increase efficiency in surveying the numerous Adirondack lakes and ponds therein.

Historically, APIPP's AIS Early Detection Team has performed aquatic vegetation surveys and rapid response management on any new, isolated aquatic invasive plant infestations discovered. In 2018, the Team's output shifted to incorporate new technologies and to perform rapid response management on only [Tier 1 and Tier 2 species](#), such as hydrilla, quagga mussels, water chestnut, and rusty crayfish, if found, as well as containment of Tier 3 species with partners. Starting in 2018, the Team began using the Lowrance ELITE-7Ti and HDS Live Chartplotters and C-Map BioBase cloud processing and GIS automation platform ([www.biobasemaps.com/](http://www.biobasemaps.com/)) to map vegetation BioVolume, bottom hardness, and bathymetry as part of a standard protocol. As defined by BioBase, BioVolume represents the percent of the water column occupied by plant matter (i.e. how close plant growth is to the surface of the lake) at each GPS location. It does not differentiate between plant species. Bottom hardness is determined by using the strength of sonar reflectivity to infer whether the bottom is soft, medium or hard. Generally, sound signals reverberate strongly off hard substrates such as gravel and rocks and weakly off soft substrates such as muck and mud. In the maps presented in this report, the darkest shade of orange is the hardest and the lightest shade of orange is the softest. Images and data captured on the Lowrance Chartplotters were uploaded to the BioBase web interface and then post-processed to create the maps displayed in this report. This information will be used to inform invasive species vulnerability assessments to better prioritize and allocate resources for future early detection surveys.



Figure 1: Regions of yearly AIS survey program.



## Objectives

The primary objective of the AIS Early Detection Team was to detect and delineate any new or existing aquatic invasive plant or animal infestations within prioritized lakes. The secondary objective was to deploy the Lowrance system to map the vegetation beds, contour lines, and bottom hardness of a select set of those lakes to gather important baseline data on plant distribution and other physical parameters that influence aquatic species invasion. This data can be used in the future to create AIS vulnerability models.

### Lake Selection and Prioritization

Region 1 lakes and ponds included in the Early Detection Team's 2021 surveys were selected and prioritized by APIPP's AIS Project Coordinator, Brian Greene, based on existing AIS distribution and monitoring data, the level of public access, risk of invasion and local partner input. The abundant waterways in Region 1, and all three regions for that matter, make it challenging to select target waterbodies to survey. Not every lake or pond is selected for survey each three years. The

following outlines the parameters used to select and prioritize lakes for survey in 2021. All lakes have either a public access point or some other form of motorized or non-motorized watercraft access via permission from private property owners. One exception to this is publicly-owned reservoirs, including Ireland Vly and Round Lake.

Additionally, in 2021, a few lakes were chosen that had been surveyed in 2018 and that had AIS occurrences. These lakes were resurveyed in an attempt to collect data on changes in AIS bed sizes, bed numbers, and AIS density.



**Photo 2.** Research technician, Lura Johnson, surveying the littoral zone along Kings Flow, Hamilton County.

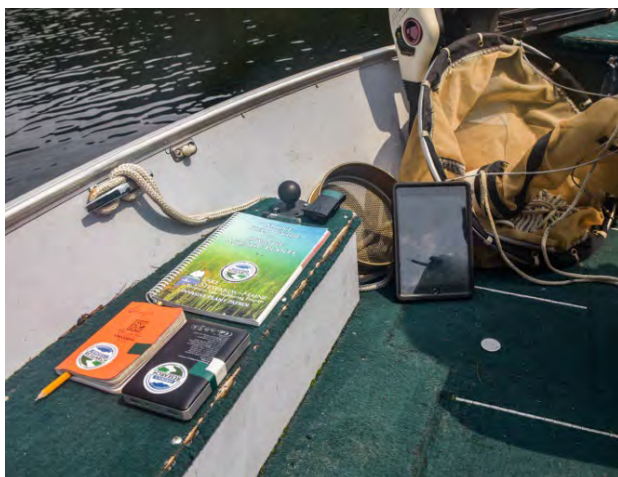
| Lake Selection Criteria |  |
|-------------------------|--|
| Priority 1              | <ul style="list-style-type: none"> <li>High Risk of Invasion               <ul style="list-style-type: none"> <li>Public access points, close to roads, near other invaded lakes</li> </ul> </li> </ul>  |
| Priority 2              | <ul style="list-style-type: none"> <li>Focus on lakes that have not recently been monitored               <ul style="list-style-type: none"> <li>no records of monitoring in the past three years</li> </ul> </li> </ul>   |
| Priority 3              | <ul style="list-style-type: none"> <li>Feedback from regional partners               <ul style="list-style-type: none"> <li>Possible invasive species occurrence</li> <li>Monitor AIS management</li> <li>Expert opinion on local pathways (fishing pressure, recreation use, etc.)</li> </ul> </li> </ul> |

**Table 1:** Lake selection criteria used for choosing which lakes to survey in 2021.

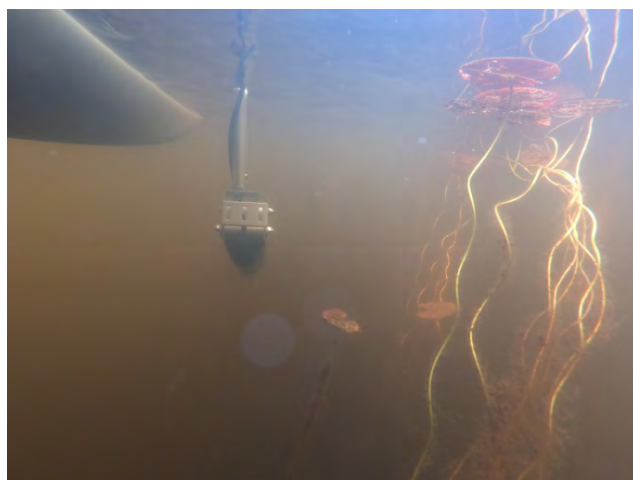
## Methods

### Equipment

Equipment used during this project consisted of three double-sided rakes for aquatic sampling, zooplankton nets, sediment sieves, Lowrance ELITE-7Ti or HDS-Live Chartplotters, Bluetooth GPS antennas (Garmin GLO), and iPad 4 minis. Data and observations were recorded on iPad 4 minis using The Nature Conservancy's Invasive Plant Mobile Monitoring System (IPMMS) via the Esri Collector for ArcGIS application. Surveys were completed using console motorboats or canoes, depending on waterbody access. When possible, a trolling motor was used on the canoes. Since the team was accessing multiple waterbodies over the course of each week, specific precautionary measures were taken to guarantee all equipment was decontaminated between waterbodies. Equipment was decontaminated using the Adirondack Watershed Institute's Watercraft Inspection Stewardship Program's free boat wash and decontamination services located throughout the Adirondack Park. The team visited a total of eight different decontamination stations, multiple times, over the course of the summer. High pressure and hot water were used to remove and/or kill any organisms, native or invasive, present on equipment after surveys. The specific equipment that was decontaminated by professional decontamination technicians included: motorboat hulls, trailers, motor lower units and bilges; canoes and paddles; plankton net and detachable PVC sieve and cap end; brass sediment sieves; ropes; and all jars and containers.



**Photo 3:** Equipment used for to complete our surveys.



**Photo 4:** The transducer collecting data for our sonar unit.



**Photo 5:** Two of Adirondack Research's field vehicles and motor boats used for surveys. Second Pond DEC boat launch, NY.



**Photo 6:** Decontamination Steward of the Adirondack Watershed Institute decontaminating a research vessel after being in Upper Saranac Lake, Franklin County.



## Plant Surveys and Identification

The littoral zone of each lake was surveyed for aquatic plants by the Early Detection Team from shoreline to a depth of about 15 feet, although the littoral zone water depth and distance from shore varied between waterbodies. Some waterbodies were completely comprised of littoral zone; others contained little area that supported plant growth. The team surveyed in a zig-zag search pattern, using visual detection from the surface in combination with the sonar output from the Lowrance unit, to locate plant beds. Once a plant bed was located, rake tosses were conducted to retrieve and identify plants that could not be confirmed through visual detection alone.

All plants retrieved, invasive and native, were identified using the field guides: “Aquatic Plants of the Upper Midwest” by Paul M. Skawinski and/ or “Maine Field Guide to Invasive Aquatic Plants and Their Common Look Alikes” by the Maine Center for Invasive Aquatic Plants and Maine Volunteer Lake Monitoring Program. If an AIS infestation was detected, an occurrence point was marked in its approximate center using the IPMMS. The occurrence feature classifies which species is present and contains unique naming and attribute



**Photo 7:** Brian Greene and Tammara Van Ryn of the Adirondack Park Invasive Plant Program (APIPP) showing our field crew samples of invasive species during pre-season training.



information for the specific infestation. After an occurrence was entered, the team collected an assessment polygon for the infestation. An assessment polygon was mapped by circumnavigating the exterior boundary of the infestation. The percent cover of the invasive plant was documented for each assessment polygon. Since the polygon is marked with GPS points, changes in acreage and percent cover can be monitored over time. Native plants that were identified were also recorded and noted in narrative form for this report. Complete lists of native plants and their abundance were not recorded. Native plant identification and abundance was not set as a priority in 2021.

In 2015, APIPP and the Adirondack Watershed Institute’s (AWI) Adirondack Aquatic Invasive Rapid Response Team conducted similar research, and comprehensive information regarding plant species

**Photo 8:** Variable leaf watermilfoil recorded on Peck Lake by the Early Detection Team in 2021.

richness and abundance can be found in their report ([2015 Report: Adirondack Regional Aquatic Response Team](#)). As previously mentioned, the watershed regions are surveyed on a three-year rotation. Region 1 was surveyed in 2018 was also surveyed in 2015, when native plant identification and abundance was prioritized.

| Cover Class | Description                                      |
|-------------|--|
| 0           | No vegetation present; zero plants               |
| <1          | Trace (1-2 stems)                                |
| 1-10        | Sparse (3-6 stems)                               |
| 11-25       | Low Density                                      |
| 26-50       | Medium Density (Rakefull; no visible rake tines) |
| 51-100      | High Density (Difficult to bring to boat)        |

Table 2: Vegetation cover class categories used for surveys.

Relative percent cover class range estimates of invasive plant species were taken using a rating system as follows: 0, <1, 1-10, 11-25, 26-50, 51-100%. Cover classes are defined in the following table and are based on the scale developed by the U.S. Army Corps of Engineers and further developed by Paul Lord and Bob Johnson from Cornell University

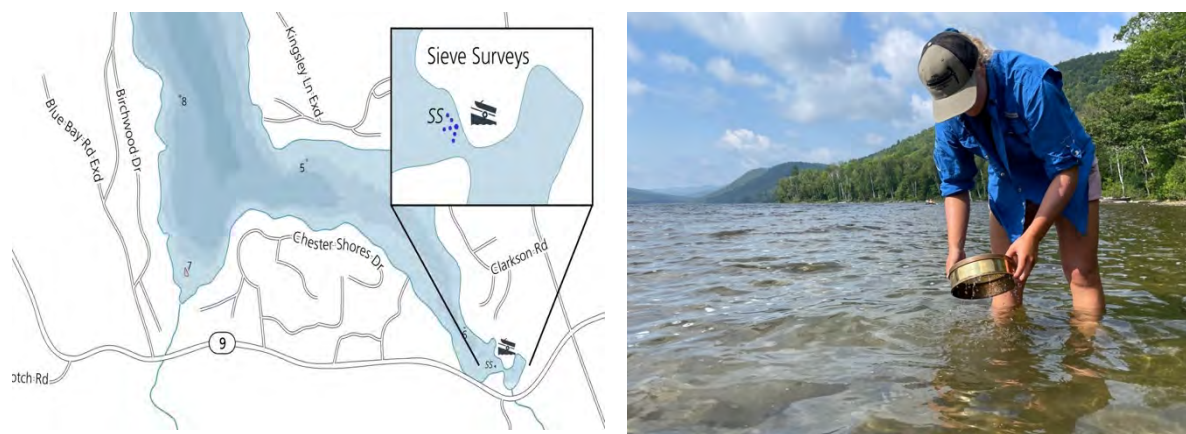


Photo 9: Identifying native plants using multiple field guide, including the Maine Field Guide to Invasive Aquatic Plants (pictured).



## Animal Surveys and Identification

Two methods were utilized to survey for aquatic animal species. 2mm sediment sieves were used at shorelines with sandy substrates to search for aquatic invasive mollusks, specifically *Corbicula fluminea* (Asian clams). Five samples were taken at each location using a ray pattern method. In addition to sediment sieves, plankton tows were used to search for aquatic invasive zooplankton using a 500-



**Photo 10:** (left) Ray pattern sieve survey method and (right) Field Technician, Lura Johnson taking a sieve sample from Thirteenth Lake, Warren County.

micron plankton net at the deepest point of the lake. Species of primary concern were: *Bythotrephes longimanus* (spiny waterflea) and *Cercopagis pengoi* (fishhook waterflea). The plankton tow was dropped off the bow of the stationary boat, released to a depth below the thermocline, and then towed for two minutes at a speed of 2mph behind the motorboat or as fast as possible by canoe, allowing the attached line to lie at a 45-degree angle. The net was then retrieved and samples were placed into Nalgene jars or plain white containers for examination in the field. Any samples that were suspected to contain AIS were stored in ethanol and brought back to the Adirondack Research lab for further analysis.



**Photo 11:** (Far Left) Timothy Murphey checking a plankton tow sample for invasive zooplankton on Lake Pleasant, Hamilton County. (Right) A clump of invasive spiny waterflea resting on a finger for scale on Peck Lake, Fulton County.

**Photo 12:** (Left) A macroinvertebrate sample containing native and invasive species (Left) and a magnified image of the spiny waterflea (Right). Samples are from Sacandaga Lake, Hamilton County.

## Complete Lake Mapping

When conducting plant surveys, the AIS Early Detection Team focused efforts in the littoral zone of each waterbody. In the littoral zone, sunlight can penetrate through to the bottom of the lake, which allows for plant growth. Typically, the littoral zone of a lake is exclusively near shore. However, as advancements are made in underwater mapping and new technologies arrive, it's becoming more apparent that we are all still learning about what lies below the surface of many lakes and ponds. Sunken islands or ridges can arise in seemingly deep water, resulting in potential aquatic plant habitat in unexpected locations of the lake. Covering all acreage of a waterbody lessens that chance of missing a "hidden" area of plant growth.

On lakes or ponds on which complete lake mapping/surveys were conducted, the Team generally split the waterbody in half and each team of two paddled or drove from shore to shore in their respective half. To ensure no gaps in coverage occurred, each pass was done about 120 feet apart, which is within the range that BioBase can automatically interpolate lake characteristic parameters. For the purposes of this report, complete lake mapping/surveys refer to this method of data collection from the entire acreage of a lake or pond. Surveys of the littoral zone are still considered "completed," but they do not typically include waterbodies in their entirety.

## 2015, 2018 and 2021 Comparison

APIPP's system of dividing the Adirondack PRISM into three regions and surveying each region on a three-year rotation allows for frequent re-visitation of waterbodies to accommodate early detection and potential rapid response as well as opportunity to conduct assessments of trends over time. Surveys completed in 2015 provide baseline data for Region 1. Upon revisiting in 2018 and 2021, the team implemented new protocols using different technologies to increase the amount and types of data collected in the field. By using the Lowrance Chartplotter, IPMMS, and the BioBase platform, detailed maps were produced documenting biovolume, bottom substrate hardness, and lake bathymetry for each lake surveyed. Mapping invasive plant beds using GPS and IPMMS, coupled with biovolume data recorded with BioBase, allowed for accurate delineation of AIS infestations even when located within larger native plant beds.

In 2021, we did not focus on doing complete BioBase surveys of waterbodies. This was due to complete BioBases being time consuming. In 2021 the team did not map the entirety of waterbodies unless they had available time after completing their scheduled survey. We revisited some lakes that were surveyed in 2018, including lakes with no AIS (still early detection of these lakes) as well as some lakes with confirmed AIS in 2018 to see if beds changed in size or density of AIS.



**Photo 13:** Adirondack Research Director, Ezra Schwartzberg mapping out a bed of invasive Eurasian water milfoil on Loon Lake, Warren County.

## Data Management

To ensure all data collected in the field were safely stored, redundant copies were kept at multiple steps throughout the collection process. Following are the steps taken to store and organize data:

### *Lowrance Chartplotter*

- Data collected on the Lowrance Chartplotter were saved on 32GB memory cards in the field.
- Files were saved every one to two hours to lessen the amount of data lost if a file became corrupted.
- At the end of each week, data collected from the Lowrance Chartplotter and stored on memory cards were saved on a computer and backed up on a separate external hard drive.
- Once backed up, data from the Lowrance Chartplotter were uploaded to the BioBase platform and processed. All processed data were then copied onto Adirondack Research's cloud data storage. Chartplotter data were also backed up (third copy) to cloud storage periodically.

### *ESRI ArcGIS Collector App – Invasive Plant Mobile Monitoring System (IPMMS)*

- Esri ArcGIS Collector data were backed up on the Esri server weekly. All ArcGIS data were uploaded to Adirondack Research's cloud storage in the middle of the field season, then again at the end of the season.

### *Paper Collection*

- Lists of native plants identified were recorded on paper and transcribed to digital form weekly.

### *GIS*

- Post processed GIS data (lake boundaries, invasive plant bed polygons and associated data, point data from Kriging interpolated biovolume, bottom hardness and bathymetry) were stored as CSV and raster format, depending on data source.
- All GIS shapefiles and attribute tables were packaged and submitted to APIPP with this report.



Data were also used to create visually appealing lake maps for each of the 52 lakes surveyed. Because AIS presence data were collected using IPMMS, the original shapefiles recorded during each survey are stored in and are accessible through APIPP's GIS database.

**Photo 13:** *Thomas Firkins uploading lake data to BioBase, a server that creates bathymetric maps.*



## Scheduling and Travel

The team of seven worked 40-hour weeks, spending the majority of time in the field and the rest in the office planning for the following week and uploading and processing data. To increase efficiency and reduce travel costs, lodging near clusters of lakes to be surveyed were selected each week. Lake survey order for the week was determined by distance to lodging, weather, and scheduling with lake associations.

## Results

Between June 10 and September 5, 2021, 52 waterbodies (lakes and ponds) were surveyed with the objective of AIS early detection and data collection, and if discovered, management of Tier 1 and Tier 2 species. Two newly invaded waterbodies were discovered by the Early Detection Team in 2021 and two other waterbodies with previously identified invasive species discovered a new species in 2021. The most common AIS detected was *Myriophyllum spicatum* (Eurasian watermilfoil) in twelve lakes and ponds. No invasive mollusk infestations were detected. A total of 287.62 shoreline miles were surveyed by the team in 2021. Lakes surveyed ranged in size from 19.7 acres (North Pond, Warren County) to 1503.22 acres (Sacandaga Lake, Hamilton County).



**Photo 14:** Jabe Pond, 2021. Photo by Patrick Bly.





## Data and Research Limitations

Project results were affected by various sources of data error, time limitations, and equipment issues. Acknowledging these limitations provide a more prudent analysis of the data and assist with planning for future surveys.

### Survey Accessibility

The team used either a canoe or motorboat to complete surveys depending on the accessibility and size of each waterbody. The canoe allowed the team to access lakes with restrictions on motorized usage,



**Photo 15:** *Not every water body is as accessible as Lake Algonquin, Hamilton County, pictured here next to a road. Photo by Pat Bly.*

whereas the motorboat gave the team opportunity to conduct field work on a sturdier platform. There were limitations associated with each mode of transportation. Lakes and ponds are not always comprised of unobstructed, open water. Many waterbodies surveyed contained downed trees, stumps, rocks, emergent tussocks, mats of floating and submerged plants, or human improvements, such as docks and blocked off swimming areas. These obstacles limited the team's accessibility by both canoe and motorized watercraft. When accessibility was limited, the team maneuvered the vessel as close to the obstacles as possible while ensuring their

safety and that of other lake users. When not using canoes, shallow bottom low draft aluminum boats used for this project worked well for these situations, but an outboard motor with electric trim was critical. However, even with this setup some areas were still inaccessible by boat.

As a result of these accessibility limitations, the maps produced for this report may not provide a complete representation of the aquatic vegetation in each lake or pond – especially for shallow areas near shore. Areas unable to be accessed have been identified by hatch marks and labeled “Not Surveyed” in each map's legend.

### Technology

Various technologies were deployed over the course of this project to improve survey effectiveness and efficiency. The Esri ArcGIS Collector App and IPMMS ran on an iPad Mini 4 tablet linked via Bluetooth to a Garmin GPS antenna (Garmin GLO). This set-up was used to map invasive plant beds and mark locations of plankton tows and sediment sieves, but spatial accuracy was often limited to around 16 feet due to terrain and insufficient satellite signals. Therefore, spatial data collected over the course of the project is potentially affected by this 16-foot variance. The team did their best to hold the boat stationary and reduce any drifting of the canoe or motorboat while collecting GPS data. Even with this care, the team had difficulty mapping the area of smaller plant beds.

While APIPP's AIS Early Detection Team has been in existence since 2015, the Lowrance Chartplotter and C-Map BioBase platform were new to survey protocols in 2018. During the 2018-2021 seasons, the team identified potential sources of error associated with the Lowrance Chartplotters and BioBase platform. First, when navigating through dense beds of vegetation, the sonar was not able to accurately detect the lake or pond bottom to map sediment hardness, bathymetry, and/or biovolume. In relation to vegetation, a major limitation of the BioBase platform is that it does not produce accurate vegetation biovolume outputs for areas less than 2.4 feet in depth. This has the potential to impact the thoroughness of maps produced for shallow waterbodies or if water levels are seasonally low. It is also important to remember that this BioVolume data is a snapshot of the amount of plant growth on the day of the survey and will change as plants grow and die throughout a normal growth season. Second, when the transducer is in less than 2 feet of water, the sonar is not able to collect data. This results in data gaps that can only be corrected with visual confirmation and GPS mapping of plant beds. Outputs may show areas of no vegetation because of these limitations. All three of these limitations are also identified by hatch marks and labeled "Not Surveyed" in each map's legend.

Future deployment of the Lowrance Chartplotter, transducer and BioBase platform will likely improve over time as APIPP and its early detection teams become more familiar with the intricacies and limitations of these technologies.

### Survey Thoroughness

The serpentine search pattern used per our methodology increases the total area surveyed per lake but is not the most comprehensive technique to identify every species in each waterbody. Since the main goal of this project is to detect and identify invasive species, overall abundance of native vegetation is not a primary concern, and therefore the serpentine search pattern offers the most efficient method to meet our goals. With the serpentine search pattern, not every inch of each lake is covered, but enough of the lake's area is covered to minimize the likelihood that we are missing invasive plant beds. There is the possibility that we missed some small beds (or single plants), but future repeat surveys will help to ensure any missed small or isolated infestations will be detected. Survey techniques aside, other factors may affect the thoroughness of surveys including seasonal survey timing, water clarity or weather conditions. Day to day and year to year changes in survey conditions may result in minor variations in documented plant species and abundance.



**Photo 16:** Research technicians, Tim Murphy and Joshua Young surveying Lake Pleasant, Hamilton County, 2021.

While management of invasive species is important to maintain the quality of aquatic resources, it does pose a challenge for mapping existing invasive plant beds. The maps produced for this project are intended to be used to inform future surveys and management. If a team surveys a lake after management has occurred, the resulting maps will not indicate where the invasive species were growing in the lake or pond, as the plants have already been removed. All distribution data and plant bed locations produced during this survey reflect the lake as it was the day of the survey.

At the time of our surveys, management of AIS had already occurred or was occurring on: Paradox Lake, Lake Luzerne, Hadlock Pond, East Caroga Lake and Loon Lake.

### Possible Errors

While the field season was relatively free of errors and issues a few inconveniences were encountered. Even with appropriate training, there is still a chance of misidentifying a plant species. Whorled milfoil was found on Fourth Lake, which may have been misidentified as Eurasian water milfoil in the past. This year we started taking pictures of new occurrences on most lakes to allow for confirmation and reduce misidentification from happening in the future.

### Recommendations

Adirondack Research provides the following set of recommendations to improve future project effectiveness and techniques used to detect AIS infestations as they relate to informing management decisions.

#### Crew Size and Training

Optimal early detection team size depends on the project scope of work. If deploying the BioBase platform to produce detailed maps becomes a higher priority, a larger crew will be necessary, as this component of the survey protocol add considerably to the time/resources required to survey and map each waterbody. This especially applies to larger lakes and ponds which have larger surface areas to map. In 2021, the team of seven over 13 weeks was able to complete serpentine search surveys for AIS on 52 lakes or ponds and collect data to produce lake maps with lake characteristics data in C-Map BioBase for all of these waterbodies.

Setup and maintenance of the technology used for this project are vital to collecting accurate, reliable data. Familiarity with the equipment is not a penultimate prerequisite, but it does keep the short field season running smooth. With new technologies comes



**Photo 17:** Adirondack Research's 2020 field crew during a training day on First Pond, Franklin Co., NY.



troubleshooting and periods of trial and error. Understanding intricacies, nuisances and common issues with the system will prove invaluable in the field.

### Technology

In regard to the BioBase platform, the data and maps produced by this technology will be a tremendous asset to lake associations and communities looking to monitor or manage AIS. If any lake associations or researchers are interested in accessing this data, please contact APIPP. The data provide detailed waterbody-specific characteristic information with increased accuracy and at reduced cost than top-water or diver-assisted surveys.

Utilizing these data to develop geospatial vulnerability models of aquatic invasive plant establishment and spread for individual lakes can help target future early detection surveys and to direct regional AIS spread prevention measures. For example, the bottom hardness data produced may allow for predictions of lake vulnerability to aquatic invasive plants, or even invasive mollusk establishment.

Additionally, when analyzed against the biovolume data, improved predictions can be made of where invasive plants are likely to become established and spread. Adirondack Research has already begun this work as an

awardee of a Microsoft AI for Earth Grant and is exploring how technology can inform conservation efforts. With study areas across the Adirondack Park, there is leading opportunity to advance a regional vulnerability assessment project with data collected during surveys by the Early Detection Team.



Photo 12: Crew leader Thomas surveying on Lake Placid.

### Yearly Number and Types of Surveys

As with crew size, the annual number of waterbodies surveyed is dependent on the project scope of work. Using the Lowrance Chartplotter to make complete maps of each waterbody, in contrast to only running the system during littoral zone surveys, significantly adds to the time/resources required to survey each lake. Adding additional lakes or ponds to be fully mapped with BioBase will necessitate a larger crew, as well as additional motorboats, sonar units, and subscription-based services. The same will be true with lakes with large acreage, as a minimal speed will need to be maintained to ensure accurate data collection. Since the data collected during this project will have great value in future AIS management and research, we recommend performing sonar collection throughout the lakes' littoral zones and omit the centers of the lakes.

Management of aquatic invasive plants pose a challenge for accurately mapping the invasive plant beds in a lake. If the survey is conducted after management has occurred, the resulting map does not capture the full extent of the original infestation for that year. All invasive species distribution data and plant bed location maps produced will document only the current conditions in the lake the day the survey

was completed. We recommend that APIPP compile a list of lakes with active management when prioritizing lakes for surveys.

We recommend continuing to collect sonar data on lake in which it has not yet been collected. We also recommend continuing to survey lakes for which no invasive plants have been detected, including lakes that have been surveyed in previous years. If partners can benefit from detailed surveys on lakes for which we know to be invaded, then we think it is valuable to perform sonar recordings along with AIS surveys on those lakes. Besides that, we think it is important to continue to perform AIS surveys on lakes, especially those without known infestations of AIS so that if and when we find new AIS infestations of species that can be managed, we have the opportunity to perform rapid response.

## Conclusions

The 2021 Aquatic Invasive Species Early Detection Team surveyed 52 lakes and ponds in the southeastern section of the Adirondack Park. We did find new infestations of AIS during the 2021 field season highlighting the importance of having an early detection program in place to identify new invasions. While we did find new infestations of previously known invasive species, no new species (APIPP Tier 1) to the region were detected. Most of the lakes and ponds surveyed this year were surveyed previously in 2015 or 2018, but there were 10 lakes that there were no records of previous AIS monitoring.

We continued to incorporate the BioBase system to map aquatic vegetation and other lake characteristics. We now have collected sonar data on at least the littoral zones of over 100 lakes in the three survey regions of the Adirondack PRISM. These data can be modeled to help guide prioritization of lakes for future surveys.

## Maps

The following section provides lake survey maps and description narratives of the 52 lakes and ponds surveyed in 2021. Each lake map comprises a vegetation survey area (which document plant bed Biovolume), invasive plant beds (as delineated by IPMMS if found), and the locations of plankton tows (PP) and invasive mollusk sieve survey (SS) locations. Thirty-six lakes and ponds also include bathymetric and bottom hardness composition maps. Some waterbodies have areas denoted as excessively interpolated. For these lakes, we interpolated across areas of water greater than 200 feet. At these distances, the potential for error and mis-interpolation are greater than data standards employed by BioBase. For this reason, we show a visualization of the interpolation, but also denote that the data presented may contain error. These are represented by a grid pattern across the area in question.

### Invasive Species Maps

Each lake description is followed by 1-3 maps. The first map, if aquatic invasive species were detected in the lake, is the “Vegetation Map” and shows presence of aquatic invasive species (AIS) beds and points if present along with BioVolume output. Points are labeled directly on the map with the acronym of the invasive species name and consist of individual plants. Polygons denote beds of invasive species. These polygons are labeled with numbers that correspond to a bed density and size in both acres and square feet in the facing table. The tables have only polygon data and do not include individual plant occurrences, which are denoted only with a point and acronym on the map. The acronym is listed in

each map legend. Also noted on this map with a dashed line is the GPS track of the boat to show where the crew went and searched.

**Aquatic Invasive Species Acronyms**—The maps contain acronyms for invasive species occurrences. These occur when a polygon or point record for an invasive species are labeled directly on a map. The following acronyms and their full common names occur throughout.

| Aquatic Invasive Species | Acronym |
|--------------------------|---------|
| Curly Leaf Pondweed      | CLP     |
| Brittle Naiad            | BN      |
| Variable Leaf Milfoil    | VLM     |
| Eurasian Watermilfoil    | EWM     |
| Yellow Iris              | YI      |
| Water Chestnut           | WC      |
| Phragmites               | CRG     |
| Purple Loosestrife       | PL      |

### Bathymetry Maps

The next map is the bathymetry map. This map shows water depth in increments contingent with the overall maximum depth of the waterbody.

### Bottom Hardness

The next and last map is the bottom hardness map. The values of bottom hardness range from 0 to 0.5 and are an interpretation of sonar made by BioBase. The values are linear in hardness and range from the low end of 0, denoting a mucky bottom to 0.5, denoting a sandy or hard bottom.

### Excessive Interpolation

We create the bathymetry and bottom hardness layers on the lake maps on the following pages by utilizing BioBase output (csv files of grid formatted values) and then interpolate them with one another to form a matrix raster image. This raster image estimates the values between each of the points. One issue we face with performing this type of interpolation of these data is that sometimes we interpolate over large distances. This results in errors of over guessing. For example, we can interpolate across a lake, but we will not take into consideration changes in depth or bottom hardness that exist in areas where we did not collect data directly with sonar. While these interpolations are inaccurate, it can help make a map look much nicer. For that reason, we have interpolated across larger areas, but we show these areas as being “excessively interpolated” by denoting their areas with a hatch marking. These can be seen over the centers of several of the lakes that follow.

## Adirondack Lake

**Survey Date:** June 21, 2021

**Last Surveyed:** 2015

**Survey Team:** L. Johnson, T. Murphy, T. Firkins, M. Privee, E. Schwartzberg

### Lake Description

Adirondack Lake is 205-acres with 6-miles of shoreline. It is located in the town of Indian Lake, Hamilton County, and lies in the Upper Hudson River watershed. The team launched a motorboat from the public launch on the south end of the lake. There was a roped off area on northwest side of the lake as well as an area with nesting loons in the northeast side of the lake that we were unable to be surveyed.

### Aquatic Invasive Plant Presence

No invasive plants were detected.

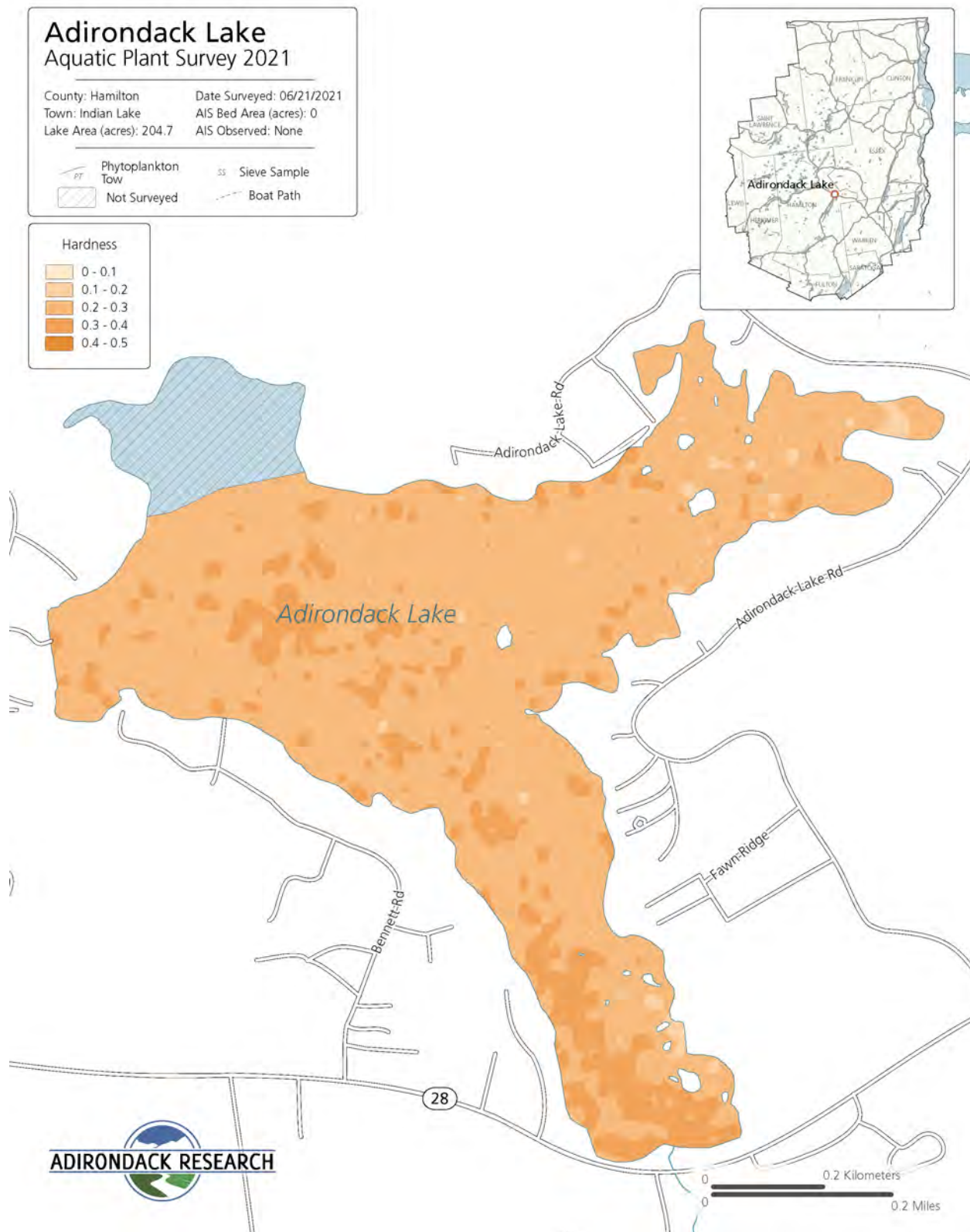
### Native Plant Biota

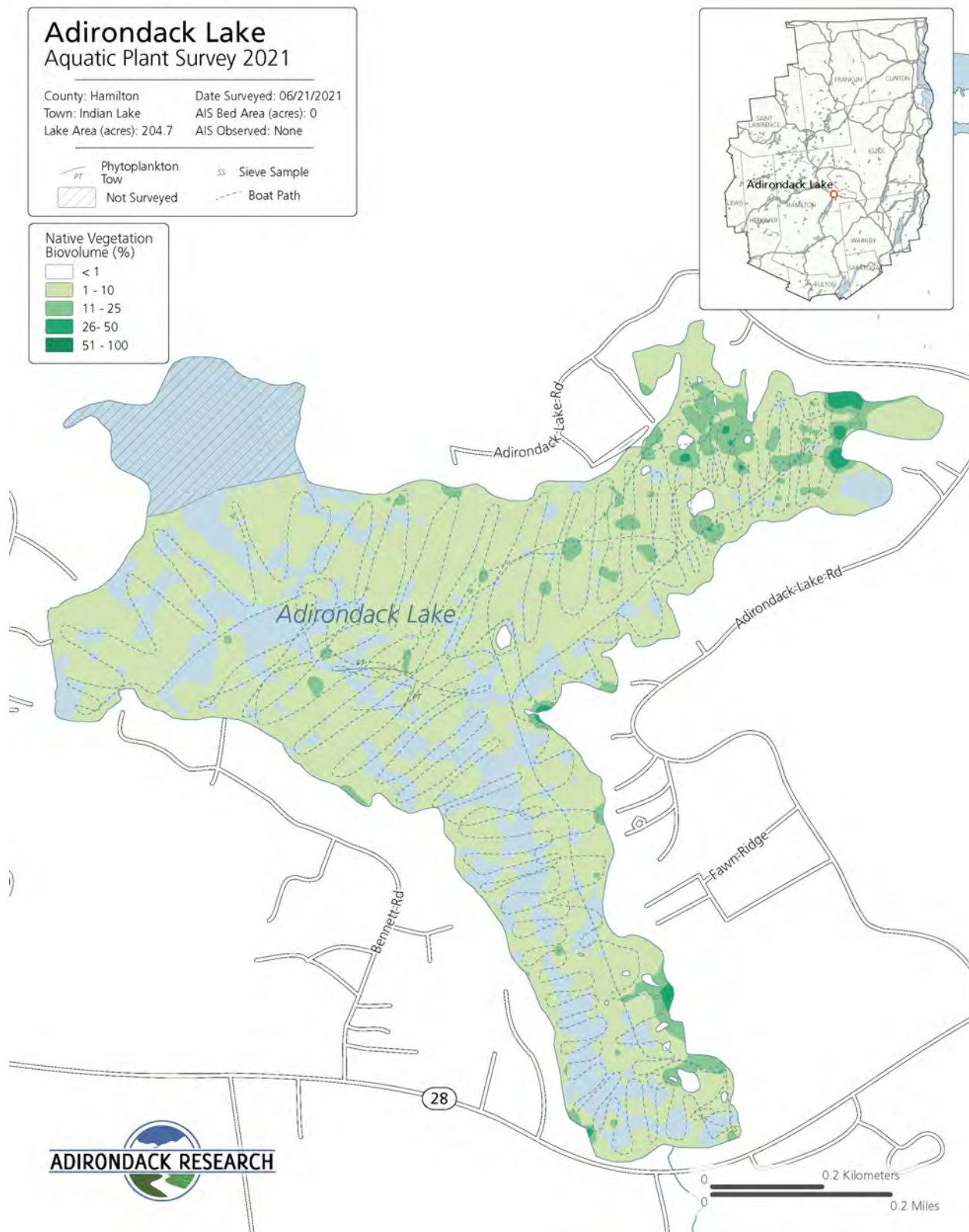
The following native plants were found: *Nuphar variegata* (spatterdock), *Utricularia macrorhiza* (common bladderwort), *Brasenia schreberi* (watershield), *Nymphaea odorata* (white water lily), *Pontederia cordata* (pickerel weed), and *Iris versicolor* (blue flag iris).

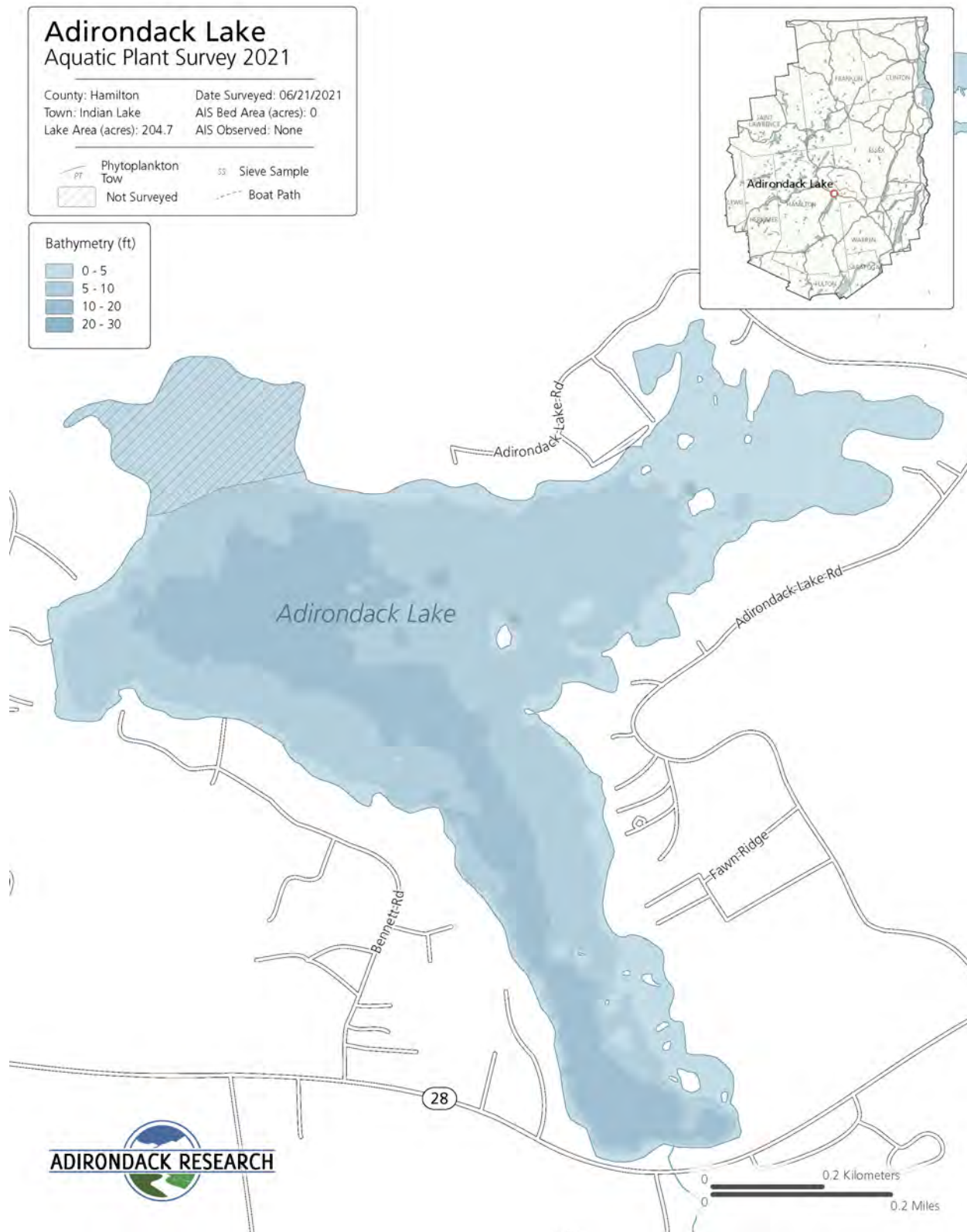
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. *Viviparus georgianus* (banded mystery snails) were found. Three plankton tows were also conducted with no invasive zooplankton detected.









## Arbutus Pond

**Survey Date:** July 21, 2021

**Last Surveyed:**

**Survey Team:** P. Bly, M. Privee

### Lake Description

Arbutus Pond is 121-acres. It is located in the town of Newcomb, within Essex County, and lies in the Lake Champlain watershed. The team launched a canoe from the SUNY ESF property.

### Aquatic Invasive Plant Presence

No aquatic invasive plant species were identified.

### Native Plant Biota

Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Nymphaea alba* (white water lily), *Pontederia cordata* (pickerelweed), *Sparganium angustifolium* (narrowleaf burr reed), *Utricularia spp.* (bladderwort), *Potamogeton amplifolius* (largeleaf pondweed), *Nuphar advena* (spatterdock), *Brasenia schrederi* (watershield), *Eriocaulon spp.* (pipewort), *Potamogeton natans* and (floatingleaf pondweed).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with no invasive zooplankton detected.



# Arbutus Pond

## Aquatic Plant Survey 2021

County: Essex

Town: Newcomb

Lake Area (acres): 120.5

Date Surveyed: 07/22/2021

AIS Bed Area (acres): 0

AIS Observed: None

Phytoplankton Tow

Boat Path

Native Vegetation Biovolume (%)

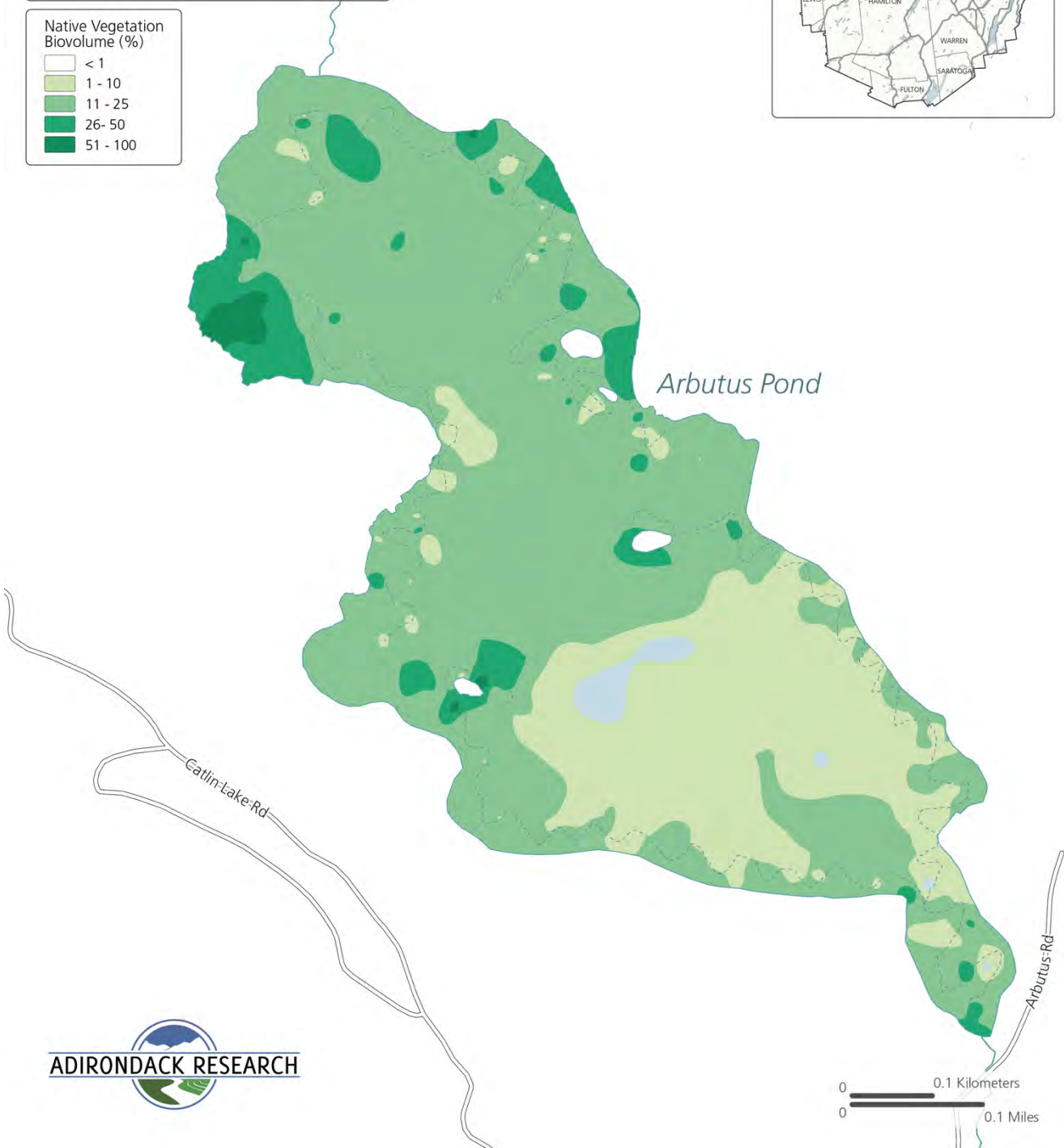
< 1

1 - 10

11 - 25

26 - 50

51 - 100



## Balfour Lake

**Survey Date:** August 10, 2021

**Last Surveyed:** August 23, 2018

**Survey Team:** P. Bly, T. Firkins, T. Murphy, L. Johnson

### Lake Description

Balfour Lake is 94-acres and has 2.47-miles of shoreline. It is found in the town of Minerva, Essex County and lies in the Upper Hudson River watershed. The team launched at the hand launch off Route 28N.

### Invasive Species Presence

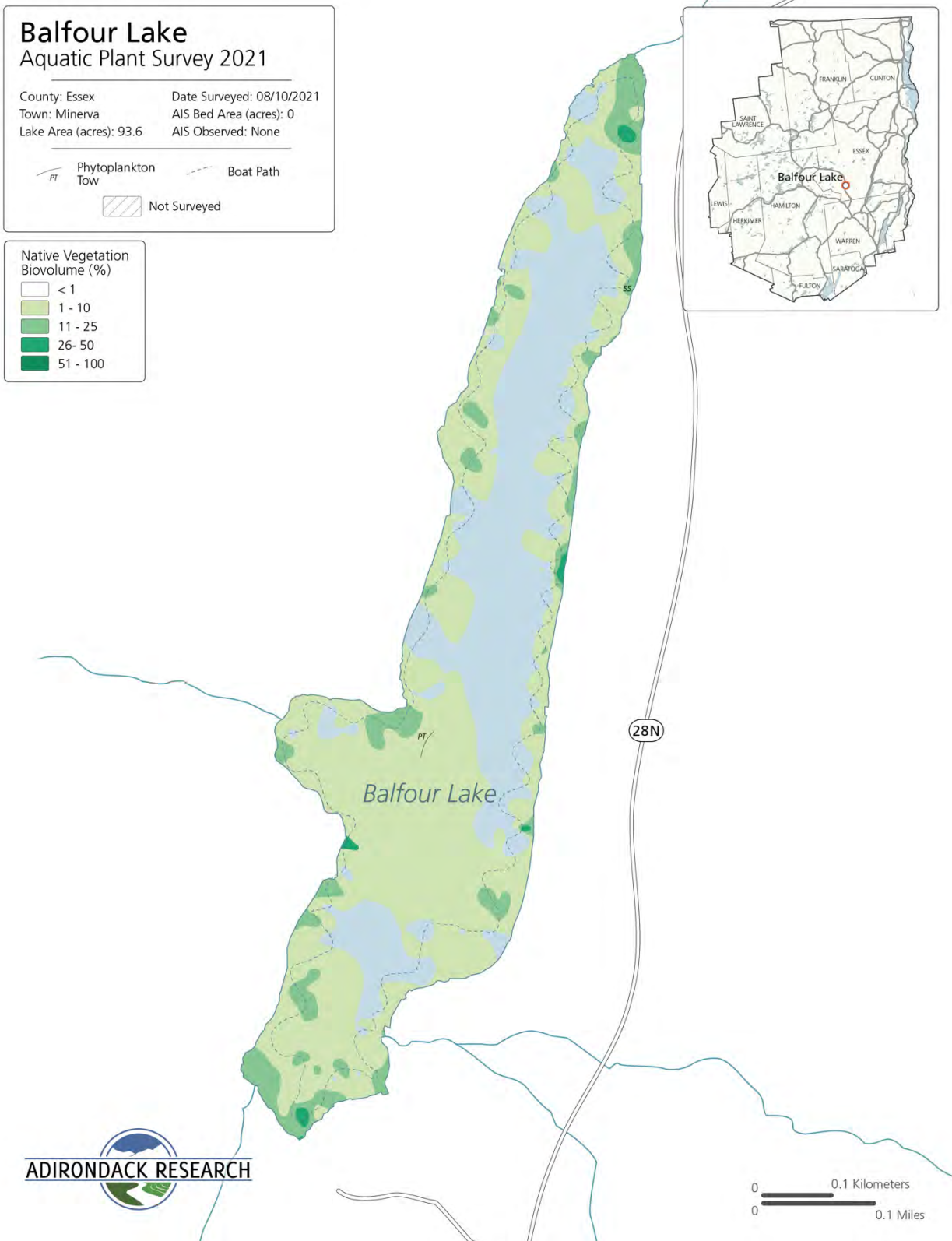
No invasive plants were detected.

### Native Biota

Comprehensive surveys of all native plants found within the lake were not prioritized in 2018, as 2018 was the second of the three-year rotation cycle described in the introduction. Native plants found within the lake include *Brasenia schreberi* (watershield), *Eriocaulon* spp., *Nymphaea odorata* (white water lily), *Eriocaulon aquaticum* (pipewort), *Nuphar advena* (spatterdock), *Potamogeton natans* (floating leaf pondweed), *Utricularia purpurea* (large purple bladderwort), and

### Animal Aquatic Invasive Species

Sieves were also taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Plankton tows were done and no invasive plankton was detected.



## Bartlett Pond

**Survey Date:** August 26, 2021

**Last Surveyed:** June 26 and 27, 2018

**Survey Team:** T. Firkins, J. Young

### Lake Description

Bartlett Pond is 99-acres and has 1.93-miles of shoreline. It is located in the town of Moriah, Essex County and lies in the Lake Champlain watershed. The team launched at the hand launch off of County Highway 7B (Bartlett Pond Road).

### Aquatic Invasive Plant Presence

A total of 25 invasive *Myriophyllum spicatum* (Eurasian watermilfoil) plant beds were mapped, with the heaviest concentrations documented at the northern end of the pond.

### Native Plant Biota

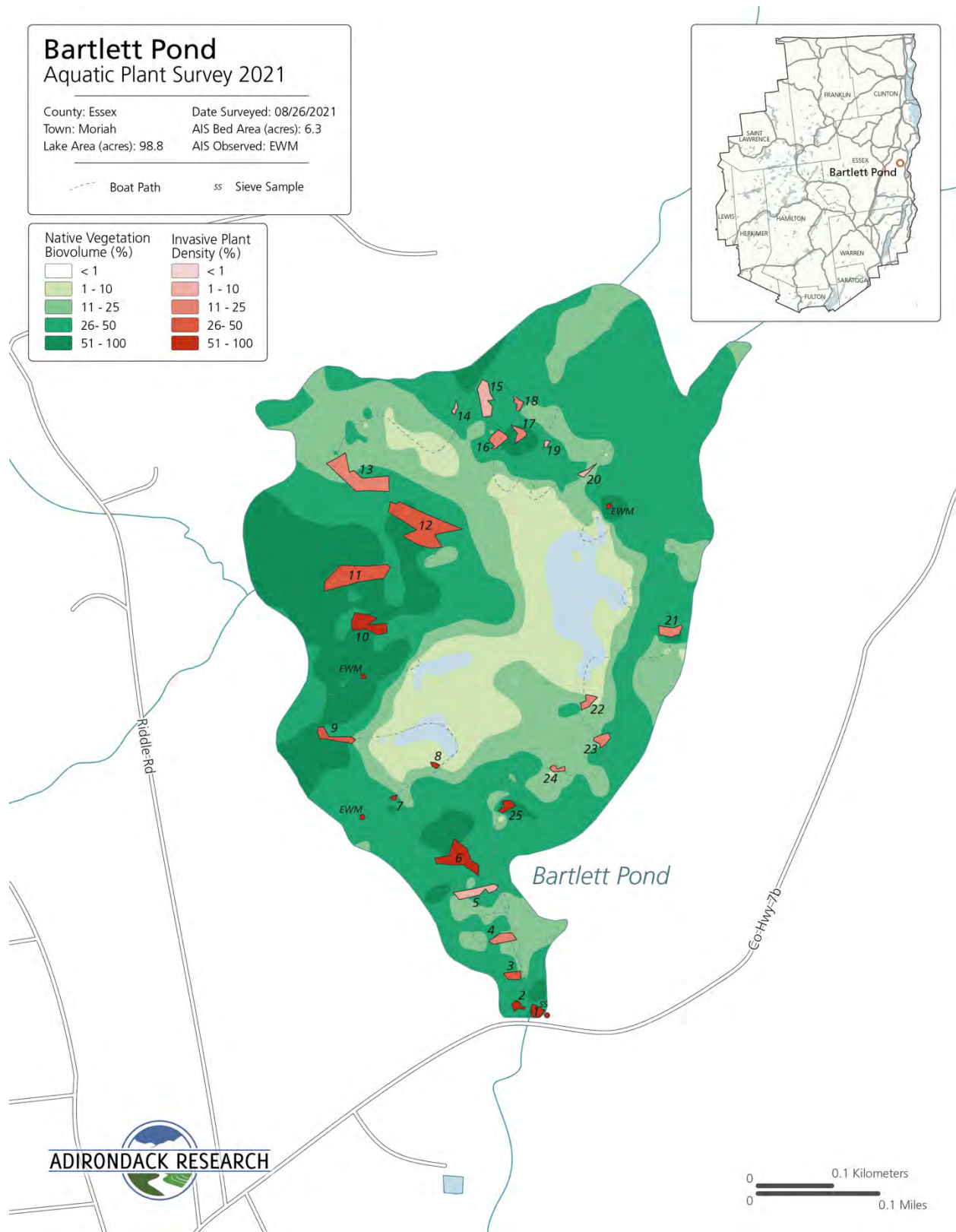
Comprehensive surveys of all native plants found within the pond were not prioritized in 2021, as this data had been previously collected in 2015 when the lake was first surveyed. The following native plants were found and identified: *Brasenia schreberi* (water shield), *Potamogeton amplifolius* (large leaf pondweed), *Eriocaulon aquaticum* (pipewort), *Nuphar variegata* (spatterdock), *Utricularia vulgaris* (common bladderwort), *Pontedaria cordata* (pickerel weed), *Nymphaea odorata* (white water lily), and *Potamogeton natans* (floating leaf pondweed).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.

| Eurasian Watermilfoil |            |                |         | Eurasian Watermilfoil |            |                 |         |
|-----------------------|------------|----------------|---------|-----------------------|------------|-----------------|---------|
| Bed                   | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed                   | Size (Ac.) | Size (Sq. Ft.)  | % Cover |
| 1                     | 0.06       | 2459.86        | 51-100  | 15                    | 0.17       | 7577.89         | 1-10    |
| 2                     | 0.04       | 1533.10        | 51-100  | 16                    | 0.09       | 3954.18         | 11-25   |
| 3                     | 0.05       | 2300.44        | 26-50   | 17                    | 0.06       | 2425.11         | 11-25   |
| 4                     | 0.09       | 3878.17        | 11-25   | 18                    | 0.03       | 1490.74         | 11-25   |
| 5                     | 0.13       | 5843.32        | 1-10    | 19                    | 0.01       | 548.67          | 1-10    |
| 6                     | 0.28       | 12195.39       | 51-100  | 20                    | 0.03       | 1098.55         | 1-10    |
| 7                     | 0.01       | 440.11         | 51-100  | 21                    | 0.09       | 3966.26         | 11-25   |
| 8                     | 0.02       | 689.31         | 51-100  | 22                    | 0.06       | 2423.34         | 11-25   |
| 9                     | 0.10       | 4437.22        | 26-50   | 23                    | 0.06       | 2740.97         | 11-25   |
| 10                    | 0.22       | 9454.63        | 51-100  | 24                    | 0.03       | 1245.26         | 11-25   |
| 11                    | 0.47       | 20352.93       | 26-50   | 25                    | 0.05       | 2193.87         | 51-100  |
| 12                    | 0.66       | 28676.35       | 26-50   | Asian Clam            |            | Spiny Waterflea |         |
| 13                    | 0.43       | 18686.20       | 11-25   | Present (Y/N)         |            | Present (Y/N)   |         |
| 14                    | 0.02       | 720.85         | 1-10    | No                    |            | N/A             |         |





## Brant Lake

**Survey Date:** June 14 and June 15, 2021

**Last Surveyed:** 2020

**Survey Team:** P. Bly, T. Firkins, L. Johnson, T. Murphy, M. Privee, J. Young

### Lake Description

Brant Lake is a 1521-acre lake with 22.3-miles of shoreline. It is in the town of Horicon in Warren County within the Upper Hudson River watershed. The team was able to launch a motorboat from a public boat launch on the southeastern shore of the lake.

### Aquatic Invasive Plant Presence

Beds of *Myriophyllum spicatum* (Eurasian watermilfoil) and *Potamogeton crispus* (curly leaf pondweed) were located throughout the lake in isolated bays. *Iris pseudacorus* (yellow iris) was also located along the shores of the lake in isolated patches.

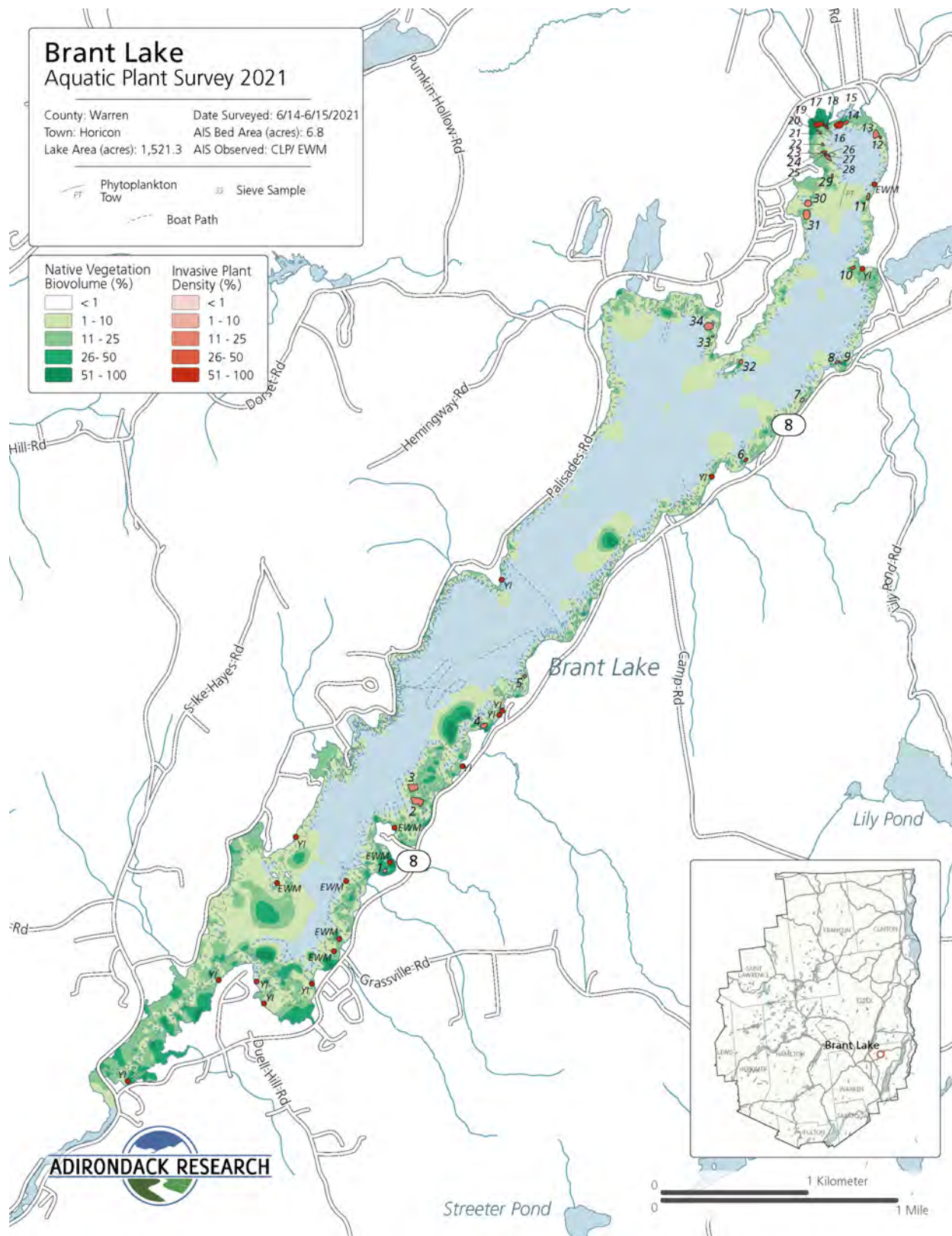
### Native Plant Biota

Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native plants were found: *Nuphar variegata* (spatterdock), *Brasenia schreberi* (water shield), *Nymphaea odorata* (white-water lily), *c* (common bladderwort), *Pontedaria cordata* (pickerelweed), *Typha* spp. (cattail spp.), *Potamogeton natans* (floating-leaf pondweed), *Elodea nuttallii* (slender waterweed), *Potamogeton perfoliatus* (clasping-leaf pondweed), *Zostera marina* (common eelgrass), *Potamogeton robbinsii* (Robbin's pondweed), *Sparganium angustifolium* (narrow-leaf burr reed), *Potamogeton amplifolius* (large leaf pondweed), *Ceratophyllum demersum* (coontail), *Potamogeton praelongus* (white-stem pondweed), and *Sagittaria graminea* (grassy arrowhead).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with no invasive zooplankton detected.







## Canada Lake

**Survey Date:** June 28, 2021

**Last Surveyed:** July 2 and September 5 2018

**Survey Team:** P. Bly, T. Firkins, M. Privee, T. Murphy

### Lake Description

Canada Lake is 539-acres with 16.2-miles of shoreline. It is located in the town of Caroga, Fulton County and lies in the Mohawk watershed. The team launched two motorboats from the public boat launch located on West Lake.

### Aquatic Invasive Plant Presence

No aquatic invasive plant species were identified. Yellow iris was recorded.

### Native Plant Biota

Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Nuphar advena* (spatterdock), *Nymphoides cordata* (little floating heart), *Brasenia schrederi* (watershield), *Sparganium angustifolium* (narrowleaf burr reed), *Nymphaea alba* (white water lily), *Utricularia spp.* (bladderwort), *Potamogeton natans* (floatingleaf pondweed), and *Elodea spp.* (elodea).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Four plankton tows were also conducted with no invasive zooplankton detected.

## Green Lake

**Survey Date:** July 19, 2021

**Last Surveyed:** July 2, 2018

**Survey Team:** T. Firkins, P. Bly

### Lake Description

Green Lake is 45-acres and has 1.2-miles of shoreline. It is located in the town of Caroga, Fulton County and lies in the Mohawk River watershed. The team launched a motorboat at the public launch on north side. The team launched a motorboat from West Lake to access Green lake. Green Lake is connected to Canada Lake by a channel.

### Aquatic Invasive Plant Presence

No invasive plant species were detected.

### Native Plant Biota

Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Potamogeton natans* (floating-leaf pondweed), *Potamogeton zosteriformes* (narrow-leaf pondweed), *Utricularia spp.* (bladderwort), *Nymphoides cordata* (little- floating heart), *Potamogeton corodata* (pickerel weed), and *Nymphaea alba* (white water lily).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Two plankton tows were also conducted with no invasive zooplankton detected.

## West Lake

**Survey Date:** July 19, 2021

**Last Surveyed:** 2018

**Survey Team:** E. Schwartzberg, T. Murphy

### Lake Description

West Lake is 208-acres and has 2.2-miles of shoreline. It is located in the town of Caroga, Fulton County and lies in the Mohawk River watershed. The team launched a motorboat at the public launch on west north side. There was a lot of little floating heart and floating- leaf pondweed on the south and west side of the lake.

### Aquatic Invasive Plant Presence

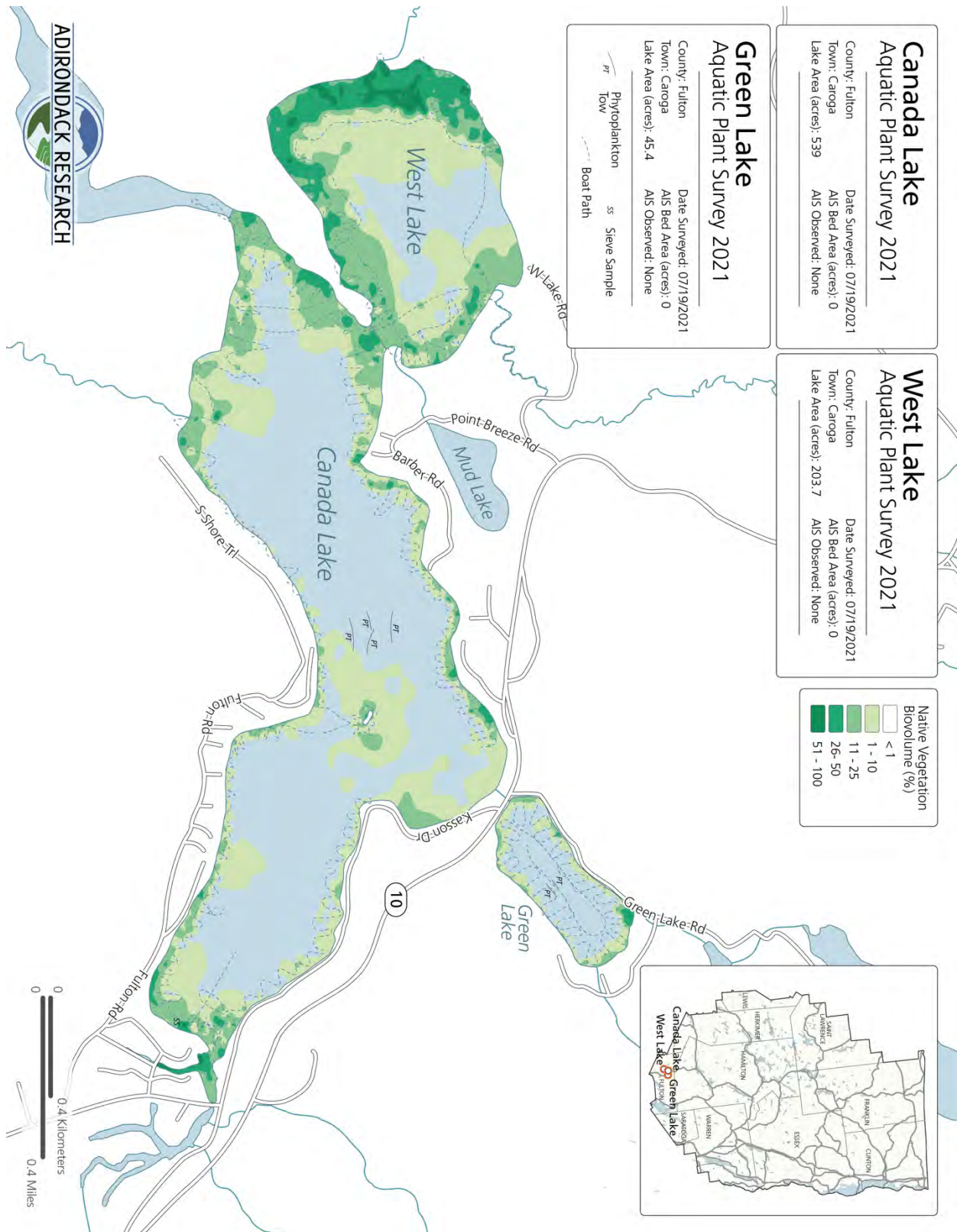
No invasive plant species were detected.

### Native Plant Biota

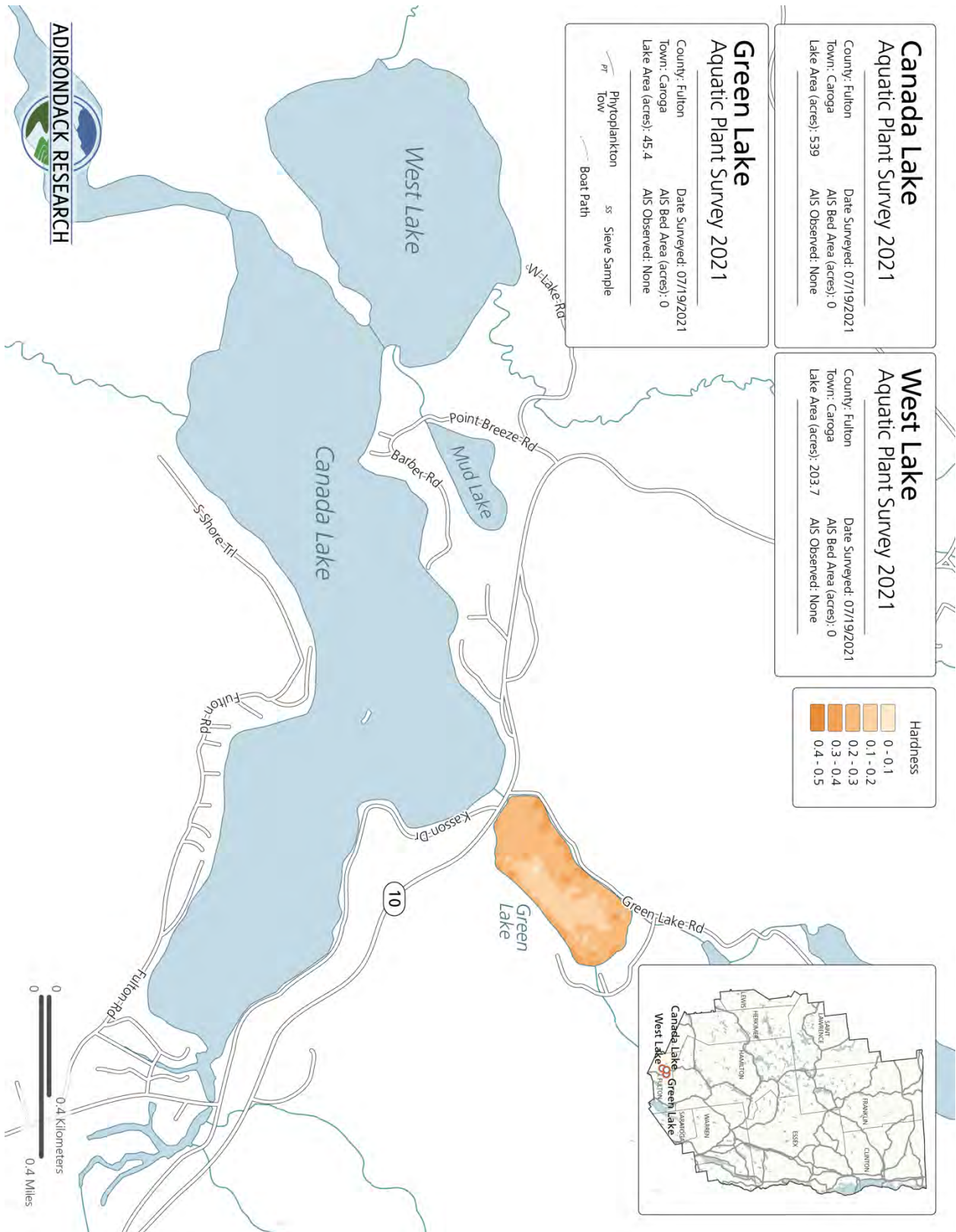
Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Nophar advena* (Spatterdock), *Potamogeton natans* (floating-leaf pondweed), *Potamogeton zosteriformes* (narrow-leaf pondweed), *Utriculariasp* (bladderwort), *Nymphoides cordata* (little- floating heart), *Potamogeton corodata* (Pickerel weed), and *Zostera* (eelgrass).

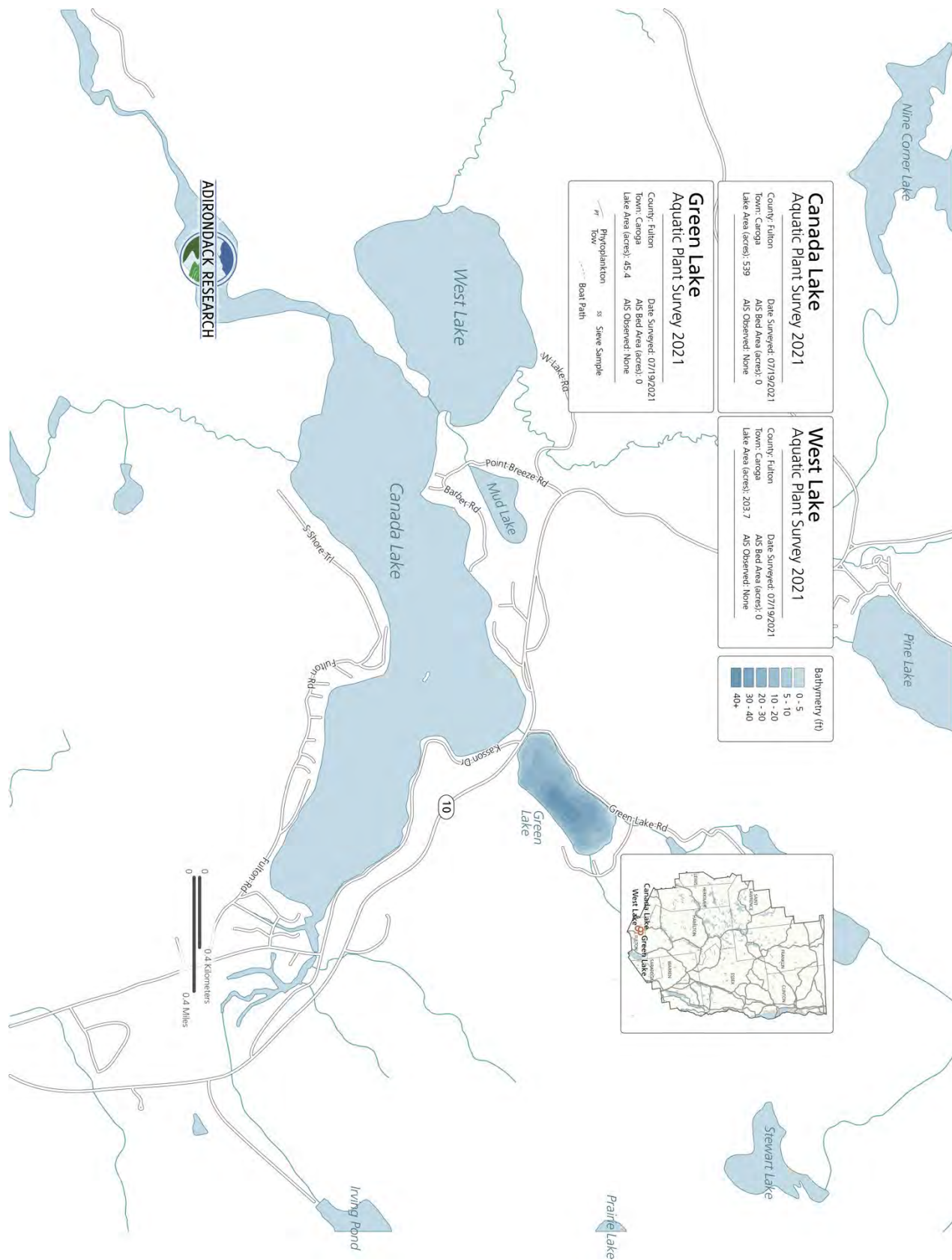
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted on Green and Canada Lakes with no invasive zooplankton detected. Plankton tows were not conducted directly on West Lake.









## East Caroga Lake

**Survey Date:** July 29 and August 5, 2021

**Last Surveyed:** June 19, 2018

**Survey Team:** P. Bly, T. Murphy, L. Johnson, J. Young

### Lake Description

East Caroga Lake is 234-acres and has 5.1-miles of shoreline. It is located in the town of Caroga, Fulton County and lies in the Mohawk River watershed. The team launched motor boats from launch located at the Caroga Lake marina.

### Aquatic Invasive Plant Presence

Several large beds of *Myriophyllum spicatum* (Eurasian milfoil) were found throughout the lake and a few patches of *Lythrum salicaria* (purple loosestrife) were also found.

### Native Plant Biota

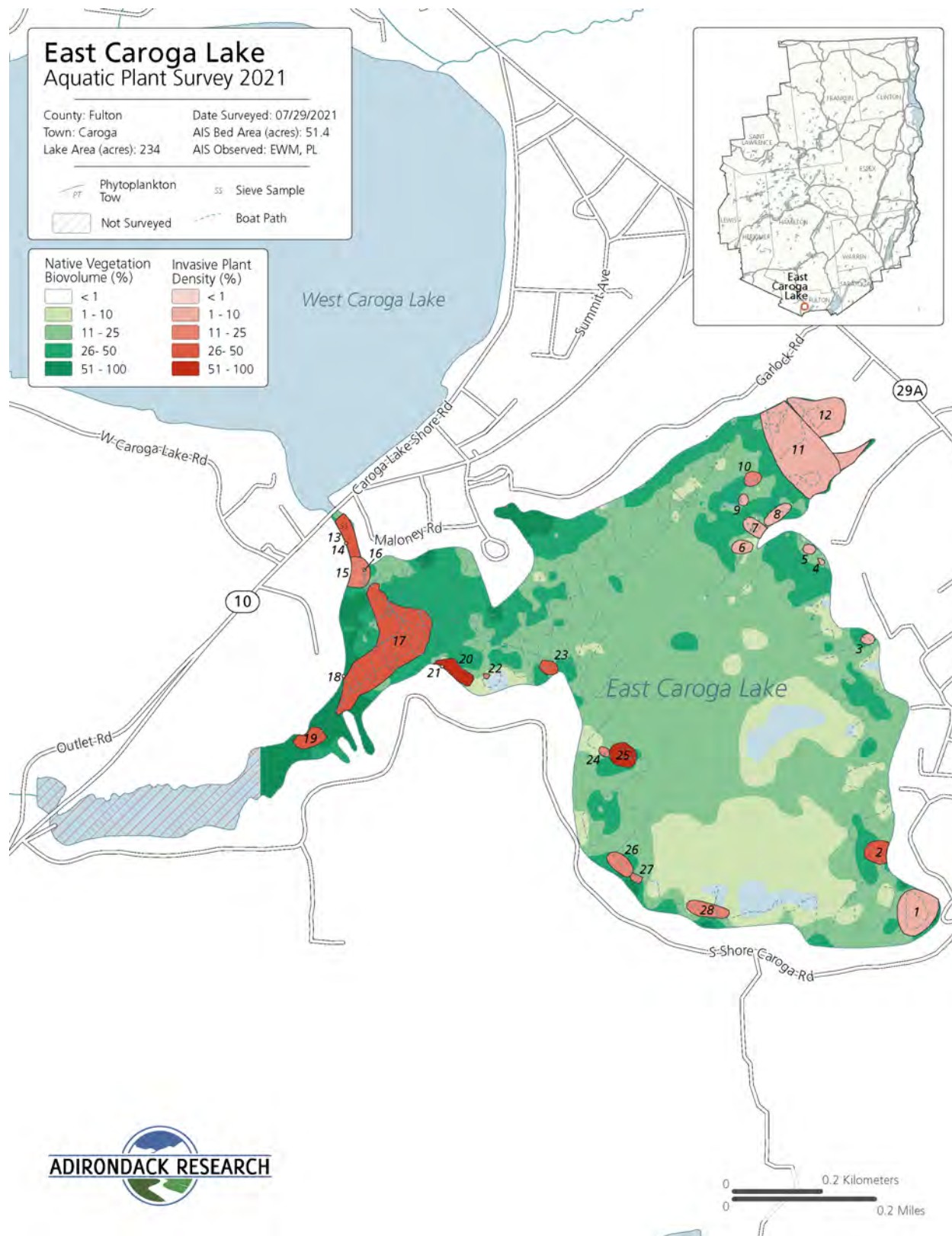
The following native plants were found: *Utricularia macrorhiza* (Common bladderwort), *Potamogeton robbinsi* (Robbins pondweed), *Potamogeton amplifolius* (largeleaf pondweed), *Eriocaulon decangulare* (pipewort), *Sparganium angustifolium* (narrow leaf bur reed), *Brasenia schreberi* (watershield), *Nuphar advena* (spatterdock), *Nymphaea odorata* (white water lily), *Nymphoides cordata* (little floating heart), *Potamogeton perfoliatus* (clasping leaf pondweed), *Nitella spp.* (nitella), *Potamogeton natans* (floating leaf pondweed), *Potamogeton praelongus* (white stemmed pondweed) and *Pontederia cordata* (pickerel weed).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.

| Eurasian Watermilfoil |            |                |         | Eurasian Watermilfoil |            |                 |         | Purple Loosestrife |            |                |         |
|-----------------------|------------|----------------|---------|-----------------------|------------|-----------------|---------|--------------------|------------|----------------|---------|
| Bed                   | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed                   | Size (Ac.) | Size (Sq. Ft.)  | % Cover | Bed                | Size (Ac.) | Size (Sq. Ft.) | % Cover |
| 1                     | 1.89       | 82146.54       | 1-10    | 15                    | 1.25       | 54353.72        | 11-25   | 16                 | 0.01       | 447.78         | NR      |
| 2                     | 0.70       | 30704.72       | 26-50   | 17                    | 6.26       | 272823.57       | 26-50   | 18                 | 0.01       | 447.81072      | NR      |
| 3                     | 0.15       | 6492.28        | 1-10    | 19                    | 0.62       | 26904.69        | 26-50   | 21                 | 0.01       | 447.81         | NR      |
| 4                     | 0.04       | 1710.01        | 1-10    | 20                    | 0.72       | 31236.07        | 51-100  |                    |            |                |         |
| 5                     | 0.13       | 5480.33        | 1-10    | 22                    | 0.03       | 1476.12         | 11-25   |                    |            |                |         |
| 6                     | 0.30       | 12857.59       | 1-10    | 23                    | 0.27       | 11649.69        | 26-50   |                    |            |                |         |
| 7                     | 0.42       | 18465.45       | 1-10    | 24                    | 0.11       | 4734.51         | 11-25   |                    |            |                |         |
| 8                     | 0.41       | 17869.74       | 1-10    | 25                    | 0.67       | 29239.04        | 51-100  |                    |            |                |         |
| 9                     | 0.12       | 5146.97        | 1-10    | 26                    | 0.54       | 23305.38        | 11-25   |                    |            |                |         |
| 10                    | 0.26       | 11126.41       | 11-25   | 27                    | 0.11       | 4696.41         | 11-25   |                    |            |                |         |
| 11                    | 5.79       | 252075.11      | 1-10    | 28                    | 0.66       | 28578.76        | 11-25   |                    |            |                |         |
| 12                    | 4.63       | 201628.71      | 1-10    | Asian Clam            |            | Spiny Waterflea |         |                    |            |                |         |
| 13                    | 1.29       | 56265.75       | 26-50   | Present (Y/N)         |            | Present (Y/N)   |         |                    |            |                |         |
| 14                    | 0.01       | 447.77         | 1-10    | No                    |            | N/A             |         |                    |            |                |         |







## West Caroga Lake

**Survey Date:** August 5, 2021

**Last Surveyed:** June 19, 2018

**Survey Team:** P. Bly, T. Murphy

### Lake Description

West Caroga Lake is 318-acres and has 3.2-miles of shoreline. It is located in the town of Caroga, Fulton County and lies in the Mohawk River watershed. The team launched motorboats from launch located at the Caroga lake marina.

### Aquatic Invasive Plant Presence

Several small to medium sized beds of *Myriophyllum spicatum* (Eurasian water milfoil) were found along the lakeshore.

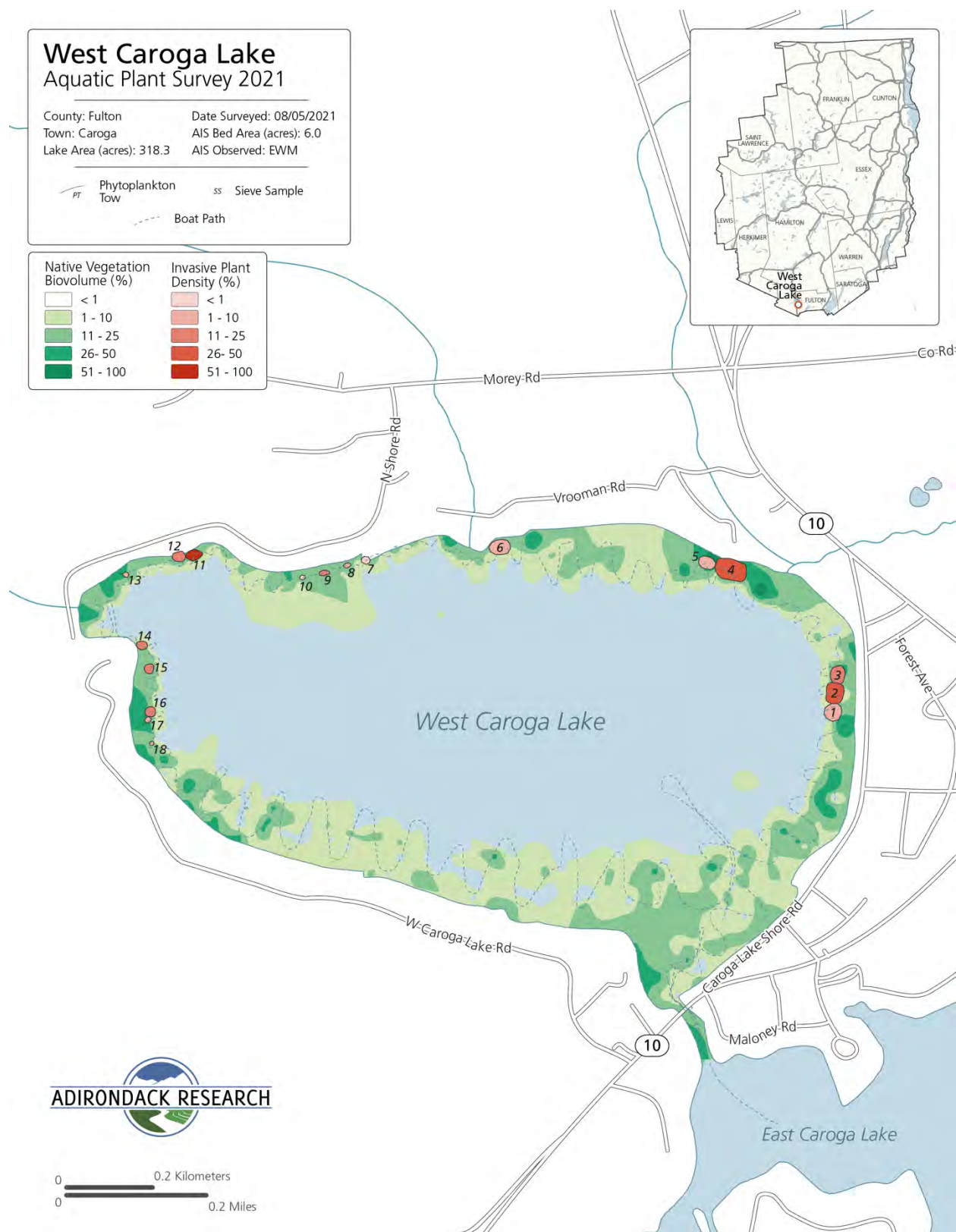
### Native Plant Biota

The following native plants were found: *Utricularia macrorhiza* (Common bladderwort), *Potamogeton robbinsi* (Robbins pondweed), *Potamogeton amplifolius* (largeleaf pondweed), *Eriocaulon decangulare* (pipewort), *Sparganium angustifolium* (narrow leaf bur reed), *Brasenia schreberi* (watershield), *Nuphar advena* (spatterdock), *Nymphaea odorata* (white water lily), *Nymphoides cordata* (little floating heart), *Potamogeton perfoliatus* (clasping leaf pondweed), *Nitella spp.* (nitella), *Potamogeton natans* (floating leaf pondweed), *Potamogeton praelongus* (white stemmed pondweed) and *Pontederia cordata* (pickerel weed).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.

| Eurasian Watermilfoil |            |                |         | Eurasian Watermilfoil |            |                 |         |
|-----------------------|------------|----------------|---------|-----------------------|------------|-----------------|---------|
| Bed                   | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed                   | Size (Ac.) | Size (Sq. Ft.)  | % Cover |
| 1                     | 0.31       | 13490.08       | 1-10    | 12                    | 0.14       | 6103.05         | 11-25   |
| 2                     | 0.42       | 18214.83       | 26-50   | 13                    | 0.03       | 1287.48         | 1-10    |
| 3                     | 0.29       | 12421.36       | 11-25   | 14                    | 0.10       | 4227.21         | 11-25   |
| 4                     | 0.74       | 32303.39       | 26-50   | 15                    | 0.09       | 4130.70         | 11-25   |
| 5                     | 0.22       | 9683.46        | 1-10    | 16                    | 0.11       | 4902.97         | 11-25   |
| 6                     | 0.33       | 14333.74       | 1-10    | 17                    | 0.04       | 1692.89         | 1-10    |
| 7                     | 0.07       | 2917.47        | <1      | 18                    | 0.02       | 758.78          | 1-10    |
| 8                     | 0.03       | 1445.42        | 1-10    | Asian Clam            |            | Spiny Waterflea |         |
| 9                     | 0.06       | 2465.68        | 11-25   |                       |            |                 |         |
| 10                    | 0.03       | 1124.02        | <1      |                       |            |                 |         |
| 11                    | 0.17       | 7439.18        | 51-100  | Present (Y/N)         |            | Present (Y/N)   |         |
|                       |            |                |         | No                    |            | N/A             |         |



## Cheney Pond

**Survey Date:** August 5, 2021

**Last Surveyed:** 2015

**Survey Team:** L. Johnson, M. Privee

### Lake Description

Cheney Pond is 59-acres with 1.8-miles of shoreline. It is located in the town of Minerva, Essex County, and lies in the Lake Champlain watershed. The team launched a canoe from Cheney Pond access and campsite. The weather was sunny with a breeze.

### Aquatic Invasive Plant Presence

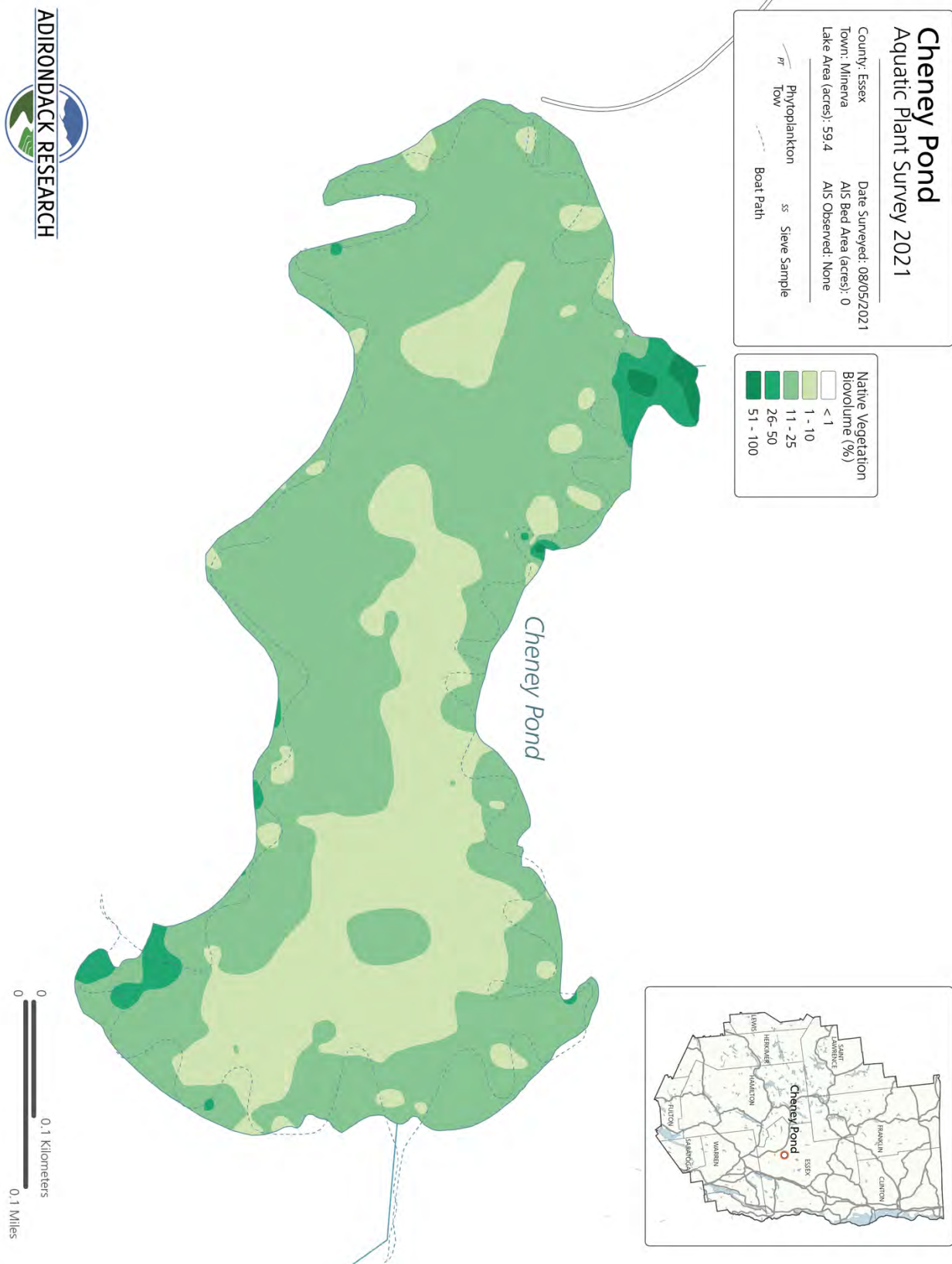
No invasive plant species were identified.

### Native Plant Biota

Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Nymphaea alba* (white waterlily), *Brasenia schrederi* (water shield), *Utricularia purpurea* (purple bladderwort), *Potamogeton natans* (floating-leaf pondweed), *Utricularia vulgaris* (bladderwort), *Zostera* spp. (eelgrass), and *Sparganium angustifolium* (narrowleaf bur-reed)

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.





## Crystal Lake

**Survey Date:** August 10, 2021

**Last Surveyed:** No previously reported surveys

**Survey Team:** L. Johnson, T. Murphy

### Lake Description

Crystal Lake is 54 acres and has 1.26 miles of shoreline. It is located in the town of Horicon, Warren County and lies in the Upper Hudson River watershed. The team launched a canoe at the northern end of the lake.

### Aquatic Invasive Plant Presence

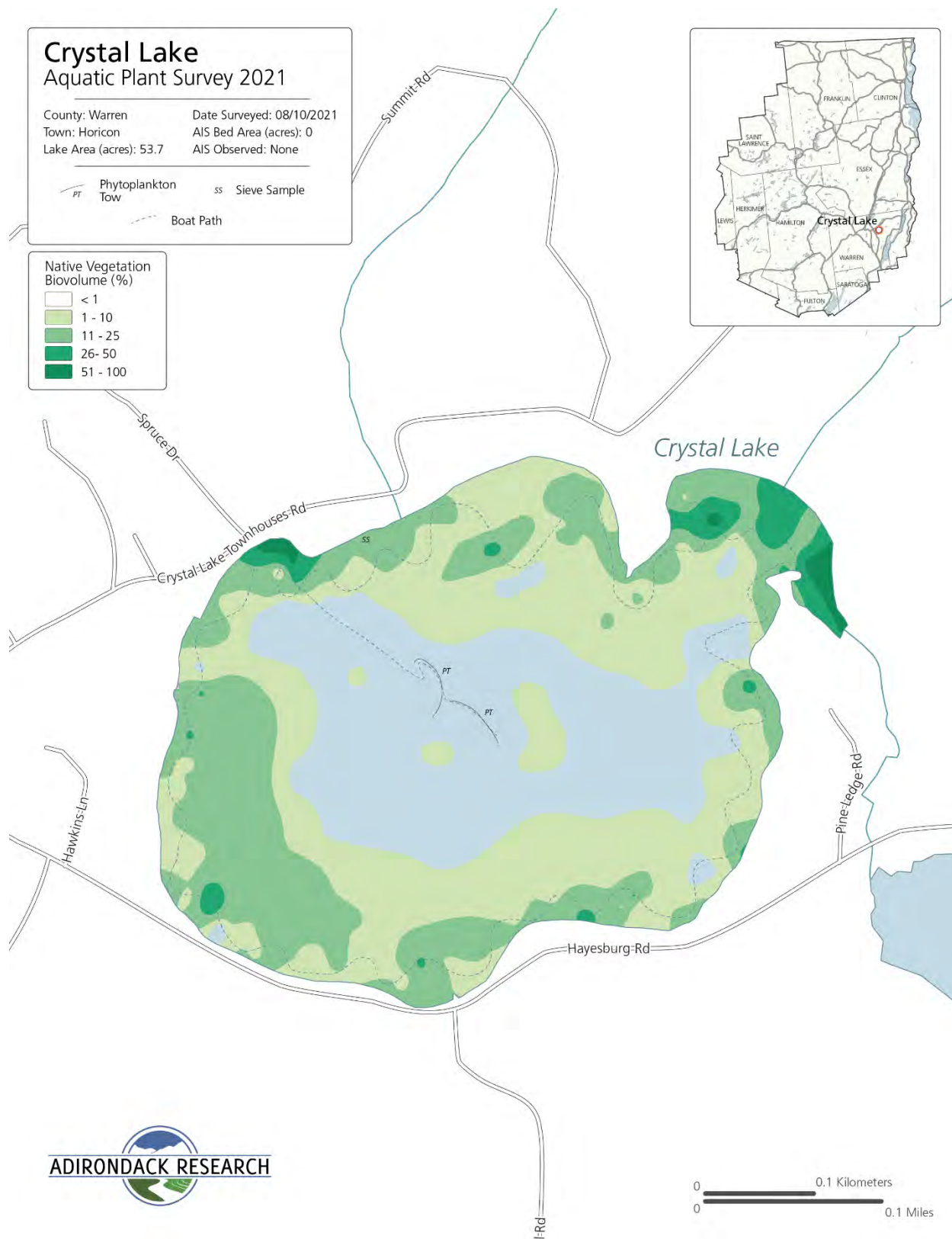
No invasive plants were detected.

### Native Plant Biota

The following native plants were found: *Nymphaea odorata* (white water lily), *Pontederia cordata* (pickerel weed), and *Potamogeton natans* (floating leaf pondweed), *Elodea* spp. (Elodea), *Nitella* spp. (nitella), *Nuphar advena* (spatterdock), *Dulichium arundinaceum* (three-way sedge), *Eriocaulon aquaticum* (pipewort), *Brasenia schreberi* (watershield), *Potamogeton amplifolius* (large leaf pondweed), *Zostera* spp. (eelgrass), *Nymphoides cordata* (little floating heart), *Potamogeton gramineus* (variable leaf pondweed), *Potamogeton pusillus* (slender pondweed), *Typha* spp. (cattail), and *Ceratophyllum demersum* (coontail).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Two plankton tows were also conducted with no invasive zooplankton detected.



## Eagle Lake

**Survey Date:** August 30, 2021

**Last Surveyed:** July 10, 2018

**Survey Team:** P. Bly, T. Firkins

### Lake Description

Eagle Lake is 424-acres it has 8.5-miles of shoreline. It is located in the town of Ticonderoga, Essex County and lies in the Upper Hudson River watershed. The team launched at the fishing access site on Route 74.

### Aquatic Invasive Plant Presence

A total of 74 invasive *Myriophyllum spicatum* (Eurasian watermilfoil) plant beds were mapped.

### Native Plant Biota

Comprehensive surveys of all native plants found within the pond were not prioritized in 2021, as this data had been previously collected in 2015 when the lake was first surveyed. The following native plants were found and identified: *Nymphaea odorata* (white water lily), *Nuphar variegata* (spatterdock),

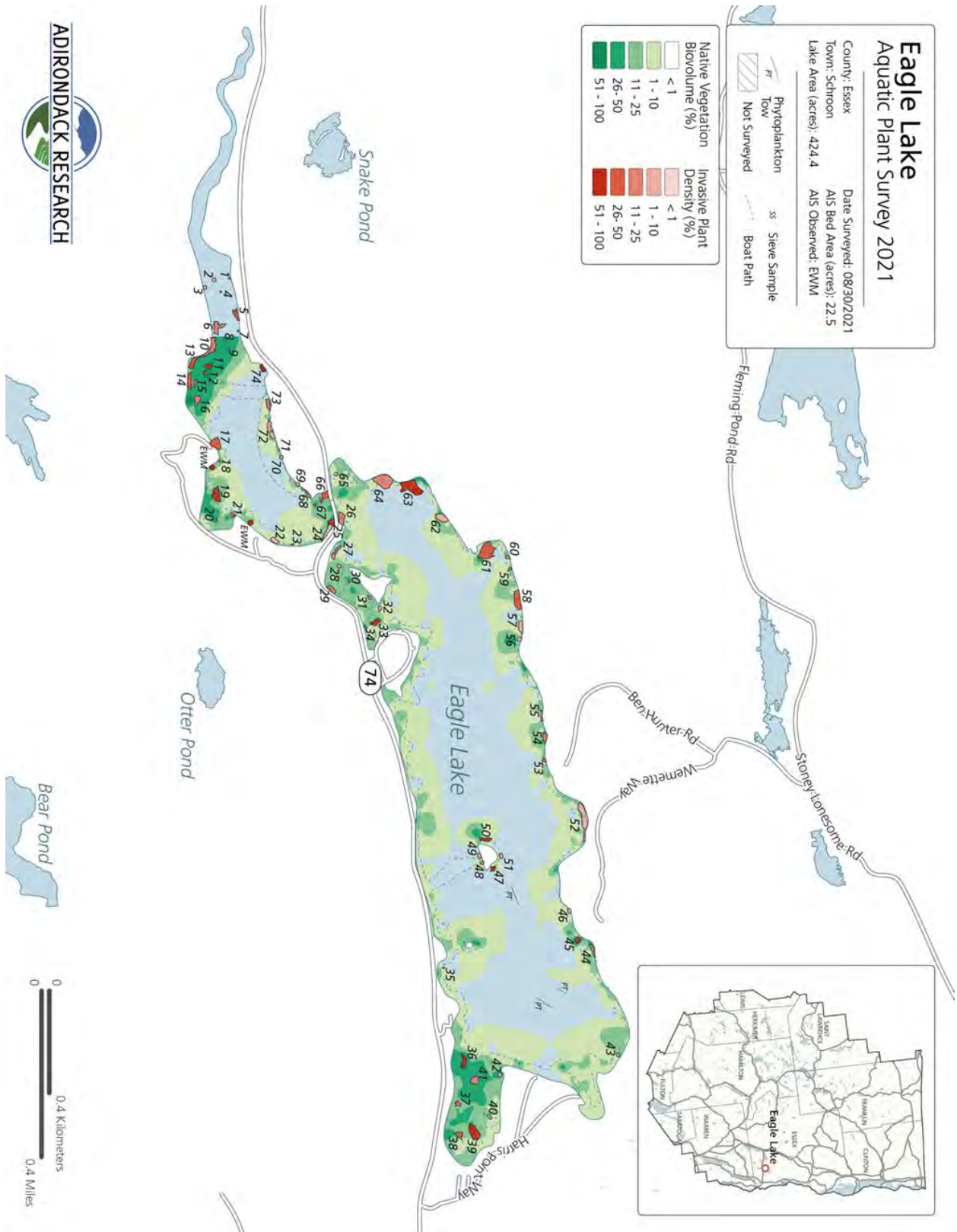
*Brasenia schreberi* (watershield), *Elodea canadensis* (elodea), *Pontedaria cordata* (pickerel weed), *Potamogeton amplifolius* (large leaf pondweed), *Potamogeton praelongus* (white stemmed pondweed), *Potamogeton natans* (floating leaf pondweed), *Eriocaulon aquaticum* (pipewort), *Potamogeton robbinsii* (robbin's pondweed), *Bidens beckii* (water marigold), and *Ceratophyllum demersum* (coontail).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with no invasive plankton detected.

| Eurasian Watermilfoil |            |                |         | Eurasian Watermilfoil |            |                |         | Eurasian Watermilfoil |            |                 |         |
|-----------------------|------------|----------------|---------|-----------------------|------------|----------------|---------|-----------------------|------------|-----------------|---------|
| Bed                   | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed                   | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed                   | Size (Ac.) | Size (Sq. Ft.)  | % Cover |
| 1                     | 0.01       | 436.96         | 1-10    | 27                    | 0.14       | 6169.85        | 11-25   | 53                    | 0.04       | 1529.66         | 11-25   |
| 2                     | 0.04       | 1747.88        | 1-10    | 28                    | 0.04       | 1747.63        | 1-10    | 54                    | 0.18       | 7823.03         | 11-25   |
| 3                     | 0.04       | 1747.90        | 1-10    | 29                    | 0.12       | 5329.49        | 11-25   | 55                    | 0.07       | 3040.20         | 1-10    |
| 4                     | 0.01       | 436.96         | 1-10    | 30                    | 0.01       | 436.90         | 1-10    | 56                    | 0.08       | 3633.35         | 1-10    |
| 5                     | 0.13       | 5450.17        | 26-50   | 31                    | 0.04       | 1670.50        | 1-10    | 57                    | 0.22       | 9660.21         | 1-10    |
| 6                     | 0.26       | 11277.89       | 11-25   | 32                    | 0.05       | 2286.02        | 1-10    | 58                    | 0.47       | 20510.92        | 26-50   |
| 7                     | 0.01       | 436.95         | 1-10    | 33                    | 0.15       | 6341.01        | 51-100  | 59                    | 0.03       | 1201.25         | 11-25   |
| 8                     | 0.01       | 436.96         | 1-10    | 34                    | 0.01       | 287.40         | 1-10    | 60                    | 0.04       | 1904.73         | 11-25   |
| 9                     | 0.01       | 436.96         | 1-10    | 35                    | 0.01       | 436.86         | <1      | 61                    | 0.71       | 30834.42        | 26-50   |
| 10                    | 0.33       | 14191.87       | 11-25   | 36                    | 0.17       | 7608.22        | 51-100  | 62                    | 0.26       | 11465.84        | 1-10    |
| 11                    | 0.08       | 3583.79        | 51-100  | 37                    | 0.08       | 3572.25        | 26-50   | 63                    | 1.08       | 47057.99        | 51-100  |
| 12                    | 0.03       | 1433.82        | 26-50   | 38                    | 0.14       | 5908.86        | 26-50   | 64                    | 1.24       | 53875.52        | 11-25   |
| 13                    | 0.18       | 7774.80        | 26-50   | 39                    | 0.42       | 18236.98       | 51-100  | 65                    | 0.04       | 1747.64         | 1-10    |
| 14                    | 0.33       | 14446.55       | 26-50   | 40                    | 0.05       | 2034.25        | 1-10    | 66                    | 0.20       | 8788.85         | 26-50   |
| 15                    | 0.05       | 2201.87        | 11-25   | 41                    | 0.19       | 8190.80        | 11-25   | 67                    | 0.02       | 982.22          | 51-100  |
| 16                    | 0.16       | 6814.40        | 11-25   | 42                    | 0.05       | 2170.36        | 1-10    | 68                    | 0.08       | 3493.14         | 11-25   |
| 17                    | 0.31       | 13674.54       | 26-50   | 43                    | 0.04       | 1747.09        | 1-10    | 69                    | 0.04       | 1747.71         | 1-10    |
| 18                    | 0.01       | 436.96         | 1-10    | 44                    | 0.11       | 4760.24        | 11-25   | 70                    | 0.04       | 1747.75         | 1-10    |
| 19                    | 0.32       | 13766.82       | 51-100  | 45                    | 0.09       | 4006.62        | 51-100  | 71                    | 0.01       | 436.93          | 1-10    |
| 20                    | 0.01       | 436.97         | 1-10    | 46                    | 0.01       | 274.75         | 1-10    | 72                    | 0.23       | 9971.24         | 1-10    |
| 21                    | 0.05       | 2032.50        | 11-25   | 47                    | 0.07       | 3145.25        | 51-100  | 73                    | 0.13       | 5568.80         | 11-25   |
| 22                    | 0.11       | 4890.38        | 1-10    | 48                    | 0.04       | 1715.25        | 11-25   | 74                    | 0.09       | 4055.29         | 51-100  |
| 23                    | 0.01       | 453.08         | 1-10    | 49                    | 0.01       | 282.07         | 1-10    | Asian Clam            |            | Spiny Waterflea |         |
| 24                    | 0.24       | 10532.03       | 1-10    | 50                    | 0.12       | 5317.73        | 51-100  | Present (Y/N)         |            | Present (Y/N)   |         |
| 25                    | 0.12       | 5099.87        | 51-100  | 51                    | 0.01       | 482.87         | 1-10    | No                    |            | No              |         |
| 26                    | 0.22       | 9460.84        | 11-25   | 52                    | 0.78       | 34002.41       | 1-10    |                       |            |                 |         |





## Echo Lake

**Survey Date:** August 9, 2021

**Last Surveyed:** No previously reported surveys

**Survey Team:** P. Bly, T. Murphy

### Lake Description

Echo Lake is 23-acres and has 0.78-miles of shoreline. It is located in the town of Warrensburg, Warren County and lies in the Upper Hudson River watershed. The team launched a canoe at the southeastern end of the lake.

### Aquatic Invasive Plant Presence

No aquatic invasive species were found, however the terrestrial plant, *Phragmites australis* (common reed grass), was detected.

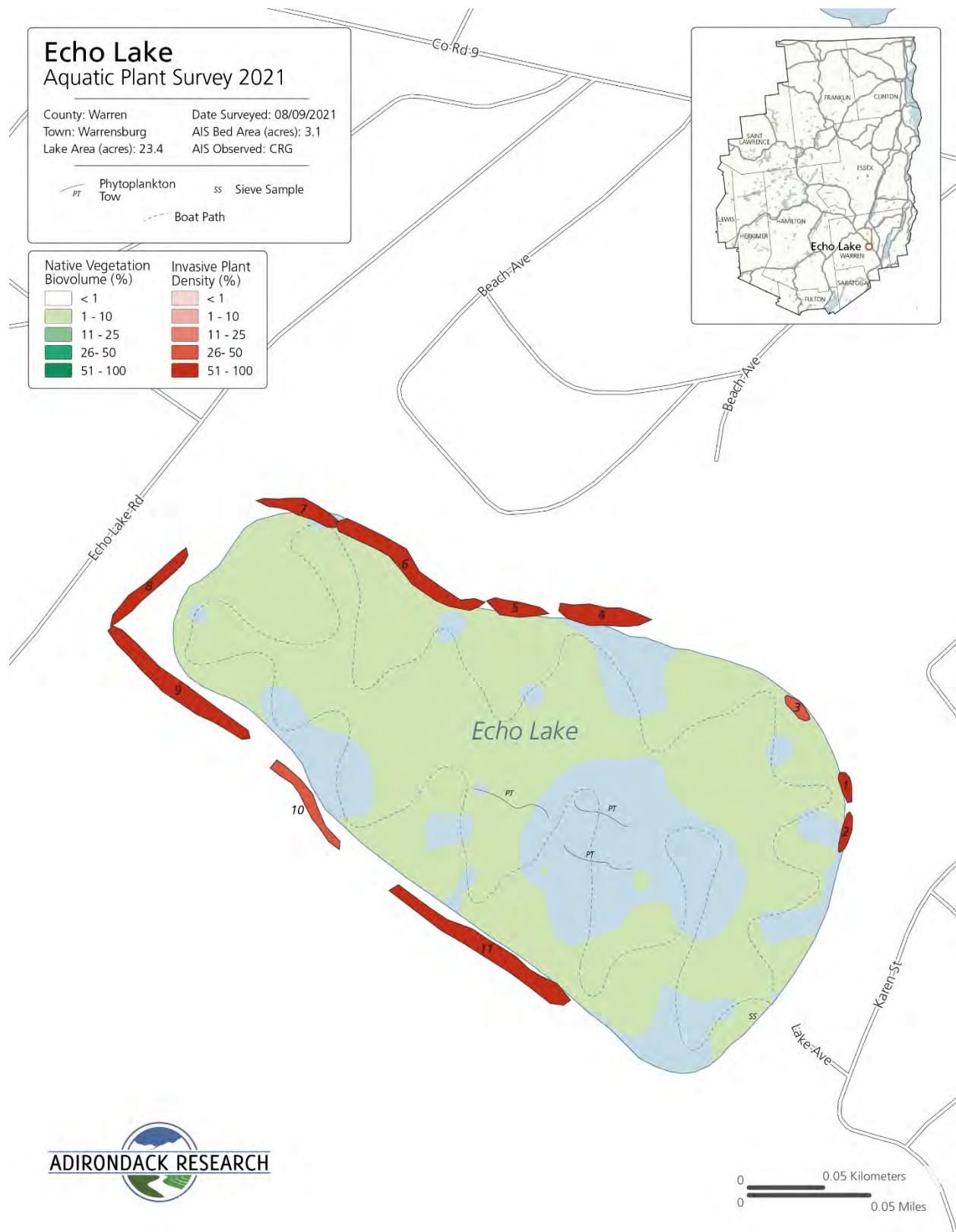
### Native Plant Biota

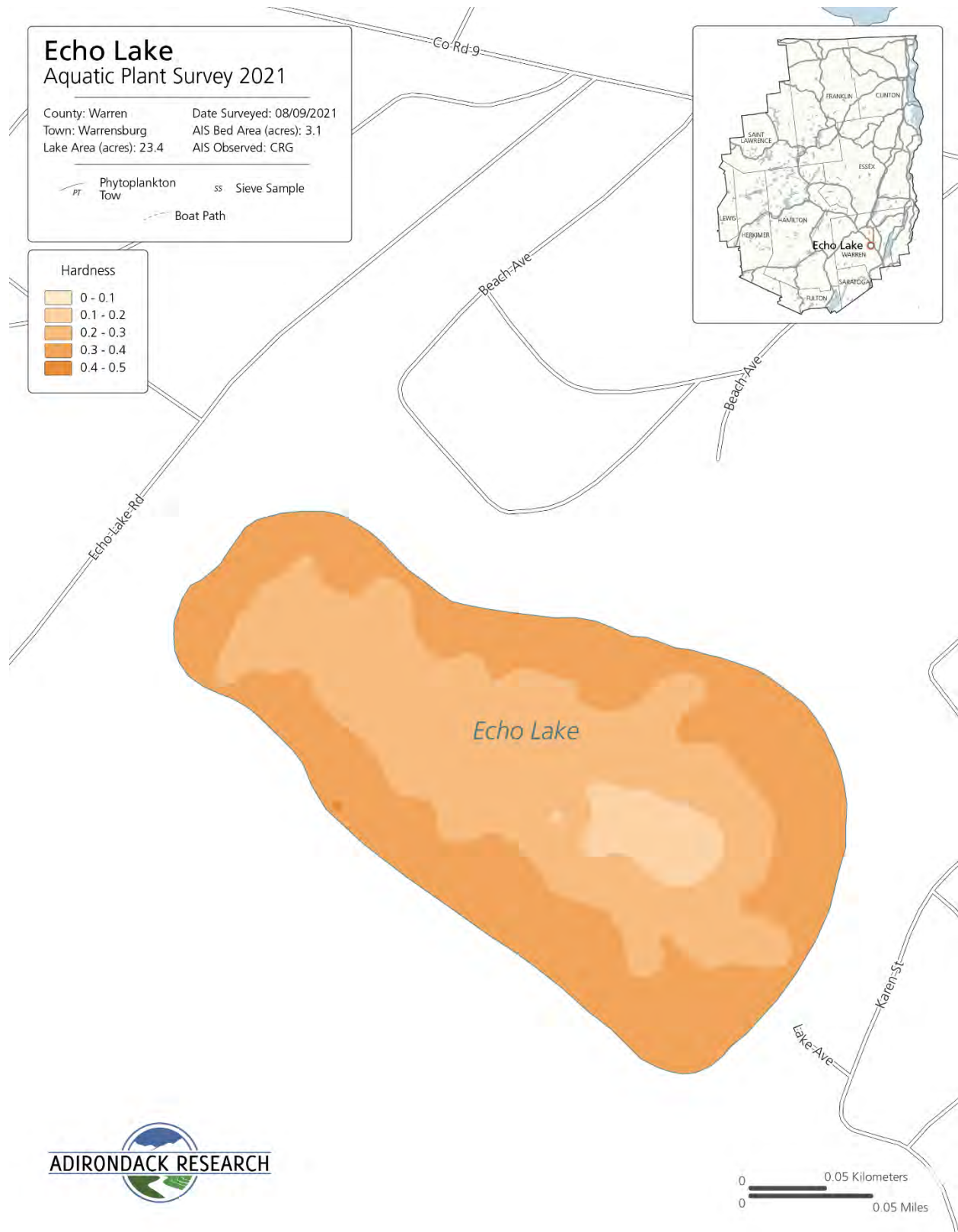
The following native plants were found: *Nymphaea odorata* (white water lily), *Pontederia cordata* (pickerel weed), and *Potamogeton natans* (floating leaf pondweed).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with no invasive zooplankton detected.

| Common Reed Grass |            |                |         | Common Reed Grass |            |                        |         |
|-------------------|------------|----------------|---------|-------------------|------------|------------------------|---------|
| Bed               | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed               | Size (Ac.) | Size (Sq. Ft.)         | % Cover |
| 1                 | 0.03       | 1377.32        | 51-100  | 8                 | 0.13       | 5593.83                | 51-100  |
| 2                 | 0.04       | 1563.11        | 51-100  | 9                 | 0.30       | 13184.11               | 51-100  |
| 3                 | 0.04       | 1549.70        | 26-50   | 10                | 0.11       | 4982.29                | 26-50   |
| 4                 | 0.16       | 7124.86        | 51-100  | 11                | 0.35       | 15178.69               | 51-100  |
| 5                 | 0.08       | 3483.55        | 51-100  | <b>Asian Clam</b> |            | <b>Spiny Waterflea</b> |         |
| 6                 | 0.27       | 11824.31       | 51-100  | Present (Y/N)     |            | Present (Y/N)          |         |
| 7                 | 0.12       | 5048.71        | 51-100  | No                |            | No                     |         |









## Edgecomb Pond

Survey Date: August 8, 2021

Last Surveyed: August 23, 2018

Survey Team: T. Murphy, L. Johnson

### Lake Description

Edgecomb Pond is 36-acres it has 1.08-miles of shoreline. It is found in the town of Bolton, Warren County and lies in the Lake Champlain watershed. The team launched at the public hand launch adjacent to the Town of Bolton Water Supply.

### Aquatic Invasive Plant Presence

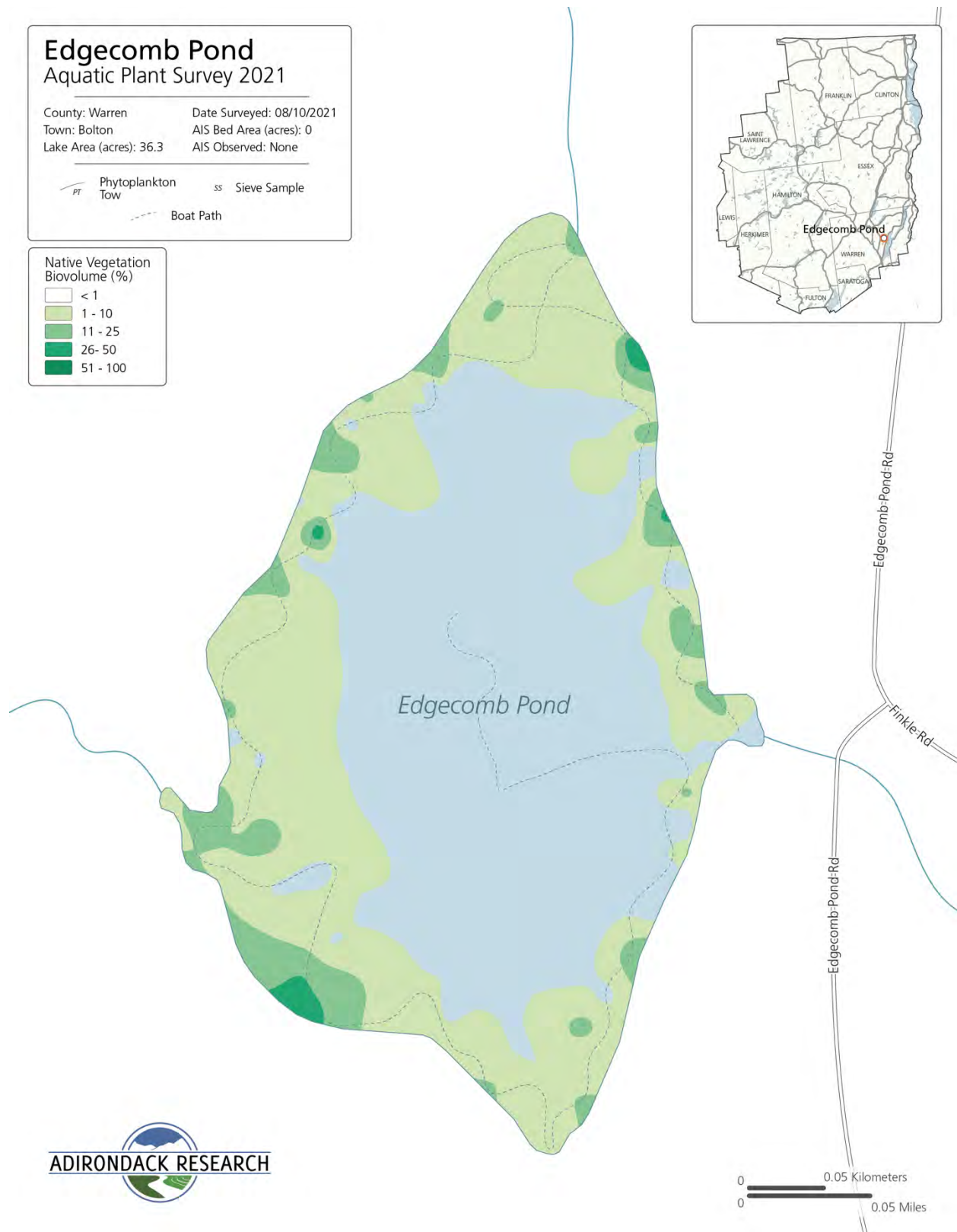
No invasive plants were detected.

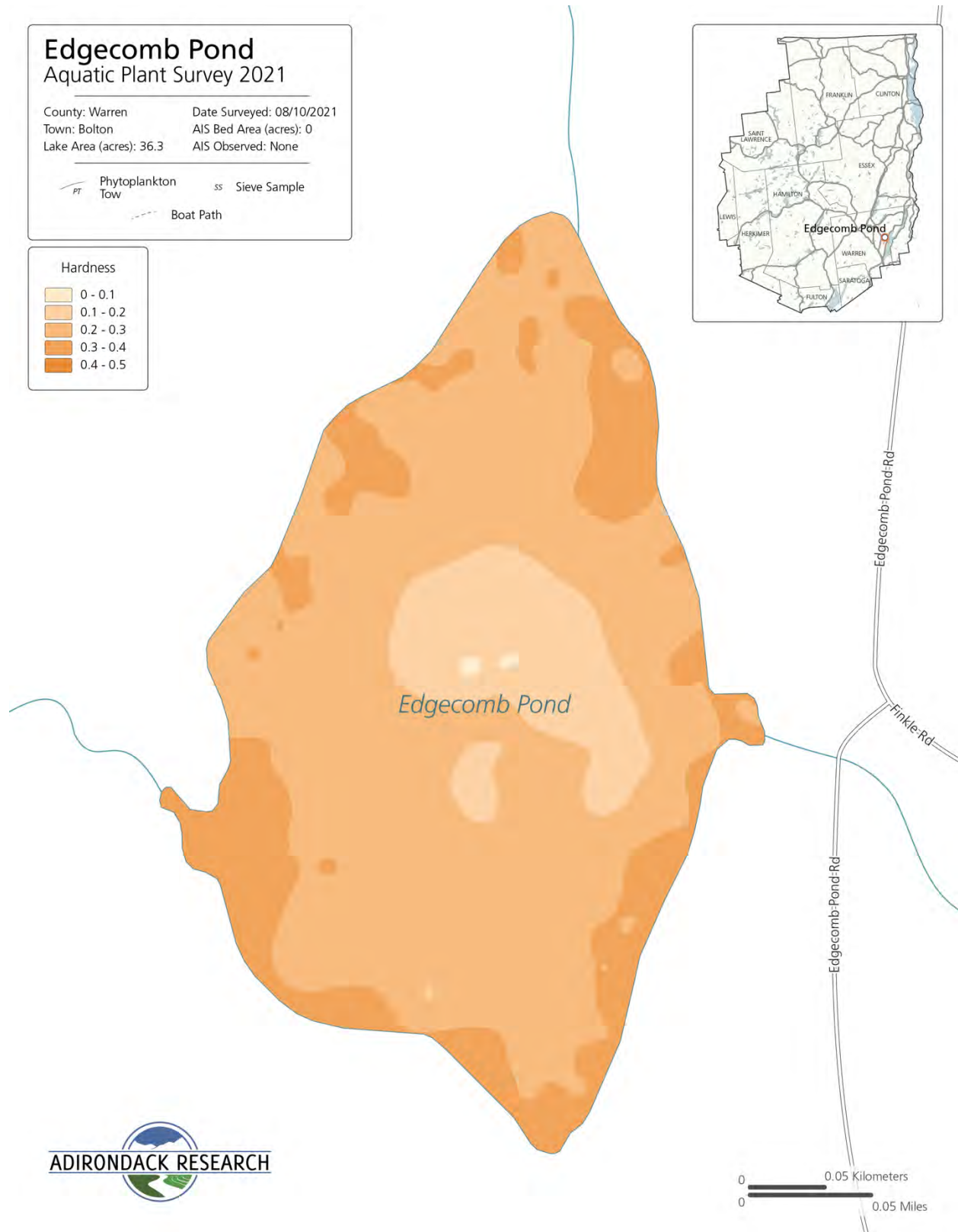
### Native Biota

Comprehensive surveys of all native plants found within the lake were not prioritized in 2021, as 2018 was the second of the three-year rotation cycle described in the introduction. Few plants were detected in Edgecomb Pond. A steep drop-off and small littoral zone likely contribute to that. *Zostera spp.* (eel grass), *Potamogeton natans* (Floating leaf pondweed), *Dulichium arundinaceum* (three way sedge), *Sparganium angustifolium* (narrow leaf burr reed), *Nymphaea odorata* (white water lily), and *Utricularia vulgaris* (common bladderwort).

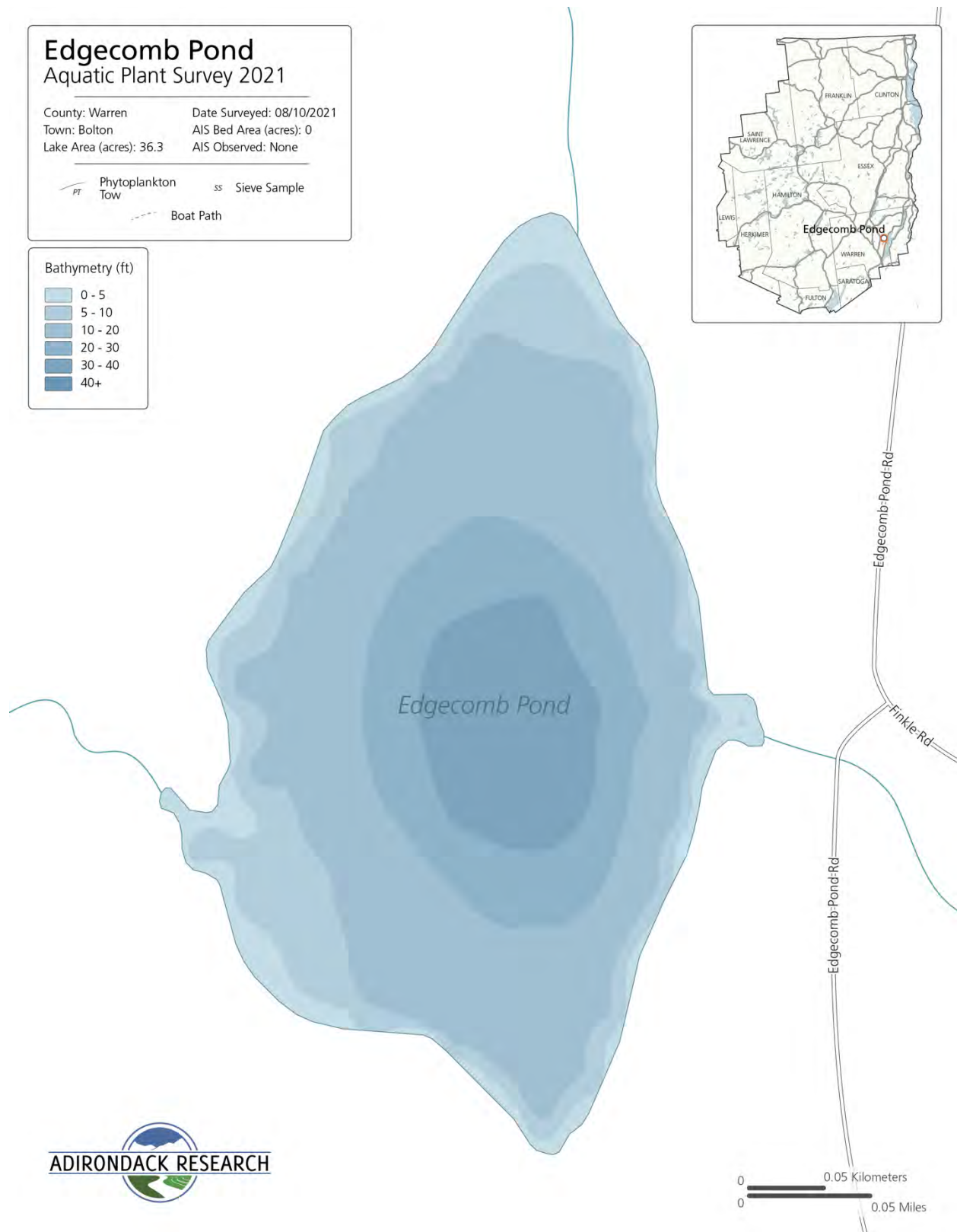
### Animal Aquatic Invasive Species

Sieves were also taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were done and no invasive plankton was detected.









## Fourth Lake

**Survey Date:** June 28, 2021

**Last Surveyed:** 2015

**Survey Team:** L. Johnson, J. Young

### Lake Description

Fourth Lake is a 51-acre lake with 1.5-miles of shoreline. It is in the town of Lake Luzerne in Warren County within the Upper Hudson River watershed. The team was able to launch a canoe from a public boat launch at Lake Luzerne public campground on the north shore of the waterbody.

### Aquatic Invasive Plant Presence

Scattered beds of *Potamogeton crispus* (curly-leaf pondweed) were located throughout the lake. Some beds were recorded as milfoils, but their identity was not verified with voucher specimens. We will double check these locations in 2022.

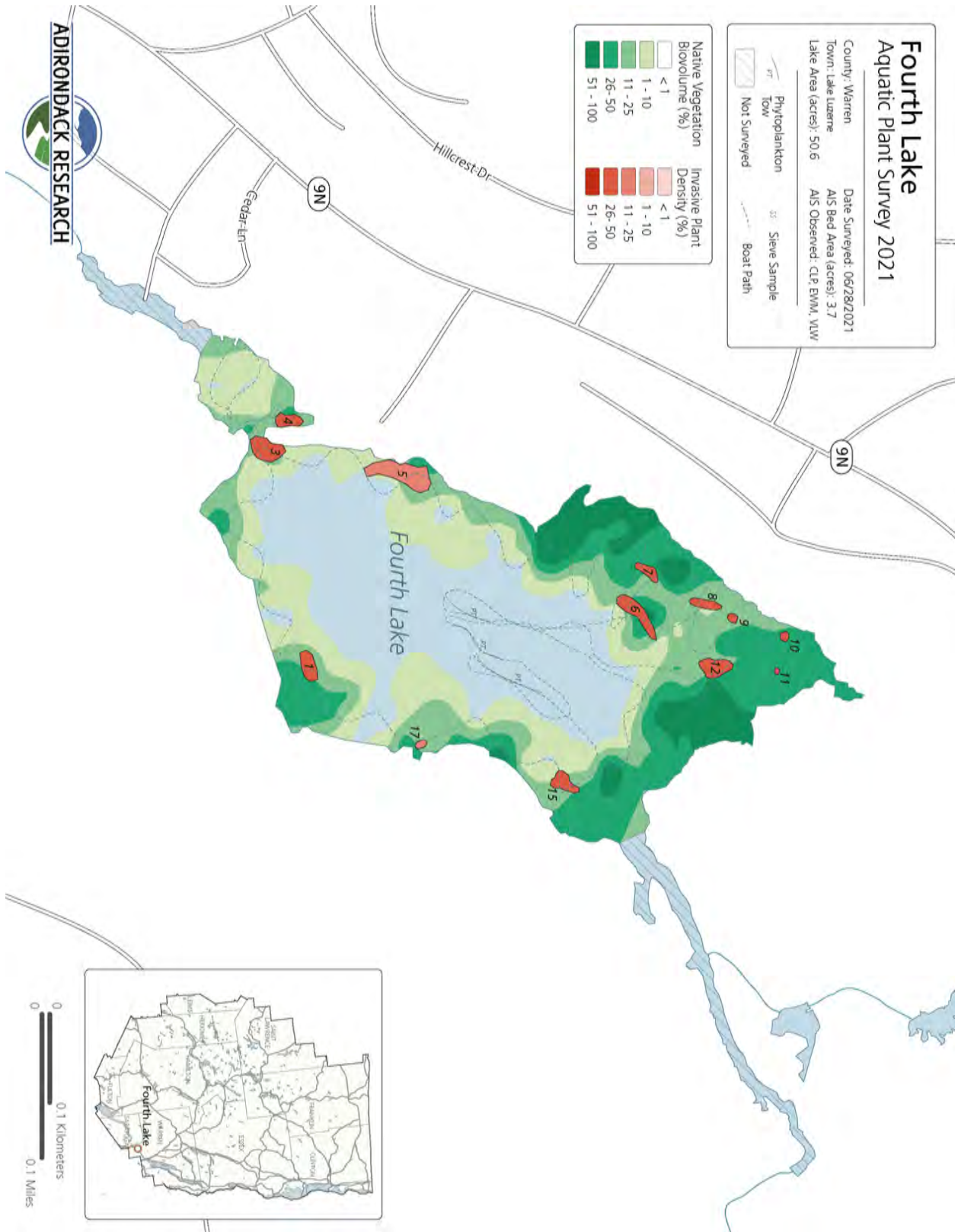
### Native Plant Biota

Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native species were found: *Nymphaea odorata* (white-water lily), *Potamogeton natans* (floating-leaf pondweed), *Iris versicolor* (blue flag iris), *Utricularia macrorhiza* (common bladderwort), *Nuphar variegata* (spatterdock), *Brasenia schreberi* (water shield), *Potamogeton amplifolius* (large leaf pondweed), *Sagittaria latifolia* (broadleaf arrowhead), *Sparganium angustifolium* (narrow-leaf burr reed), *Potamogeton robbinsii* (Robbin's pondweed), *Pontedaria cordata* (pickerelweed), and *Elodea nuttallii* (slender waterweed).

### Aquatic Invasive Animal Presence

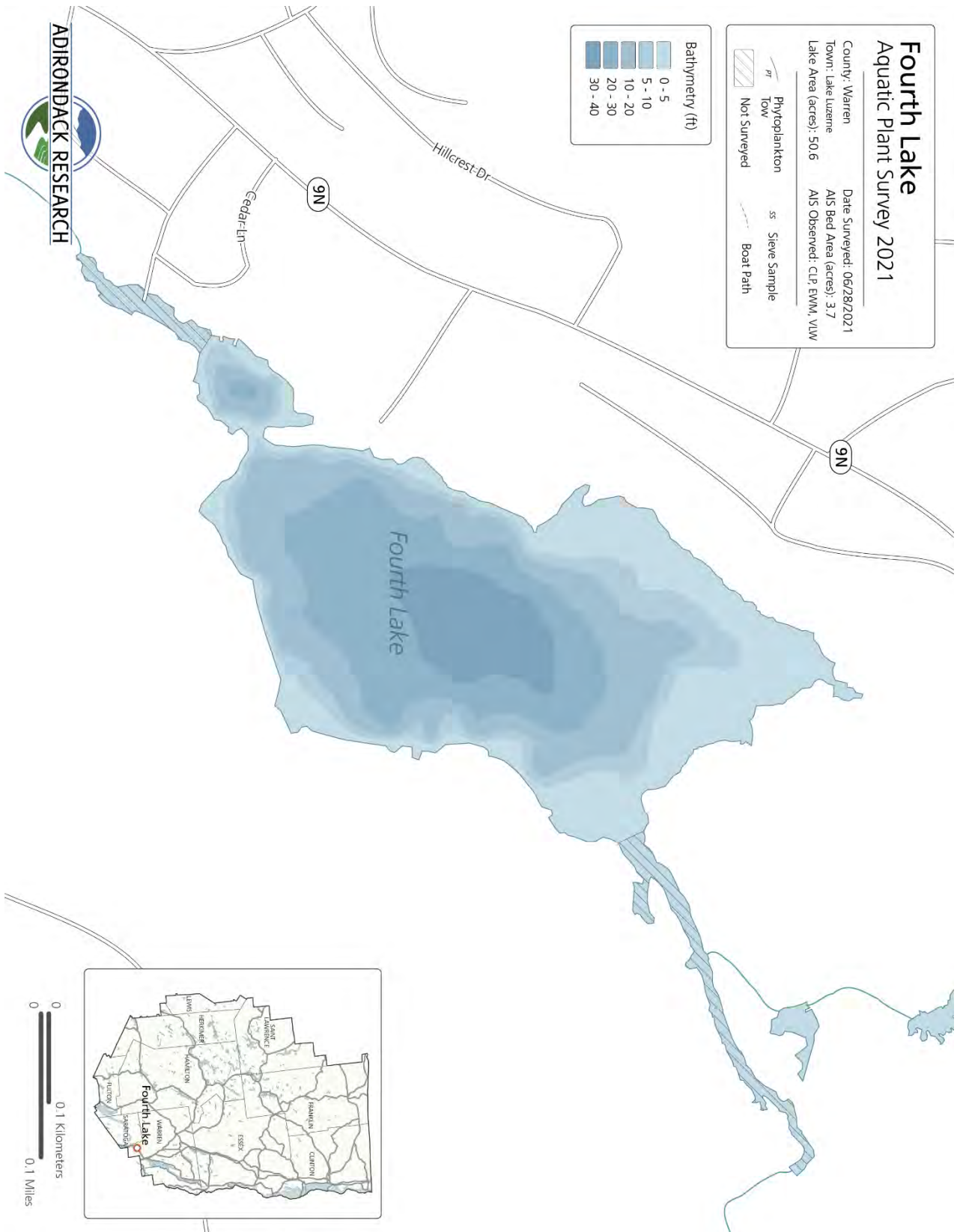
Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. However, it was determined that *Viviparus georgianus* (banded mystery snail) was present within the waterbody. Three plankton tows were also conducted with no invasive zooplankton detected.

| Curly-leaf Pondweed |            |                |         |               |            |                 |         |
|---------------------|------------|----------------|---------|---------------|------------|-----------------|---------|
| Bed                 | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed           | Size (Ac.) | Size (Sq. Ft.)  | % Cover |
| 1                   | 0.12       | 5337.29        | 26-50   | 11            | 0.01       | 382.46          | 26-50   |
| 3                   | 0.19       | 8298.34        | 26-50   | 12            | 0.15       | 6597.90         | 26-50   |
| 4                   | 0.11       | 4730.68        | 26-50   | 15            | 0.11       | 4822.71         | 26-50   |
| 5                   | 0.38       | 16575.92       | 11-25   | 17            | 0.02       | 1044.40         | 11-25   |
| 6                   | 0.19       | 8160.73        | 26-50   |               |            |                 |         |
| 7                   | 0.07       | 3128.04        | 26-50   |               |            |                 |         |
| 8                   | 0.08       | 3350.67        | 26-50   |               |            |                 |         |
| 9                   | 0.02       | 1027.94        | 26-50   |               |            |                 |         |
| 10                  | 0.02       | 976.91         | 26-50   |               |            |                 |         |
| 11                  | 0.01       | 382.46         | 26-50   | Asian Clam    |            | Spiny Waterflea |         |
| 12                  | 0.15       | 6597.90        | 26-50   | Present (Y/N) |            | Present (Y/N)   |         |
| 15                  | 0.11       | 4822.71        | 26-50   | No            |            | No              |         |
| 17                  | 0.02       | 1044.40        | 11-25   |               |            |                 |         |









## Garnet Lake

**Survey Date:** July 7, 2021

**Last Surveyed:** 2020

**Survey Team:** L. Johnson, J. Young

### Lake Description

Garnet Lake is 320-acres with 5.9-miles of shoreline. It is located in the town of Johnsburg, Warren County, and lies in the Upper Hudson River watershed. The team launched a motorboat from private property at the Garnet Lake Lodge and Cottages. The north end of the lake was dammed. A portion of the south bay was not navigable due to submerged logs and stumps. The weather was overcast with intermittent rain.

### Aquatic Invasive Plant Presence

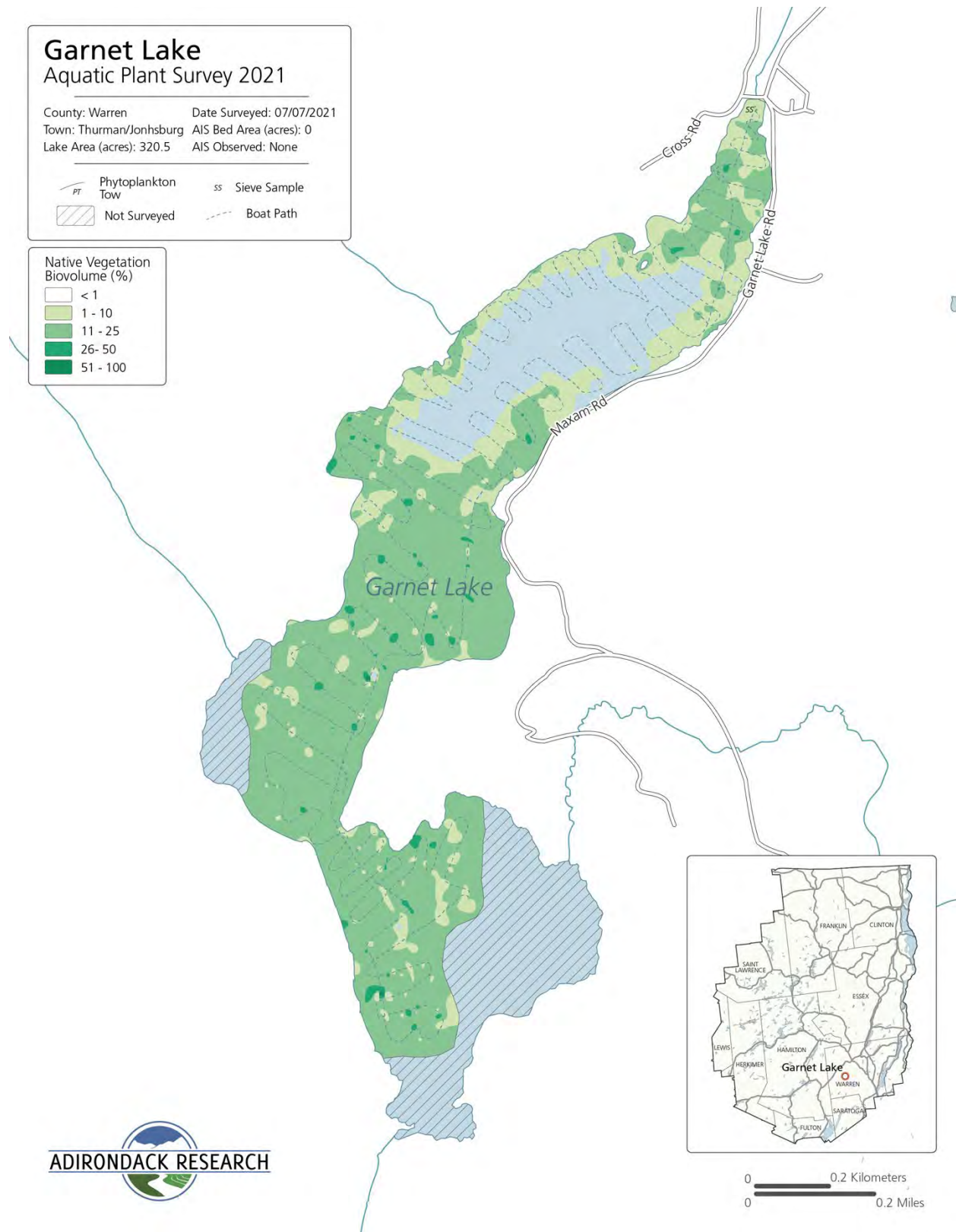
No invasive plants were detected.

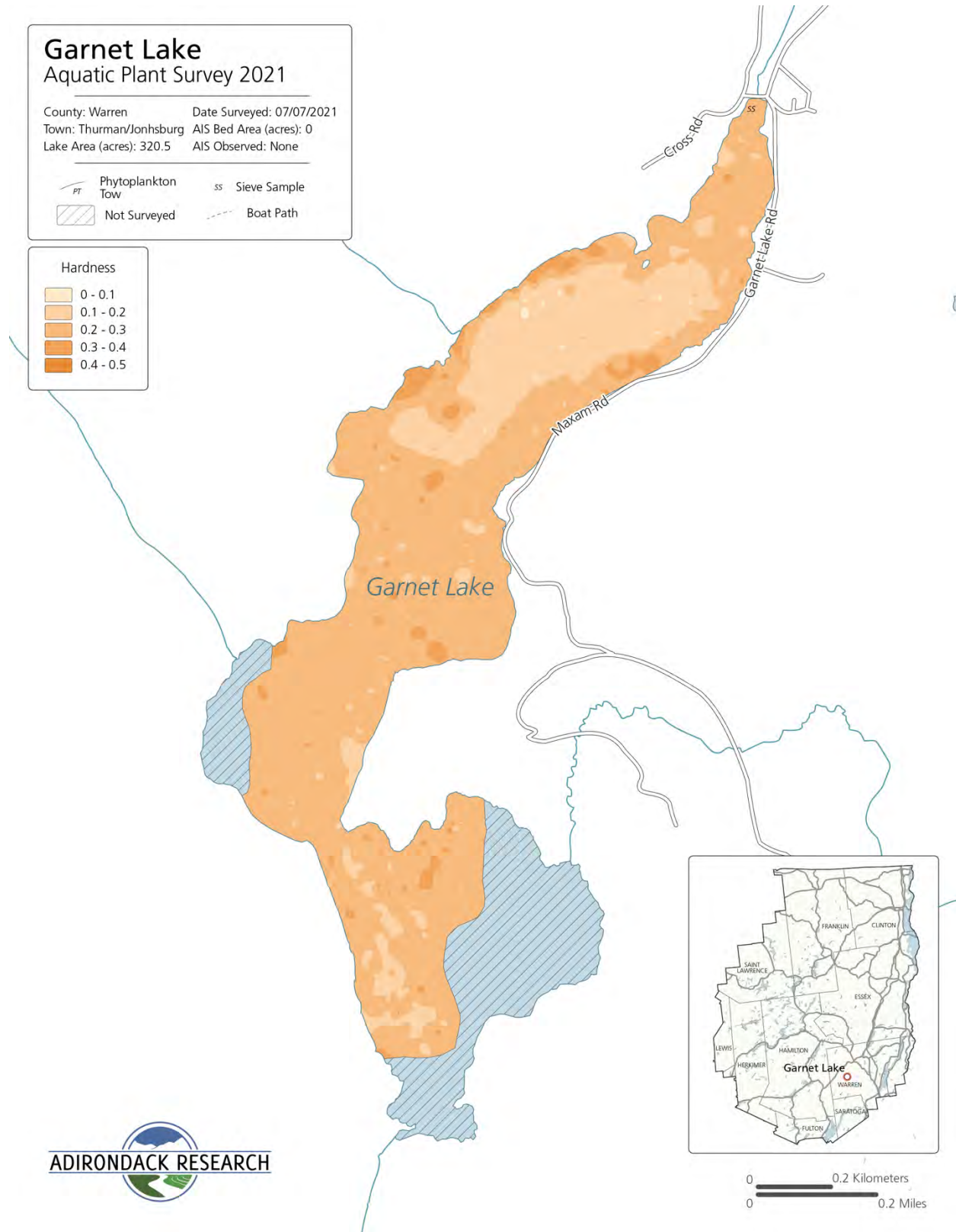
### Native Plant Biota

The following native plants were found: *Najas gracillima* (thread-like naiad), *Potamogeton pusillus* (slender pondweed), *Eriocaulon* (pipewort species), *Dulichium arundinaceum* (three-way sedge), *Juncus effusus* (smooth rush), *Ceratophyllum demersum* (coontail), *Nuphar variegata* (spatterdock), *Nymphaea odorata* (white water lily), *Pontederia cordata* (pickerel weed), *Brasenia schreberi* (watershield), *Sparganium angustifolium* (narrow-leaf burr reed), *Utricularia macrorhiza* (common bladderwort), *Zostera* (eel grass), *Potamogeton natans* (floating leaf pondweed), *Potamogeton robbinsii* (Robbin's pondweed), and *Potamogeton amplifolius* (large leaf pondweed).

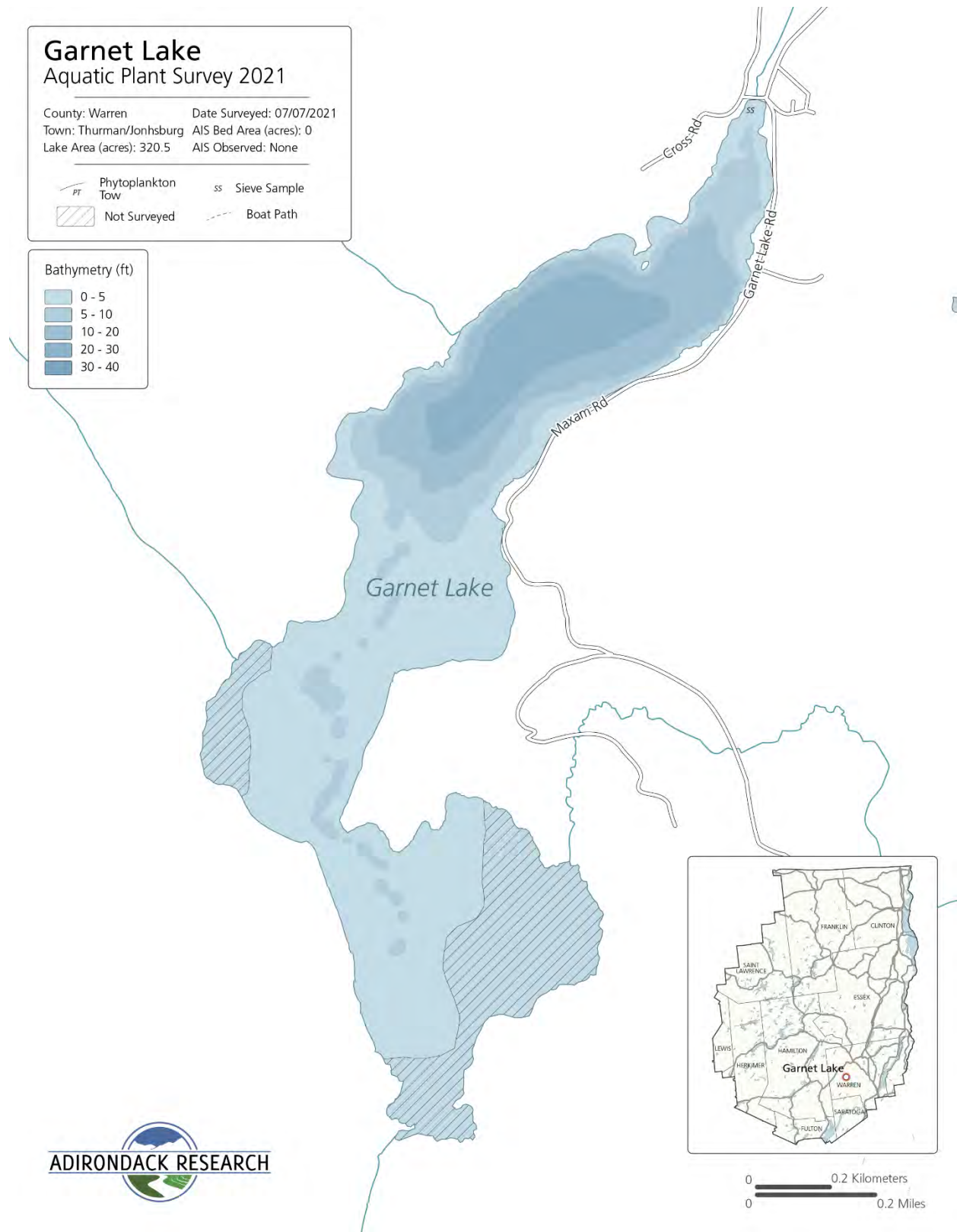
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. *Viviparus georgianus* (banded mystery snail) was found.









## Goodnow Flowage

**Survey Date:** July 6 and July 7, 2021

**Last Surveyed:** 2007

**Survey Team:** T. Firkins, T. Murphy, P. Bly, M. Privee, S. Aveson

### Lake Description

Goodnow Flowage is 446-acres and has 11.6-miles of shoreline. It is located in the town of Newcomb, Essex County and lies in the Upper Hudson River watershed. The team launched a canoe at the private beach access northside of the lake.

### Aquatic Invasive Plant Presence

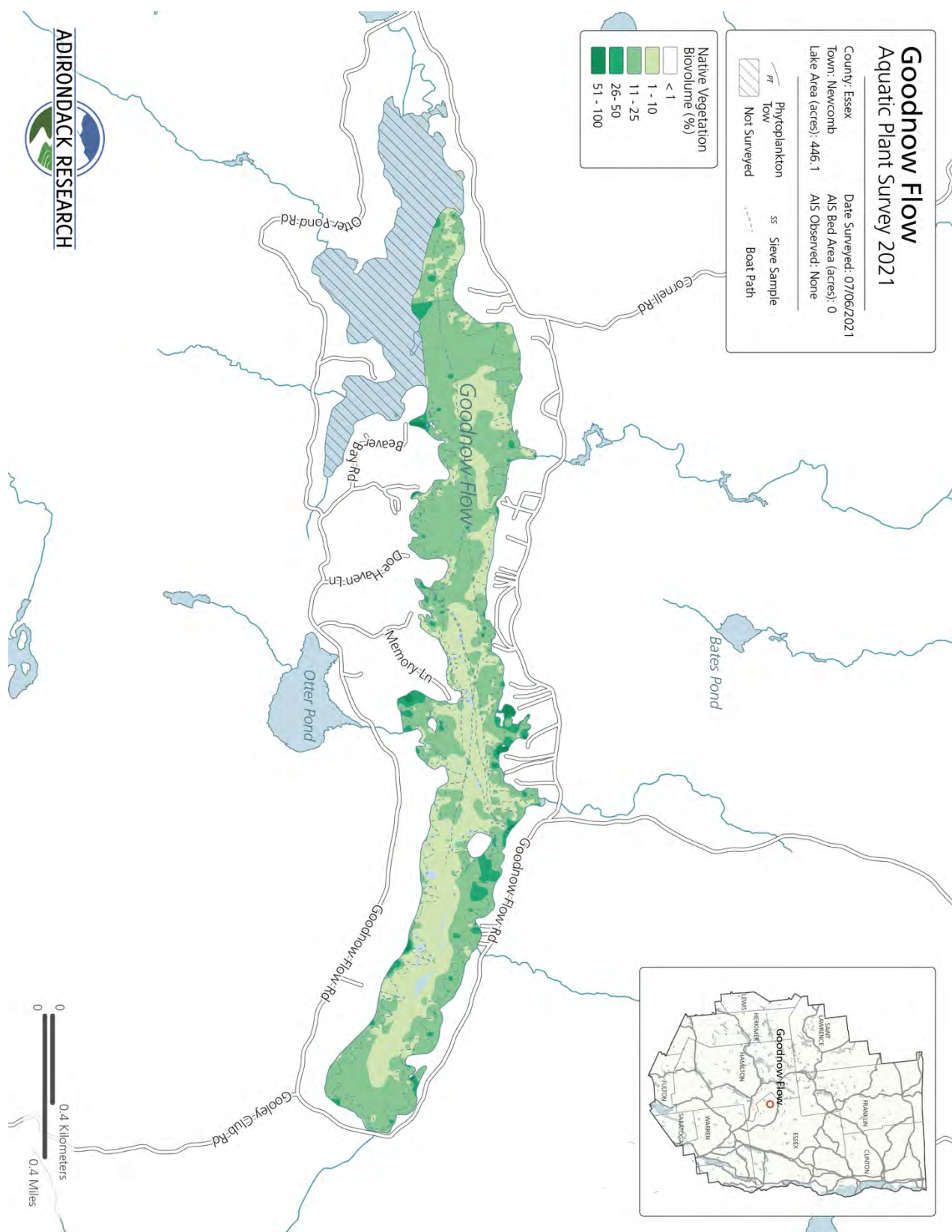
No invasive plants were detected.

### Native Plant Biota

Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native species were found: *Potamogeton corodata* (pickerel-weed), *Brasenia schreberi* (watershield), *Nuphar variegata* (spatterdock), *Nymphaea alba* (white water-lily), *Potamogeton amplifolius* (large-leaf pondweed), *Zostera spp.* (eelgrass), *Utriculariaspp.* (bladderwort), *Zostera spp.* (eelgrass), *Najas spp.* (native naiad), *Potamogeton natans* (floating-leaf pondweed), *Potamogeton zosteriformes* (narrow-leaf pondweed), *Elodea spp.* (elodea), and *Sparganium angustifolium* (narrow-leaf bur-reed).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Zooplankton tows were done and no invasive plankton species were found.



## Harris Lake

**Survey Date:** July 15, 2021

**Last Surveyed:** 2020

**Survey Team:** M. Privee, T. Murphy

### Lake Description

Loon Lake is 313-acres and has 7.6-miles of shoreline. It is located in the town of Newcomb, Essex County and lies in the Upper Hudson River watershed. The team launched motor boats on the south east end of the lake at a hard launch. The weather was clear with some cloud cover. The lake had a generally soft bottom.

### Aquatic Invasive Plant Presence

No invasive plant species were detected.

### Native Plant Biota

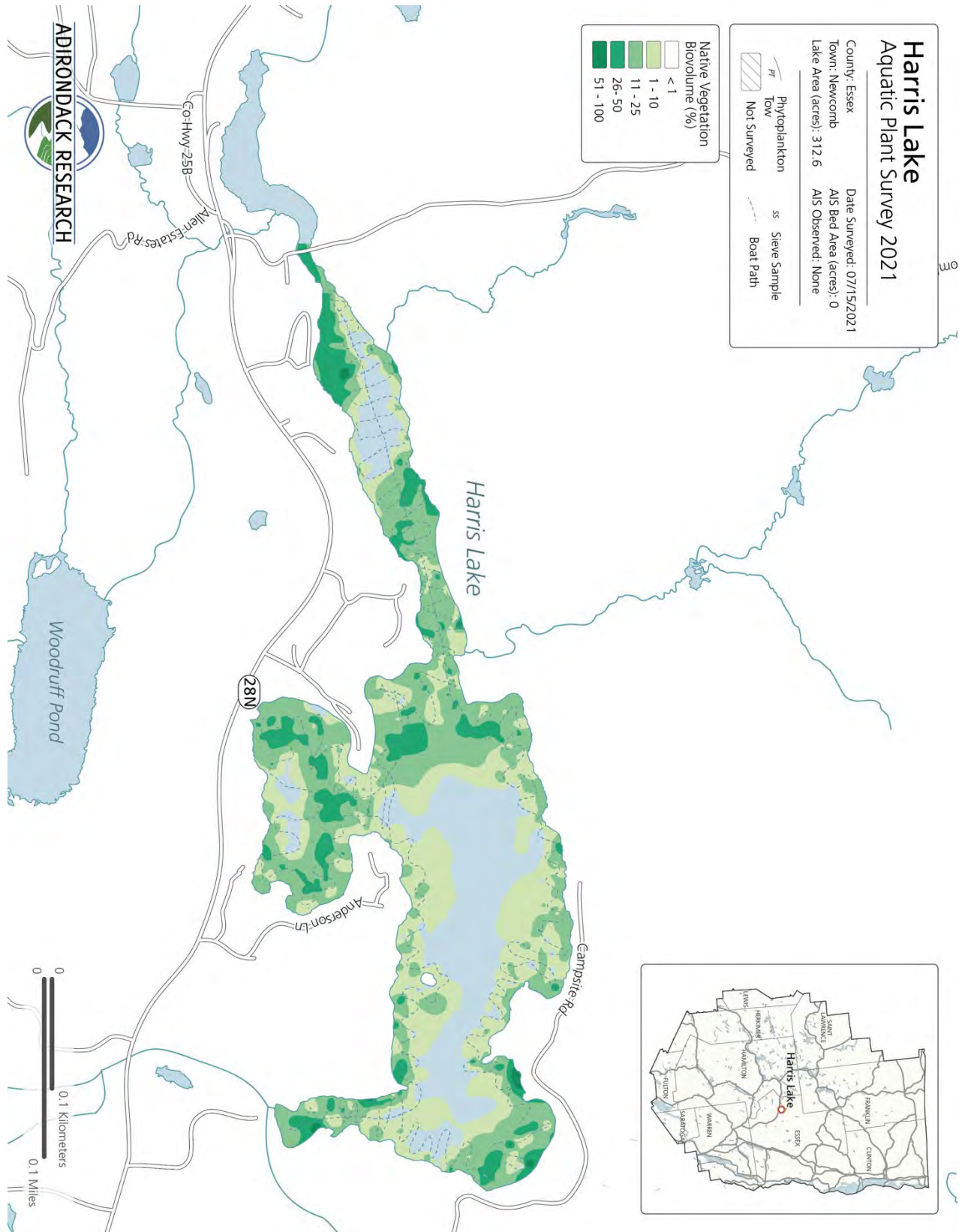
Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Potamogeton corodata* (Pickerel weed), *Brasenia schreberi* (water shield), *Nophar advena* (Spatterdock), *Sparganuim angustifolium* (Narrow-leaf bur-read)

*Potamogeton amplifeius* (large-leaf pondweed), *Potamogeton natans* (floating-leaf pondweed), *Nymphaea alba* (White water-lily), *Zostera* (eelgrass), *Nymphoides cordata* (little- floating heart), and *Utriculariasp.* (bladderwort).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with no invasive zooplankton detected.





## Harrisburg Lake

**Survey Date:** July 6, 2021

**Last Surveyed:** No previously reported surveys

**Survey Team:** L. Johnson, J. Young

### Lake Description

Harrisburg Lake is 186-acres with 6.3-miles of shoreline. It is located in the town of Stony Creek, Warren County, and lies in the Upper Hudson River watershed. The team launched a canoe from the public launch area on Harrisburg Rd about 1-mile past Harrisburg lodge, where the road crosses a culvert bisecting the lake. The lake was surveyed on either side of the culvert. The south end of the lake was damned, and the north end of the lake was shallow as it approached the inlet of Halfway Brook. The weather was windy and overcast.

### Aquatic Invasive Plant Presence

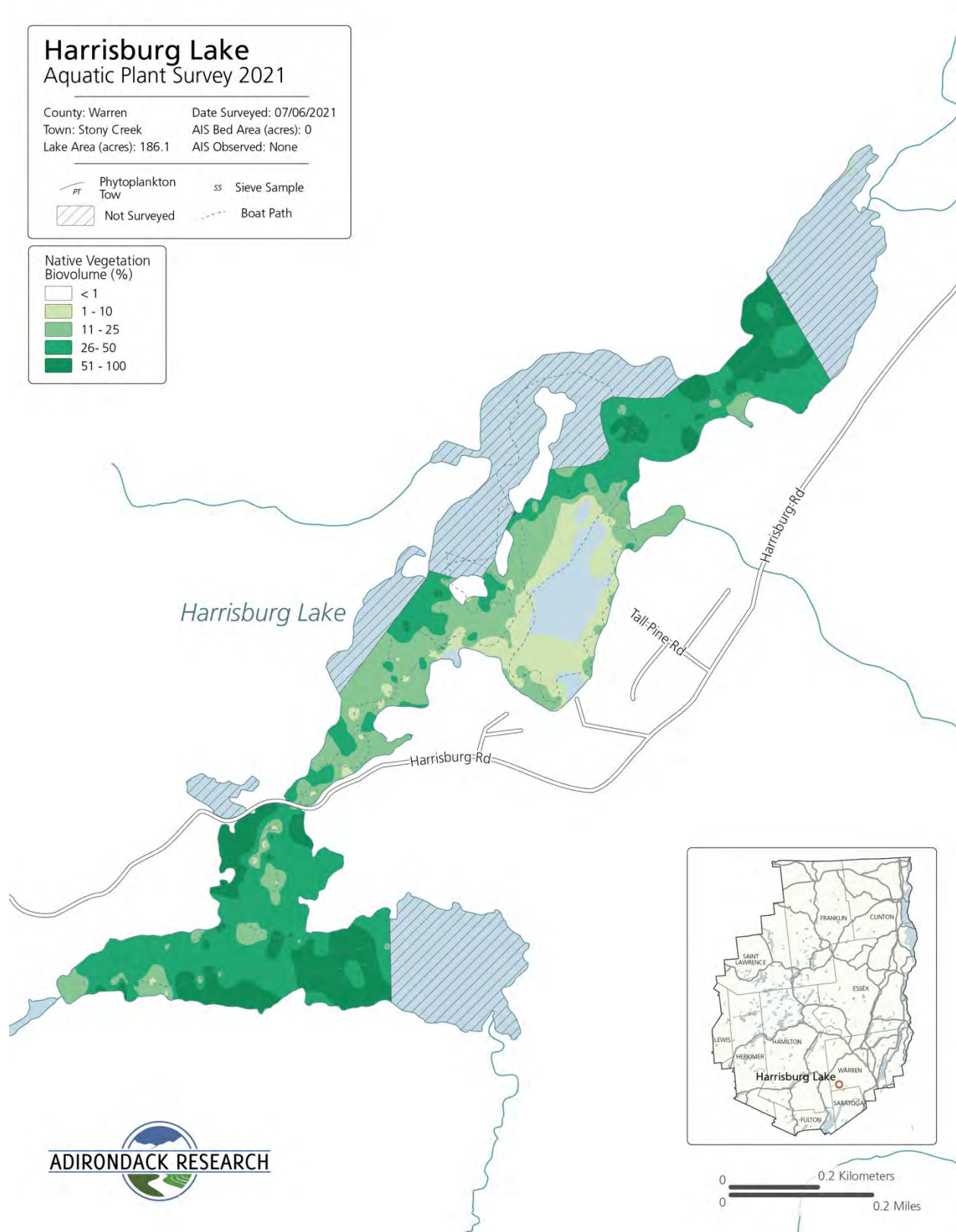
No invasive plants were detected. Note that there are sections of the lake where we were not able to collect sonar data, but for which we were able to access and survey for invasive species. Look for the boat trails on the map on the next page.

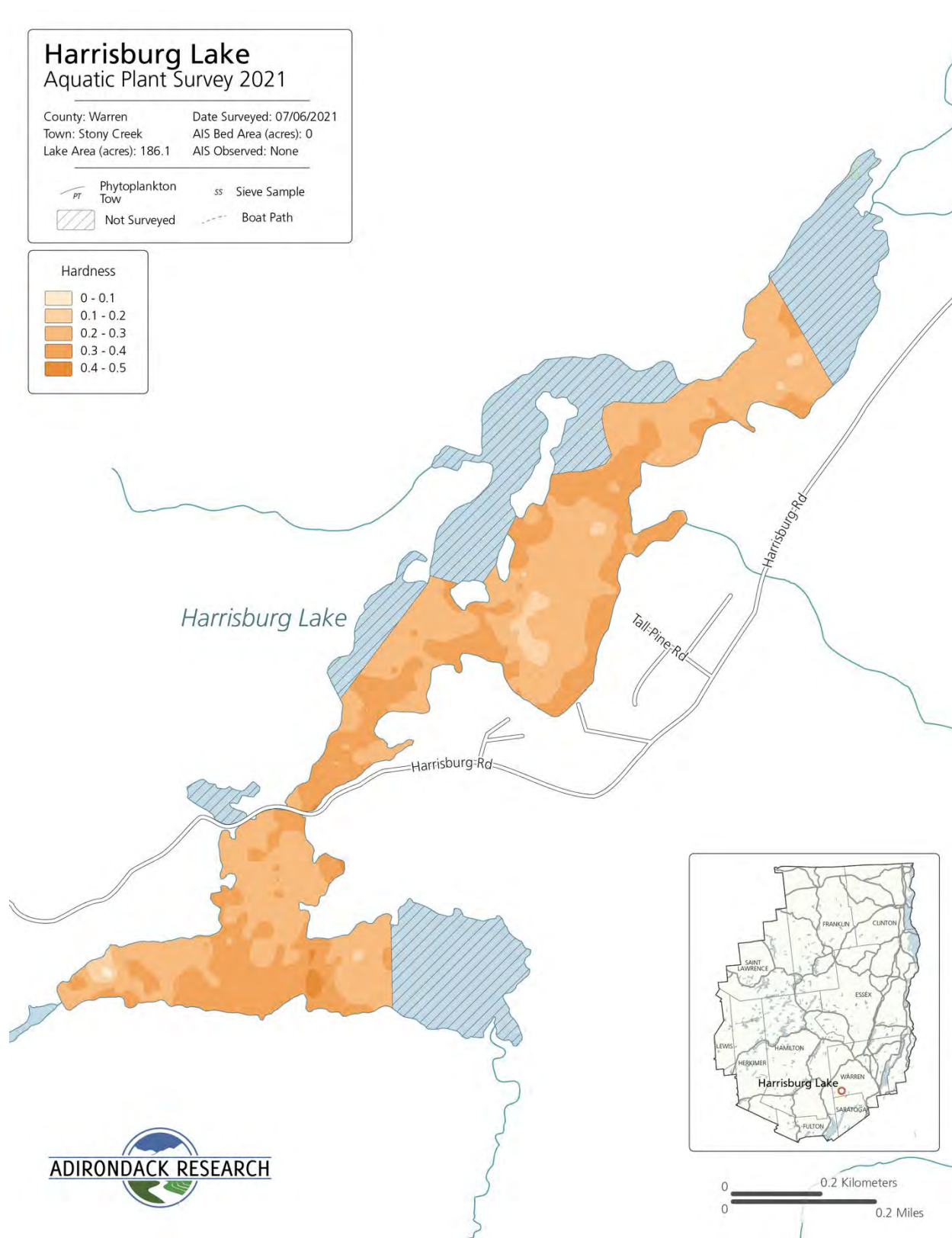
### Native Plant Biota

The following native plants were found: *Nuphar variegata* (spatterdock), *Nymphaea odorata* (white water lily), *Pontederia cordata* (pickerel weed), *Sagittaria latifolia* (arrowhead), *Brasenia schreberi* (watershield), *Dulichium arundinaceum* (three-way sedge), *Sparganium angustifolium* (narrow-leaf burr reed), *Utricularia macrorhiza* (common bladderwort), *Elodea*, *Zostera* (eel grass), *Potamogeton natans* (floating leaf pondweed), *Potamogeton robbinsii* (Robbin's pondweed), *Typha* (cat tail species), and *Potamogeton amplifolius* (large leaf pondweed).

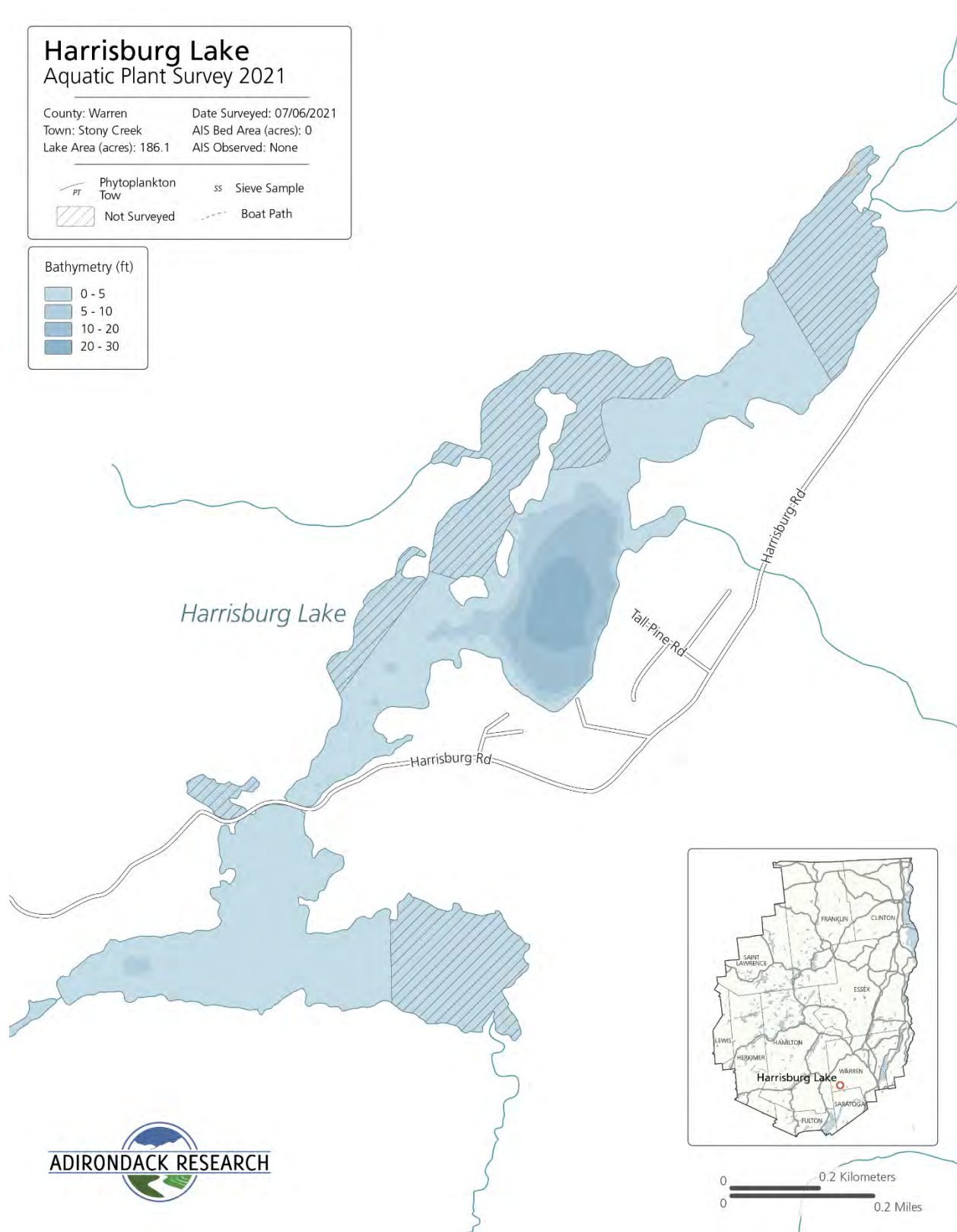
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.









## Ireland Vly

**Survey Date:** August 3, 2021

**Last Surveyed:** 2011

**Survey Team:** P. Bly, M. Privee, L. Johnson, T. Murphy

### Lake Description

Ireland Vly is 262-acres and has 6.1 miles of shoreline. It is located in the town of Providence, Saratoga County and lies in the Upper Hudson River watershed. The team launched canoes from a private launch off Hans Creek Road.

### Aquatic Invasive Plant Presence

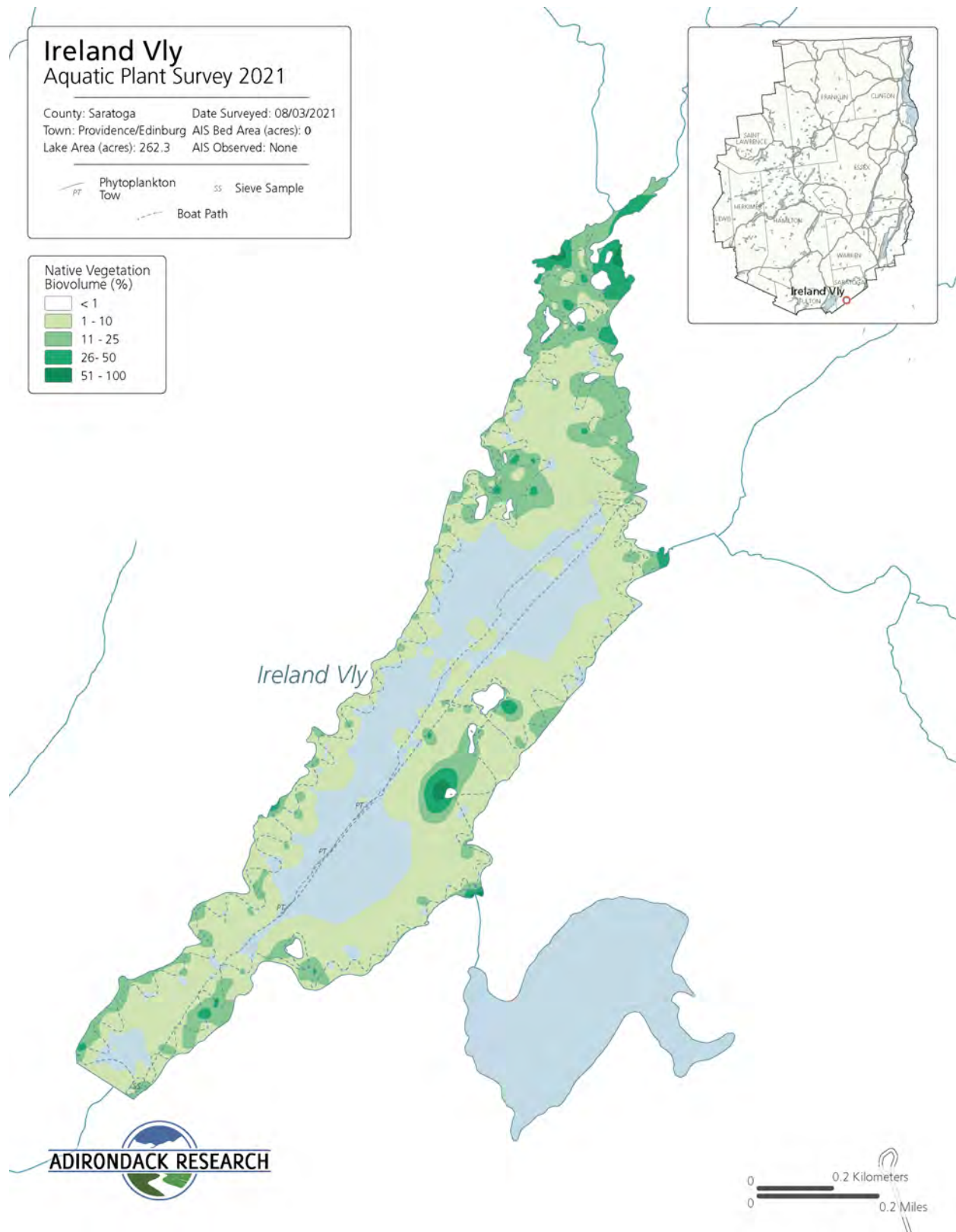
No invasive plants were detected.

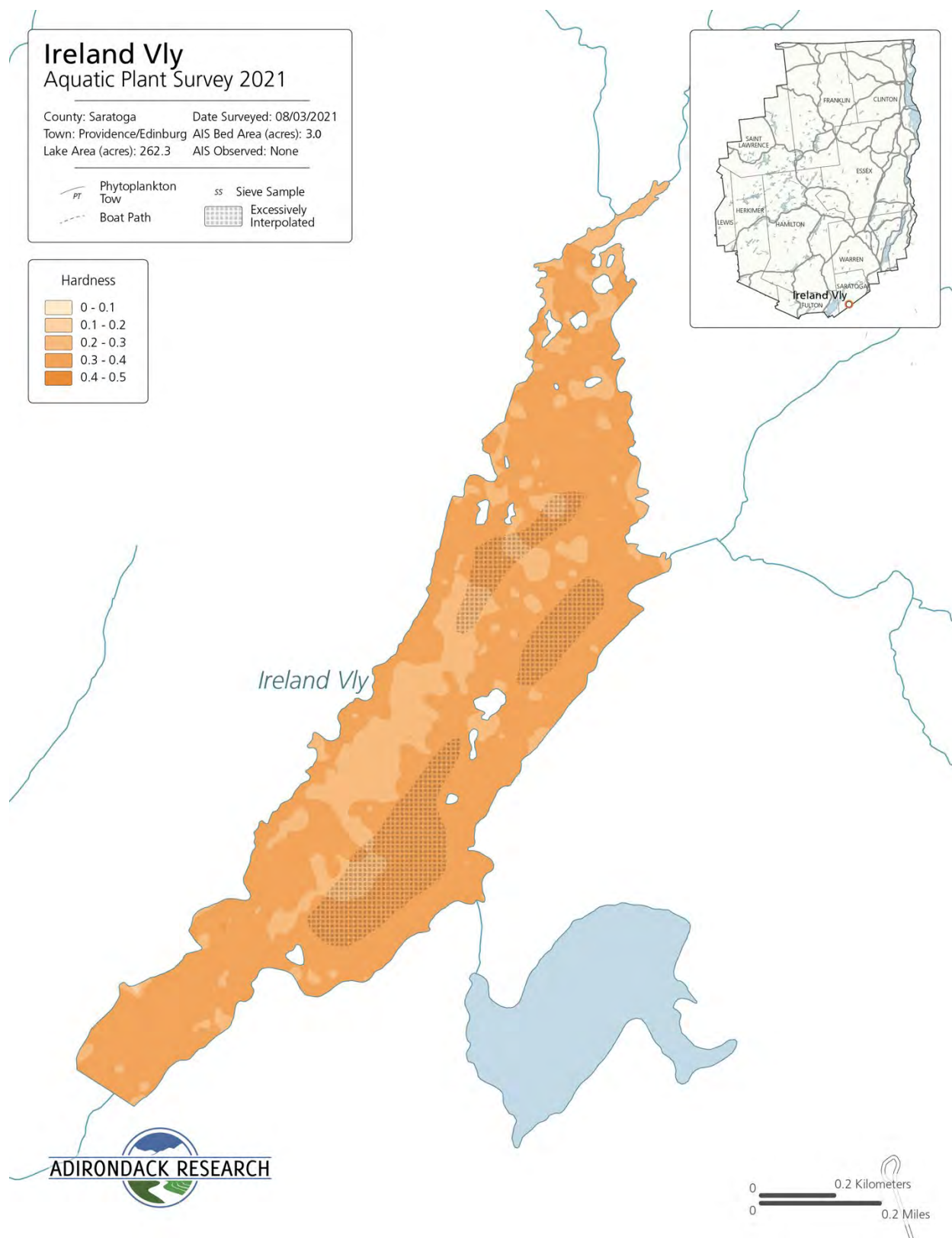
### Native Plant Biota

Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native plants were found: *Nuphar variegata* (spatterdock), *Brasenia schreberi* (water shield), *Eriocaulon decangulare* (pipewort), *Potamogeton natans* (floating leaf pondweed), *Lemna minor* (common duckweed), *Utricularia macrorhiza* (common bladderwort), *Dulichium arundinaceum* (three way sedge), *Elodea canadensis* (elodea), *Utricularia purpurea* (purple bladderwort), *Potamogeton pusillus* (slender pondweed), *Sparganium angustifolium* (narrow leaf bur reed) and *Ceratophyllum demersum* (common coontail).

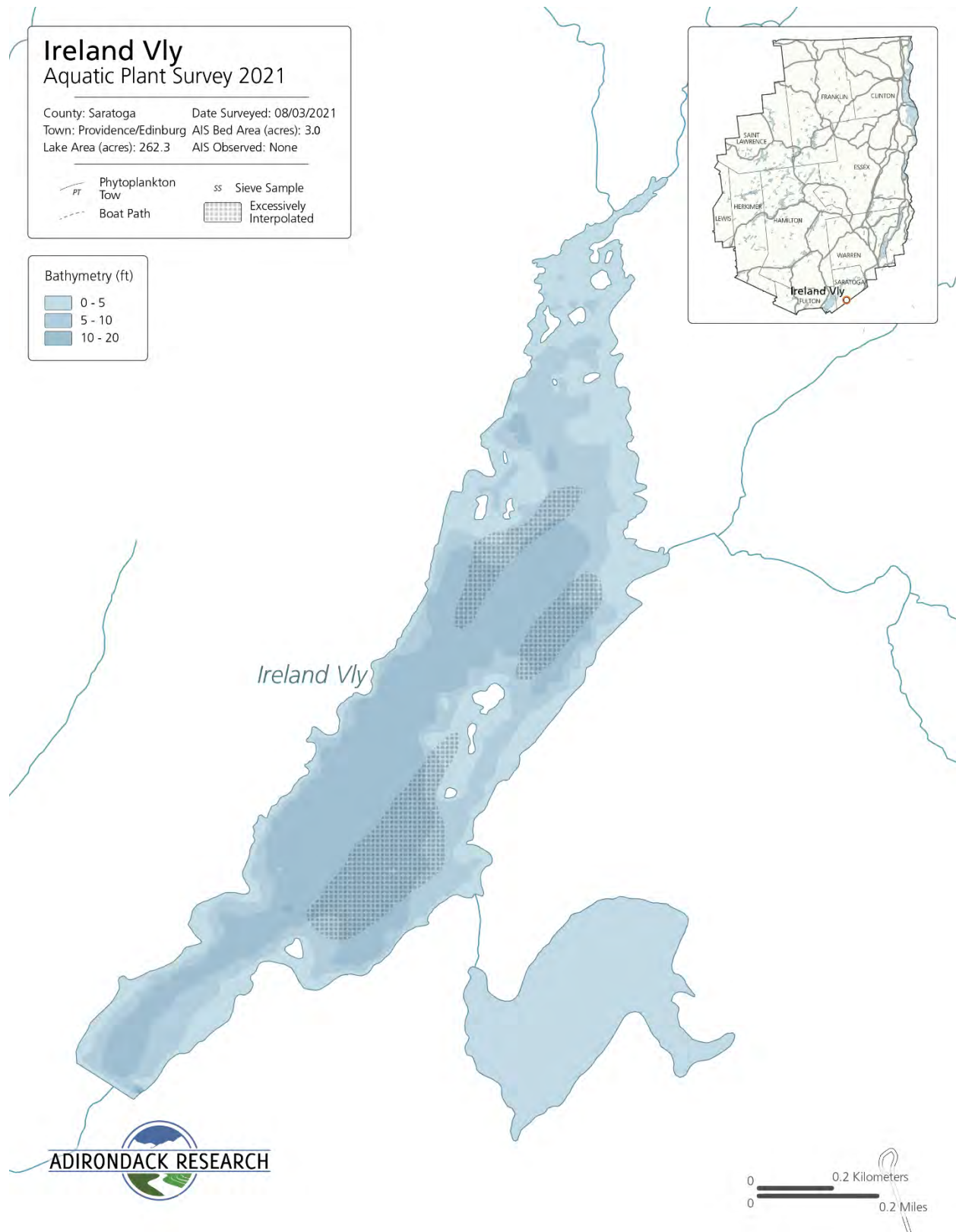
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with no invasive zooplankton detected.









## Jabe Pond

**Survey Date:** June 17, 2021

**Last Surveyed:** 2017

**Survey Team:** P. Bly, L. Johnson, M. Privee, J. Young

### Lake Description

Jabe Pond is a 146-acre lake with 3-miles of shore. It is located in the town of Hague in Warren County within the Lake Champlain watershed. The team was able to launch a canoe from a public carry down a dirt road onto the north shore of the lake. The map on the next page does not show BioVolume because our sonar files became corrupted and are unable to be processed into a map of vegetation.

### Aquatic Invasive Plant Presence

No aquatic invasive species were detected.

### Native Plant Biota

Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native species were found: *Sparganium angustifolium* (narrow-leaf burr reed), *Pontedaria cordata* (pickerelweed), *Nuphar variegata* (spatterdock), *Dulichium arundinaceum* (three-way sedge), and *Iris versicolor* (blue flag iris).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.

## Jabe Pond Aquatic Plant Survey 2021

County: Warren      Date Surveyed: 06/17/2021  
Town: Hague      AIS Bed Area (acres): 0  
Lake Area (acres): 146.5      AIS Observed: None

Boat Path



0 0.1 Kilometers  
0 0.1 Miles

## Jackson Summit Reservoir

**Survey Date:** June 30, 2021

**Last Surveyed:** 2011

**Survey Team:** L. Johnson, M. Privee

### Lake Description

Jackson Summit Reservoir is 106-acres and has 2.8-miles of shoreline. It is located in the town of Mayfield, Fulton County and lies in the Upper Hudson River watershed. The team launched two canoes from Tolmantown Rd, located at the western end of the lake.

### Aquatic Invasive Plant Presence

No invasive plants were detected.

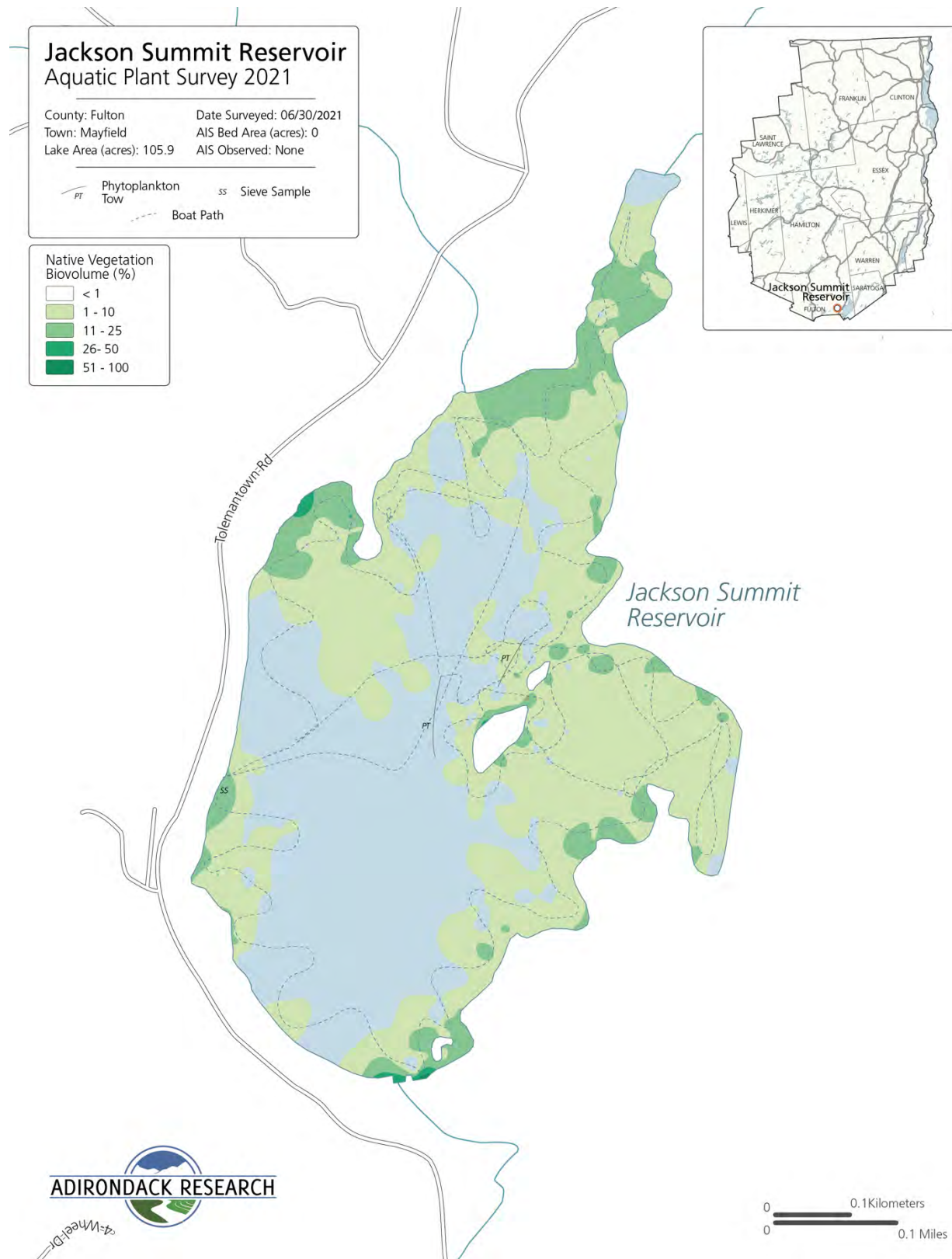
### Native Plant Biota

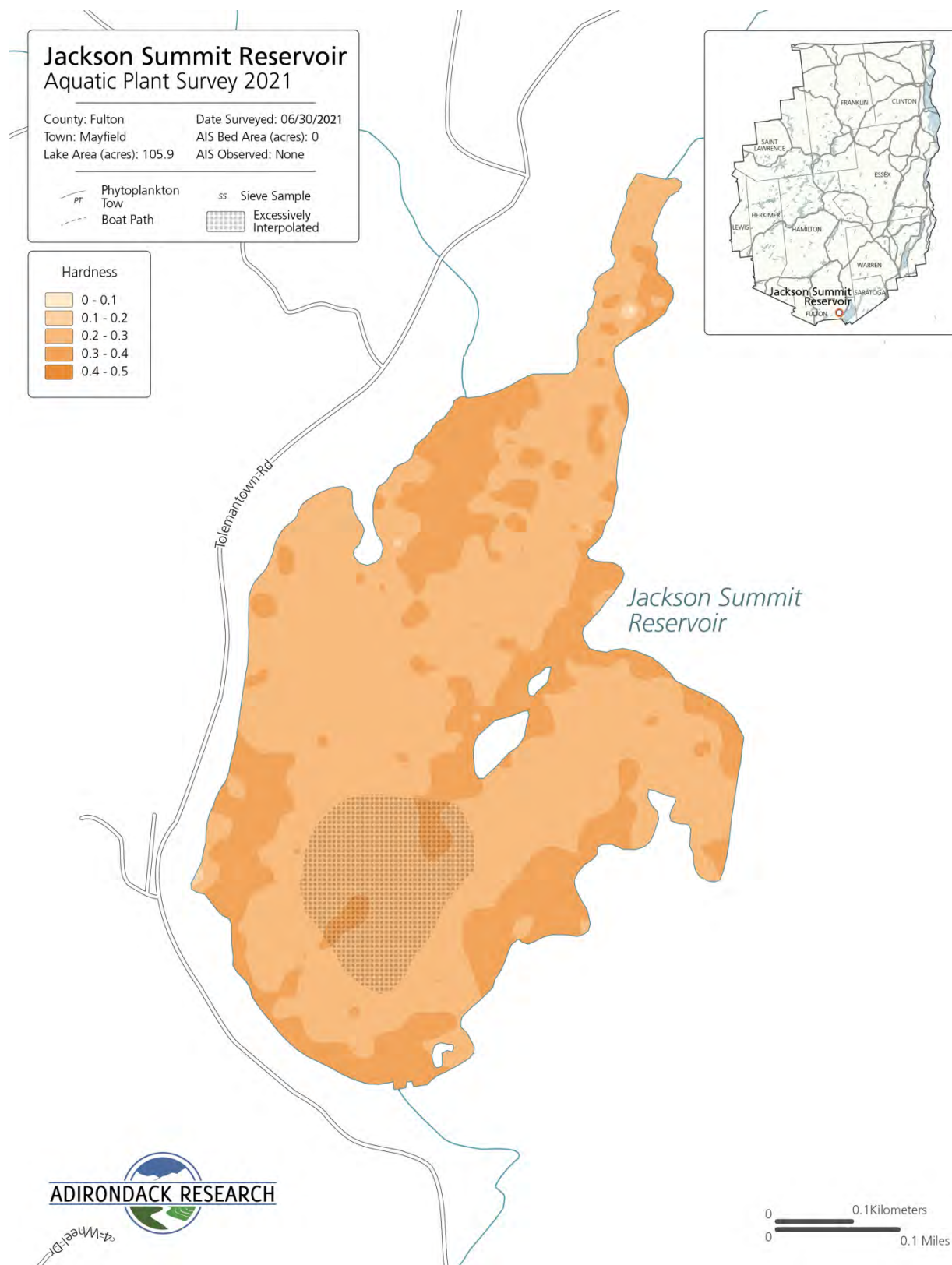
The following native plants were found: *Nuphar variegata* (spatterdock), *Brasenia schreberi* (watershield), *Sagittaria angustifolia* (arrowhead), *Potamogeton natans* (floating leaf pondweed), and *Iris versicolor* (blue flag iris).

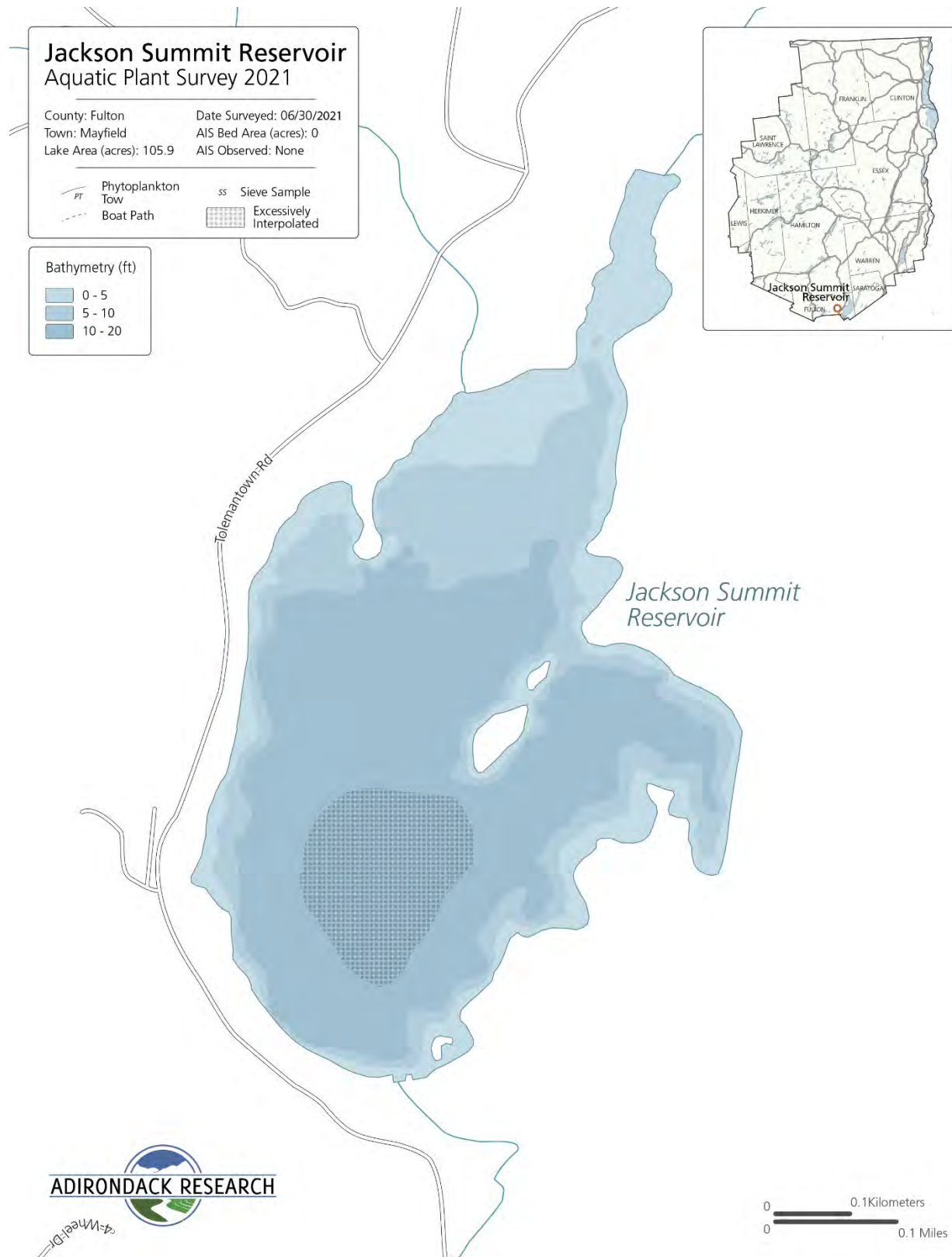
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Two plankton tows were also conducted with no invasive zooplankton detected.









## Kelm Pond

**Survey Date:** June 16, 2021

**Last Surveyed:** No previously reported surveys

**Survey Team:** T. Firkins T. Murphy

### Lake Description

Kelm pond is 56-acres and has 2.9-miles of shoreline. It is located in the town of Warrensburg, Warren County and lies in the Upper Hudson River watershed. The team launched a canoe at the private beach access at the south end of the lake at the restore. The lake was mostly sand with rocks along the shoreline.

### Aquatic Invasive Plant Presence

No aquatic invasives were detected.

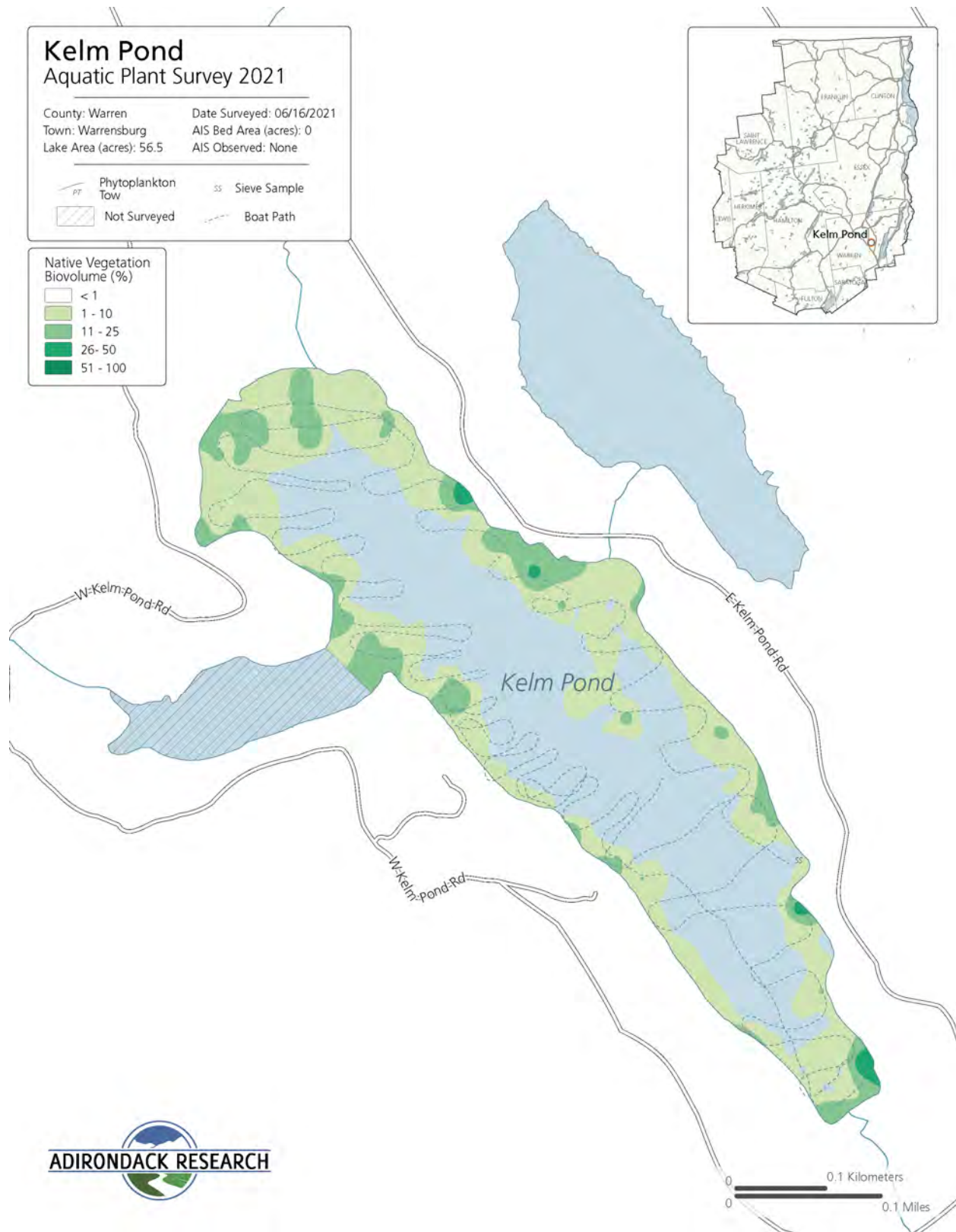
### Native Plant Biota

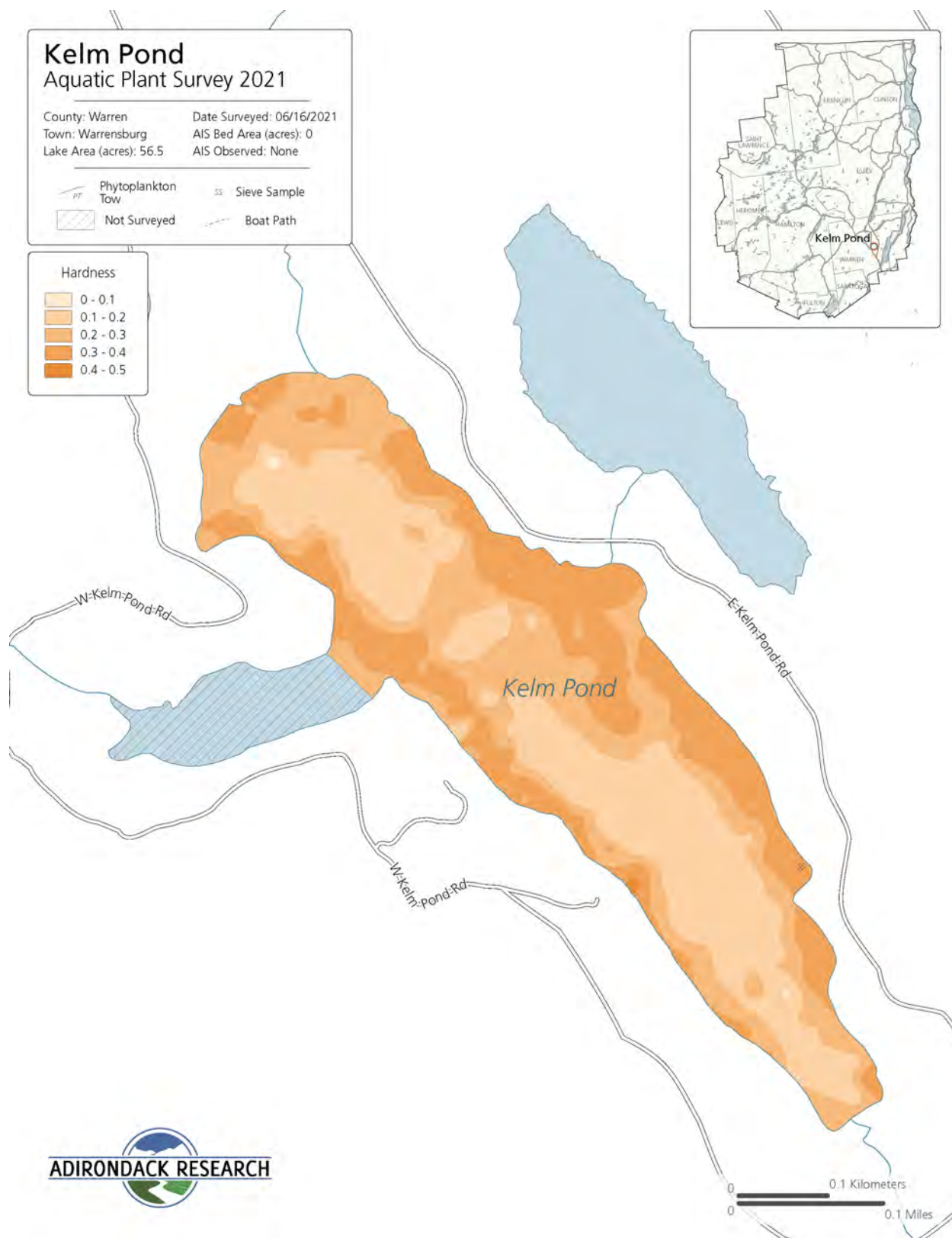
Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native species were found: *Potamogeton corodata* (pickerel-weed), *Brasenia schreberi* (watershield), *Nuphar variegata* (spatterdock), *Nymphaea alba* (white water-lily), *Potamogeton amplifolius* (large-leaf pondweed), *Zostera spp.* (eelgrass), and *Utricularia spp.* (bladderwort).

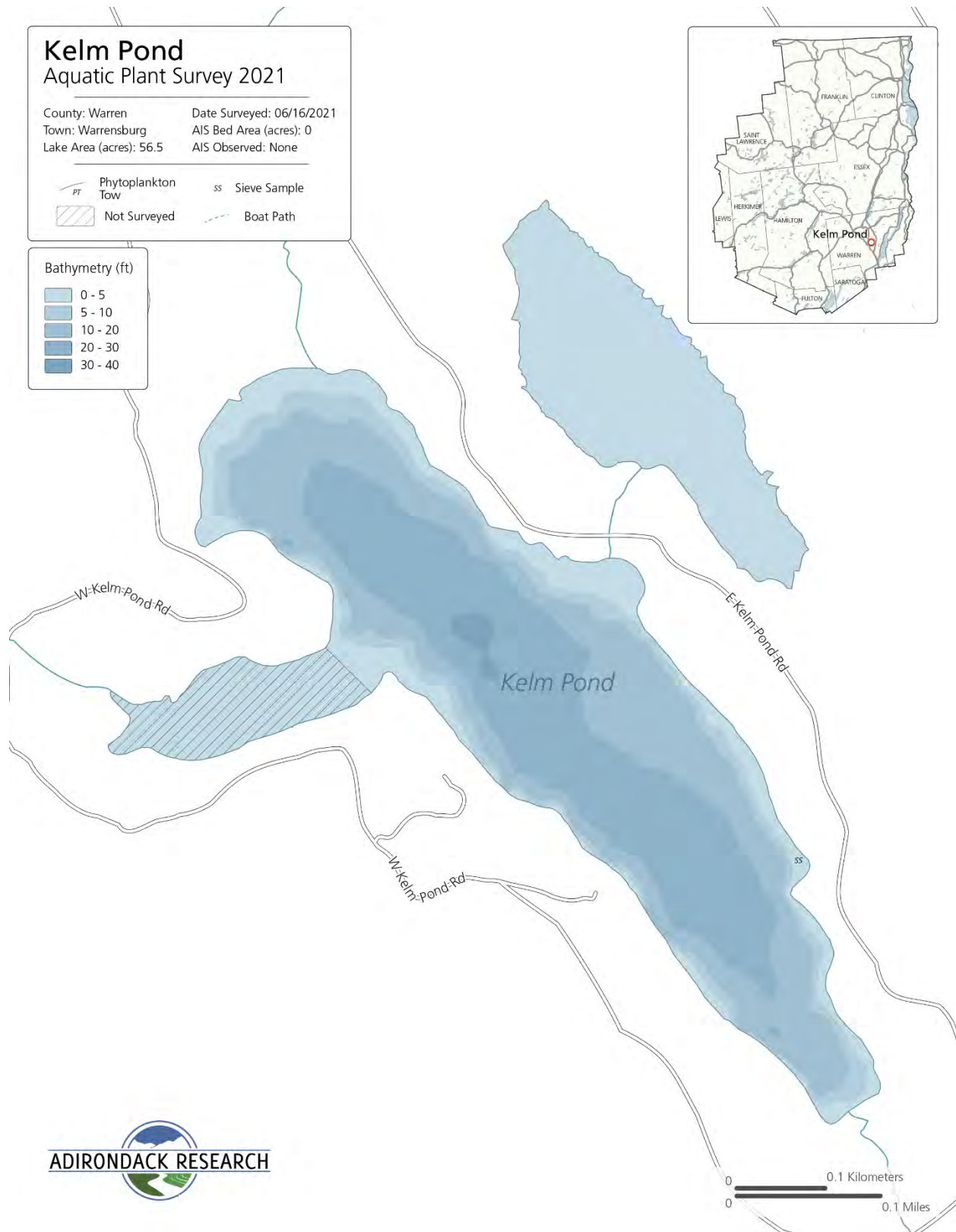
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.









## King's Flow

**Survey Date:** July 15, 2021

**Last Surveyed:** No previously reported surveys

**Survey Team:** L. Johnson, P. Bly

### Lake Description

King's Flow is 207-acres with 4.6-acres of shoreline. It is located in the town of Indian Lake, Hamilton County, and lies in the Upper Hudson River watershed. The team launched a canoe from Chimney Mountain Cabins into the flow. The weather was warm, sunny, and breezy.

### Aquatic Invasive Plant Presence

No aquatic invasive plants were detected.

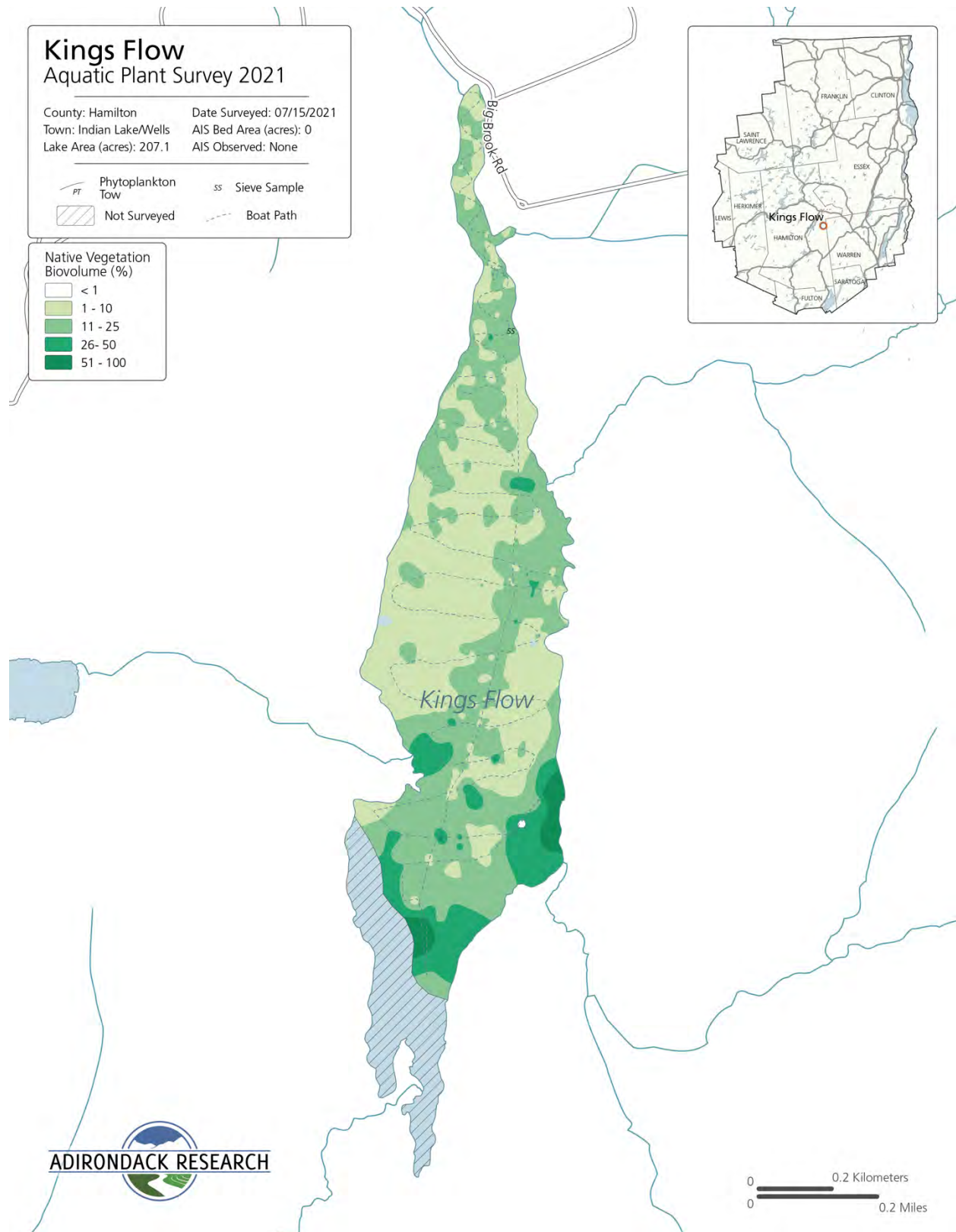
### Native Plant Biota

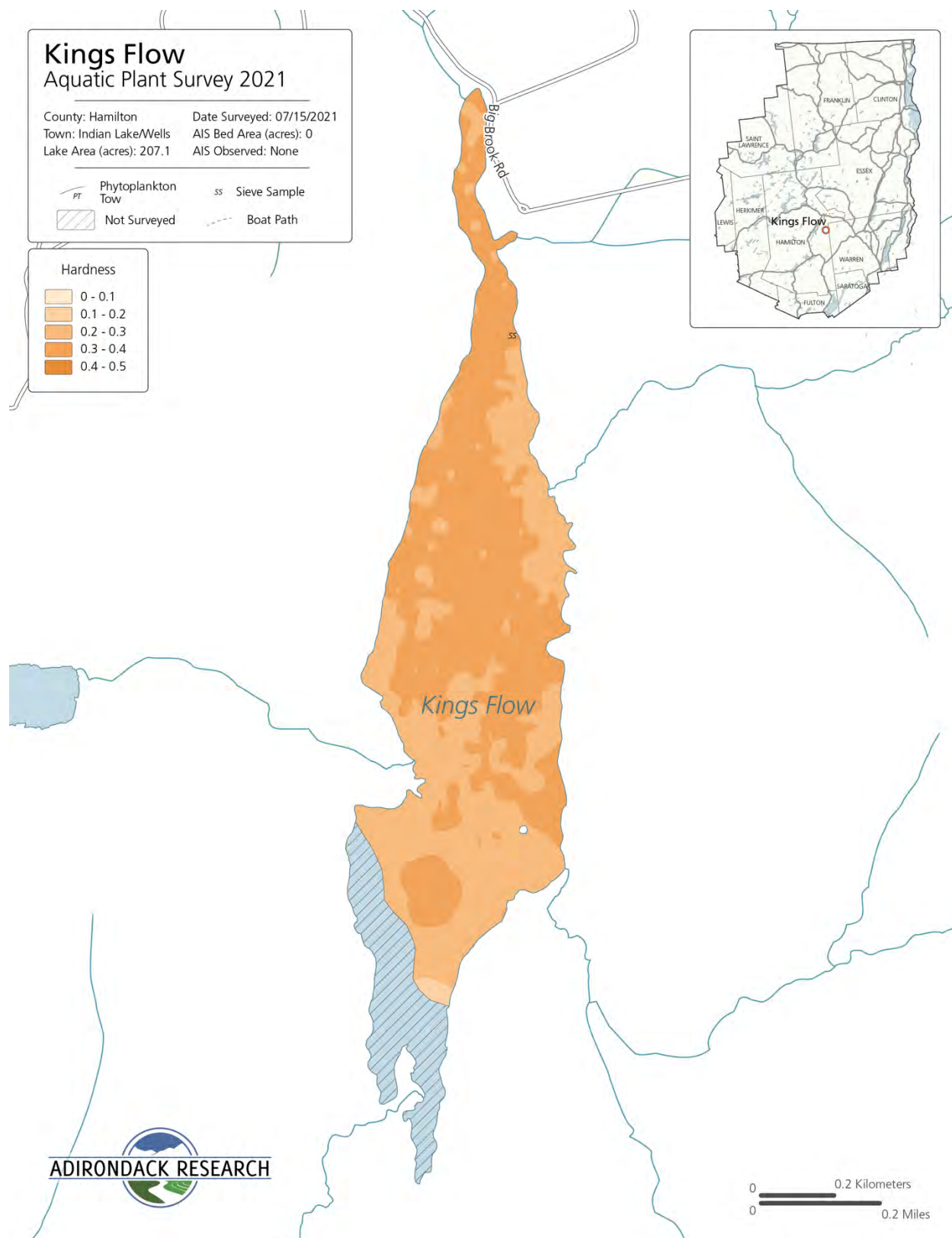
Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native species were found: *Nymphaea odorata* (white water lily), *Dulichium arundinaceum* (three-way sedge), *Sparganium angustifolium* (narrow-leaf burr reed), *Ceratophyllum demersum* (coontail), *Hippuris vulgaris* (Mare's tail), *Nitella spp.* (nitella), *Nophar advena* (spatterdock), *Brasenia schreberi* (watershield), *Potamogeton corodata* (pickerel-weed), *Zostera* (eelgrass), *Utricularia spp.* (bladderwort), *Potamogeton amplifolius* (large-leaf pondweed), *Potamogeton natans* (floating-leaf pondweed), *Elodea spp.* (elodea), and *Microphyll spp.* (native milfoil).

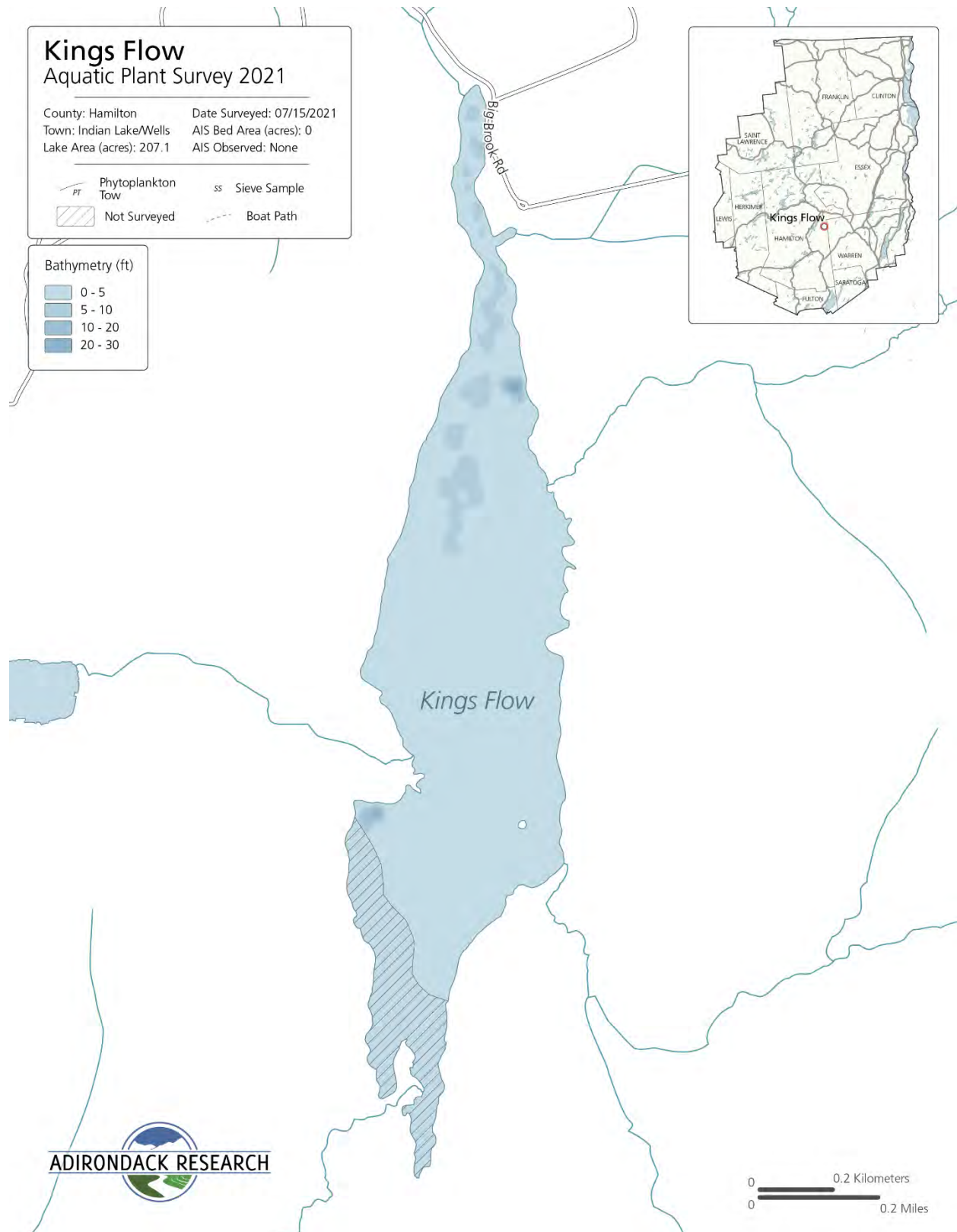
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.









## Lake Abanakee

**Survey Date:** June 22 and 23, 2021

**Last Surveyed:** 2020

**Survey Team:** L. Johnson, T. Firkins, M. Privee, T. Murphy, E. Schwartzberg

### Lake Description

Lake Abanakee is 530-acres and has 18.5 -miles of shoreline. It is located in the town of Indian lake, Hamilton County and lies in the Mohawk River watershed. The team launched a motorboat at the public launch that was soft lunch on the north end of the lake.

### Aquatic Invasive Plant Presence

No aquatic invasive species were detected.

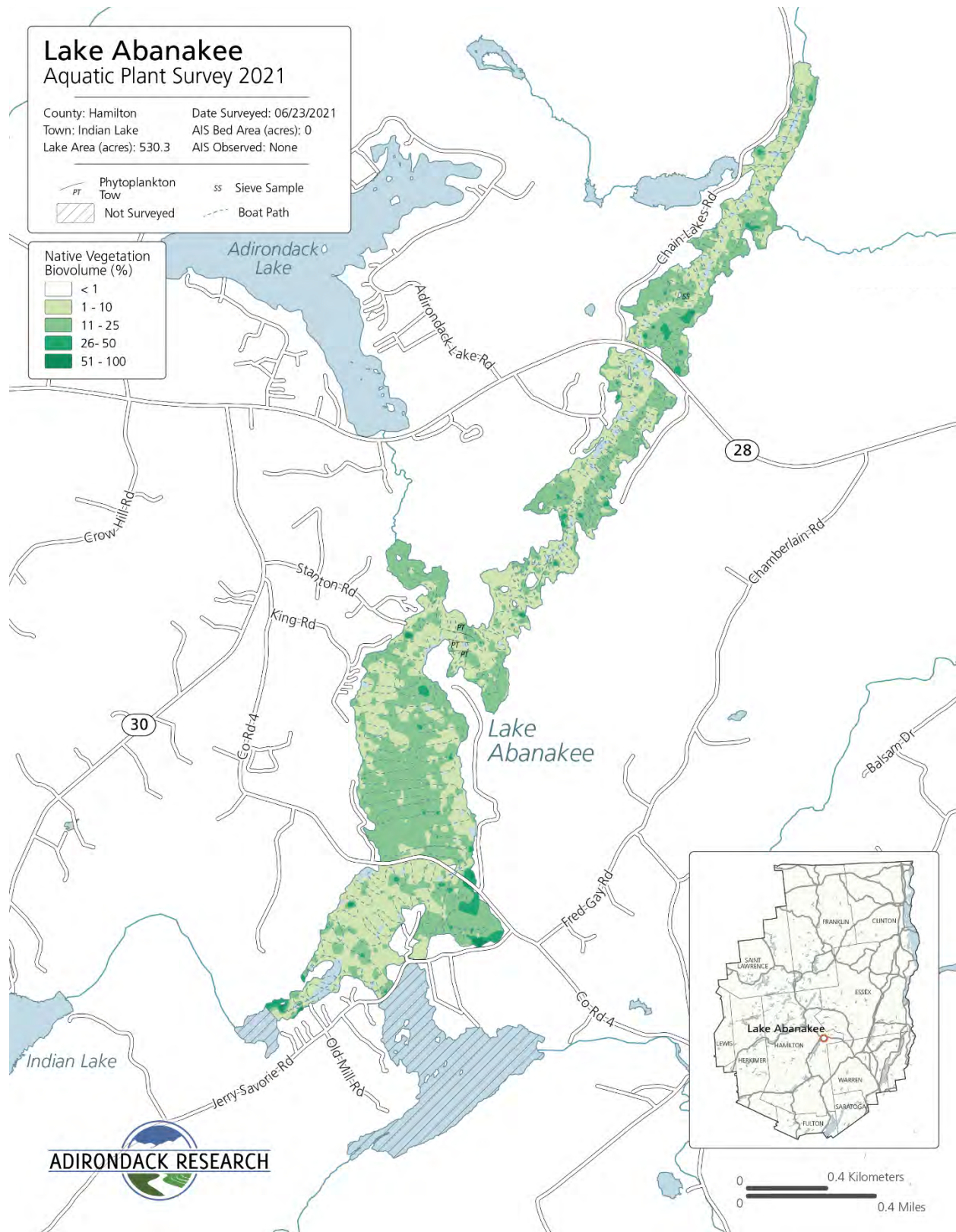
### Native Plant Biota

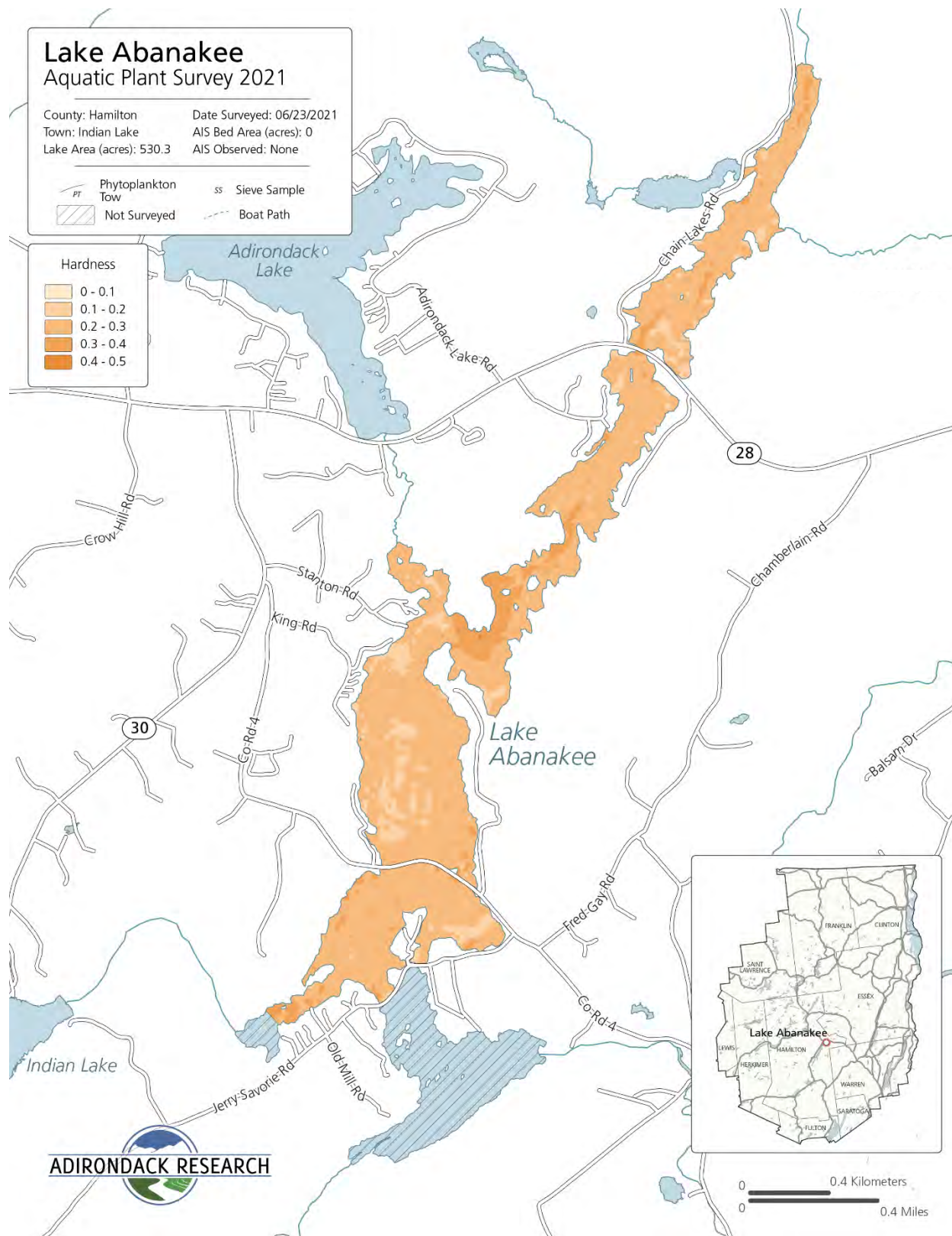
Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native species were found: *Nophar advena* (spatterdock), *Brasenia schreberi* (watershield), *Potamogeton corodata* (pickerel-weed), *Zostera* (eelgrass), *Utricularia spp.* (bladderwort), *Potamogeton amplifolius* (large-leaf pondweed), *Potamogeton natans* (floating-leaf pondweed), *Potamogeton zosteriformes* (narrow-leaf pondweed), *Elodea spp.* (elodea), *Potamogeton perfoliatus* (clasping-leaf pondweed), *Najas spp.* (native naiad), and *Microphyll spp.* (native milfoil).

### Aquatic Invasive Animal Presence

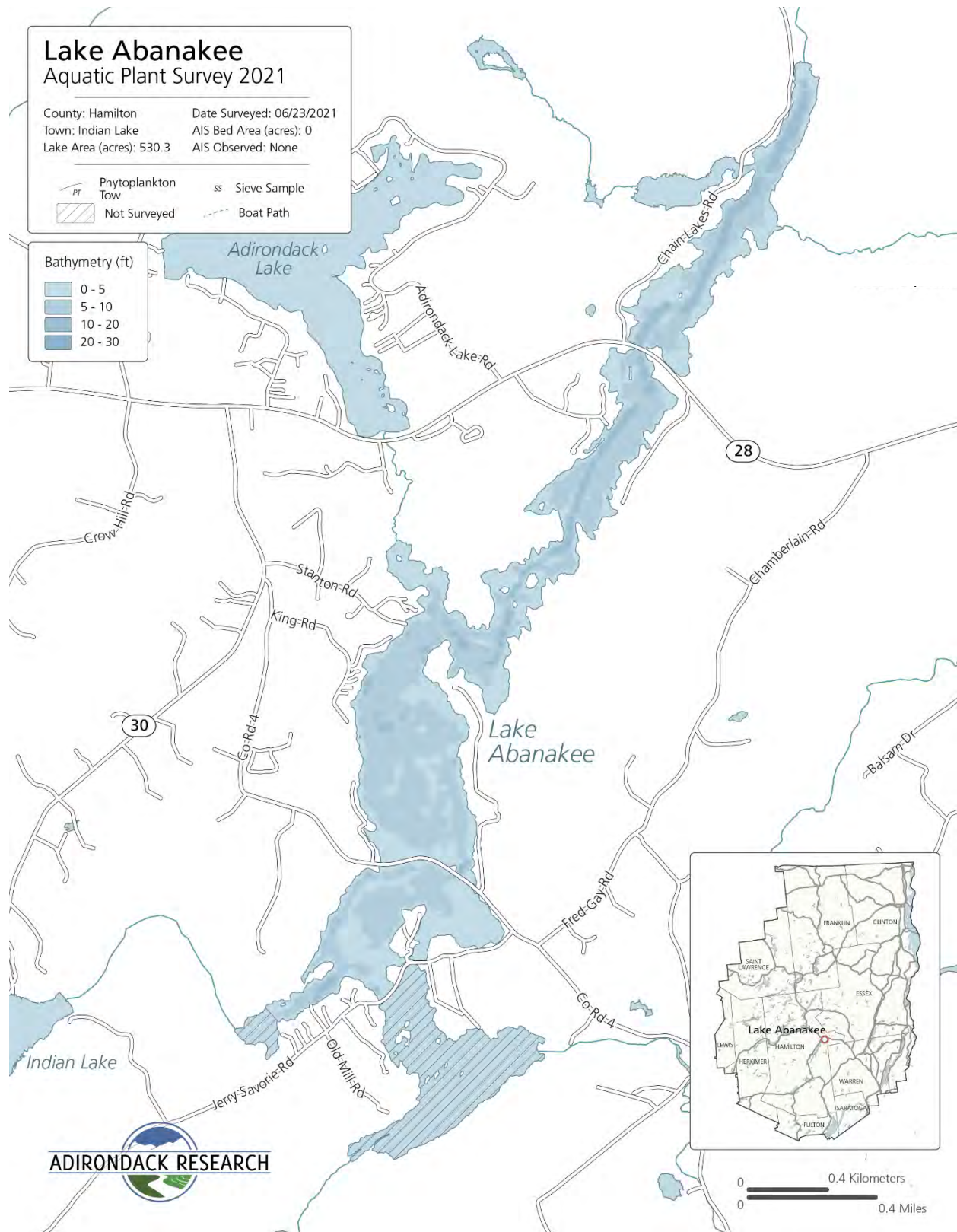
Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with no invasive zooplankton detected.











## Lake Algonquin

Survey Date: September 1, 2021

Last Surveyed: August 30, 2018

Survey Team: P. Bly, T. Firkins

### Lake Description

Lake Algonquin is 259-acres and has 6-miles of shoreline. It is located in the town of Wells, Hamilton County and lies in the Sacandaga watershed. The team launched at the public launch on Algonquin Drive.

### Aquatic Invasive Plant Presence

A total of 40 invasive *Myriophyllum spicatum* (Eurasian watermilfoil) plant beds were mapped. Beds ranged from a few plants to dense monocultures.

### Native Plant Biota

Comprehensive surveys of all native plants found within the pond were not prioritized in 2021, as this data had been previously collected in 2015 when the lake was first surveyed. The following native plants were identified: *Nymphaea odorata* (white water lily), *Potamogeton amplifolius* (large leaf pondweed), *Brasenia schreberi* (watershield), (common bladderwort), *Eriocaulon aquaticum* (pipewort),

*Potamogeton perfoliatus* (clasping leaf pondweed), *Elodea canadensis* (elodea), *Nuphar variegata*

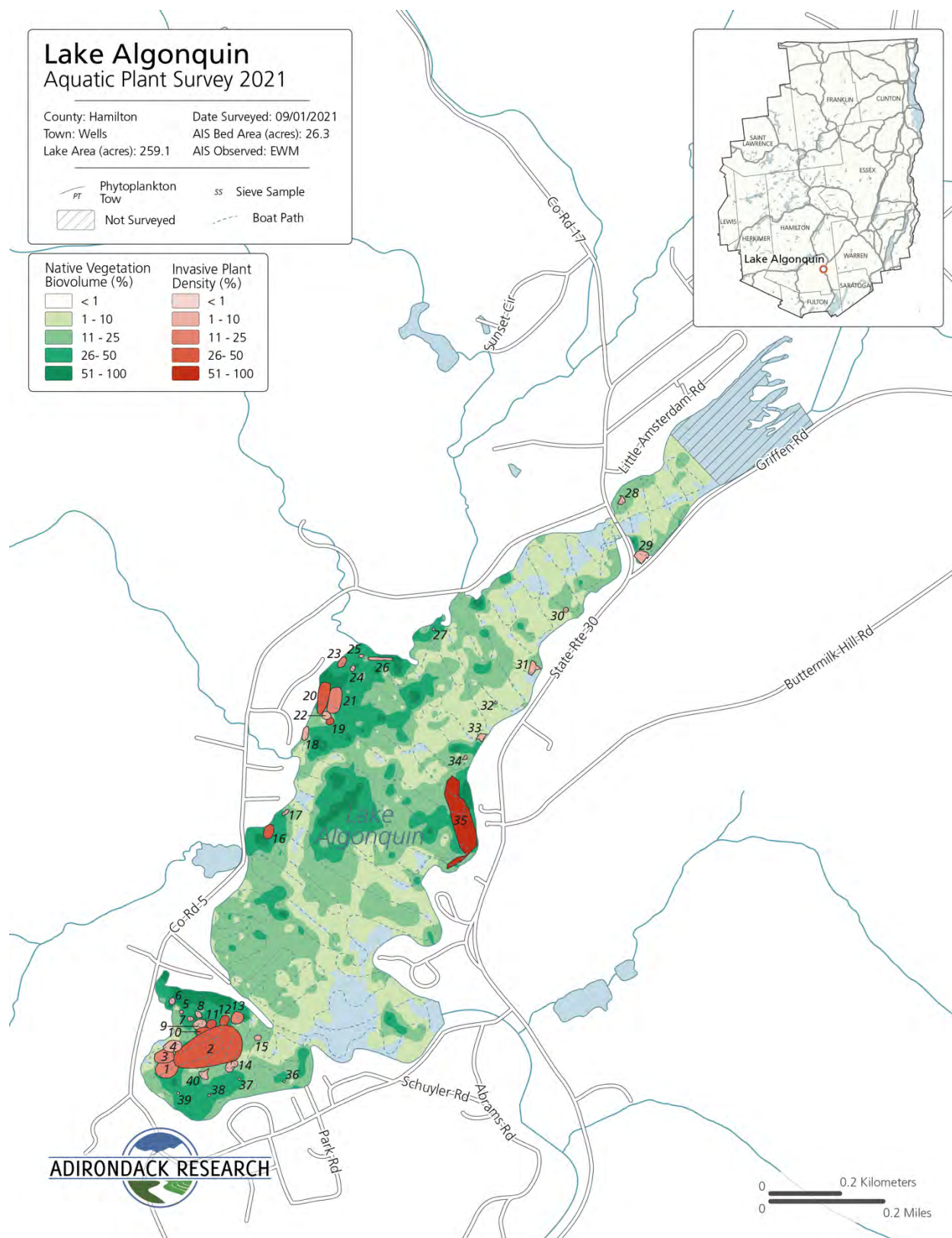
(spatterdock), *Nymphoides cordata* (little floating heart), and *Potamogeton natans* (floating leaf pondweed).

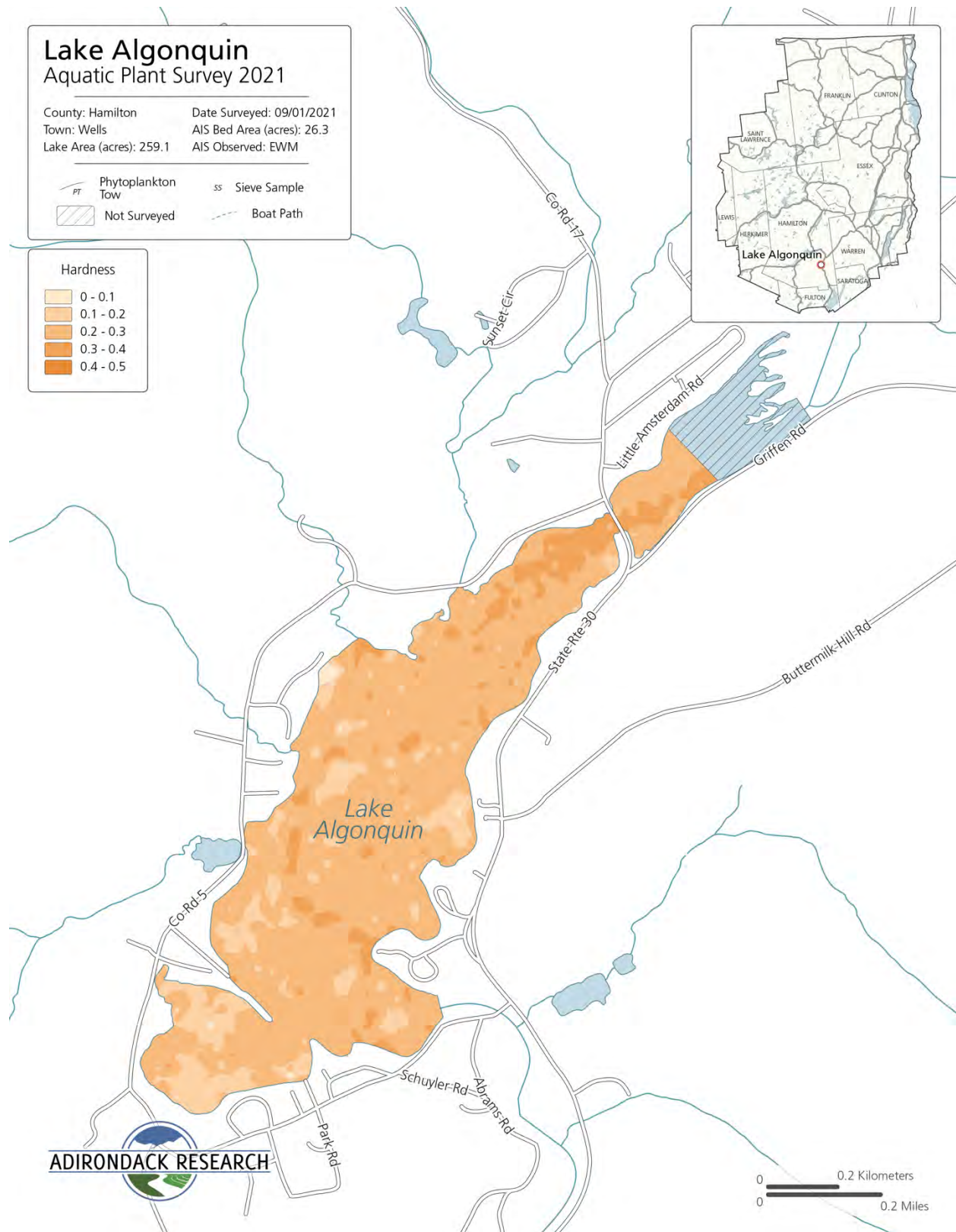
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.

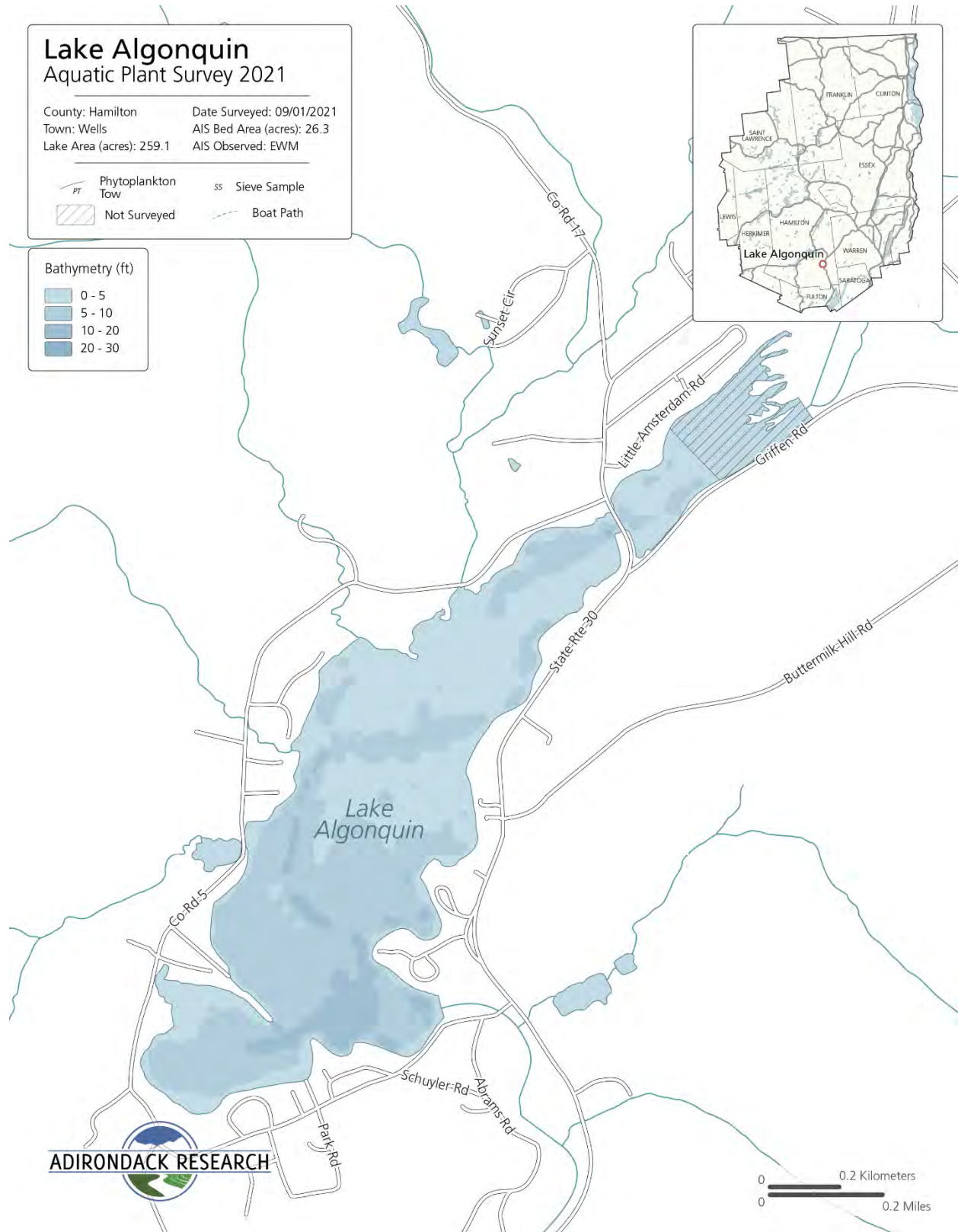


| Eurasian Watermilfoil |            |                |         | Eurasian Watermilfoil |            |                 |         |
|-----------------------|------------|----------------|---------|-----------------------|------------|-----------------|---------|
| Bed                   | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed                   | Size (Ac.) | Size (Sq. Ft.)  | % Cover |
| 1                     | 0.73       | 31791.58       | 11-25   | 23                    | 0.14       | 5938.89         | 11-25   |
| 2                     | 4.49       | 195472.74      | 26-50   | 24                    | 0.05       | 2174.48         | 1-10    |
| 3                     | 0.48       | 21031.45       | 11-25   | 25                    | 0.03       | 1246.29         | 1-10    |
| 4                     | 0.36       | 15798.76       | 1-10    | 26                    | 0.16       | 6814.93         | 1-10    |
| 5                     | 0.02       | 1071.47        | 1-10    | 27                    | 0.01       | 443.85          | <1      |
| 6                     | 0.07       | 3038.71        | 1-10    | 28                    | 0.08       | 3580.86         | 1-10    |
| 7                     | 0.05       | 2230.76        | 1-10    | 29                    | 0.25       | 11051.68        | 1-10    |
| 8                     | 0.07       | 3153.50        | 1-10    | 30                    | 0.04       | 1775.38         | 1-10    |
| 9                     | 0.23       | 9970.82        | 1-10    | 31                    | 0.19       | 8276.32         | 1-10    |
| 10                    | 0.19       | 8143.90        | 26-50   | 32                    | 0.01       | 443.88          | <1      |
| 11                    | 0.16       | 6838.92        | 26-50   | 33                    | 0.10       | 4305.87         | 1-10    |
| 12                    | 0.19       | 8303.37        | 26-50   | 34                    | 0.03       | 1283.07         | 1-10    |
| 13                    | 0.26       | 11527.33       | 11-25   | 35                    | 2.95       | 128342.67       | 51-100  |
| 14                    | 0.21       | 8960.74        | 1-10    | 36                    | 0.01       | 444.02          | <1      |
| 15                    | 0.07       | 2936.97        | 1-10    | 37                    | 0.01       | 444.02          | <1      |
| 16                    | 0.25       | 10876.05       | 26-50   | 38                    | 0.01       | 444.03          | <1      |
| 17                    | 0.05       | 2259.83        | 1-10    | 39                    | 0.01       | 444.03          | <1      |
| 18                    | 0.15       | 6593.67        | 1-10    | 40                    | 0.14       | 5909.79         | 1-10    |
| 19                    | 0.10       | 4336.72        | 26-50   | Asian Clam            |            | Spiny Waterflea |         |
| 20                    | 0.65       | 28315.40       | 26-50   | Present (Y/N)         |            | Present (Y/N)   |         |
| 21                    | 0.66       | 28939.77       | 11-25   | No                    |            | N/A             |         |
| 22                    | 0.12       | 5342.21        | 1-10    |                       |            |                 |         |











## Lake Pleasant

**Survey Date:** July 27 and July 28, 2021

**Last Surveyed:** 2019

**Survey Team:** P. Bly, L. Johnson, T. Murphy, J. Young

### Lake Description

Lake Pleasant is 1475-acres with 10.7-miles of shoreline. It is located in the town of Lake Pleasant, Hamilton County, and lies in the Upper Hudson River watershed. The team launched 2 motorboats. The weather was sunny with a calm breeze.

### Aquatic Invasive Plant Presence

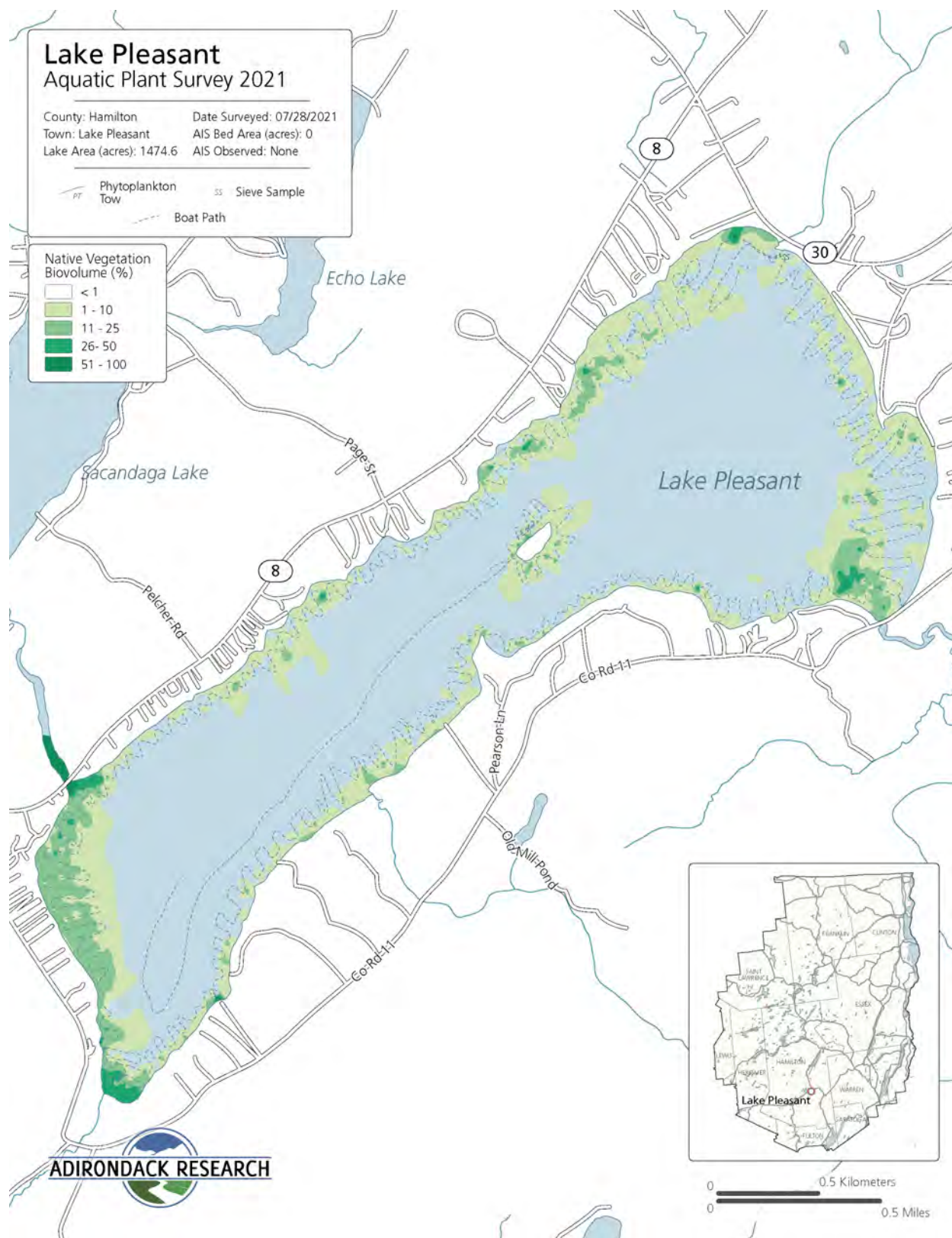
No invasive plant species were identified.

### Native Plant Biota

Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Pontederia cordata* (pickerelweed), *Potamogeton perfoliatus* (clasping leaf pondweed), *Zostera spp.* (eelgrass), *Sparangium angustifolium* (narrowleaf burred), *Nymphaea odorata* (white water lily), *Brasenia schrederi* (water shield), *Utricularia spp.* (bladderwort), *Potamogeton amplifolius* (largeleaf pond), *Eriocaulon aquaticum* (pipewort), and *Potamogeton natans* (floatingleaf pondweed).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted. *Bythotrephes longimanus* (spiny waterflea) is present in Lake Pleasant and we did observe it in our plankton tows.



## Lake Snow

**Survey Date:** June 21, 2021

**Last Surveyed:** 2013

**Survey Team:** E. Schwartzberg, M. Privee, T. Murphy

### Lake Description

Lake Snow is 116 -acres and has 2.73 -miles of shoreline. It is located in the town of Indian lake, Hamilton County and lies in the Upper Hudson River watershed. The team launched a canoe at the private beach on the south end of the lake. The lake was shallow with large-leaf pond weed in large abundances throughout the lake. The sonar was not functioning for a portion of the survey period, therefor we processed data using ReefMaster, which does not produce BioVolume measurements.

### Aquatic Invasive Plant Presence

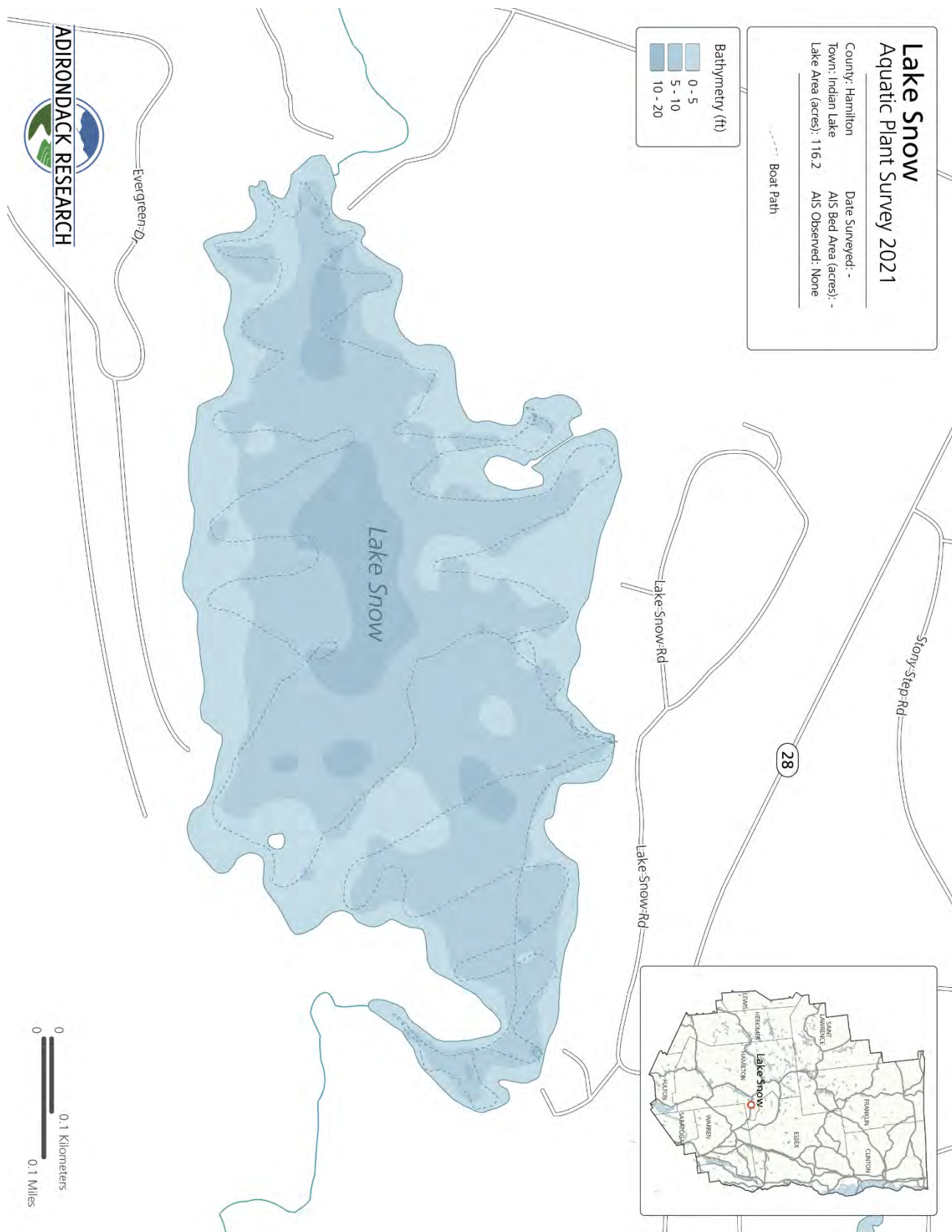
No invasive plants were detected.

### Native Plant Biota

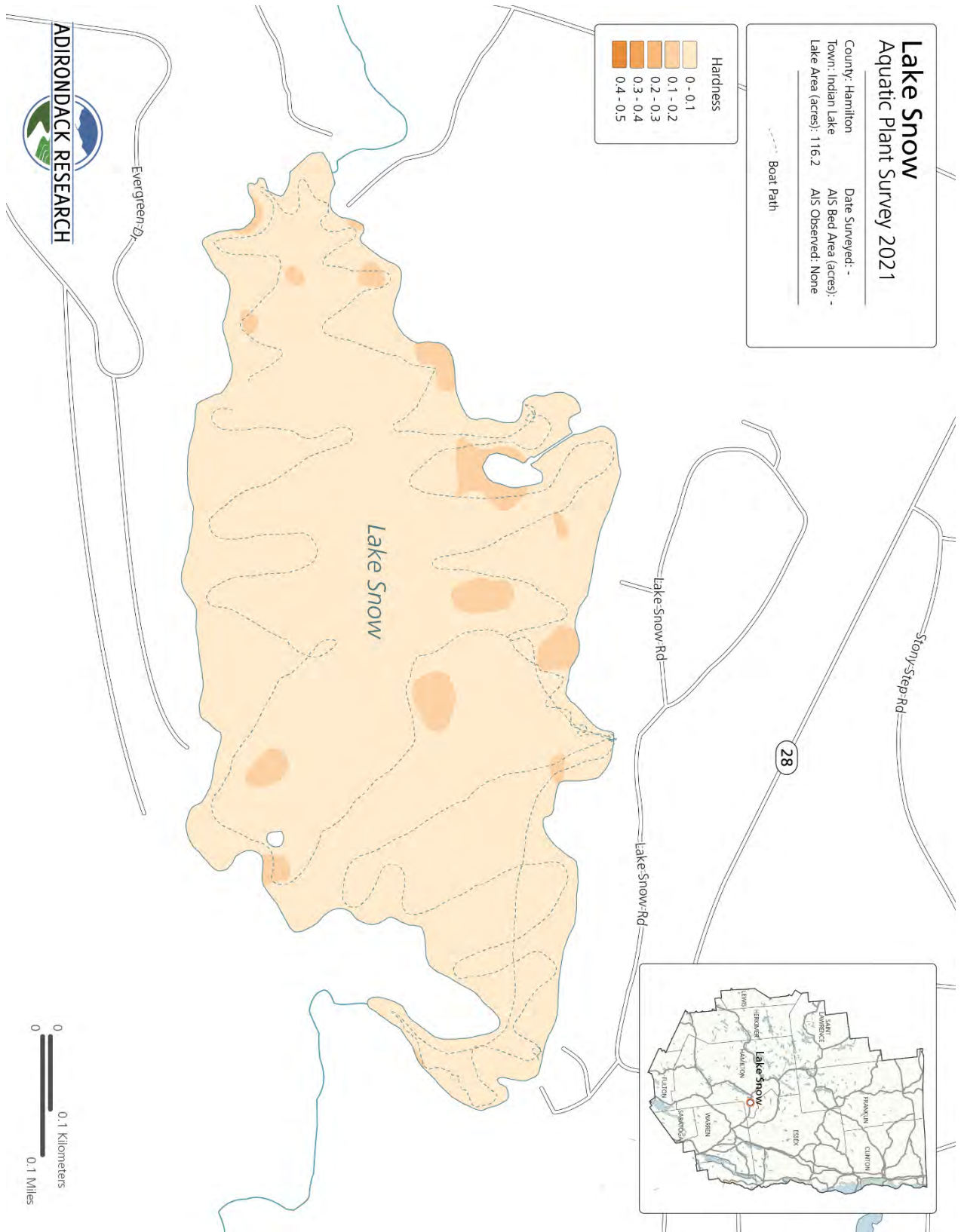
Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native species were found: *Potamogeton corodata* (pickerel-weed), *Brasenia schreberi* (watershield), *Nophar advena* (spatterdock), *Nymphaea alba* (white water-lily), *Potamogeton amplifeius* (large-leaf pondweed), *Zostera spp.* (eelgrass), *Utricularia spp.* (bladderwort), *Najas spp.* (native naiad).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.







## Lens Lake

**Survey Date:** August 4, 2021

**Last Surveyed:** 2011

**Survey Team:** P. Bly, L. Johnson

### Lake Description

Lens Lake is 77-acres with 3.9-miles of shoreline. It is located in the town of Stony Creek, Warren County, and lies in the Upper Hudson River watershed. The team launched one canoe from Gun Club Road. The weather was overcast and calm.

### Aquatic Invasive Plant Presence

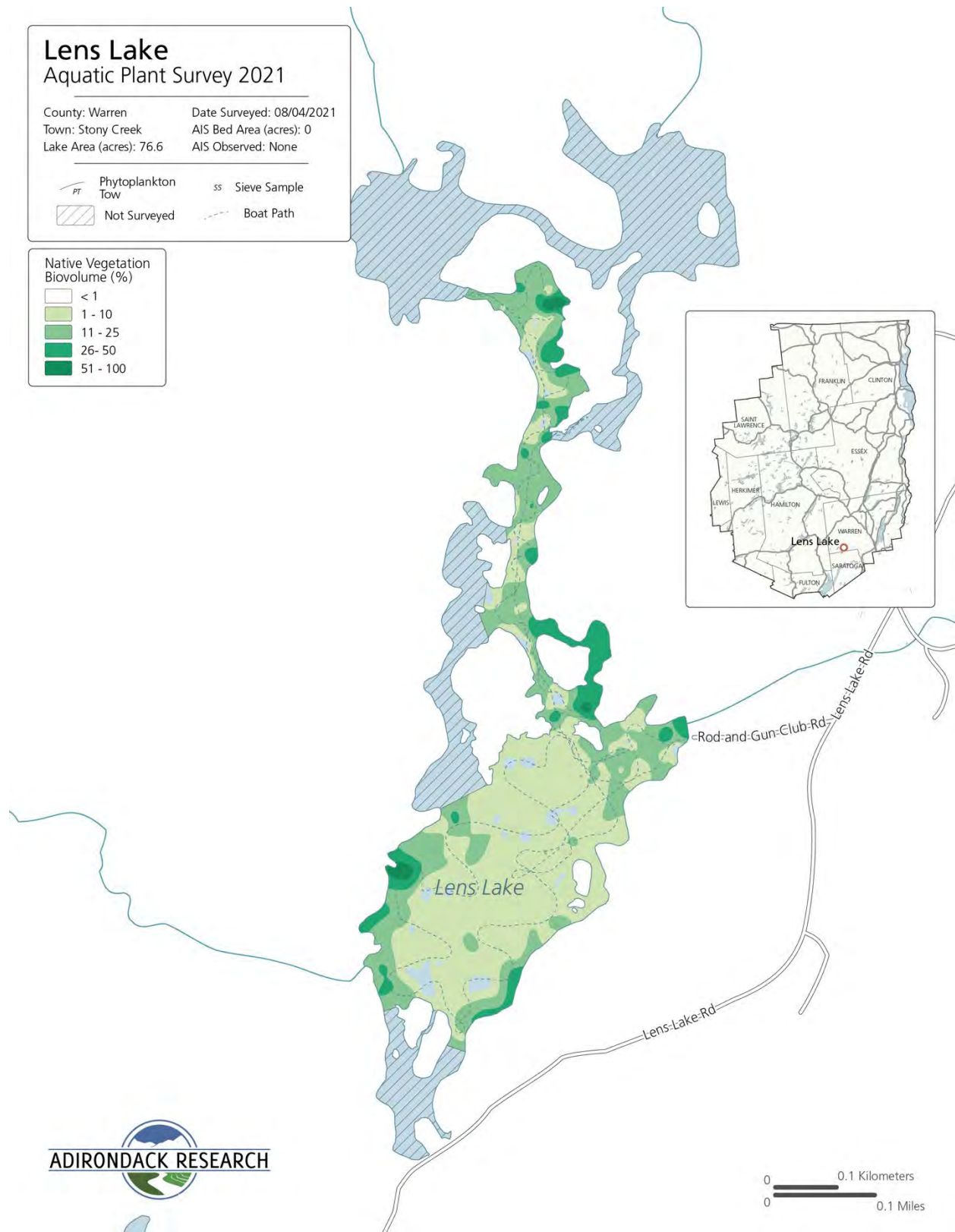
No invasive plant species were identified.

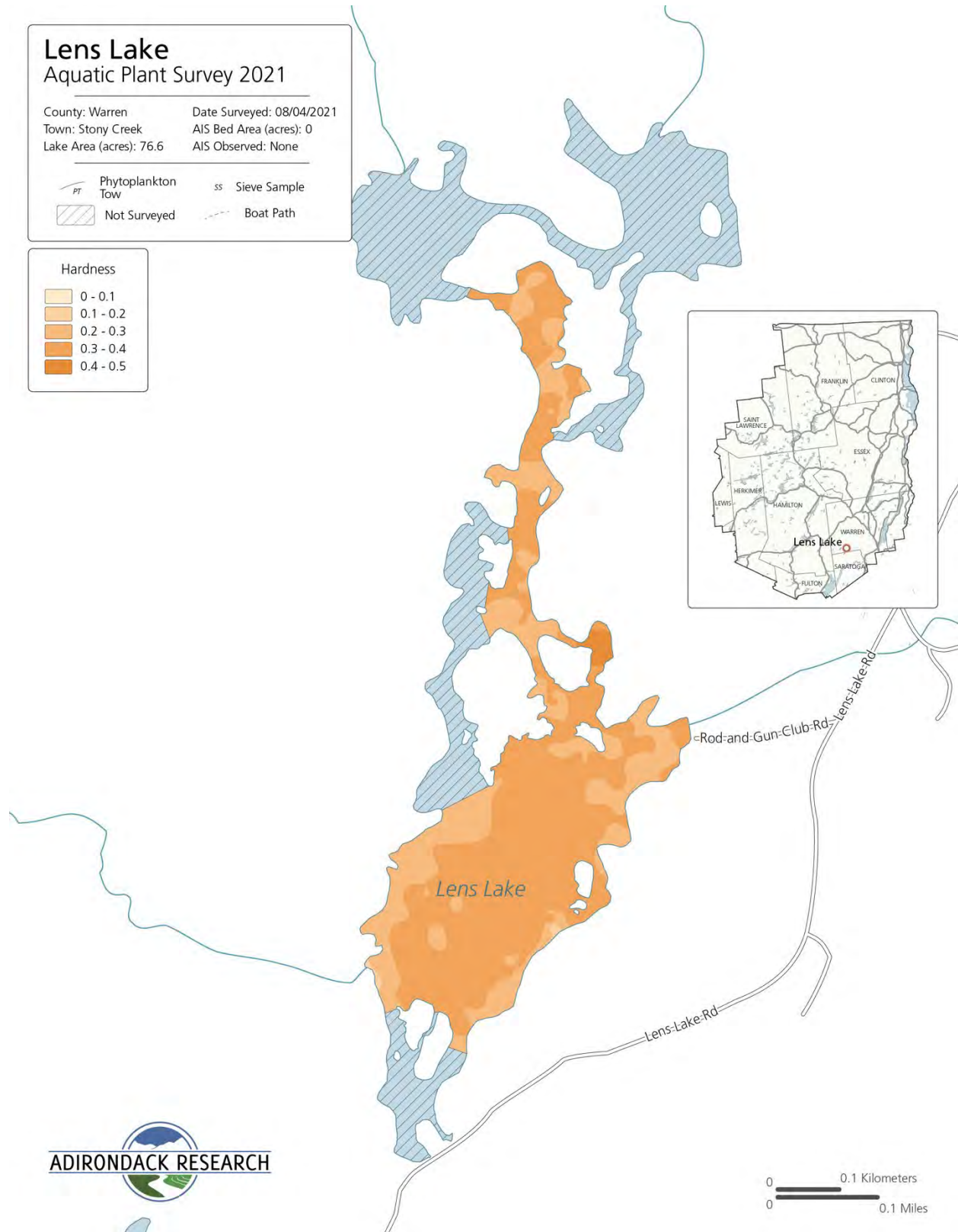
### Native Plant Biota

Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Pontederia cordata* (pickerelweed), *Dulichium arundinaceum* (threeway sedge), *Nymphaea alba* (white waterlily), *Brasenia schrederi* (water shield), *Utricularia purpurea* (purple bladderwort), *Potamogeton natans* (floating-leaf pondweed), *Utricularia vulgaris* (bladderwort), *Zostera spp.* (eelgrass), *Sagittaria spp.* (arrowhead spp.), *Nymphoides peltata* (little floating heart).

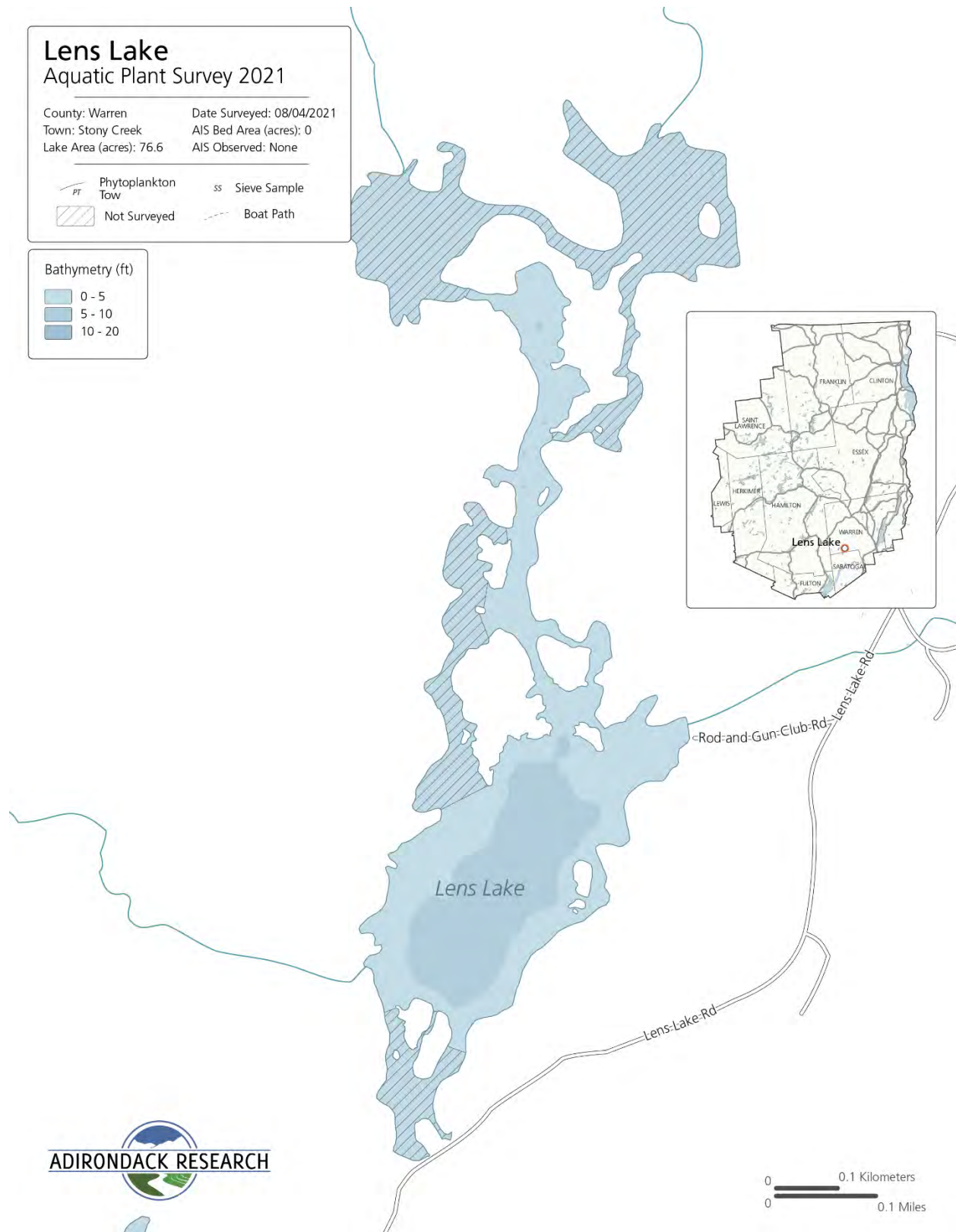
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.









## Lewey Lake

**Survey Date:** June 24, 2021

**Last Surveyed:** 2015

**Survey Team:** T. Firkins, M. Privee, L. Johnson, T. Murphy

### Lake Description

Lewey Lake is 374-acres with 3.5-miles of shoreline. It is in the town of Lake Pleasant, within Hamilton County, and lies in the Upper Hudson River watershed. The team launched a motorboat and canoe from private property at Galusha's Cottages. The weather was mostly sunny with a strong breeze.

### Aquatic Invasive Plant Presence

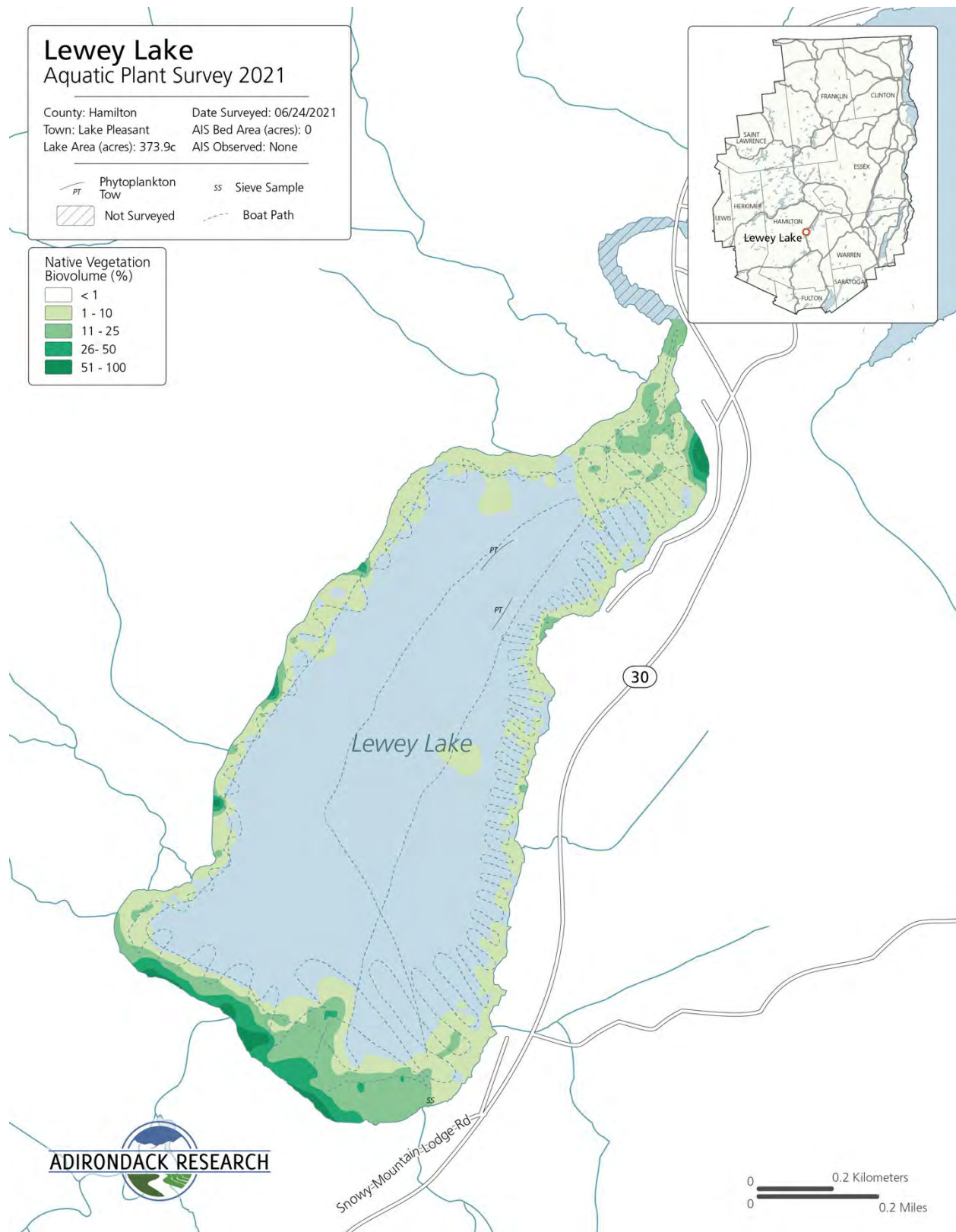
No aquatic invasive plant species were detected.

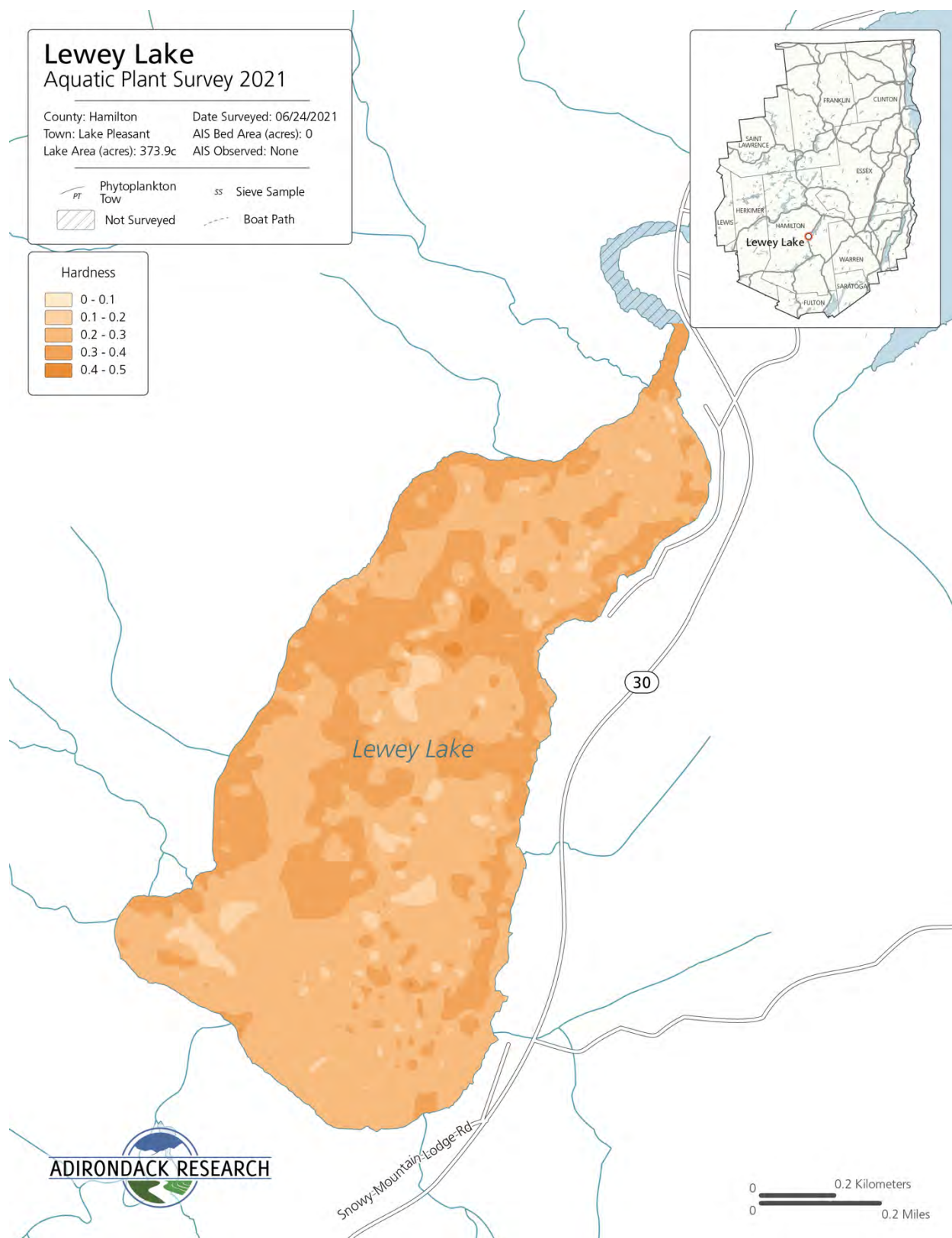
### Native Plant Biota

Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Nuphar advena* (spatterdock), *Pontederia cordata* (pickerelweed), *Nymphoides cordata* (little floating heart), *Brasenia schrederi* (watershield), *Sparganium angustifolium* (narrowleaf burr reed), *Potamogeton amplifolius* (largeleaf pondweed), *Nymphaea alba* (white water lily), *Utricularia spp.* (bladderwort), *Potamogeton natans* (floatingleaf pondweed).

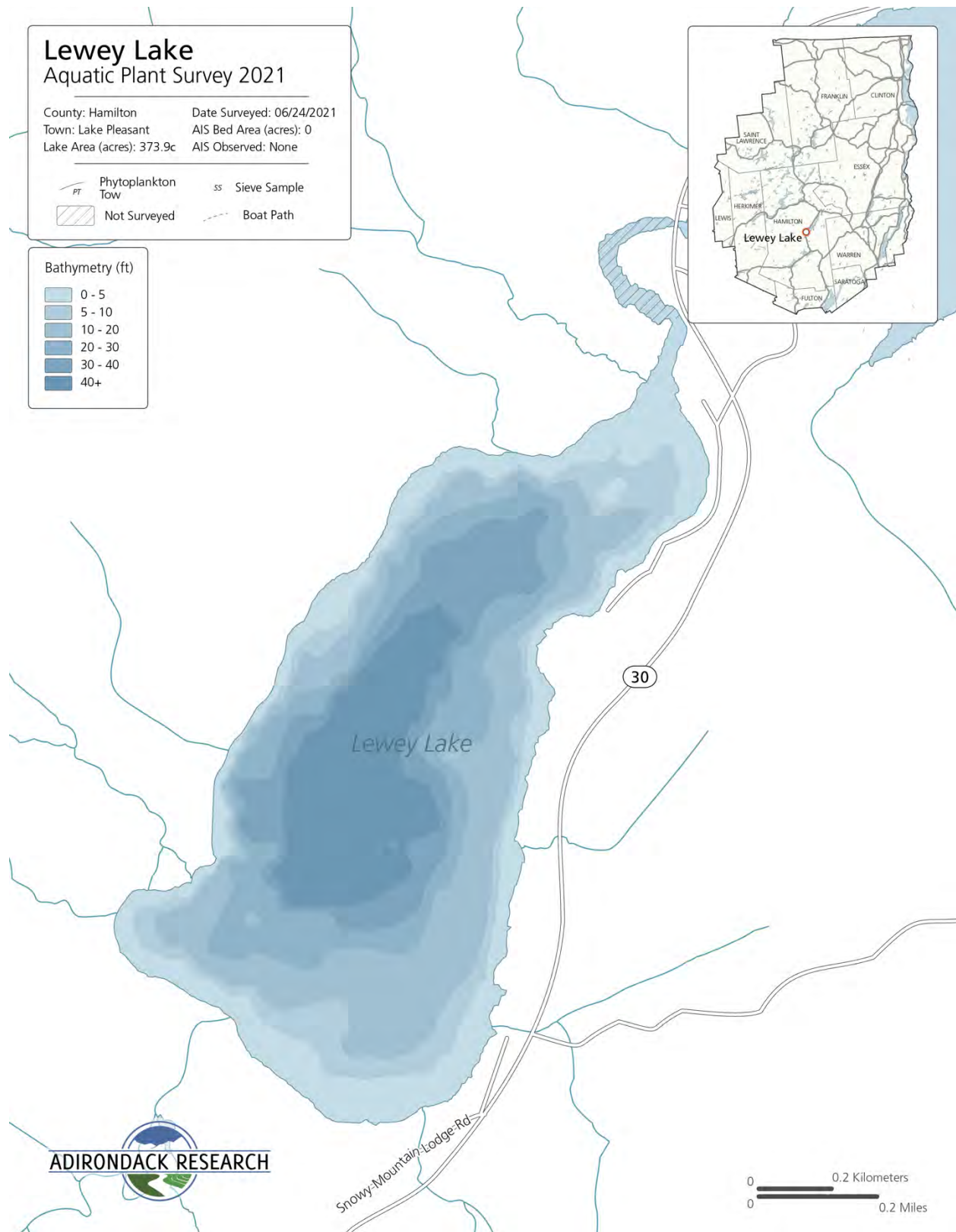
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with no invasive zooplankton detected.









## Loon Lake

**Survey Date:** July 20, 2021

**Last Surveyed:** July 31, 2018

**Survey Team:** T. Firkins, T. Murphy, P. Bly E. Schwartzberg

### Lake Description

Loon Lake is 524-acres with 11.2-miles of shoreline. It is in the town of Chester, in Warren County, and lies within the Upper Hudson River watershed. The team launched a motorboat from Loon Lake Public Beach and Boat Launch. The weather was sunny with light cloud cover and a slight breeze.

### Aquatic Invasive Plant Presence

There was *Myriophyllum spicatum* L. (Eurasian watermilfoil) found periodically on the lake in small clumps of one or two strands.

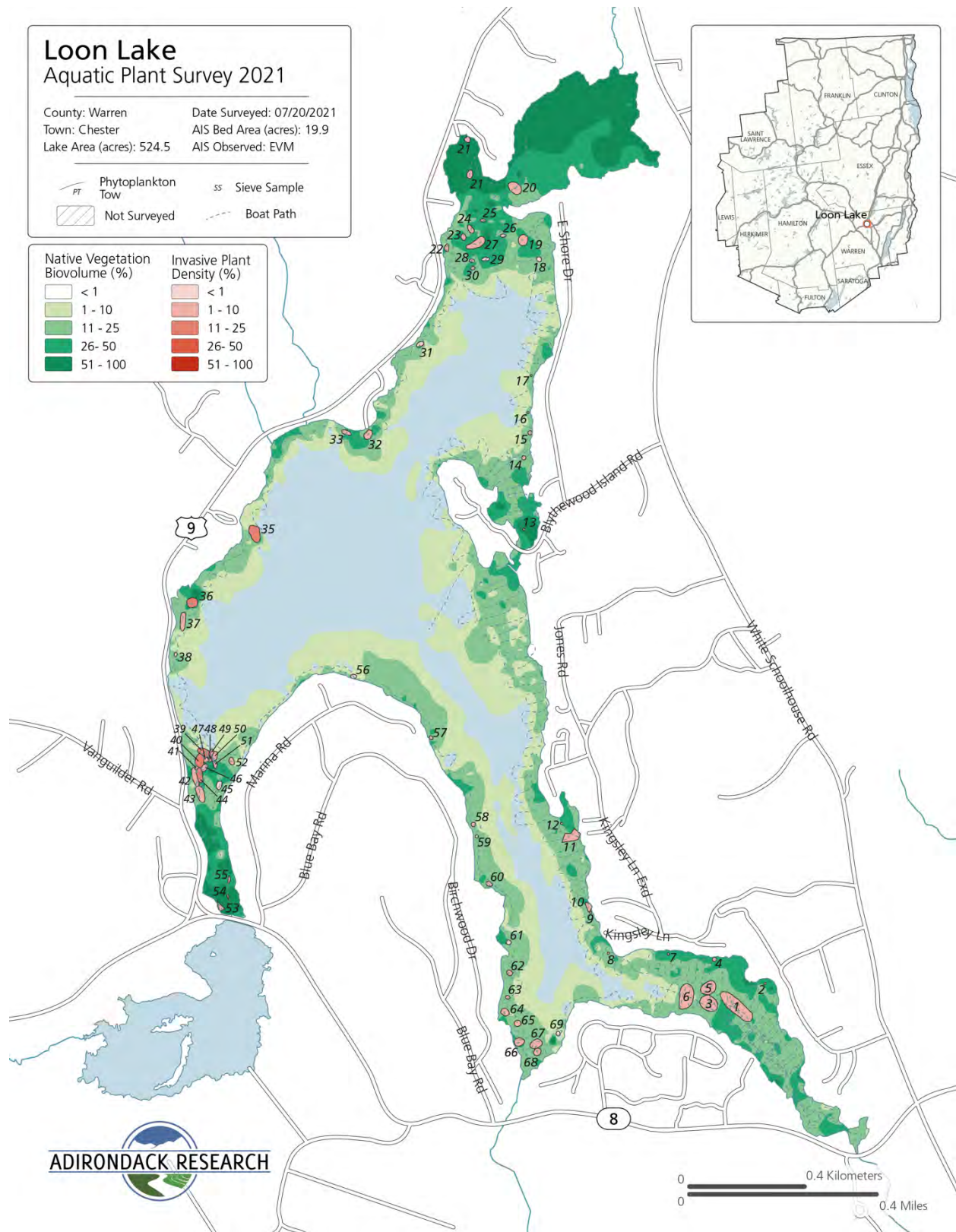
### Native Plant Biota

Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Elodea spp* (elodea), *Sparganium angustifolium* (Narrow-leaf bur-reed), *Potamogeton amplifolius* (large-leaf pondweed), *Brasenia schreberi* (water shield), *Utricularia spp* (bladderwort).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with no invasive zooplankton detected.

| Eurasian Watermilfoil |            |                |         | Eurasian Watermilfoil |            |                |         | Eurasian Watermilfoil |            |                 |         |
|-----------------------|------------|----------------|---------|-----------------------|------------|----------------|---------|-----------------------|------------|-----------------|---------|
| Bed                   | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed                   | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed                   | Size (Ac.) | Size (Sq. Ft.)  | % Cover |
| 1                     | 1.28       | 55828.38       | 1-10    | 25                    | 0.04       | 1624.60        | 1-10    | 50                    | 0.12       | 5228.83         | 1-10    |
| 2                     | 0.01       | 439.97         | 1-10    | 26                    | 0.04       | 1825.43        | <1      | 51                    | 0.07       | 2870.42         | 1-10    |
| 3                     | 0.63       | 27388.67       | 1-10    | 27                    | 0.38       | 16616.30       | 1-10    | 52                    | 0.09       | 4000.97         | 1-10    |
| 4                     | 0.04       | 1759.86        | 1-10    | 28                    | 0.05       | 1960.58        | 1-10    | 53                    | 0.10       | 4329.22         | 1-10    |
| 5                     | 0.46       | 19974.36       | 1-10    | 29                    | 0.07       | 2859.88        | <1      | 54                    | 0.02       | 926.21          | 1-10    |
| 6                     | 0.86       | 37487.43       | 1-10    | 30                    | 0.04       | 1587.20        | 1-10    | 55                    | 0.04       | 1661.23         | 1-10    |
| 7                     | 0.01       | 439.96         | 1-10    | 31                    | 0.09       | 3771.95        | <1      | 56                    | 0.06       | 2473.28         | <1      |
| 8                     | 0.01       | 439.96         | 1-10    | 32                    | 0.17       | 7455.04        | 1-10    | 57                    | 0.03       | 1353.09         | 1-10    |
| 9                     | 0.01       | 439.94         | 1-10    | 33                    | 0.10       | 4381.71        | 1-10    | 58                    | 0.05       | 1983.86         | 1-10    |
| 10                    | 0.13       | 5627.27        | 1-10    | 35                    | 0.42       | 18353.21       | 11-25   | 59                    | 0.02       | 1058.79         | <1      |
| 11                    | 0.41       | 17746.46       | 1-10    | 36                    | 0.26       | 11312.19       | 11-25   | 60                    | 0.07       | 2987.71         | 1-10    |
| 12                    | 0.01       | 439.90         | 1-10    | 37                    | 0.24       | 10636.57       | 1-10    | 61                    | 0.05       | 2277.27         | <1      |
| 13                    | 0.01       | 439.77         | 1-10    | 38                    | 0.03       | 1368.44        | <1      | 62                    | 0.07       | 3137.64         | 1-10    |
| 14                    | 0.04       | 1758.96        | 1-10    | 39                    | 0.22       | 9661.56        | 11-25   | 63                    | 0.04       | 1640.77         | 1-10    |
| 15                    | 0.04       | 1758.91        | 1-10    | 40                    | 0.30       | 13204.11       | 11-25   | 64                    | 0.14       | 5968.29         | 1-10    |
| 16                    | 0.01       | 439.72         | 1-10    | 41                    | 0.03       | 1350.93        | 1-10    | 65                    | 0.09       | 4085.36         | 1-10    |
| 17                    | 0.01       | 439.70         | 1-10    | 42                    | 0.26       | 11532.21       | 1-10    | 66                    | 0.19       | 8441.76         | 1-10    |
| 18                    | 0.05       | 2370.67        | <1      | 43                    | 0.31       | 13439.52       | 1-10    | 67                    | 0.25       | 10909.08        | 1-10    |
| 19                    | 0.24       | 10583.52       | 1-10    | 44                    | 0.21       | 9343.17        | 11-25   | 68                    | 0.13       | 5458.35         | 1-10    |
| 20                    | 0.35       | 15274.28       | 1-10    | 45                    | 0.11       | 4755.87        | <1      | 69                    | 0.04       | 1811.00         | <1      |
| 21                    | 0.19       | 8281.01        | 1-10    | 46                    | 0.10       | 4546.21        | 1-10    | Asian Clam            |            | Spiny Waterflea |         |
| 22                    | 0.07       | 3258.18        | 1-10    | 47                    | 0.09       | 3847.49        | 1-10    |                       |            |                 |         |
| 23                    | 0.07       | 3190.94        | 1-10    | 48                    | 0.04       | 1542.08        | 1-10    | Present (Y/N)         |            | Present (Y/N)   |         |
| 24                    | 0.10       | 4538.94        | 1-10    | 49                    | 0.08       | 3352.36        | 1-10    | No                    |            | No              |         |



## Mason Lake

**Survey Date:** June 23, 2021

**Last Surveyed:** 2018

**Survey Team:** T. Firkins, M. Privee, L. Johnson, T. Murphy

### Lake Description

Mason Lake is 104-acres with 2.9-miles of shoreline. It is located in the town of Lake Pleasant, in Hamilton County, and lies in the Upper Hudson River watershed. The team launched two canoes from a roadside pull off along Rt 30.

### Aquatic Invasive Plant Presence

No invasive plant species were identified.

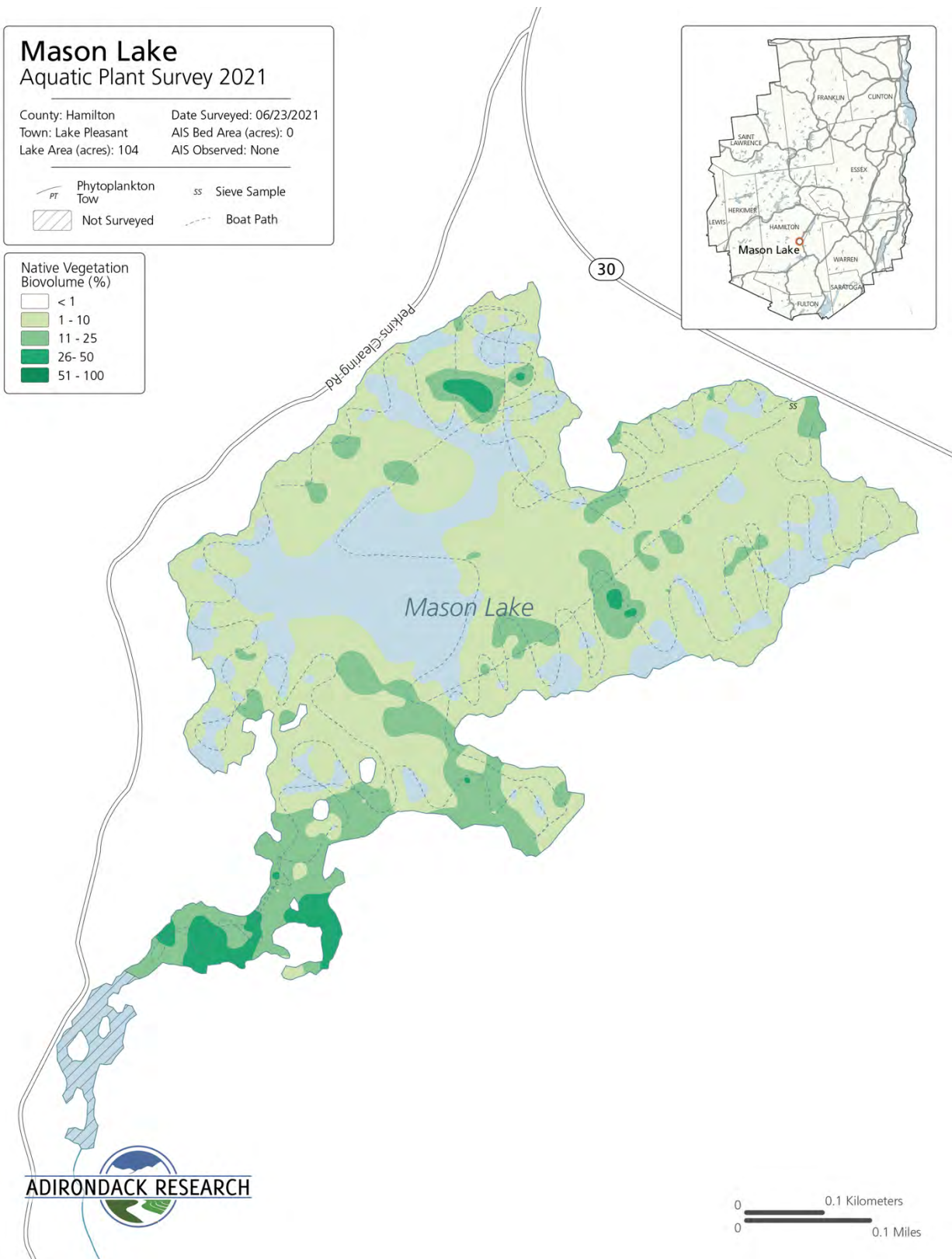
### Native Plant Biota

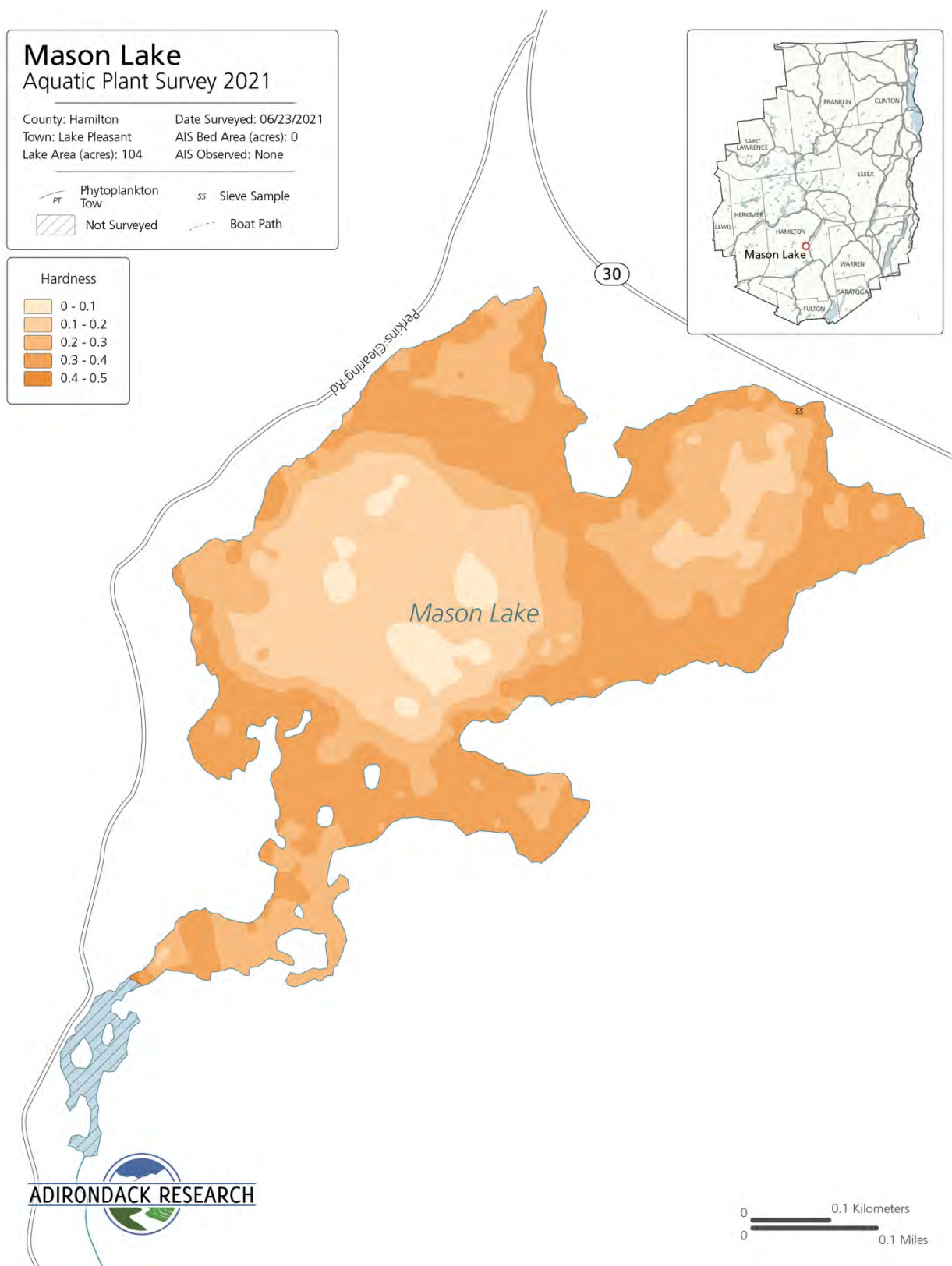
Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Nymphaea alba* (white water lily), *Brasenia schrederi* (watershield), *Sparganium angustifolium* (narrowleaf burr reed), *Potamogeton amplifolius* (largeleaf pondweed), *Utricularia spp.* (bladderwort), *Potamogeton natans* (floatingleaf pondweed), *Iris versicolor* (blue flag iris).

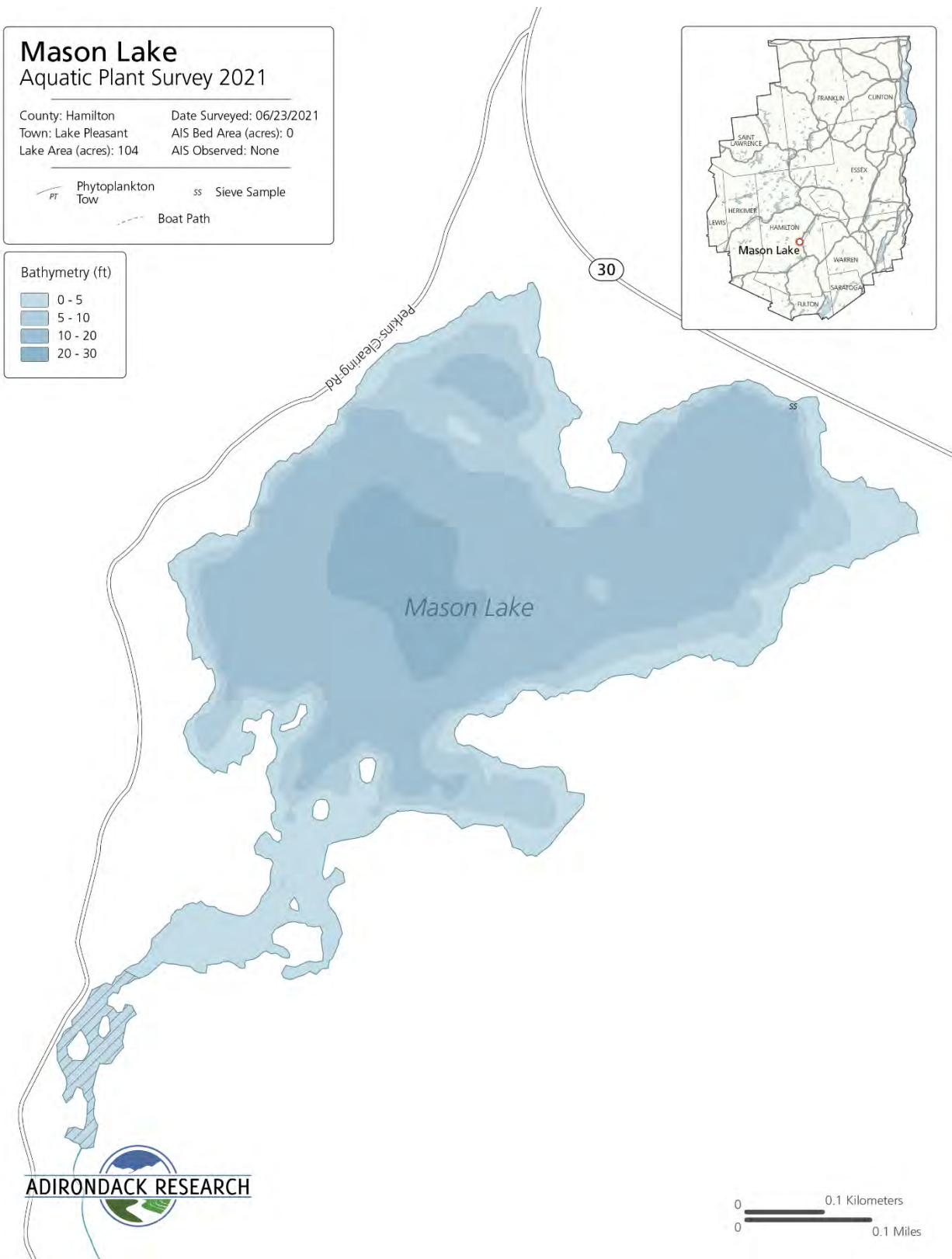
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.









## North Pond

**Survey Date:** August 4, 2021

**Last Surveyed:** August 21, 2018

**Survey Team:** P. Bly, T. Murphy

### Lake Description

North Pond is 27-acres and has 1.7-miles of shoreline. It is found in the town of Hague, Warren County and lies in the Lake Champlain watershed. The team launched a canoe from a roadside launch off Route 8 along the northern shore of the lake.

### Aquatic Invasive Plant Presence

Dense beds of *Myriophyllum spicatum* (Eurasian watermilfoil) were identified throughout the lake. *Myriophyllum spicatum* was detected in North Pond in 2006. Beds ranged from a single plant to dense monocultures.

### Native Plant Biota

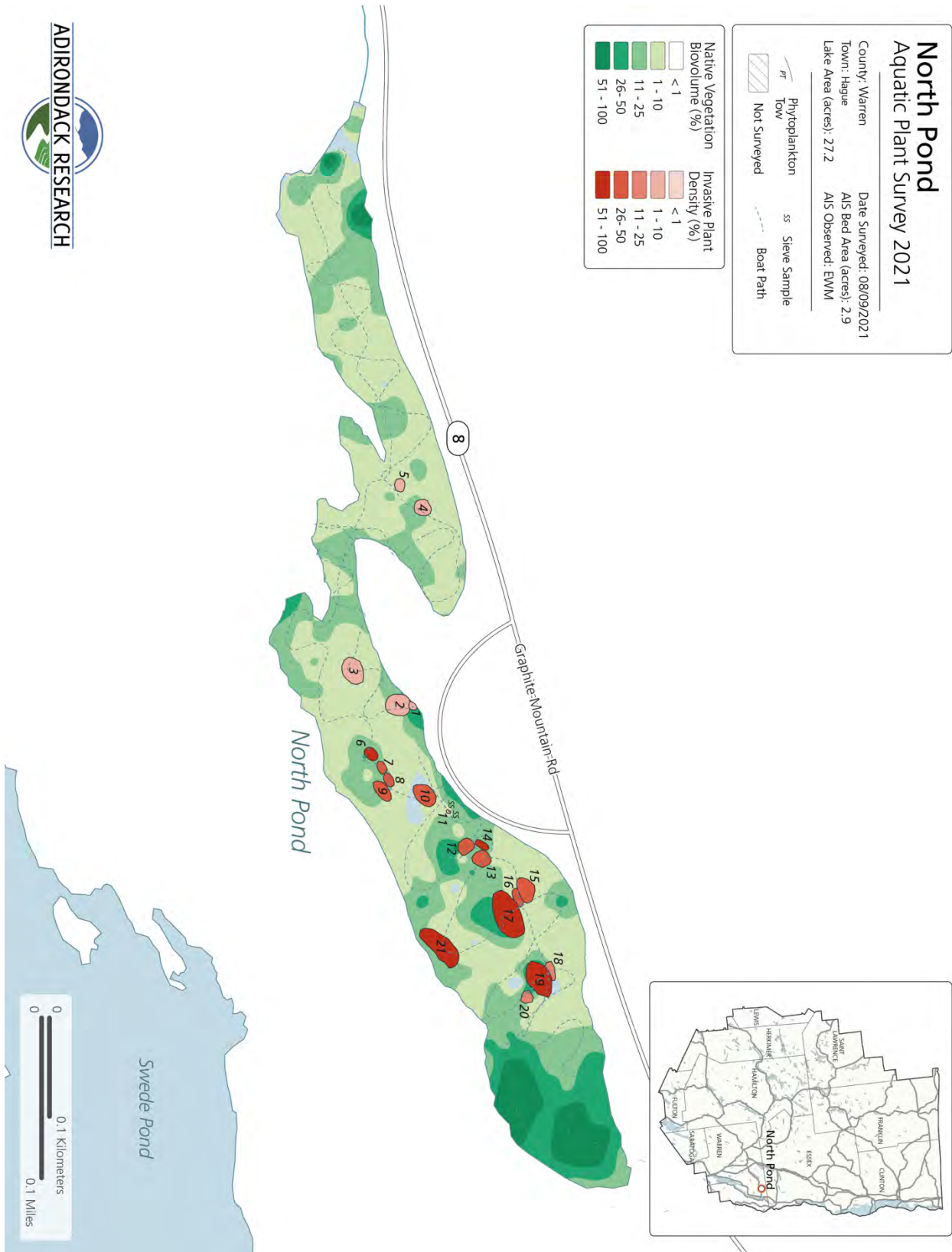
Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Nymphaea alba* (white water lily), *Brasenia schrederi* (water shield), *Nuphar lutea* (spatterdock), *Najas spp.* (native naiad).

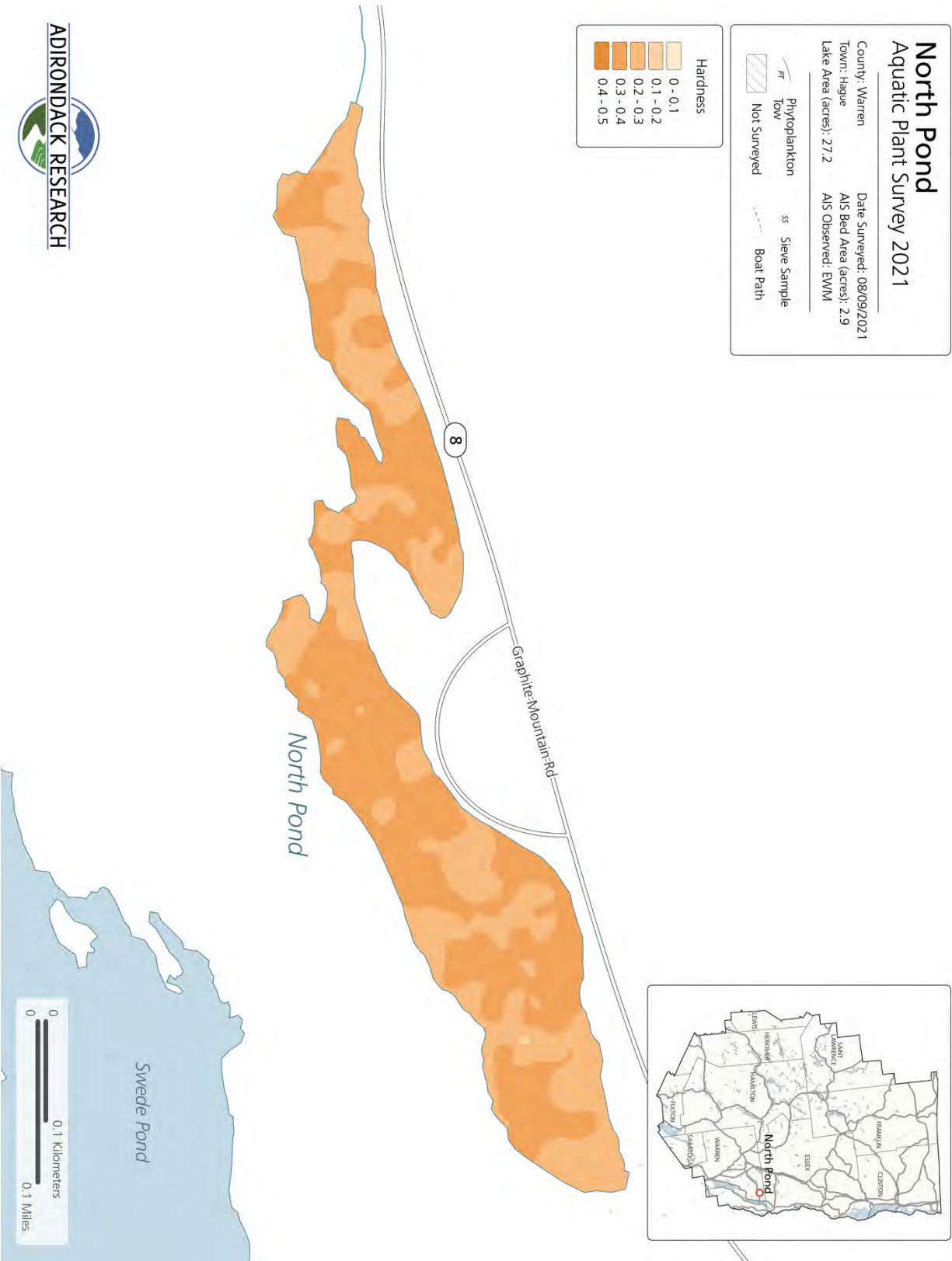
### Aquatic Invasive Animal Presence

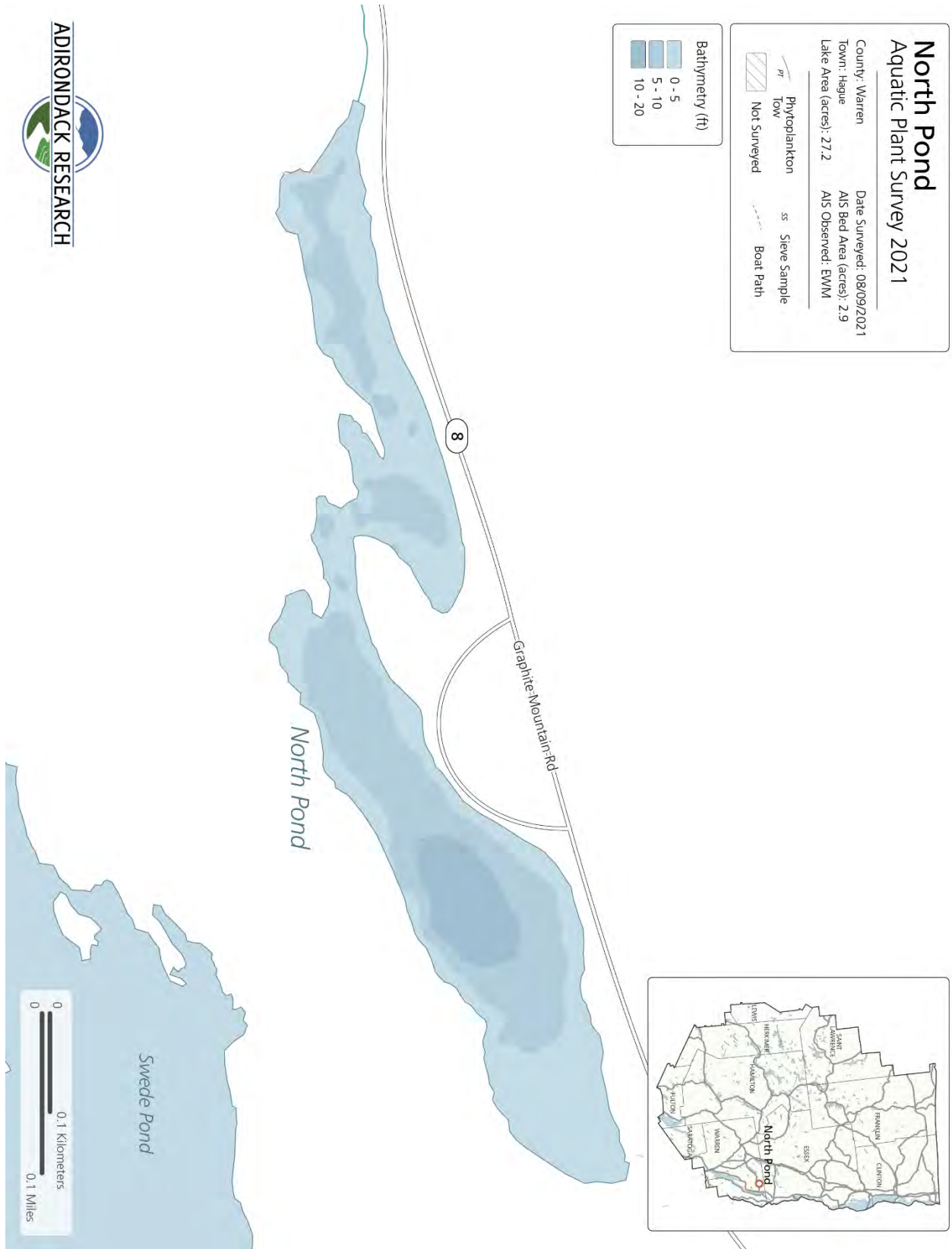
Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.

| Eurasian Watermilfoil |            |                |         |               |            |                 |         |
|-----------------------|------------|----------------|---------|---------------|------------|-----------------|---------|
| Bed                   | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed           | Size (Ac.) | Size (Sq. Ft.)  | % Cover |
| 1                     | 0.01       | 552.37         | 1-10    | 13            | 0.06       | 2588.88         | 26-50   |
| 2                     | 0.11       | 4860.87        | 1-10    | 14            | 0.02       | 964.48          | 51-100  |
| 3                     | 0.11       | 4873.47        | 1-10    | 15            | 0.08       | 3667.03         | 26-50   |
| 4                     | 0.06       | 2407.91        | 1-10    | 16            | 0.03       | 1520.95         | 26-50   |
| 5                     | 0.03       | 1195.18        | 1-10    | 17            | 0.26       | 11432.74        | 51-100  |
| 6                     | 0.03       | 1467.38        | 51-100  | 18            | 0.04       | 1732.77         | 11-25   |
| 7                     | 0.02       | 1004.17        | 26-50   | 19            | 0.17       | 7290.52         | 51-100  |
| 8                     | 0.03       | 1158.56        | 26-50   | 20            | 0.03       | 1274.91         | 11-25   |
| 9                     | 0.06       | 2509.38        | 26-50   | 21            | 0.20       | 8639.41         | 51-100  |
| 10                    | 0.09       | 4009.70        | 26-50   | Asian Clam    |            | Spiny Waterflea |         |
| 11                    | 0.00       | 135.71         | 1-10    | Present (Y/N) |            | Present (Y/N)   |         |
| 12                    | 0.05       | 2233.64        | 26-50   | No            |            | N/A             |         |









## Northville Lake

**Survey Date:** June 30, 2021

**Last Surveyed:** No previously reported surveys

**Survey Team:** M. Privee, J. Young

### Lake Description

Northville lake is 62-acres and has 2.5-miles of shoreline. It is located in the village of Northville, in Fulton County and lies within the Upper Hudson River watershed. The team launched a canoe at a public boat launch, located at the southern end of the lake. Northville Lake is connected to Great Sacandaga Lake.

### Aquatic Invasive Plant Presence

Scattered beds of *Potamogeton crispus* (curly-leaf pondweed) were detected at the northern end of the lake and along the southwestern shore.

### Native Plant Biota

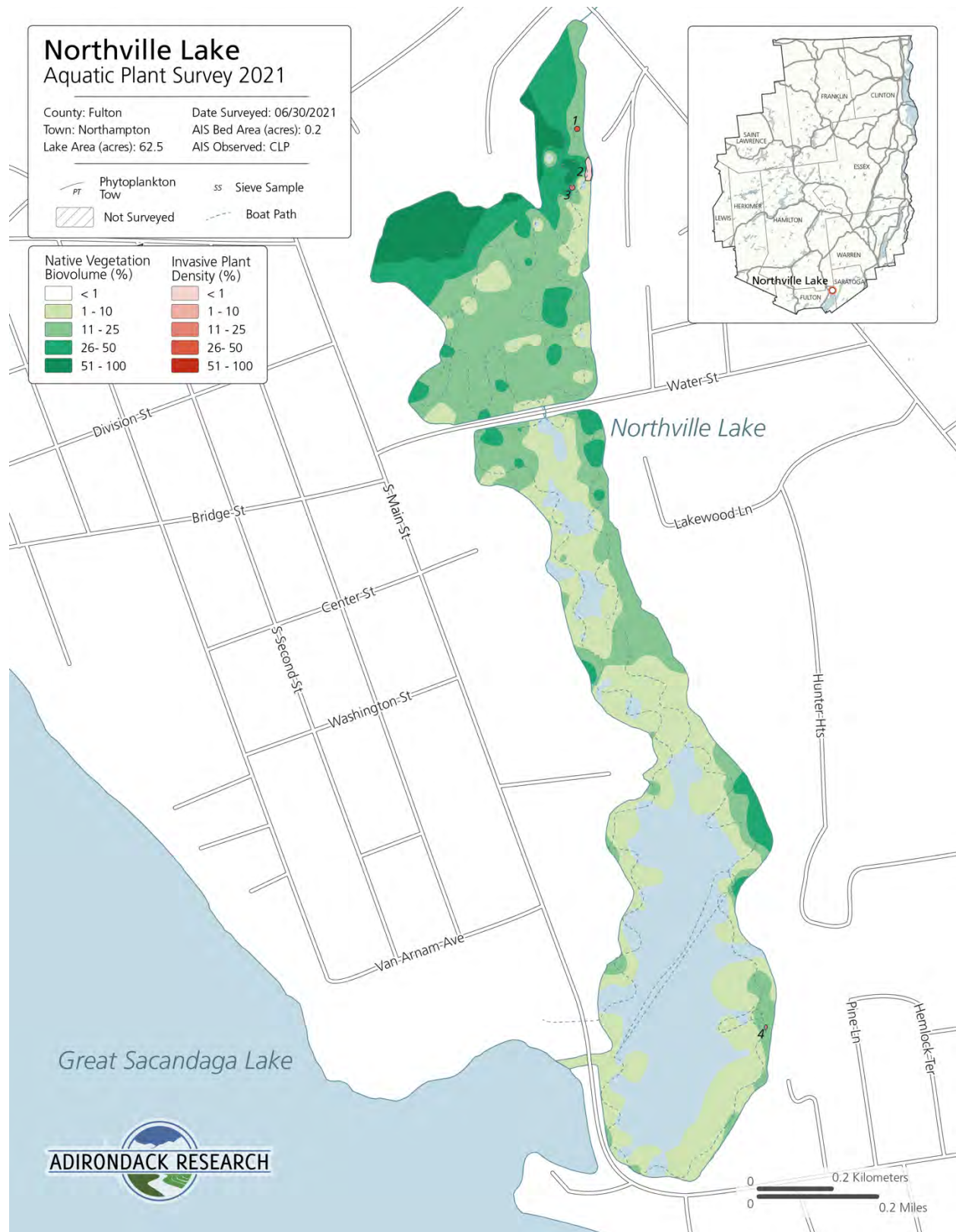
Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native plants were found: *Sparganium angustifolium* (narrow-leaf burr reed), *Utricularia macrorhiza* (common bladderwort), *Brasenia schreberi* (water shield), *Nuphar variegata* (spatterdock), *Sagittaria graminea* (grassy arrowhead), *Sagittaria latifolia* (broad-leaf arrowhead), *Potamogeton natans* (floating-leaf pondweed), *Potamogeton amplifolius* (large leaf pondweed), *Typha* spp. (cattail spp.), *Lemna minor* (common duckweed), *Zostera marina* (common eelgrass).

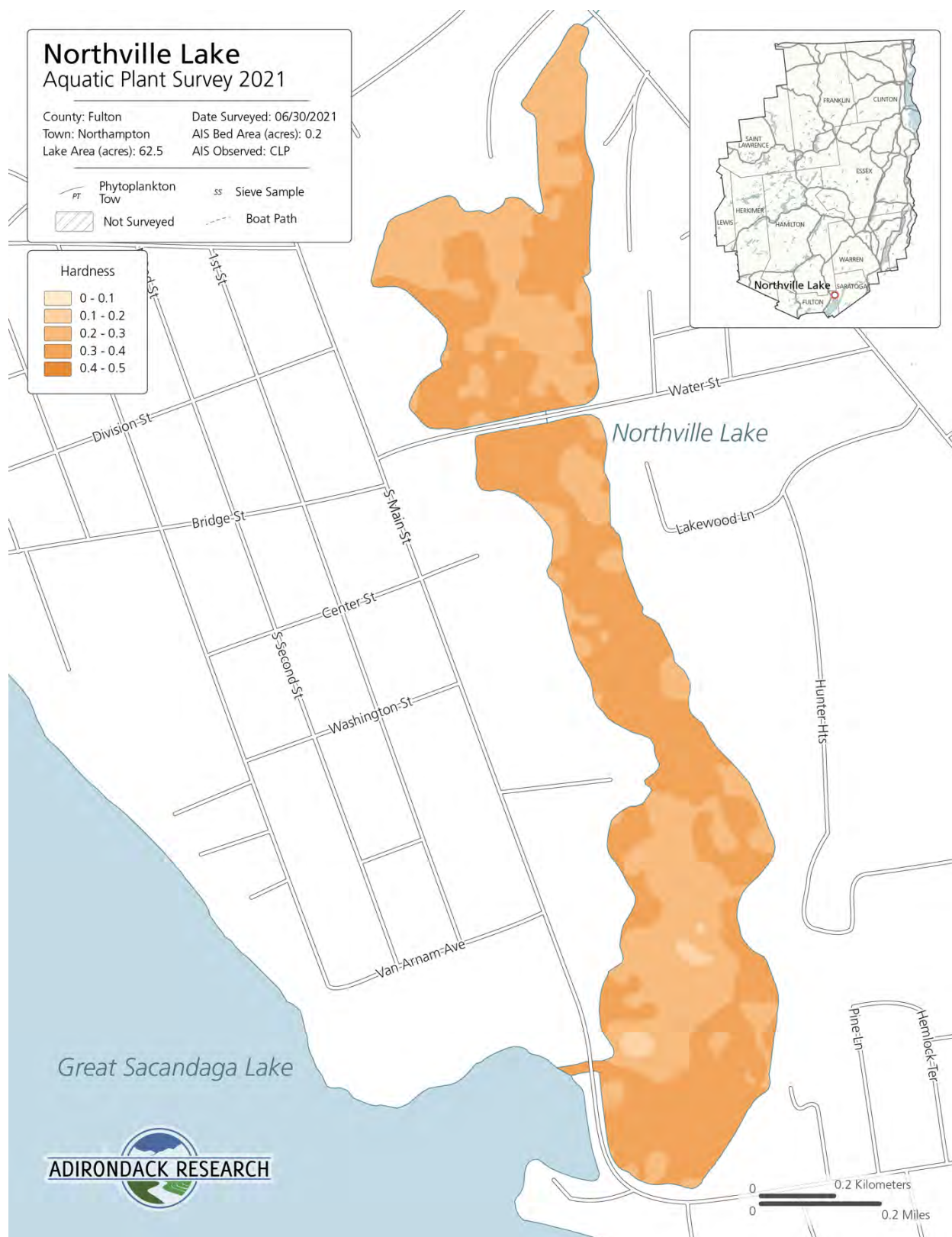
### Aquatic Invasive Animal Presence

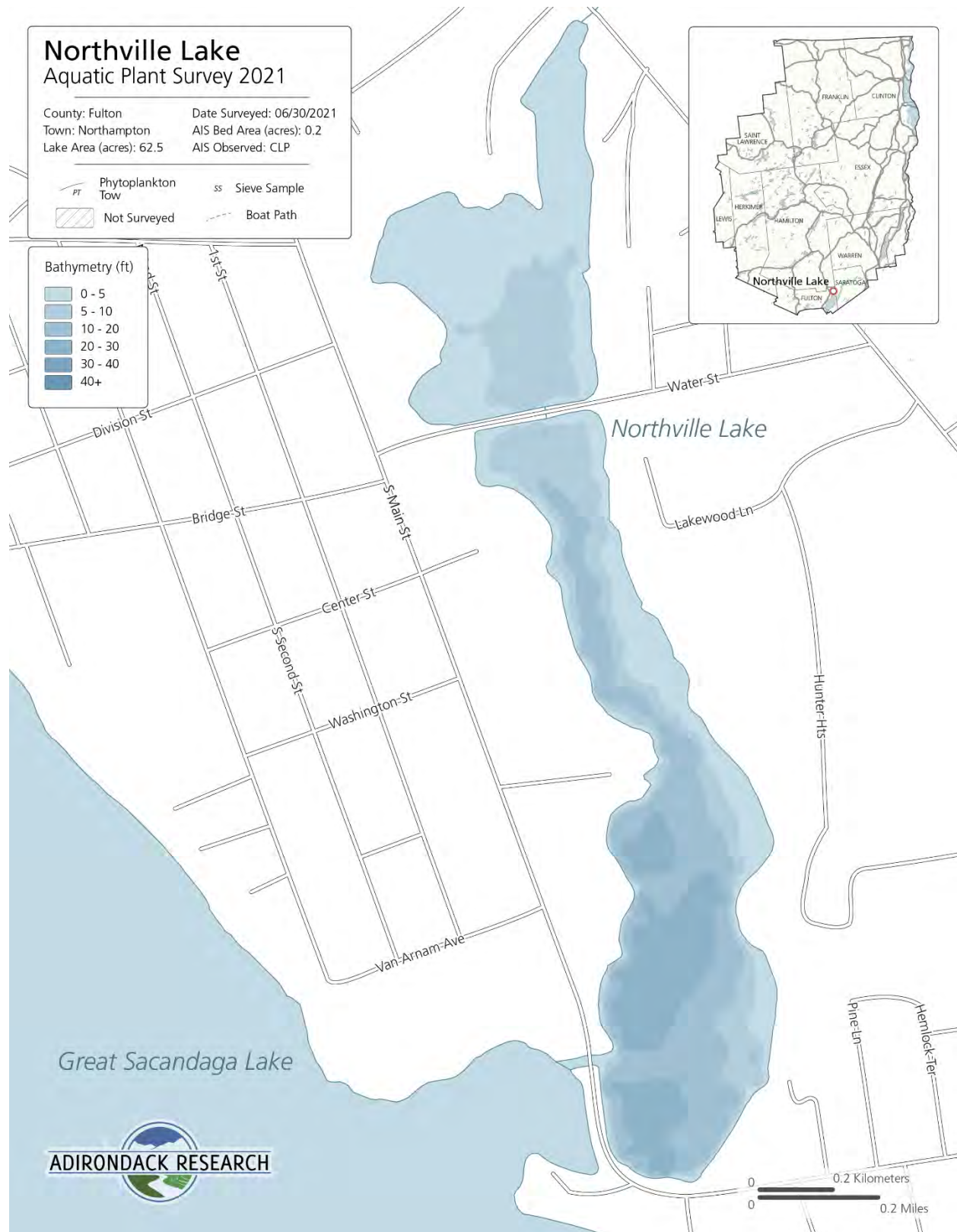
Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.

| Curly-leaf Pondweed |            |                 |         |
|---------------------|------------|-----------------|---------|
| Bed                 | Size (Ac.) | Size (Sq. Ft.)  | % Cover |
| 1                   | 0.01       | 446.33          | 26-50   |
| 2                   | 0.07       | 2871.14         | NR      |
| 3                   | 0.01       | 446.34          | 11-25   |
| 4                   | 0.00       | 59.88           | 11-25   |
| Asian Clam          |            | Spiny Waterflea |         |
| Present (Y/N)       |            | Present (Y/N)   |         |
| No                  |            | N/A             |         |











## Oliver Pond

Survey Date: August 9, 2021

Last Surveyed: June 27, 2018

Survey Team: T. Firkins, L. Johnson

### Lake Description

Oliver Pond is 45-acres it has 1.5-miles of shoreline. It is found in the town of Schroon, Essex County and lies in the Upper Hudson River watershed. The team launched at the hand launch off of County Road 24 (Hoffman Road).

### Invasive Species Presence

No aquatic invasive plants were detected.

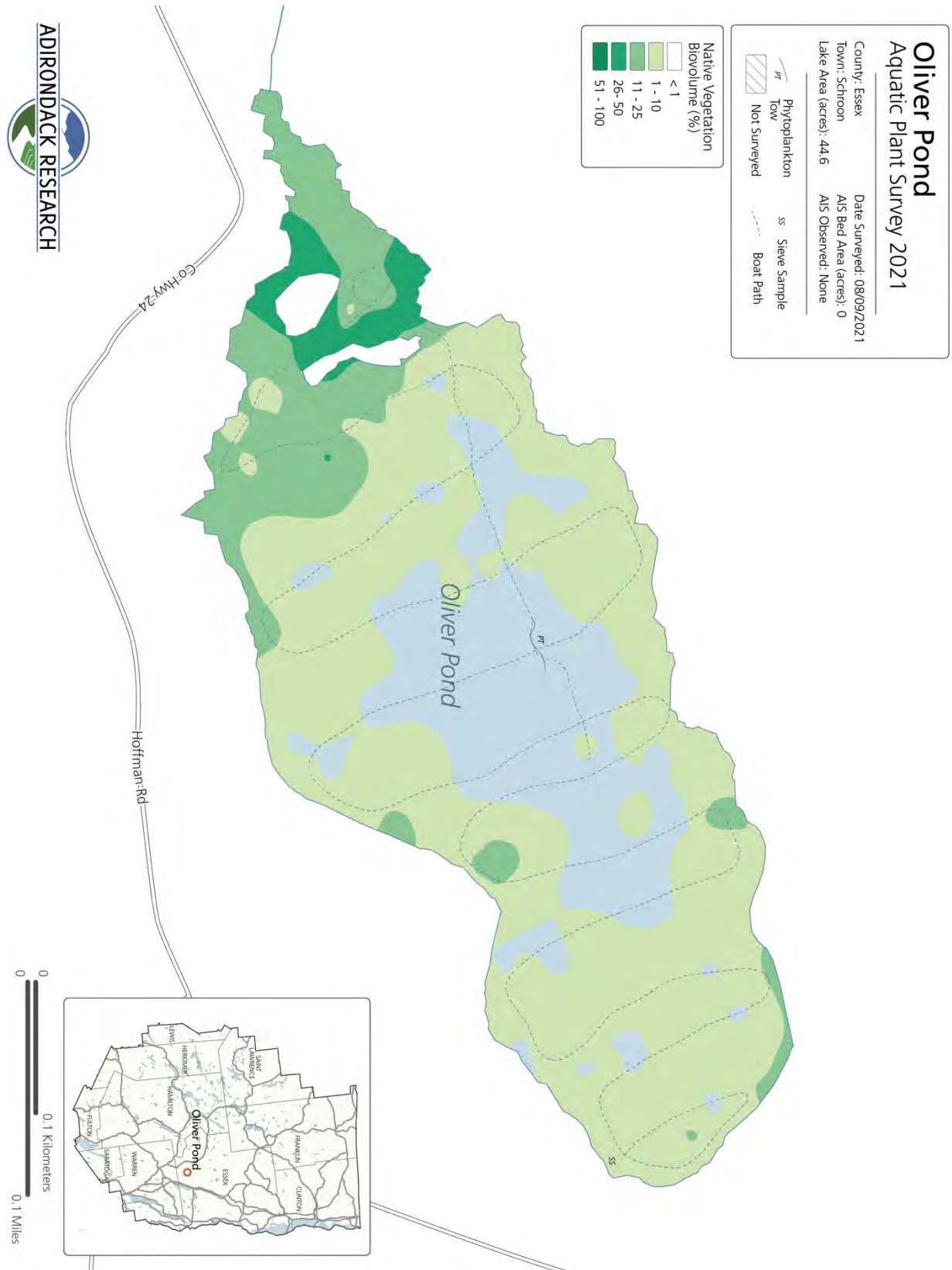
### Native Biota

Comprehensive surveys of all native plants found within the lake were not prioritized in 2021. Oliver Pond is a wild body of water with an almost completely undeveloped shoreline. The native plants found in the pond include *Brasenia schreberi* (watershield), *Nymphaea odorata* (white water lily), and *Nuphar adventa* (spatterdock) *Utricularia purpurea* (large purple bladderwort) *Eriocaulon aquaticum* (pipewort), *Pontederia cordata* (pickerel weed), *Potamogeton natans* (Floating leaf pondweed).

### Animal Aquatic Invasive Species

Sieves were also taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Plankton tows were done and no invasive zooplankton were detected.

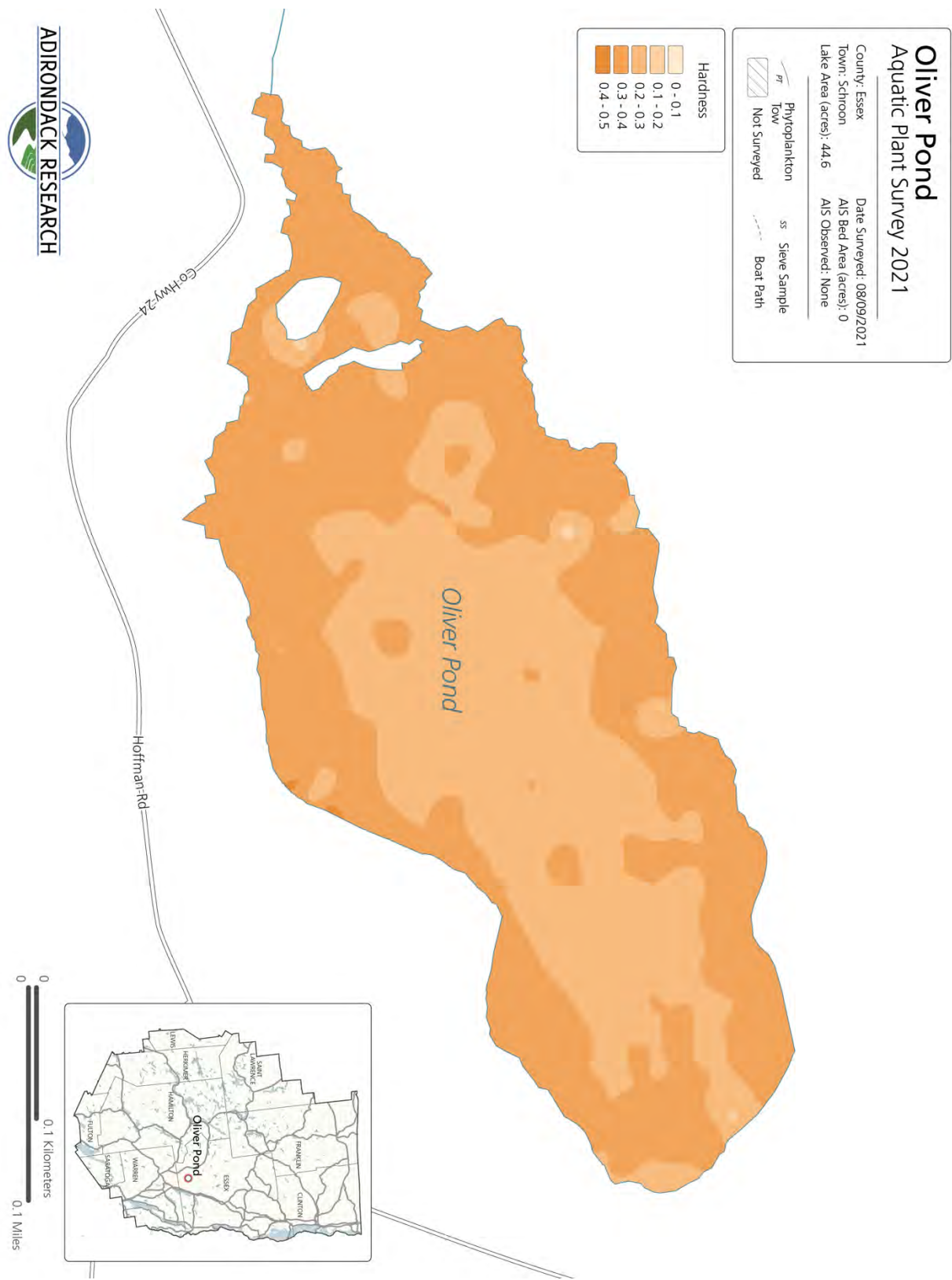


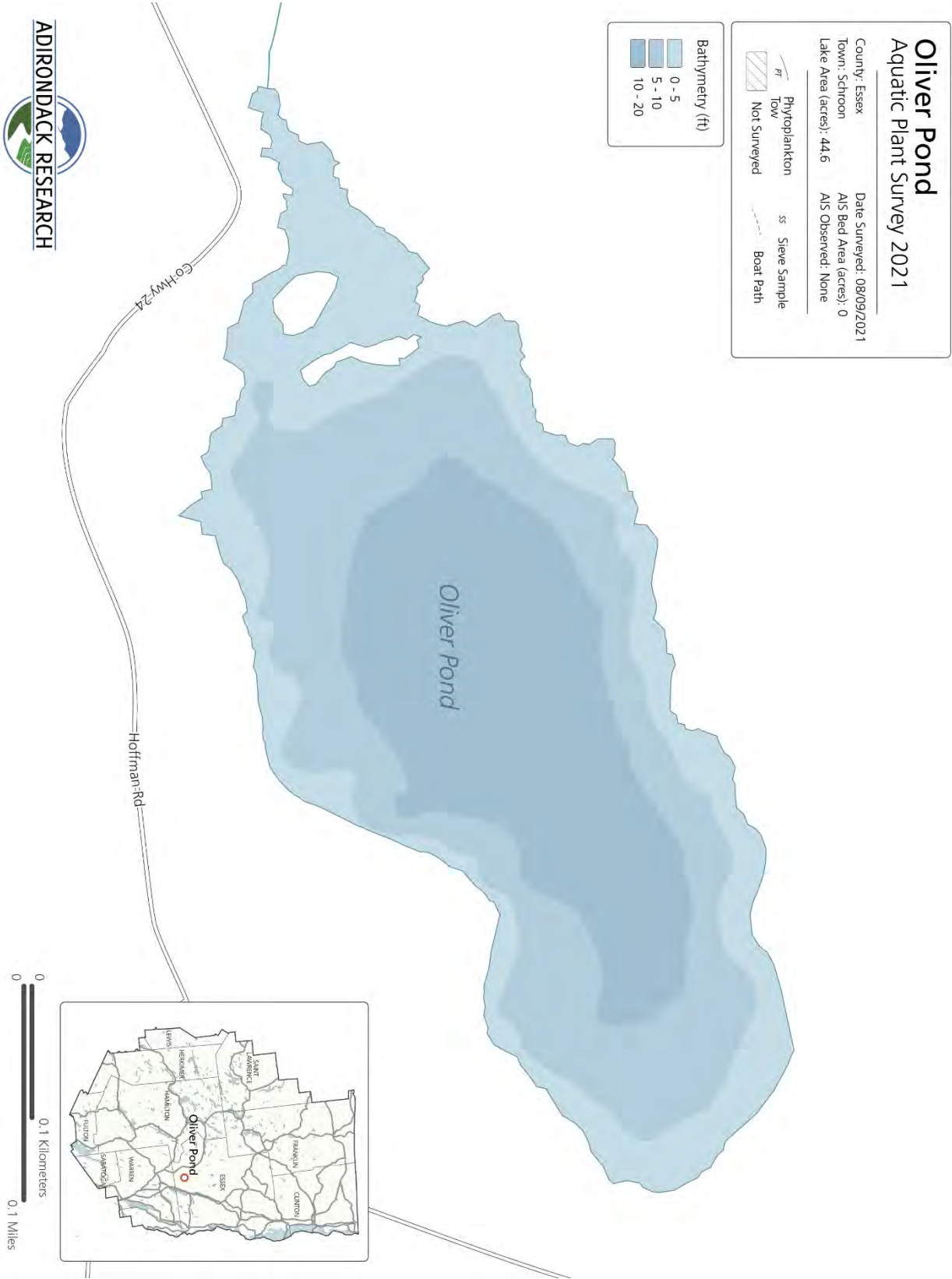


0.1 Kilometers

0.1 Miles

0





## Pack Forest Lake

Survey Date: June 16, 2021

Last Surveyed: 2015

Survey Team: P. Bly, M. Privee, L. Johnson, J. Young

### Lake Description

Pack Forest Lake is 73-acres and has 3.2-miles of shoreline. It is in the town of Warrensburg, in Warren County and lies in the Upper Hudson River watershed. The team launched two canoes from a private launch on the eastern shore of the lake.

### Aquatic Invasive Plant Presence

No invasives were detected.

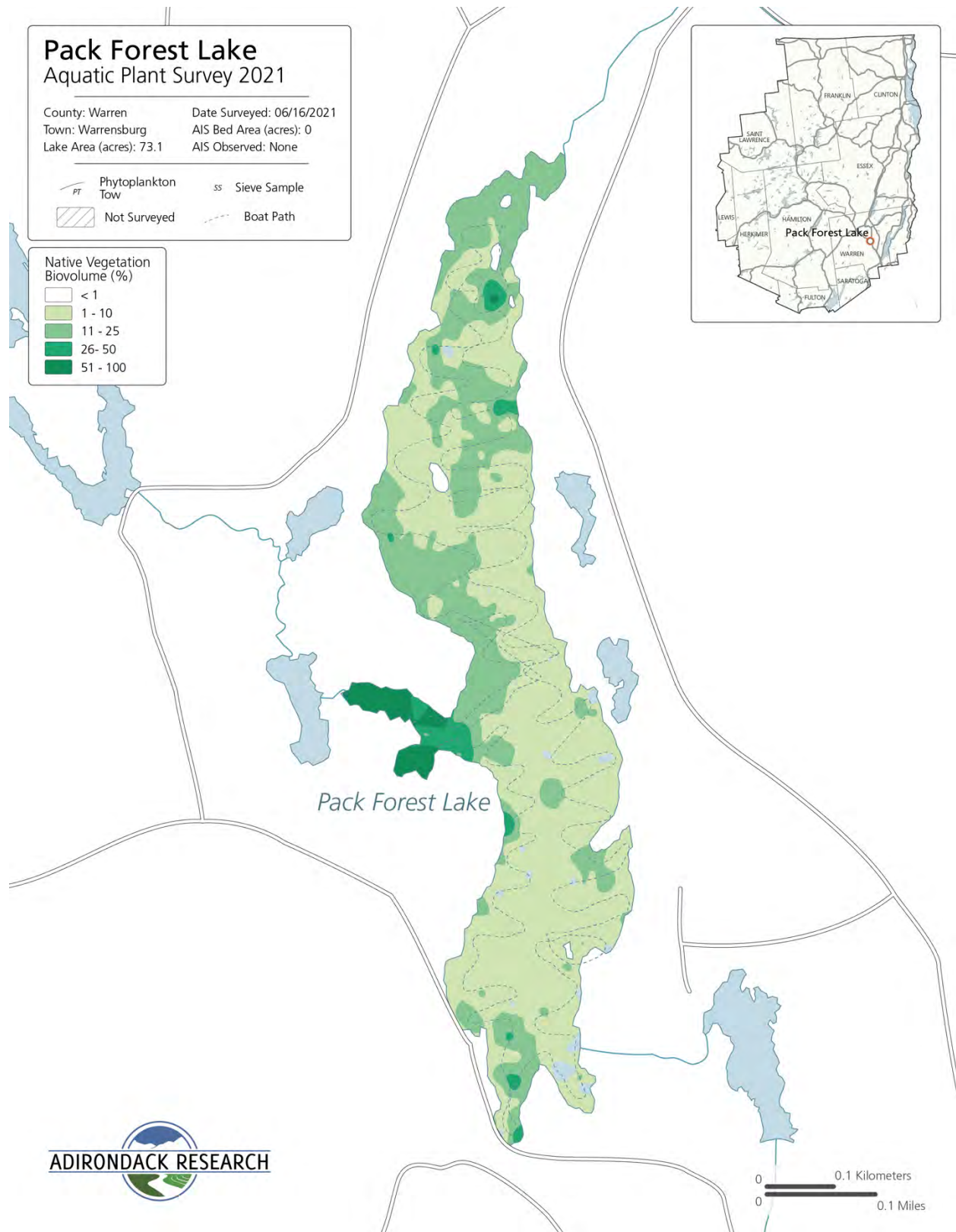
### Native Plant Biota

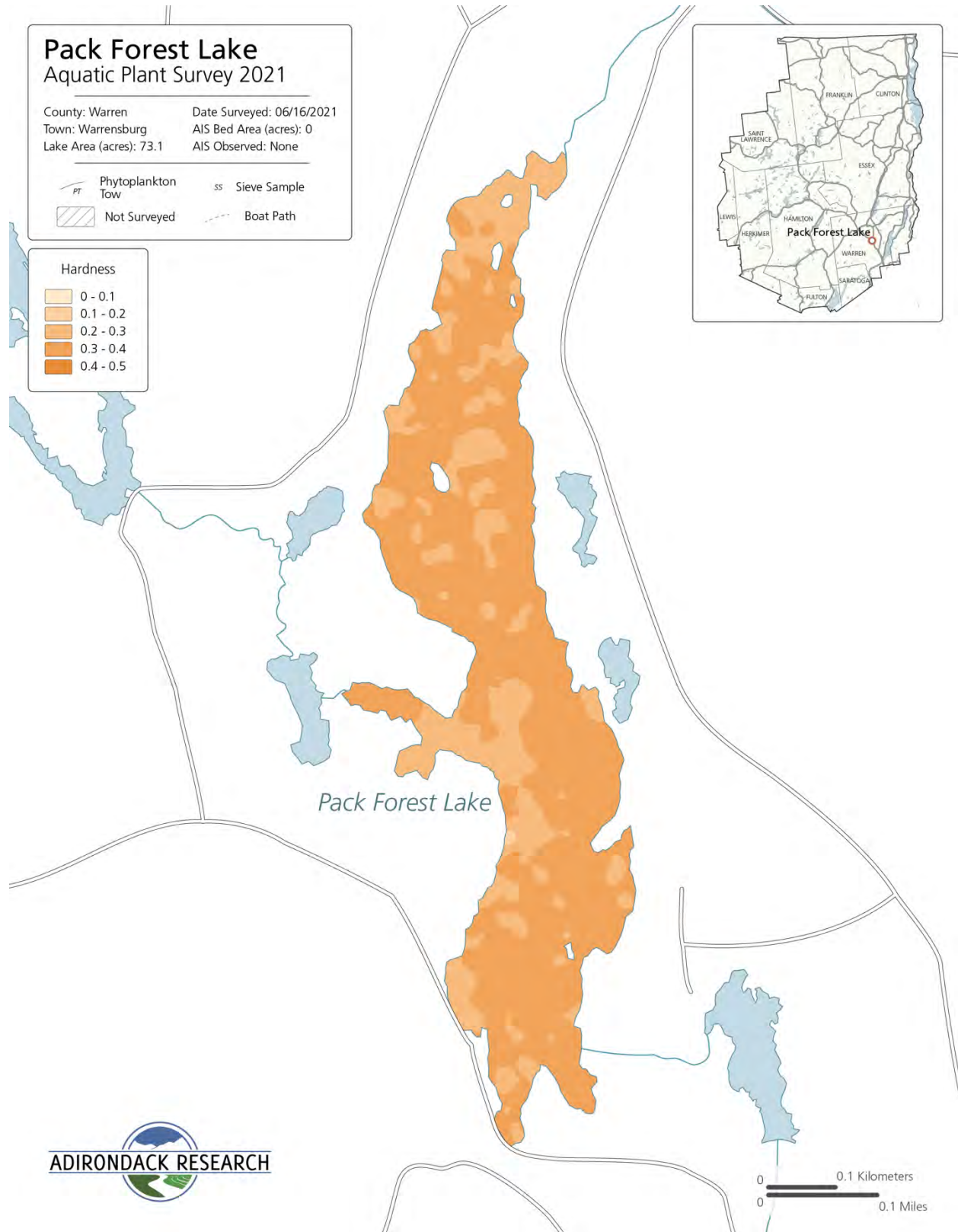
Comprehensive surveys of all native plants found within the reservoir were not prioritized in 2020 as this data had previously been collected in 2017. The following native plants were found: *Pontederia cordata* (pickerel weed), *Nymphaea odorata* (white waterlily), *Brasenia schreberi* (water shield), *Nuphar variegata* (spatterdock), *Utricularia vulgaris* (common bladderwort), *Sparganium angustifolium* (narrow-leaf burr reed), *Dulichium arundinaceum* (three-way sedge), *Iris versicolor* (blue flag iris), *Potamogeton amplifolius* (large leaf pondweed), *Potamogeton natans* (floating leaf pondweed), *Zostera marina* (common eelgrass), *Typha* spp. (cattail spp.), *Ceratophyllum demersum* (coontail).

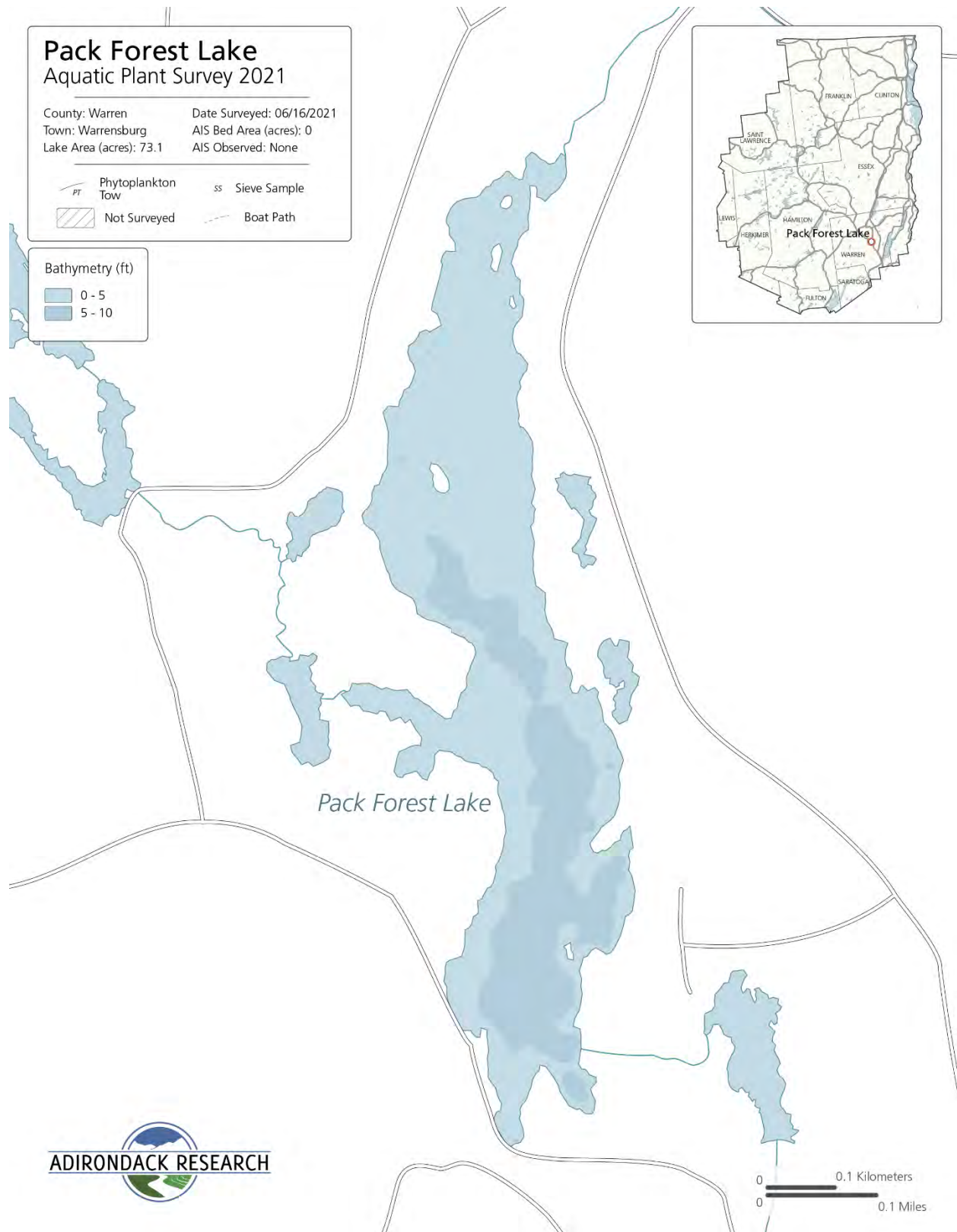
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.









## Paradox Lake

**Survey Date:** July 19 and 20, 2021

**Last Surveyed:** July 11, 2018

**Survey Team:** L. Johnson, M. Privee, B. Greene

### Lake Description

Paradox Lake is 935-acres with 14.3 miles of shoreline. It is located in the town of Schroon, Essex County, and lies in the Lake Champlain watershed. The team launched a motorboat from the Paradox Lake Public Campground launch. The weather was overcast and warm. In speaking with the Paradox Lake Association, it was found that watermilfoil removal was ongoing, and divers were spotted on site during the survey.

### Aquatic Invasive Plant Presence

Scattered beds of *Myriophyllum spicatum* (Eurasian watermilfoil) were located throughout the lake. *Lythrum salicaria* (purple loosestrife) was also located in isolated clumps along the shore.

### Native Plant Biota

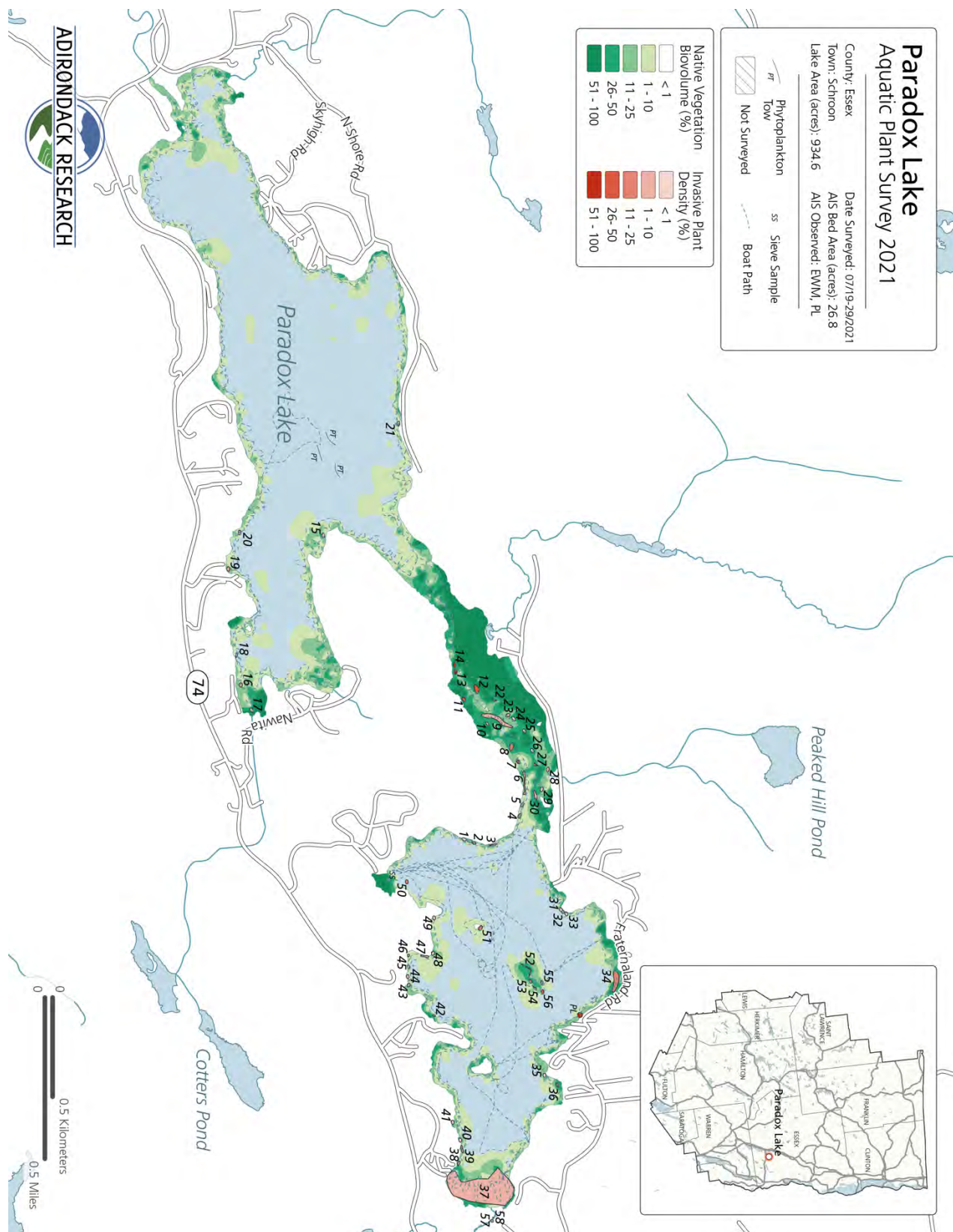
Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native species were found: *Potamogeton pusillus* (slender pondweed), *Potamogeton robbinsii* (Robbin's pondweed), *Bidens beckii* (water marigold), *Typha* spp. (cat tail spp.), *Potamogeton perfoliatus* (clasping-leaf pondweed), *Eriocaulon* spp. (pipewort), *Nymphaea odorata* (white water lily), *Dulichium arundinaceum* (three-way sedge), *Sparganium angustifolium* (narrow-leaf burr reed), *Ceratophyllum demersum* (coontail), *Nitella* spp. (nitella), *Elodea* spp. (elodea), *Nophar advena* (spatterdock), *Brasenia schreberi* (watershield), *Potamogeton corodatus* (pickerel-weed), *Utricularia* spp. (bladderwort), *Potamogeton amplifolius* (large-leaf pondweed), and *Potamogeton natans* (floating-leaf pondweed).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three zooplankton tows were performed, and no invasive zooplankton were detected.



| Eurasian Watermilfoil |            |                |         | Eurasian Watermilfoil |            |                 |         | Purple Loosestrife |            |                |         |
|-----------------------|------------|----------------|---------|-----------------------|------------|-----------------|---------|--------------------|------------|----------------|---------|
| Bed                   | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed                   | Size (Ac.) | Size (Sq. Ft.)  | % Cover | Bed                | Size (Ac.) | Size (Sq. Ft.) | % Cover |
| 2                     | 0.01       | 579.69         | 26-50   | 34                    | 0.60       | 26134.04        | 11-25   | 1                  | 0.01       | 436.73         | NR      |
| 3                     | 0.03       | 1500.31        | 11-25   | 35                    | 0.01       | 436.67          | NR      | 15                 | 0.01       | 436.82         | 1-10    |
| 4                     | 0.01       | 462.10         | 1-10    | 36                    | 0.02       | 995.36          | 26-50   | 19                 | 0.01       | 436.89         | 1-10    |
| 5                     | 0.03       | 1114.03        | 1-10    | 37                    | 10.72      | 466909.07       | 1-10    | 31                 | 0.01       | 436.66         | NR      |
| 6                     | 0.21       | 9195.54        | 1-10    | 38                    | 0.05       | 2072.79         | 1-10    | 32                 | 0.01       | 436.66         | NR      |
| 7                     | 0.01       | 319.69         | 51-100  | 39                    | 0.08       | 3470.05         | 1-10    | 33                 | 0.01       | 436.66         | NR      |
| 8                     | 0.15       | 6597.69        | 11-25   | 42                    | 0.02       | 984.15          | 11-25   | 40                 | 0.01       | 436.74         | <1      |
| 9                     | 0.78       | 33931.77       | 1-10    | 43                    | 0.01       | 436.77          | <1      | 41                 | 0.01       | 436.74         | <1      |
| 10                    | 0.04       | 1843.58        | 1-10    | 44                    | 0.01       | 436.77          | 1-10    | 58                 | 0.04       | 1746.86        | 1-10    |
| 11                    | 0.01       | 640.59         | 26-50   | 45                    | 0.04       | 1935.05         | 1-10    |                    |            |                |         |
| 12                    | 0.21       | 8954.00        | 26-50   | 46                    | 0.03       | 1158.29         | 1-10    |                    |            |                |         |
| 13                    | 0.00       | 33.89          | 51-100  | 47                    | 0.07       | 3224.48         | 1-10    |                    |            |                |         |
| 14                    | 0.00       | 76.66          | 51-100  | 48                    | 0.01       | 438.51          | NR      |                    |            |                |         |
| 16                    | 0.01       | 532.92         | 1-10    | 49                    | 0.01       | 436.75          | <1      |                    |            |                |         |
| 17                    | 0.01       | 436.87         | <1      | 50                    | 0.01       | 306.04          | 11-25   |                    |            |                |         |
| 18                    | 0.04       | 1897.20        | 1-10    | 51                    | 0.09       | 3725.15         | 11-25   |                    |            |                |         |
| 20                    | 0.01       | 436.88         | 1-10    | 52                    | 0.06       | 2697.81         | 1-10    |                    |            |                |         |
| 21                    | 0.01       | 436.77         | NR      | 53                    | 0.01       | 627.68          | 11-25   |                    |            |                |         |
| 22                    | 0.03       | 1133.07        | 11-25   | 54                    | 0.02       | 945.34          | 26-50   |                    |            |                |         |
| 23                    | 0.07       | 3246.45        | 1-10    | 55                    | 0.02       | 1064.94         | 11-25   |                    |            |                |         |
| 24                    | 0.01       | 436.69         | NR      | 56                    | 0.00       | 112.09          | 26-50   |                    |            |                |         |
| 25                    | 0.01       | 436.68         | NR      | 57                    | 0.01       | 436.71          | <1      |                    |            |                |         |
| 26                    | 0.01       | 436.68         | NR      |                       |            |                 |         |                    |            |                |         |
| 27                    | 0.03       | 1510.46        | 1-10    | Asian Clam            |            | Spiny Waterflea |         |                    |            |                |         |
| 28                    | 0.01       | 470.42         | 1-10    | Present (Y/N)         |            | Present (Y/N)   |         |                    |            |                |         |
| 29                    | 0.01       | 436.67         | NR      | No                    |            | No              |         |                    |            |                |         |
| 30                    | 0.12       | 5200.78        | 1-10    |                       |            |                 |         |                    |            |                |         |



## Peck Lake

**Survey Date:** June 29, 2021

**Last Surveyed:** 2015

**Survey Team:** P. Bly M. Privee L. Johnson T. Murphy

### Lake Description

Peck Lake is 1417-acres and has 12.9-miles of shoreline. It is located in the town of Bleecker, Fulton County and lies in the Mohawk River watershed. The team launched a motorboat at the private launch, located at the northern end of the lake.

### Aquatic Invasive Plant Presence

Dense beds of *Microphyll spicatum* (Eurasian watermilfoil) were found in the southern end of the lake and central areas in small bays. Beds of *Myriophyllum heterophyllum* (variable-leaf milfoil) were also found in western and southwestern bays.

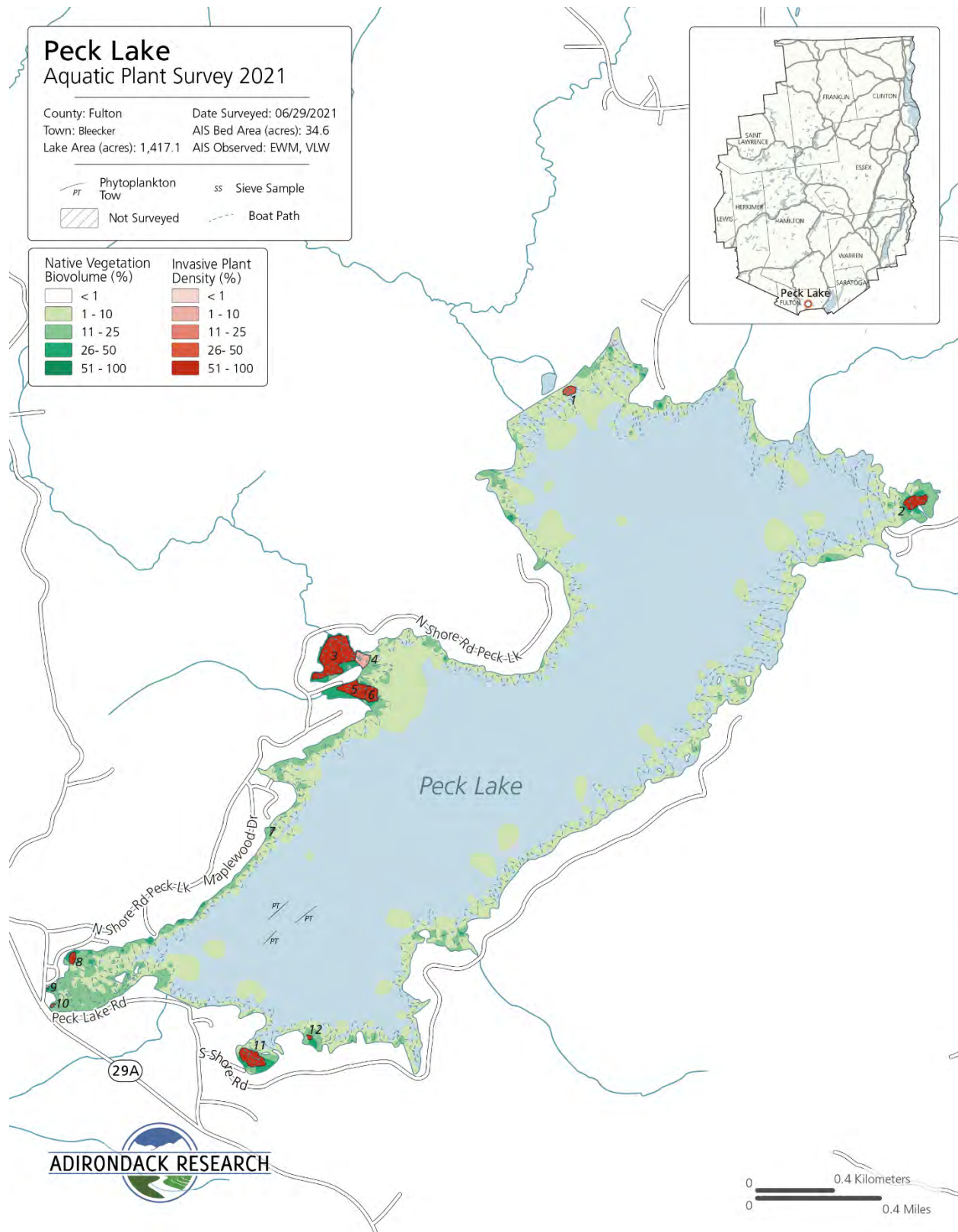
### Native Plant Biota

Comprehensive surveys were not prioritized in 2021, as invasive species were the primary focus of the surveys. The following native plants were found: *Brasenia schreberi* (watershield), *Potamogeton amplifolius* (large-leaf pondweed), *Potamogeton natans* (floating-leaf pondweed), *Potamogeton zosteriformes* (narrow-leaf pondweed), *Nophar advena* (spatterdock), *Utricularia spp.* (bladderwort), *Potamogeton perfoliatus* (clasping-leaf pondweed), *Najas spp* (naiad), *Nymphaea alba* (white water-lily), and *Potamogeton pusillus* (slender pondweed).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with *Bythotrephes longimanus* (spiny waterflea) were detected.

| Variable Leaf Watermilfoil |            |                |         | Eurasian Watermilfoil |            |                 |         |
|----------------------------|------------|----------------|---------|-----------------------|------------|-----------------|---------|
| Bed                        | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed                   | Size (Ac.) | Size (Sq. Ft.)  | % Cover |
| 3                          | 8.35       | 363885.27      | 51-100  | 1                     | 0.6406795  | 27908.00        | 26-50   |
| 4                          | 1.38       | 60283.25       | 1-10    | 2                     | 1.6727141  | 72863.43        | 51-100  |
| 5                          | 2.36       | 102692.04      | 51-100  | 11                    | 2.1144422  | 92105.10        | 51-100  |
| 6                          | 1.12       | 48886.24       | 51-100  | 12                    | 0.1440373  | 6274.27         | 51-100  |
| 7                          | 0.05       | 2006.48        | 11-25   | Asian Clam            |            | Spiny Waterflea |         |
| 8                          | 0.45       | 19458.79       | 51-100  |                       |            |                 |         |
| 9                          | 0.03       | 1101.25        | 26-50   |                       |            |                 |         |
| 10                         | 0.08       | 3404.44        | 26-50   | Present (Y/N)         |            | Present (Y/N)   |         |
|                            |            |                |         | No                    |            | Yes             |         |





## Putnam Pond

Survey Date: August 31, 2021

Last Surveyed: July 6 and 9, 2018

Survey Team: T. Firkins, P. Bly

### Lake Description

Putnam Pond is 283-acres it has 6.5-miles of shoreline. It is located in the town of Ticonderoga, Essex County and lies in the Lake Champlain watershed. The team launched at the Department of Environmental Conservation's Putnam Pond campground.

### Aquatic Invasive Plant Presence

A total of 38 invasive *Myriophyllum spicatum* (Eurasian watermilfoil) plant beds were mapped, with the heaviest concentrations at the southern and northern ends of the pond.

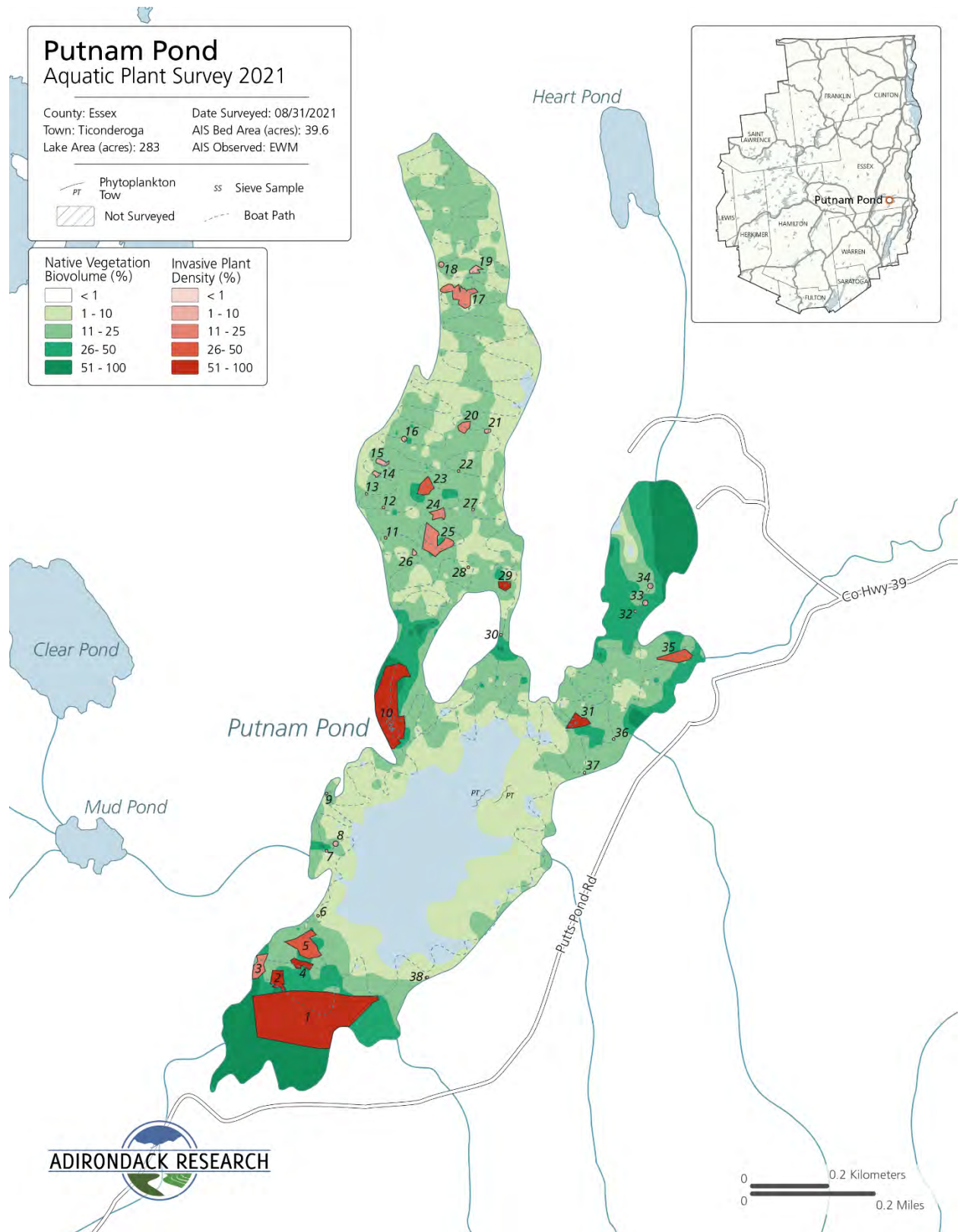
### Native Plant Biota

Comprehensive surveys of all native plants found within the pond were not prioritized in 2021, as this data had been previously collected in 2015 when the lake was first surveyed. The following native plants were identified: *Eriocaulon aquaticum* (pipewort), *Brasenia schreberi* (watershield), *Pontedaria cordata* (pickerel weed), *Potamogeton amplifolius* (large leaf pondweed), *Utricularia vulgaris* (common bladderwort), *Potamogeton praelongus* (white stemmed pondweed), *Potamogeton natans* (floating leaf pondweed), *Nitella spp.* (native nitella), *Nuphar variegata* (spatterdock), *Nymphaea odorata* (white water lily), *Elodea canadensis* (elodea).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with no invasive plankton detected.

| Eurasian Watermilfoil |            |                |         | Eurasian Watermilfoil |            |                 |         |
|-----------------------|------------|----------------|---------|-----------------------|------------|-----------------|---------|
| Bed                   | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed                   | Size (Ac.) | Size (Sq. Ft.)  | % Cover |
| 1                     | 9.45       | 411806.97      | 51-100  | 22                    | 0.01       | 437.40          | 1-10    |
| 2                     | 0.38       | 16578.60       | 51-100  | 23                    | 0.34       | 14688.29        | 26-50   |
| 3                     | 0.57       | 24730.53       | 11-25   | 24                    | 0.21       | 9216.77         | 11-25   |
| 4                     | 0.24       | 10493.76       | 51-100  | 25                    | 0.92       | 40038.12        | 11-25   |
| 5                     | 0.93       | 40661.00       | 26-50   | 26                    | 0.03       | 1524.47         | 1-10    |
| 6                     | 0.01       | 437.56         | 1-10    | 27                    | 0.01       | 437.41          | 1-10    |
| 7                     | 0.01       | 437.54         | 1-10    | 28                    | 0.01       | 437.43          | 1-10    |
| 8                     | 0.04       | 1750.14        | 1-10    | 29                    | 0.16       | 7163.63         | 51-100  |
| 9                     | 0.01       | 437.51         | 1-10    | 30                    | 0.01       | 437.46          | 1-10    |
| 10                    | 4.61       | 200855.61      | 51-100  | 31                    | 0.37       | 16250.37        | 51-100  |
| 11                    | 0.01       | 437.42         | 1-10    | 32                    | 0.01       | 437.45          | 1-10    |
| 12                    | 0.01       | 437.41         | 1-10    | 33                    | 0.04       | 1749.81         | 1-10    |
| 13                    | 0.01       | 437.41         | 1-10    | 34                    | 0.04       | 1749.78         | 1-10    |
| 14                    | 0.05       | 2241.75        | 1-10    | 35                    | 0.48       | 20917.88        | 26-50   |
| 15                    | 0.10       | 4406.00        | 1-10    | 36                    | 0.01       | 437.50          | <1      |
| 16                    | 0.04       | 1749.57        | 1-10    | 37                    | 0.01       | 437.51          | <1      |
| 17                    | 0.73       | 31868.91       | 11-25   | 38                    | 0.01       | 437.58          | <1      |
| 18                    | 0.04       | 1749.32        | 1-10    | Asian Clam            |            | Spiny Waterflea |         |
| 19                    | 0.11       | 4992.97        | 1-10    | Present (Y/N)         |            | Present (Y/N)   |         |
| 20                    | 0.18       | 8004.50        | 11-25   | No                    |            | No              |         |
| 21                    | 0.04       | 1748.24        | 1-10    |                       |            |                 |         |



## Rich Lake

**Survey Date:** July 7, 2021

**Last Surveyed:** 2016

**Survey Team:** T. Firkins, T. Murphy, P. Bly, M. Privee

### Lake Description

Rich Lake is 385-acres and has 6.9-miles of shoreline. It is located in the town of Newcomb, Essex County and lies in the Upper Hudson River watershed. The team launched a canoe at the private beach access west of the lake on the beach on the ESF property. The lake was steep with large drop offs.

### Aquatic Invasive Plant Presence

No invasive plants were detected.

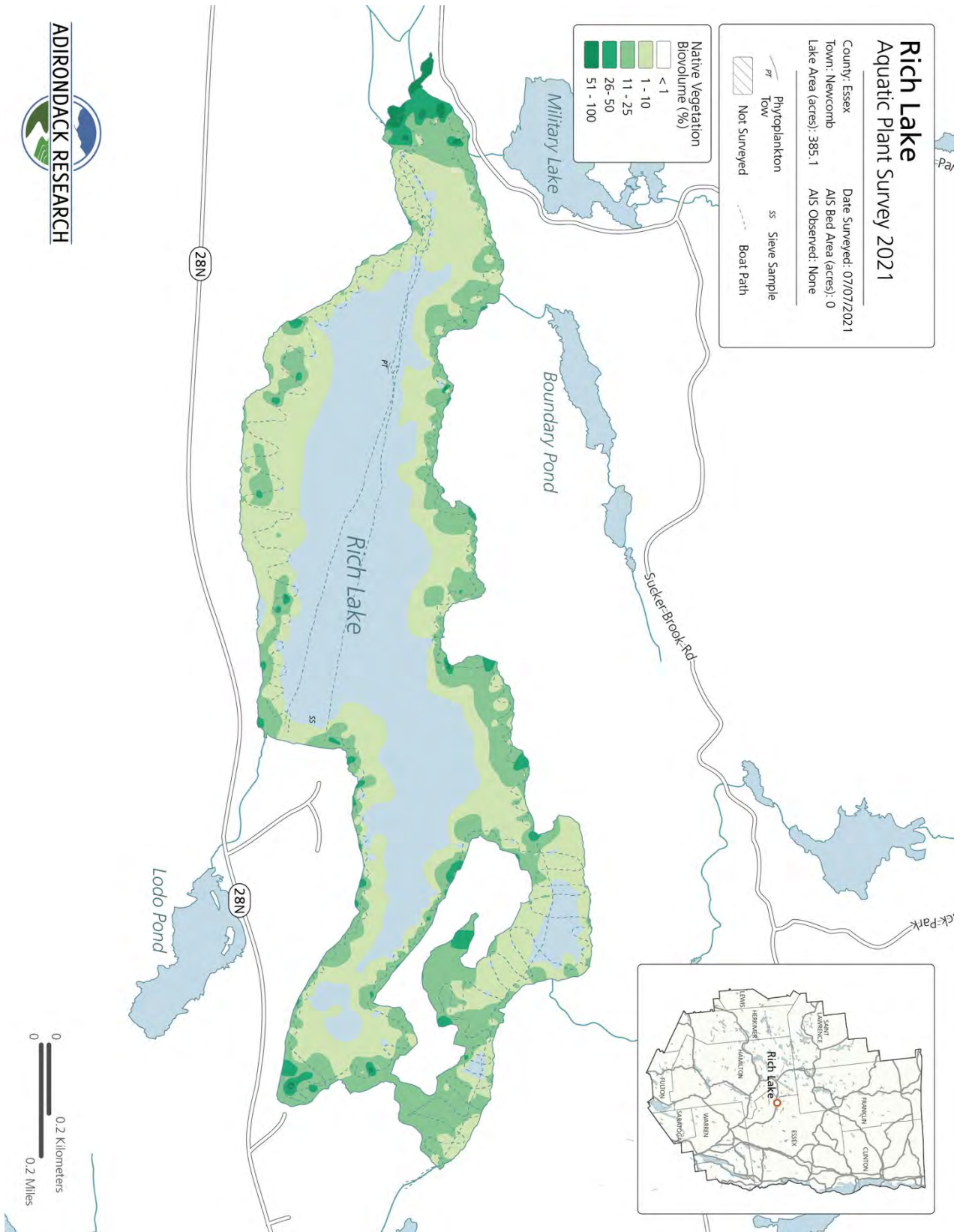
### Native Plant Biota

Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native species were found: *Potamogeton corodatus* (pickerel-weed), *Brasenia schreberi* (watershield), *Nuphar variegata* (spatterdock), *Nymphaea alba* (white water-lily), *Potamogeton amplifolius* (large-leaf pondweed), *Potamogeton natans* (floating-leaf pondweed), *Potamogeton zosteriformes* (narrow-leaf pondweed), *Sparganium angustifolium* (narrow-leaf bur-reed), *Potamogeton perfoliatus* (clasping-leaf pondweed), and *Nymphoides cordata* (little-floating heart).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Zooplankton tows were done and no invasive plankton species were detected.





## Round Lake

**Survey Date:** August 3, 2021

**Last Surveyed:** No previously reported surveys

**Survey Team:** P. Bly, L. Johnson, T. Murphy, M. Privee

### Lake Description

Round Lake is 56-acres and has 1.6 miles of shoreline. It is located in the town of Providence, Saratoga County and lies in the Upper Hudson River watershed. The team launched a canoe from a private launch off Hans Creek Road.

### Aquatic Invasive Plant Presence

No invasive plants were detected.

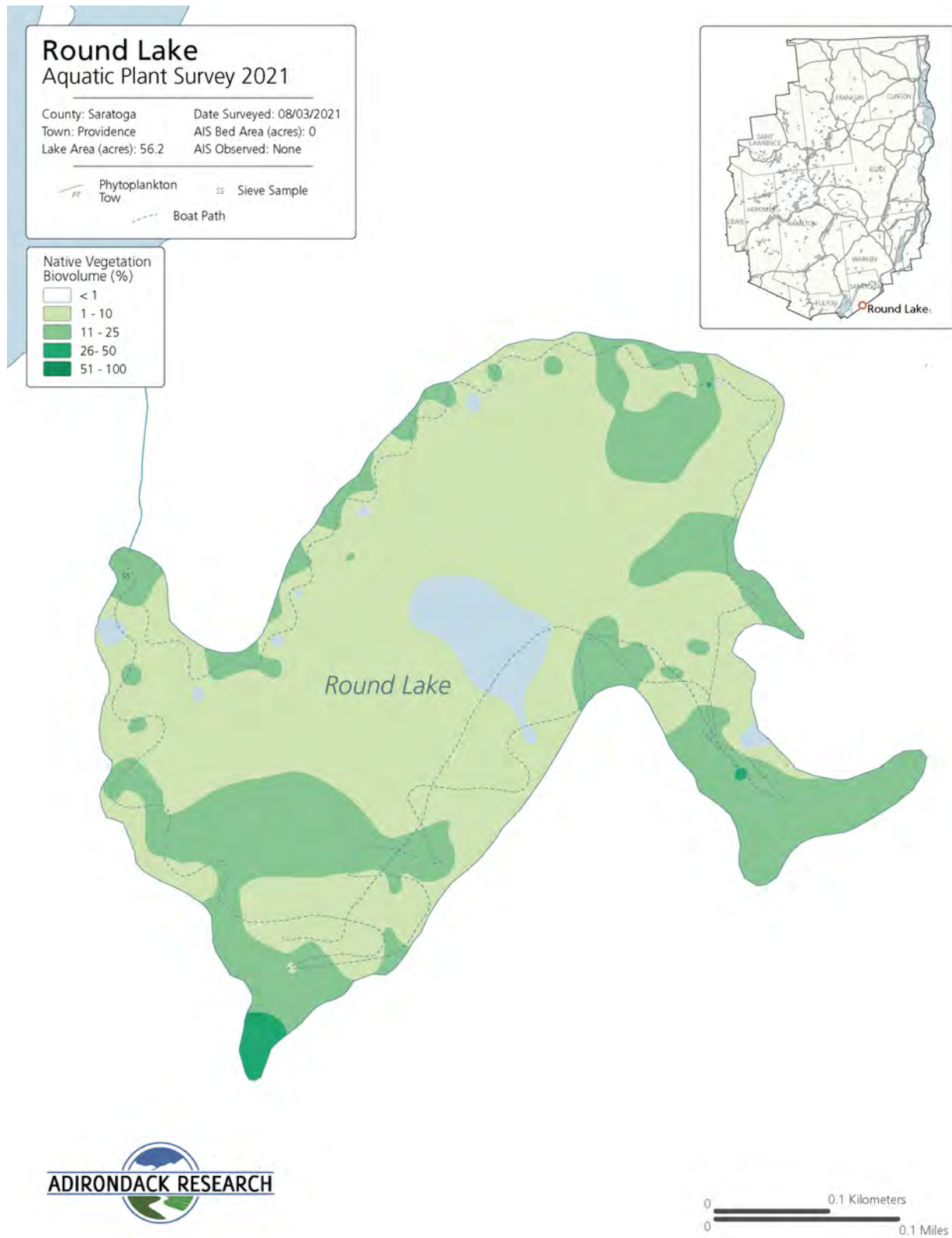
### Native Plant Biota

Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Pontederia cordata* (Pickerel weed), *Nymphaea odorata* (White water lily),

*Brasenia schreberi* (Watershield), *Eriocaulon decangulare* (Pipewort), *Dulichium arundinaceum* (Three way sedge), *Potamogeton natans* (Floating leaf pondweed), *Nuphar advena* (Spatterdock), *Sparganium angustifolium* (Narrow leaf burr reed) and *Elodea canadensis* (Elodea).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.



## Sacandaga Lake

**Survey Date:** July 27 and 28, 2021

**Last Surveyed:** 2020

**Survey Team:** P. Bly, L. Johnson, T. Murphy, J. Young

### Lake Description

Sacandaga Lake is 1607-acres with 13.2-miles of shoreline. It is in the town of Lake Pleasant, within Hamilton County, and lies in the Upper Hudson River watershed. The team launched a motorboat from the boat launch at Moffitt Beach State Campground. The weather was mostly sunny with a strong breeze.

### Aquatic Invasive Plant Presence

No aquatic invasive plant species were detected. We did record two small beds of purple loosestrife on the shore.

### Native Plant Biota

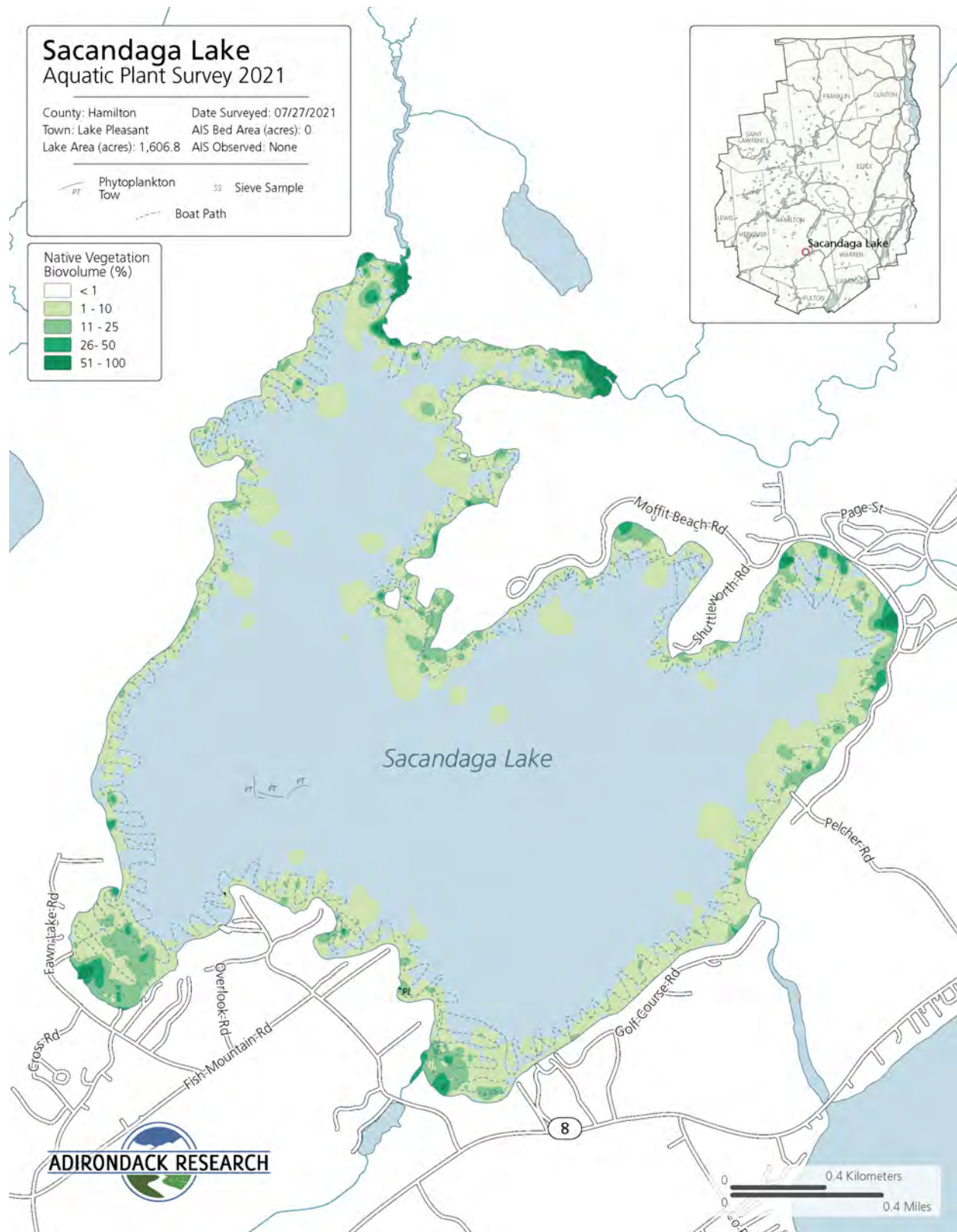
Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Potamogeton amplifolius* (largeleaf pondweed), *Zostera spp.* (eelgrass), *Nymphaea odorata* (white water lily), *Pontederia cordata* (pickerelweed).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted. Spiny waterflea has been detected in Sacandaga Lake, and we detected it in our samples this year as well.

| Purple Loosestrife |            |                 |         |
|--------------------|------------|-----------------|---------|
| Bed                | Size (Ac.) | Size (Sq. Ft.)  | % Cover |
| 1                  | 0.002      | 86.09           | NR      |
| 2                  | 0.00019    | 8.33            | NR      |
| Asian Clam         |            | Spiny Waterflea |         |
| Present (Y/N)      |            | Present (Y/N)   |         |
| No                 |            | Yes             |         |





## Sherman Lake

**Survey Date:** June 17, 2021

**Last Surveyed:** No previously reported surveys

**Survey Team:** T. Firkins, T. Murphy

### Lake Description

Sherman lake is 108-acres and has 2.3-miles of shoreline. It is located in Warren County and lies in the Upper Hudson River watershed. The team launched a canoe at the private beach access south end of the lake. The lake was mostly sand with rock along the shoreline. The sonar battery died at the end of the survey, so the survey trace is incomplete for this lake.

### Aquatic Invasive Plant Presence

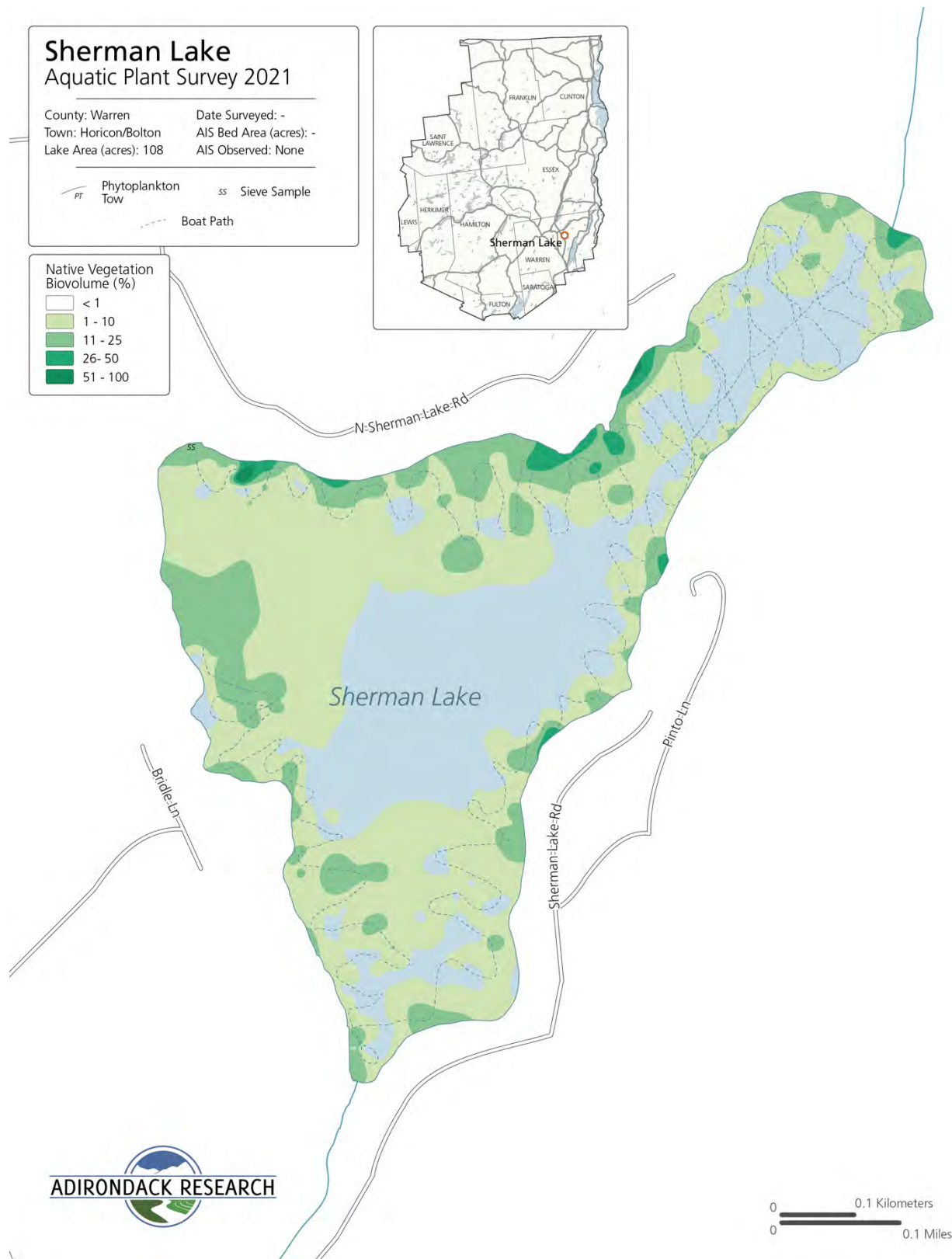
No invasive plants were detected.

### Native Plant Biota

Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native species were found: *Potamogeton amplifolius* (large-leaf pondweed), *Potamogeton natans* (floating-leaf pondweed), *Potamogeton corodatus* (pickerel-weed), *Nuphar variegatum* (spatterdock), *Nymphaea odorata* (white water-lily)

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.



## Steele Reservoir

**Survey Date:** August 2, 2021

**Last Surveyed:** 2011

**Survey Team:** P. Bly, L. Johnson, T. Murphy, M. Privee

### Lake Description

Steele Reservoir is 167-acres and has 3.7 miles of shoreline. It is located in Saratoga County and lies in the Upper Hudson River watershed. The team launched a canoe from a private launch off Hans Creek Road.

### Aquatic Invasive Plant Presence

No invasive plant species were detected.

### Native Plant Biota

Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Elodea spp.* (elodea), *Utricularia spp.* (bladderwort), and *Najas spp.* (naiad spp.).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with no invasive zooplankton detected.



## Steele Reservoir Aquatic Plant Survey 2021

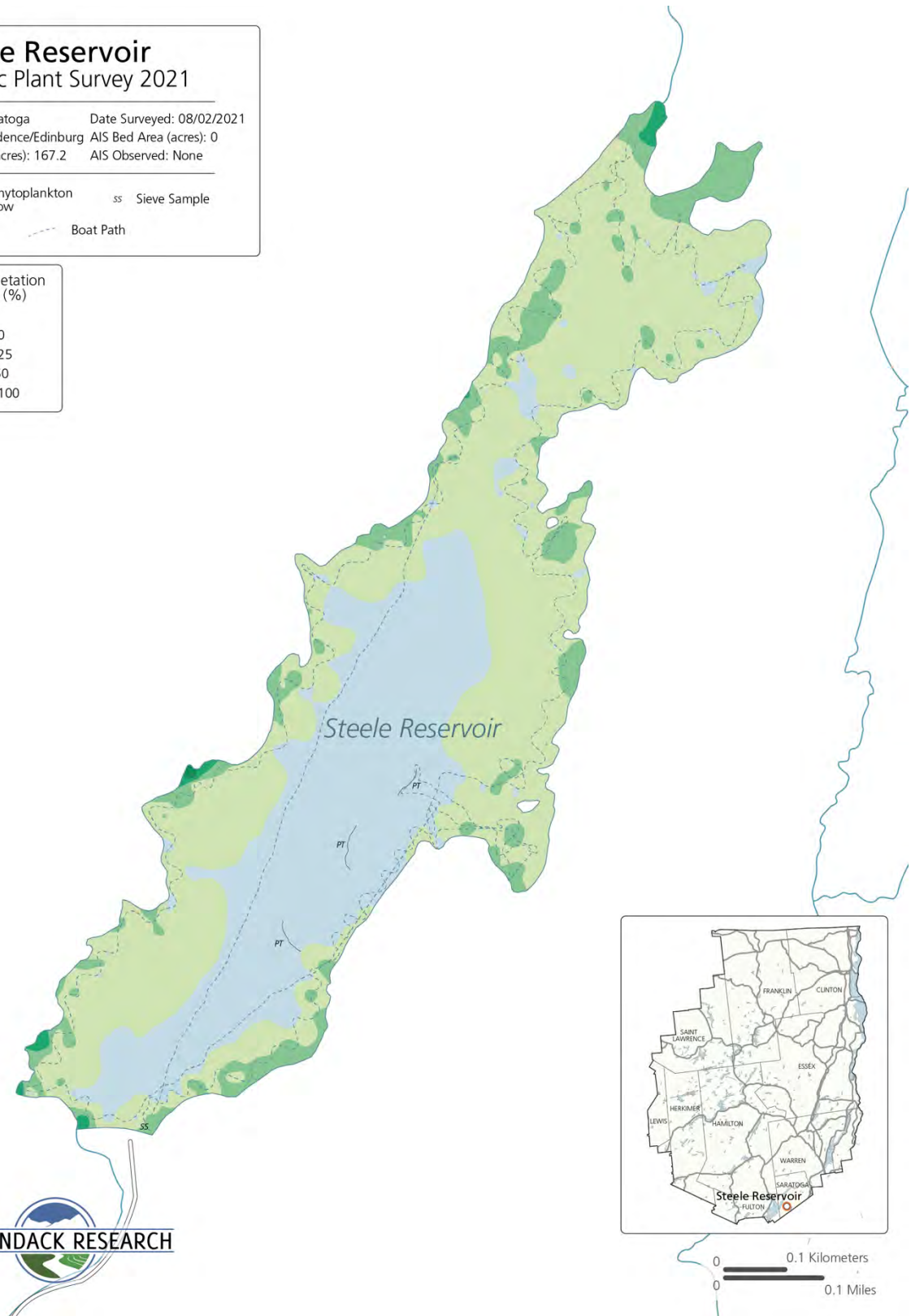
County: Saratoga Date Surveyed: 08/02/2021  
Town: Providence/Edinburg AIS Bed Area (acres): 0  
Lake Area (acres): 167.2 AIS Observed: None

PT Phytoplankton Tow  
SS Sieve Sample  
Boat Path

### Native Vegetation Biovolume (%)

< 1  
1 - 10  
11 - 25  
26 - 50  
51 - 100

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## Stewarts Bridge Reservoir

**Survey Date:** June 29, 2021

**Last Surveyed:** 2009

**Survey Team:** T. Firkins, J. Young

### Lake Description

Stewart Bridge Reservoir is 470-acres and has 9.6-miles of shoreline. It is located in the town of Hadley in Saratoga County and lies in the Upper Hudson River watershed. The team launched a motorboat at a public launch, located at a bay on the northern shore of the lake along North Shore road.

### Aquatic Invasive Plant Presence

Dense beds of *Myriophyllum spicatum* (Eurasian watermilfoil) and a single bed of *Potamogeton crispus* (curly-leaf pondweed) were documented.

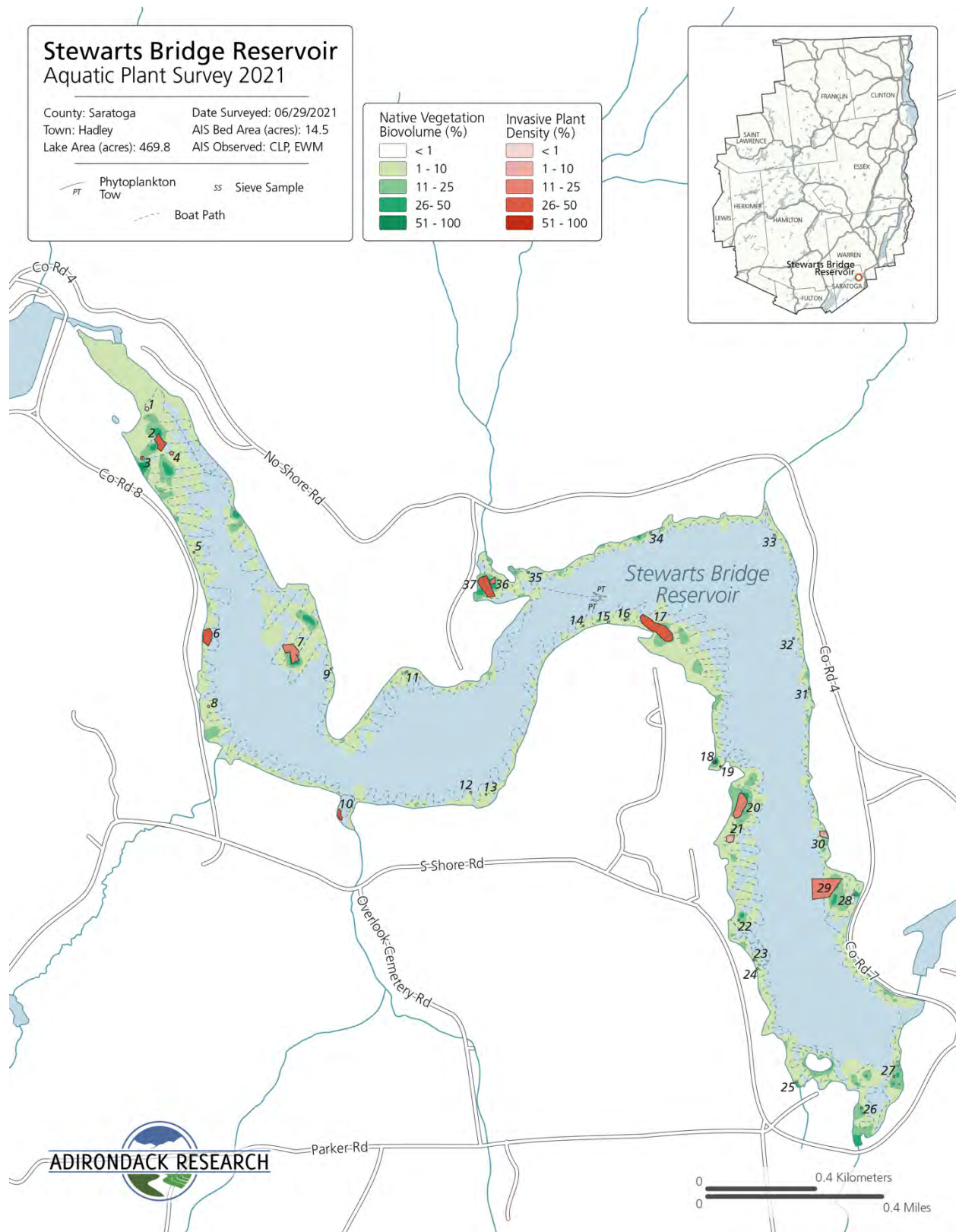
### Native Plant Biota

Comprehensive surveys were not prioritized in 2021 as invasive species were the primary focus of the surveys. The following native plants were found: *Brasenia schreberi* (water shield), *Elodea nuttallii* (slender waterweed), *Potamogeton natans* (floating-leaf pondweed), *Potamogeton perfoliatus* (clasping-leaf pondweed), *Pontedaria cordata* (pickerelweed), *Iris versicolor* (blue flag iris), *Sparganium angustifolium* (narrow-leaf burr reed), *Potamogeton amplifolius* (large leaf pondweed), *Utricularia macrorhiza* (common bladderwort).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with *Bythotrephes longimanus* (spiny water flea) detected.

| Eurasian Watermilfoil |            |                |         | Eurasian Watermilfoil |            |                 |         | Curly-leaf Pondweed |            |                |         |
|-----------------------|------------|----------------|---------|-----------------------|------------|-----------------|---------|---------------------|------------|----------------|---------|
| Bed                   | Size (Ac.) | Size (Sq. Ft.) | % Cover | Bed                   | Size (Ac.) | Size (Sq. Ft.)  | % Cover | Bed                 | Size (Ac.) | Size (Sq. Ft.) | % Cover |
| 1                     | 0.04       | 1780.30        | <1      | 26                    | 0.01       | 445.41          | <1      | 23                  | 0.01       | 445.34         | <1      |
| 2                     | 0.33       | 14348.54       | 26-50   | 27                    | 0.01       | 445.40          | 1-10    |                     |            |                |         |
| 3                     | 0.00       | 69.24          | 1-10    | 28                    | 0.01       | 445.31          | <1      |                     |            |                |         |
| 4                     | 0.04       | 1780.39        | 11-25   | 29                    | 1.47       | 63862.71        | 11-25   |                     |            |                |         |
| 7                     | 0.57       | 24998.45       | 11-25   | 30                    | 0.21       | 9134.62         | 1-10    |                     |            |                |         |
| 9                     | 0.01       | 445.20         | NR      | 31                    | 0.01       | 445.21          | NR      |                     |            |                |         |
| 10                    | 0.12       | 5353.00        | 26-50   | 32                    | 0.01       | 445.19          | NR      |                     |            |                |         |
| 11                    | 0.01       | 445.20         | NR      | 33                    | 0.01       | 445.14          | NR      |                     |            |                |         |
| 17                    | 1.13       | 49386.98       | 26-50   | 34                    | 0.01       | 445.13          | NR      |                     |            |                |         |
| 18                    | 0.00       | 187.28         | 26-50   | 35                    | 0.01       | 445.15          | NR      |                     |            |                |         |
| 19                    | 0.01       | 445.25         | 51-100  | 36                    | 0.09       | 3907.87         | 11-25   |                     |            |                |         |
| 20                    | 0.65       | 28201.94       | 11-25   | 37                    | 0.66       | 28732.80        | 26-50   |                     |            |                |         |
| 21                    | 0.17       | 7477.12        | 1-10    |                       |            |                 |         |                     |            |                |         |
| 22                    | 0.01       | 445.32         | 1-10    |                       |            |                 |         |                     |            |                |         |
| 24                    | 0.01       | 445.34         | <1      |                       |            |                 |         |                     |            |                |         |
| 25                    | 0.01       | 445.40         | <1      |                       |            |                 |         |                     |            |                |         |
|                       |            |                |         | Asian Clam            |            | Spiny Waterflea |         |                     |            |                |         |
|                       |            |                |         | Present (Y/N)         |            | Present (Y/N)   |         |                     |            |                |         |
|                       |            |                |         | No                    |            | Yes             |         |                     |            |                |         |



## Thirteenth Lake

**Survey Date:** August 11, 2021

**Last Surveyed:** 2020

**Survey Team:** P. Bly T. Murphy L. Johnson T. Firkins

### Lake Description

Thirteenth Lake is 327-acres with 4.0-miles of shoreline. It is located in the town of Johnsburg, Warren County and lies in the Lake Champlain watershed. The team launched a canoe from a roadside boat launch adjacent to Siamese Ponds Wilderness.

### Aquatic Invasive Plant Presence

No invasive plant species were identified.

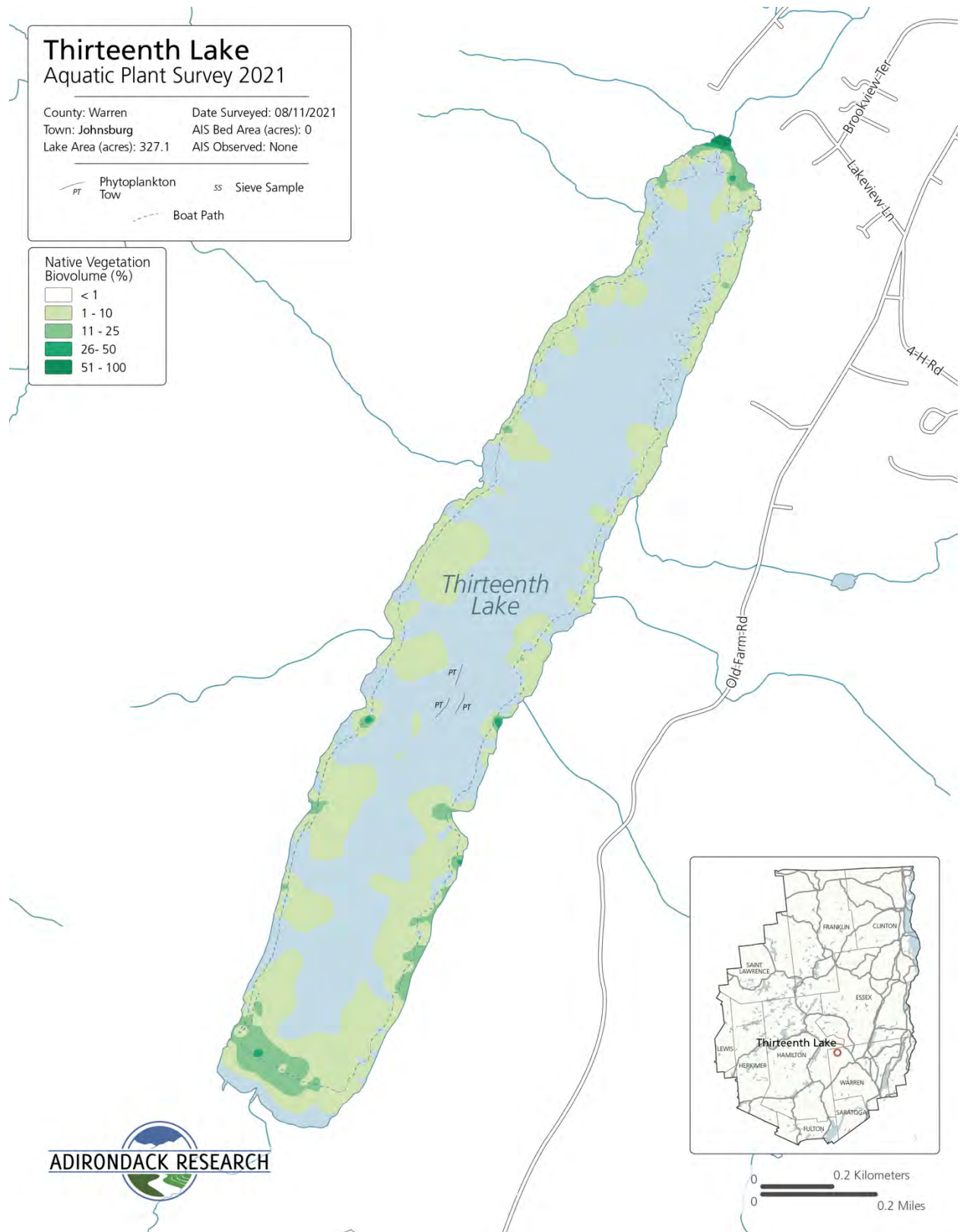
### Native Plant Biota

Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Brasenia schreberi* (water shield), *Nuphar variegata* (white water lily), *Nopha lutea* (spaddeedock), *Eniocaulon spp.* (Pipewort), *Dulcihlum arundinaceum* (threeway sedge) and *Utricularia spp.* (bladderwort).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with no invasive zooplankton detected.





## Thurman Pond

**Survey Date:** August 10, 2021

**Last Surveyed:** 2009

**Survey Team:** P. Bly, T. Firkins

### Lake Description

Thurman Pond is 122-acres with 1.9-miles of shoreline. It is located in the town of Schroon Lake, Essex County, and lies in the Upper Hudson River watershed. The team launched a rowboat from a private property on the north shore of the lake. The weather was calm and sunny.

### Aquatic Invasive Plant Presence

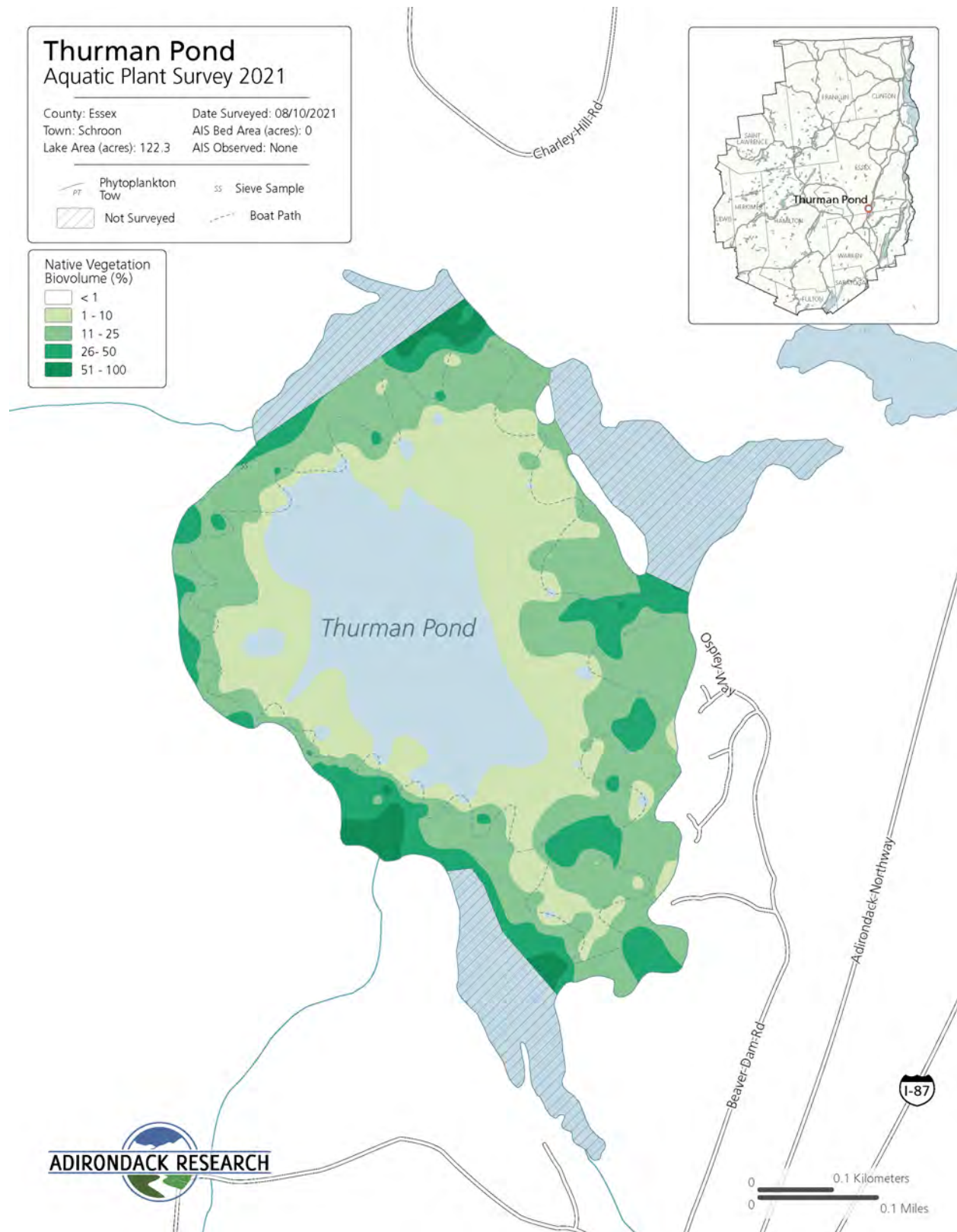
No invasive plant species were identified.

### Native Plant Biota

Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Nymphaea alba* (white water lily), *Elodea spp.* (elodea), *Brasenia schrederi* (water shield), *Nitella spp.* (nitella), *Utricularia spp.* (bladderwort), *Eriocaulon aquaticum* (pipewort), *Nophar advena* (Spatterdock), *Potamogeton natans* (floatingleaf pondweed), *Potamogeton robbinsii* (Robbin's pondweed), *Potamogeton amplifolius* (largeleaf pondweed).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found.



## Trout Lake

**Survey Date:** July 1, 2021

**Last Surveyed:** 2016

**Survey Team:** L. Johnson, M. Privee

### Lake Description

Trout Lake is 258-acres and has 4.1-miles of shoreline. It is located in the town of Bolton, Warren County and lies in the Lake Champlain watershed. The team launched a canoe at Twin Pines Resort, located at the northern end of the lake. The sonar was not functioning for a portion of the survey period, therefore we processed data using ReefMaster, which does not produce BioVolume measurements.

### Aquatic Invasive Plant Presence

No invasive aquatic plants were detected. A patch of terrestrial *Phragmites australis* (common reed grass), was detected.

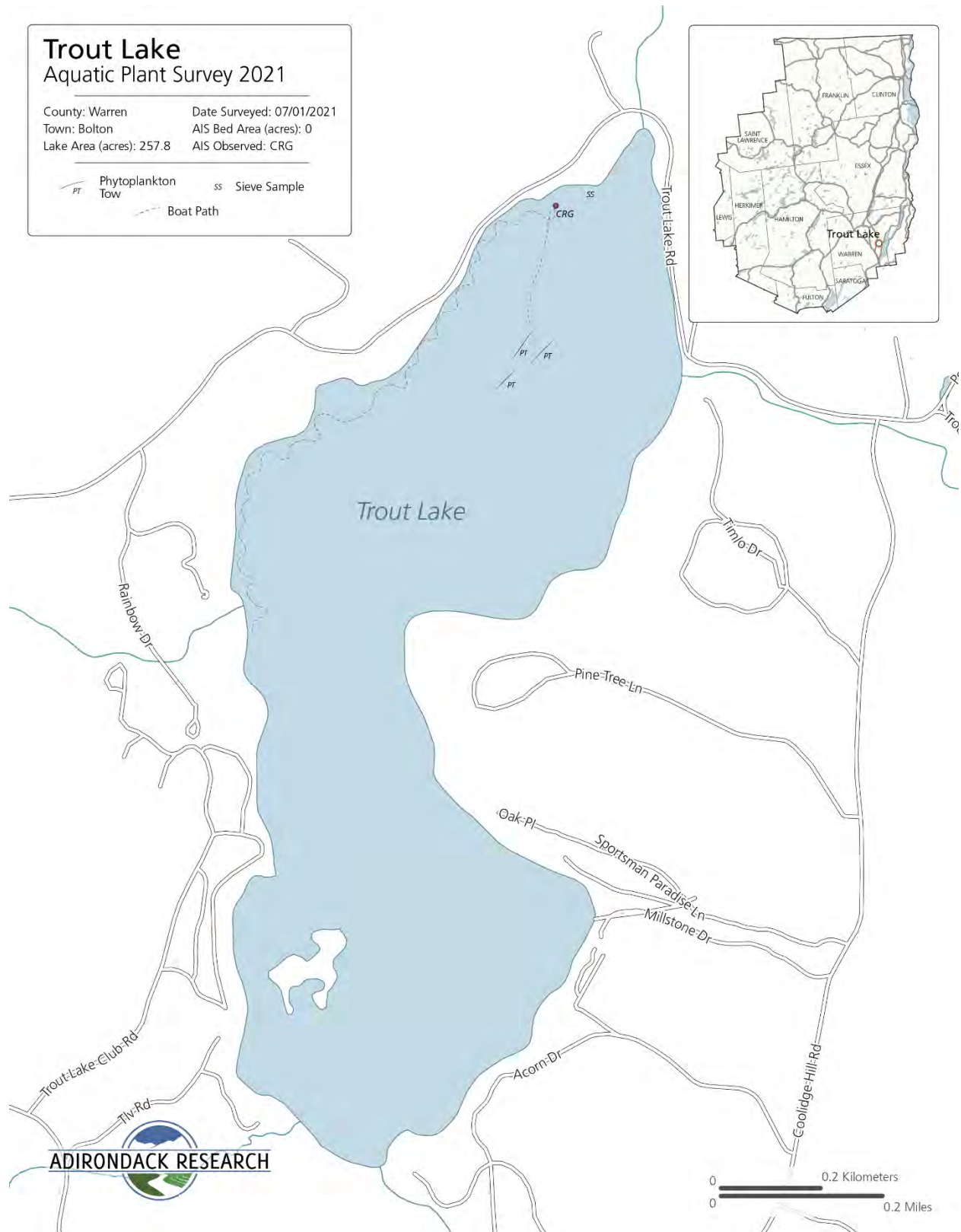
### Native Plant Biota

The following native plants were found: *Nuphar variegata* (spatterdock), *Brasenia schreberi* (watershield), *Nymphaea odorata* (white water lily), *Sparaganium angustifolium* (narrow-leaf bur-reed), and *Potamogeton natans* (floating-leaf pondweed),

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Three plankton tows were also conducted with no invasive zooplankton detected.





## Upper Sacandaga River

**Survey Date:** June 30 and July 1, 2021

**Last Surveyed:** No previously reported surveys

**Survey Team:** P. Bly, T. Firkins T. Murphy

### Lake Description

Upper Sacandaga River is 196-acres and has 3.8-miles of shoreline. It is located in the town of Northville, in Fulton County and lies in the Upper Hudson River watershed. The team launched a motorboat from a state launch on the western bank of the river along NY-30.

### Aquatic Invasive Plant Presence

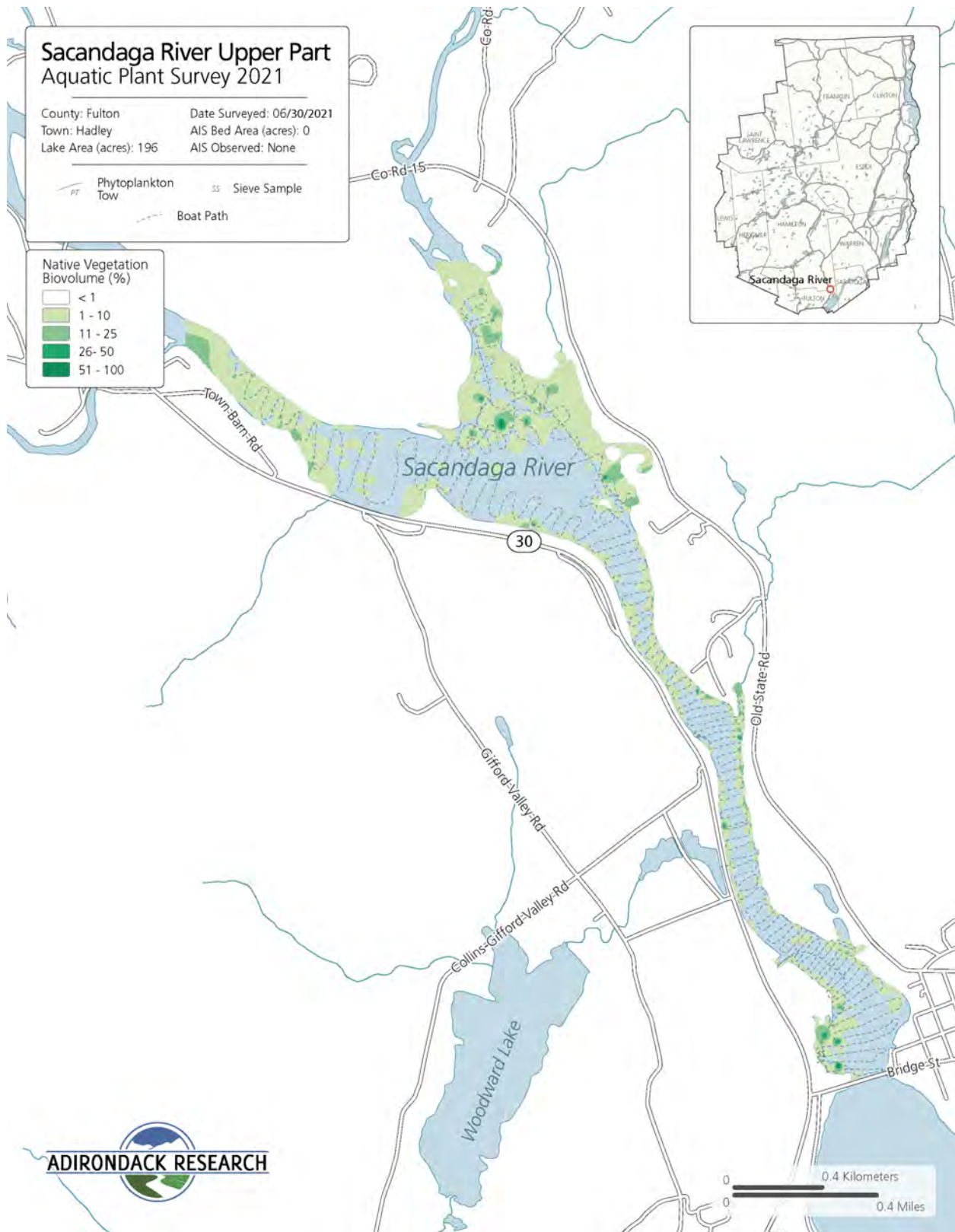
No invasives were detected.

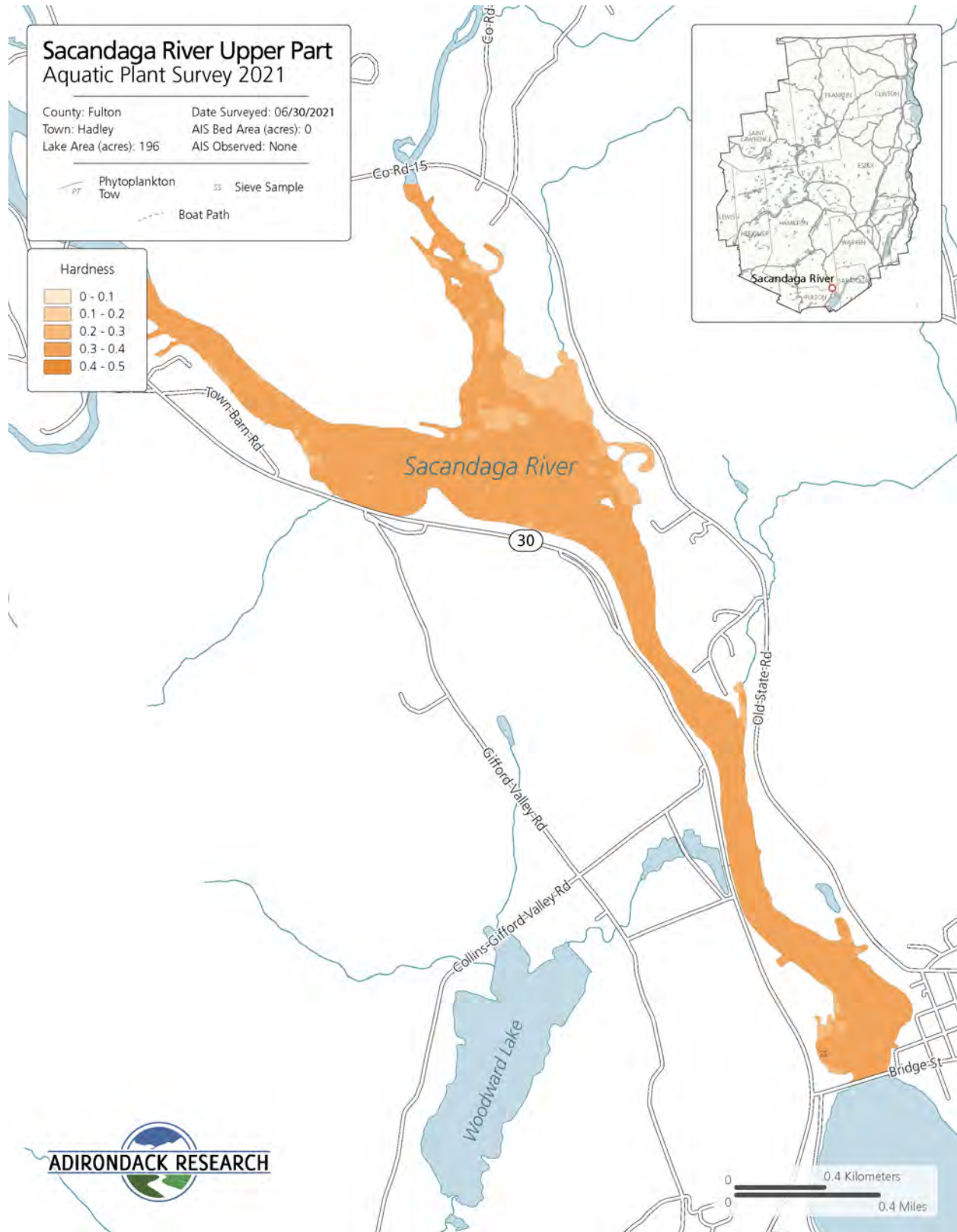
### Native Plant Biota

Comprehensive surveys of all native plants found within the reservoir were not prioritized in 2020 as this data had previously been collected in 2017. The following native plants were found: *Brasenia schreberi* (water shield), *Utricularia vulgaris* (common bladderwort), *Potamogeton natans* (floating leaf pondweed), *Elodea nuttallii* (slender waterweed), *Potamogeton perfoliatus* (clasping leaf).

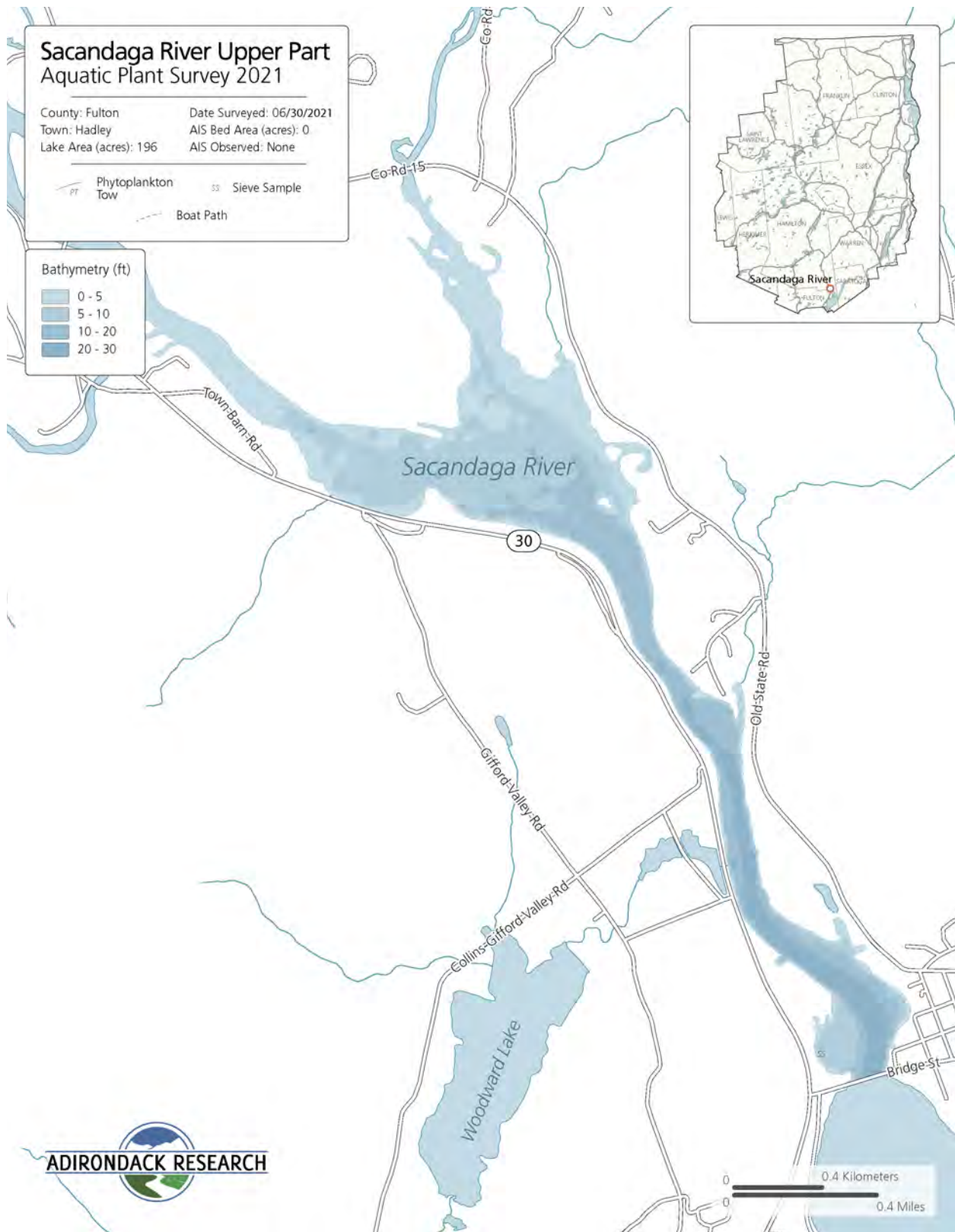
### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Plankton tows were not conducted as the deepest part of the river was in the middle of the busy channel.









## Valentine Pond

**Survey Date:** August 4, 2021

**Last Surveyed:** 2017

**Survey Team:** P. Bly, L. Johnson

### Lake Description

Valentine Pond is 99-acres with 1.8-miles of shoreline. It is located in the town of Horicon, within Warren County, and lies in the Lake Champlain watershed. The team launched a canoe from a private property located on Shaw Hill Road on the north-east shore of the pond. The weather was sunny and hot.

### Aquatic Invasive Plant Presence

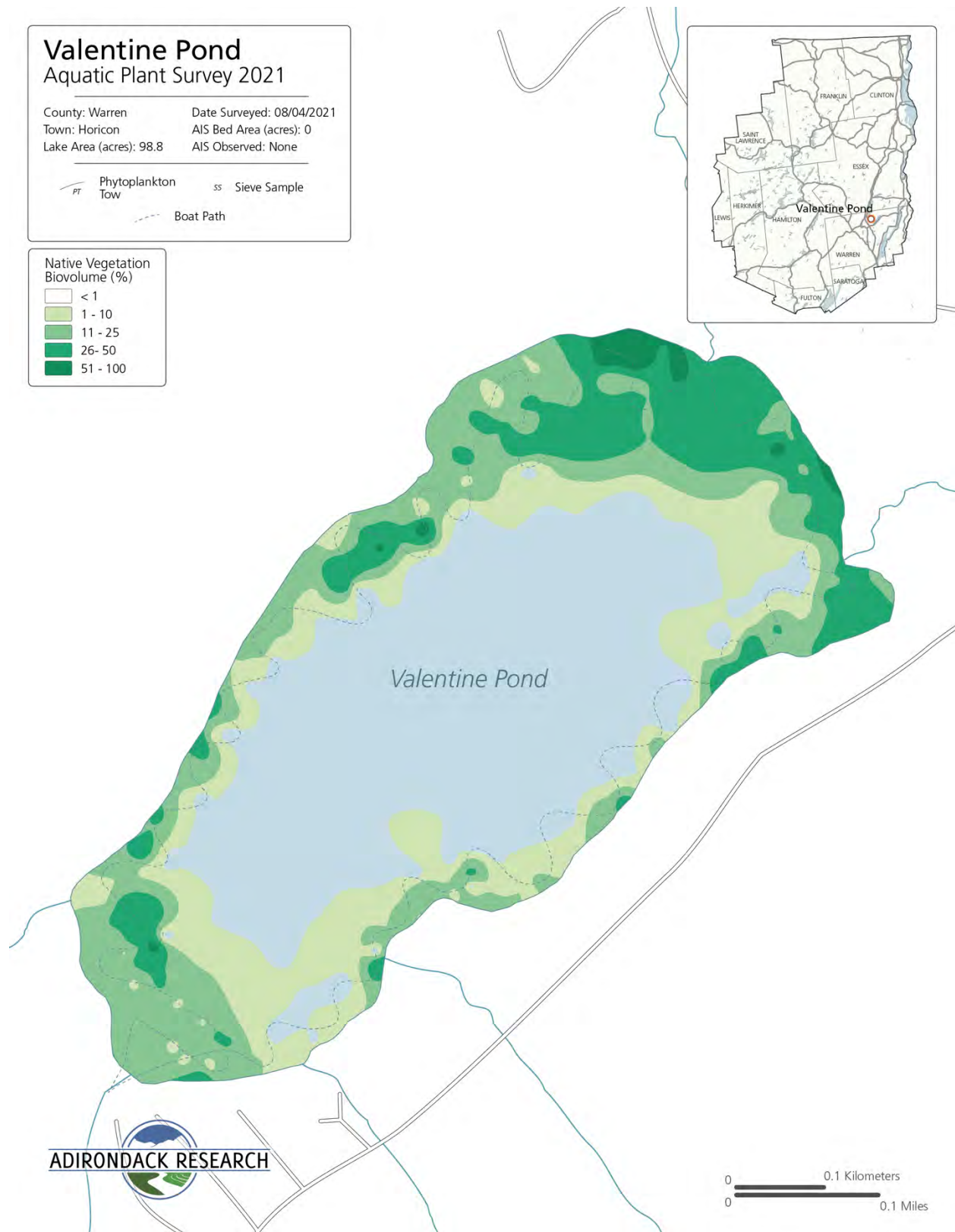
No aquatic invasive plant species were identified.

### Native Plant Biota

Though comprehensive surveys of native aquatic vegetation were not completed the following native plants were identified: *Nymphaea alba* (white water lily), *Utricularia spp.* (bladderwort), *Potamogeton praelongus* (white-stem pondweed), *Potamogeton amplifolius* (largeleaf pondweed), *Brasenia schrederi* (water shield), *Nuphar lutea* (spatterdock), *Pontederia cordata* (pickerelweed), *Elodea canadensis* (elodea), *Potamogeton robbinsii* (Robbin's pondweed), *Dulichium arundinaceum* (threeway sedge), *Sparangium angustifolium* (narrowleaf bur-reed).

### Aquatic Invasive Animal Presence

Sediment sieves were taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Though, *Viviparus georgianus* (banded mystery snail) was observed.



## Viele Pond

Survey Date: August 9, 2021

Last Surveyed: August 7, 2018

Survey Team: L. Johnson, T. Firkins

### Lake Description

Viele Pond is 27-acres and it has 1-mile of shoreline. It is located in Warrensburg, Warren County and lies in the Lake Champlain watershed. The team launched at one of three hand launches along Viele Pond Road. The eastern portion of the lake is very shallow and could not be accessed by boat.

### Invasive Species Presence

No invasive plants were detected.

### Native Biota

Comprehensive surveys of all native plants found within the lake were not prioritized in 2021. Native plants found within this pond include *Nuphar advena* (spatterdock), *Nymphaea odorata* (white water lily), *Utricularia vulgaris* (common bladderwort), *Potamogeton gramineus* (variable pondweed), *Dulichium arundinaceum* (three way sedge), *Nymphoides cordata* (little floating heart), *Ceratophyllum demersum* (coontail), *Potamogeton robbinsii* (robbins pond weed)

### Animal Aquatic Invasive Species

Sieves were also taken to determine the presence of *Corbicula fluminea* (Asian clams). None were found. Plankton tows were not done as the pond was entirely littoral zone.



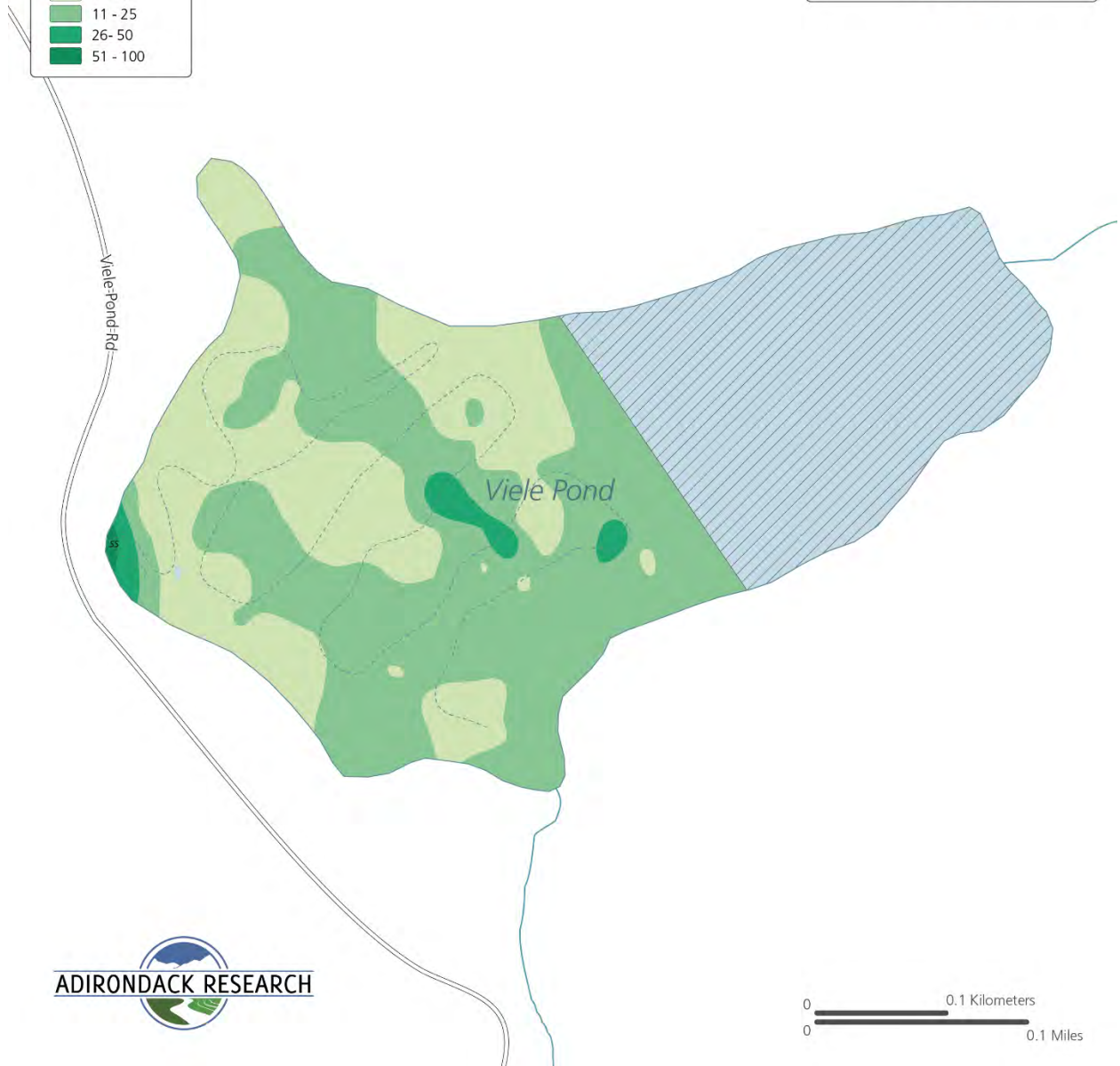
## Viele Pond Aquatic Plant Survey 2021

County: Warren Date Surveyed: 08/09/2021  
 Town: Warrensburg AIS Bed Area (acres): 0  
 Lake Area (acres): 26.8 AIS Observed: None

PT Phytoplankton Tow      SS Sieve Sample  
 Not Surveyed      Boat Path

### Native Vegetation Biovolume (%)

< 1  
 1 - 10  
 11 - 25  
 26 - 50  
 51 - 100





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