2021 Watercraft Inspection Steward Program Analysis and Watercraft Decontamination Station Report

A special thanks to the following individuals and organizations for providing insight, resources, and data to assist with the compilation of this report.

Christina Connolly – Saratoga Lake Protection & Improvement District
Adam Doll –Minnesota Department of Natural Resources
Lauren Henderson—Capital PRISM
Daniel Kelting—Adirondack Watershed Institute
Paul Lord—SUNY Oneonta
Ashley Morris—NYS DEC Region 1-Stony Brook University
Heather Nolan—Chautauqua Lake Association
Nathan Owens—Utah Division of Wildlife Resources
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Introduction

Established in 2011 and hosted through The Nature Conservancy, The St. Lawrence Eastern Lake Ontario Partnership for Regional Invasive Species Management (SLELO PRISM) serves Jefferson, Lewis, Oneida, Oswego, and St. Lawrence Counties (Figure 1). Through collaboration with local partners, the SLELO PRISM, works to employ programs and initiatives that focus on protecting native biodiversity and freshwater resources. The collaborative effort and shared knowledge of community partners has proved successful through a variety of programs and initiatives, such as the Watercraft Inspection Steward Program (WISP).

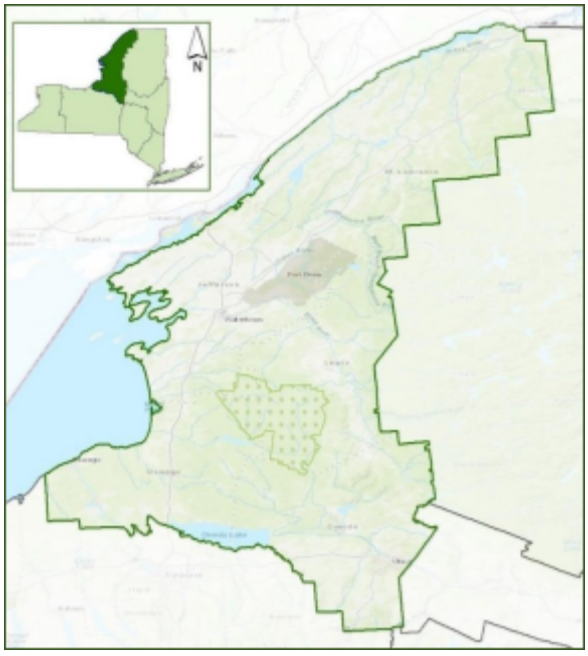

Figure 1: Regional Map of SLELO PRISM in New York State. Graphic featured in 2021 WISP Final Report by Brittney Rogers.

Developed to address the spread of Aquatic Invasive Species (AIS), the Watercraft Inspection Steward Program works to cover numerous boat launches across the nearly four million acres of land monitored by the SLELO PRISM (*Figure 1)*. Through comprehensive research, it has been determined that the primary pathway of AIS spread occurs through contaminated watercraft. Across the nation, state and local municipalities are feeling the economic strain of AIS spread and programs, like WISP and Watercraft Decontamination Stations are being deployed to combat this burgeoning problem. Since the early 2000, New York State has been home to multiple watercraft inspection programs with exponentially more areas of coverage and increasingly more sophisticated methods of preventing and addressing the spread of AIS with each passing year.

In 2019, the Thousand Islands Land Trust (TILT) was awarded the 2020 WISP Contract for Services. As part of the 2020 season, TILT provided 10 seasonal watercraft inspection stewards to cover roughly 26 launches across the SLELO PRISM. During a year with unexpected challenges, this partnership was able to conduct a successful program season and inspected 12,455 watercraft from Memorial Day Weekend through Labor Day Weekend. During these inspections, 1,243 aquatic invasive species, mostly Eurasian watermilfoil and curly-leaf pondweed, were intercepted.

This past season (2021) was met with success however the program did encounter some new challenges, mainly staffing. TILT was again tasked with hiring 10 seasonal watercraft inspection stewards to cover approximately 27 launch sites across the SLELO PRISM. This season, stewards inspected 9,648 watercraft

again from Memorial Day Weekend through Labor Day Weekend. During these inspections, 1,734 aquatic invasive species, mostly Eurasian and variable leaf-watermilfoil and curly-leaf pondweed, were intercepted.

When comparing the data of the 2020 and 2021 seasons, it is important to note that several factors influenced the results of the seasons. In 2020, watercraft inspection steward programs across the state saw greatly increased numbers of boaters and anglers, totaling over 349,800 inspections; a 41% increase from the 248,000 inspections conducted in 2019. It is suggested that this increase could be a result of the pandemic leading more people to seek outdoor recreation opportunities. Additionally, the decrease in 2021 surveys is likely correlated with the extreme low water levels of Lake Ontario. 2021 data showed that two inland launches, Delta Lake and Godfrey Point (Oneida Lake) were the season's busiest; different from 2020 in which boaters favored Lake Ontario launches, such as Cape Vincent and North Sandy Pond. Additionally, statewide data indicates a decrease in AIS organisms intercepted on watercraft from 19,122 in 2020 to 11,700 in 2021. Furthermore, 95.6% of boaters agreed to voluntary inspection, in contrast to 94% in 2021 though survey data indicated a positive trend in visitor contact with stewards and visitors taking AIS spread prevention measures (*Figure 2)*. While this data is encouraging, the declinations in inspections and the increased number of AIS interceptions suggests that the need for program interventions and outreach measures remains.

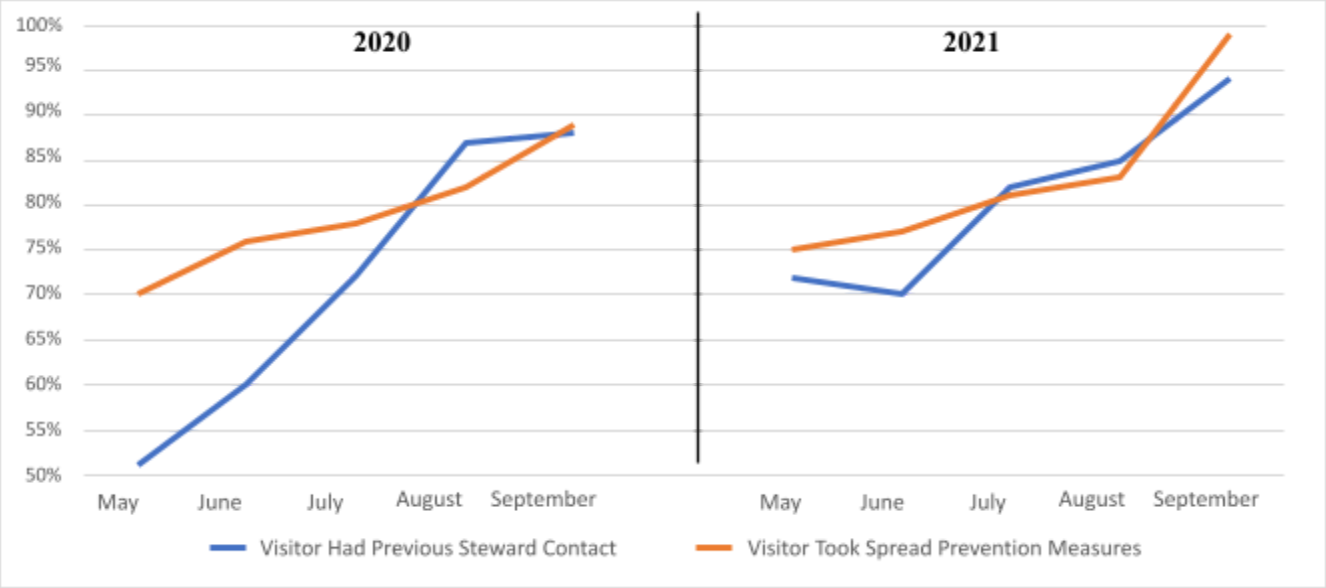

Figure 2: Comparison of 2020 and 2021 Boater behavior correlated to Contact with a Steward. Graph featured in 2021 WISP Final Report by Brittney Rogers.

2021 Program Overview

In partnership with SLELO PRISM (St. Lawrence Eastern Lake Ontario Partnership for Regional Invasive Species Management), TILT implements invasive species management practices to protect native habitats, biodiversity, natural areas, and freshwater resources emphasizing the prevention, early

detection, rapid response, and education and outreach of invasive species. The 2021 Watercraft Inspection Steward Program, developed and managed by SLELO PRISM and TILT, began on May 29 and concluded on September 21. This season, 9 seasonal watercraft inspection stewards covered 27 launches across 5 counties (Jefferson, Lewis, Oneida, Oswego, and St. Lawrence). Of this season's stewards, 5 were returning stewards from the 2020 season, 1 was a former ESF steward, and 3 were new to the program. Steward training was again conducted over 3 days with virtual training and an in-person training and supply pick-up event. Additional training was provided during an in-person AIS Specimen Identification Workshop led by SLELO PRISM and the Indian River Lakes Conservancy. During this workshop, stewards handled real specimens, discussed range and habitat with instructors, were trained in proper rake toss procedures, and practiced clean-drain-dry methods.

Across the state and nation, Watercraft Inspection Steward Programs seek to promote public education and outreach at boat launches regarding statewide Clean, Drain, Dry practices in order to help prevent the spread of aquatic invasive species. As part of the SLELO PRISM-TILT Watercraft Inspection Steward Program, stewards also conduct watercraft inspections, collect data and administer voluntary surveys using the Survey123 Watercraft Inspection Steward Program Application (WISPA), identify and manage Aquatic Invasive Species (AIS), and engage with the public to provide educational materials. Assigned to various boat launch locations throughout the SLELO PRISM, stewards are asked to work independently and travel frequently between various boat launch locations, where they are responsible for carrying out their daily responsibilities. A full list of steward responsibilities as expressed by the job description includes but is not limited to, the following—

1. Deliver existing education and outreach to the general public regarding standardized Clean, Drain, Dry practices and Aquatic Invasive Species
2. Demonstrates proper AIS preventative boat cleaning and launching techniques
3. Visually inspect boats for AIS
4. Interact with program participants (recreational boaters, anglers, other park patrons, and others) as part of program delivery
5. Use tablet (provided) to record survey and inspection data through digital survey
6. Ensure consistent and quality data collection and management including daily uploads
7. Physical removal of AIS in provided disposal location
8. Maintenance of field equipment and AIS portable disposal stations

Additionally, stewards are expected to represent TILT, SLELO PRISM and NYS DEC (as funder) before the public as part of program delivery and community engagement.

2021 Program Analysis

In the second season of the program, the SLELO PRISM and TILT administrators considered multiple avenues for program improvement. Program accuracy, effectiveness, and efficiency are primary areas of focus when considering improvements, however recruitment and retention have also become an area of concern. Program feedback from the 2020 season influenced many beneficial changes to the 2021 season. Using steward exit interviews, program data, boater/launch user surveys, and PRISM guidance, program

changes were discussed between the program administrators of SLELO PRISM and TILT and a comprehensive plan was developed to implement these changes for the 2021 season.

Most notably, new to the program this season was the inclusion of the Lead Steward role. This role was developed after careful review of the 2020 WISP Season, discussions with the program directors, and feedback from the season stewards. It was determined that the Lead Steward Position would prove beneficial to the program by providing more regular launch site visits, assisting with steward needs, and providing additional support with data review. Three Lead Stewards were hired for the 2020 season to provide the following responsibilities:

- Provide day-to-day guidance and support to 4-9 Watercraft Inspection Stewards; Stewards were divided between Leads based upon geographical location.
- Work with the TILT and SLELO PRISM supervisors to assist with trainings, group/individual projects and coordinate material re-supply and specimen collection.
- Under the TILT and SLELO PRISM supervisors, assist in solving problems and reporting conflicts that arise in the watercraft inspection steward program sites.
- Lead Stewards travel frequently between various boat launch sites.
- Participate in weekly check-in conference calls with the TILT and SLELO PRISM supervisors.
- Conduct initial verification and review of WISPA Survey data

Upon reflection of the 2021 season, all stewards agreed that the Lead Steward position is valuable and should continue, however they would have liked to see the Lead Stewards more frequently. Additionally, the Lead Stewards reported that they would like additional responsibilities regarding team management, such as scheduling, supply delivery, and more site visits. It is recognized that the Lead Stewards were underutilized this season due to scheduling and performance conflicts, therefore the following recommendations have been suggested for future seasons;

- Lead Stewards should have a weekly site visit schedule, ideally on a slower Launch Day (Mondays or Thursdays) set forth at the beginning of the summer.
- Lead Stewards should be issued a bin of bulk supplies for Steward resupply at the beginning of summer to alleviate the need for multiple trips to the SLELO office.
- Lead Stewards should have set scheduled days to perform data QA/AC.

In addition to the Lead Stewards, a project component was introduced to provide stewards with a more well-rounded experience and to enable stewards to pursue related interests within their role. At the start of the season, stewards were given a choice of focus areas and asked to develop a project within the framework of the program. These stewards chose the following project areas: Aquatic Invasive Species Collection, Launch Signage, Water Chestnut Pulls, Graphic Design for Outreach, and Social Media for Outreach. Stewards worked through the season to develop and complete their projects, with many producing high-caliber work. Of the most successful projects, the AIS Specimen Collection project required the collection, preservation, and inventory of common and pertinent AIS found within the SLELO region. The Specimen Collection and Preservation Guide *(Figure 3)* was created along with a comprehensive inventory of preserved specimens currently in program use and a log indicating which samples need

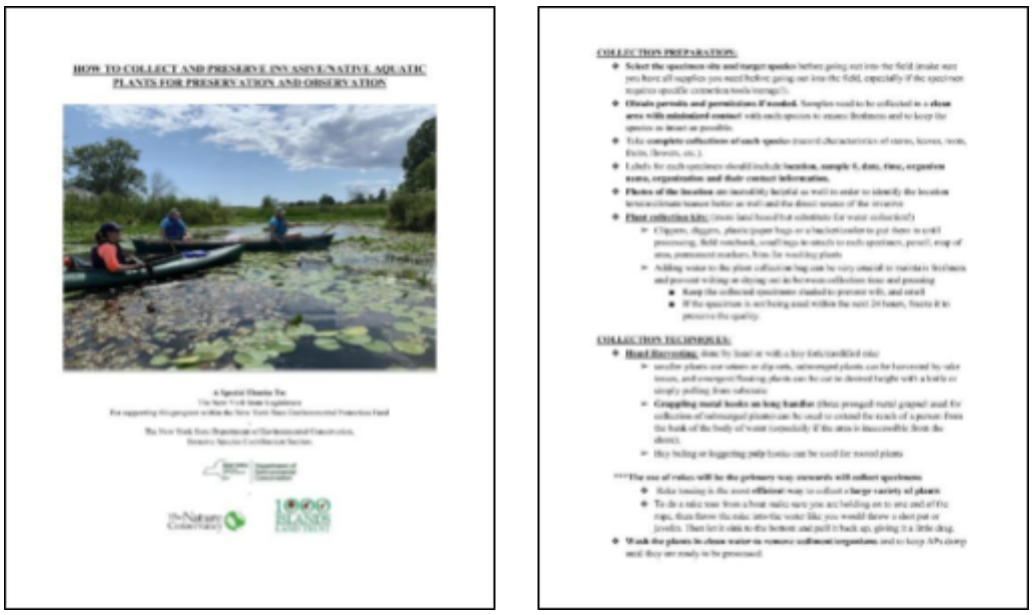

Figure 3: sample of the Specimen Collection and Preservation Guide developed by, Emily Cheney and Alexandria Hansson, 2021 WISP Stewards

replacement or duplicating. These preserved specimens are highly valuable for launch activities and provide essential visual aids for stewards and the public alike.

Another highly successful project was Social Media for Outreach, resulting in a diverse media catalog *(Table 1)* of materials for social media and general outreach. This catalog *(Table 2)* includes branded social media content with copywriting including photos of stewards in action, launches, AIS specimens and native specimens, AIS survey techniques, and the public engaging with stewards and practicing Clean-Drain-Dry techniques (*Figure 4)*. In addition, video content was created featuring stewards sharing their experiences and discussing key talking points like why the program matters and what boaters can do to prevent the spread of AIS.

	How do researchers know what plants are in any given body of water? Well the answer is much simpler than you might expect and is something you could even do at home! Rake tosses are a method where you essentially take a double-sided rake attached to a rope on and end and just throw it out into the water before dragging it back in by the rope. Once you've pulled the rake back in you can estimate overall plant abundance from a "zero" indicating no plants stuck to the rake to "Dense" which is so packed you can barely pull it up! From here you can separate out each individual type of plant recording species and weight before disposing.	#stopthespread #protectyourwaters #getinvolved

Figure 4: sample of the branded social media and copywriting project created by Chelsea Broughton, Felicia Kraatz-Lemke, and Alexander Linerode, 2021 WISP stewards

This project complimented the Graphic Design for Outreach project, a project focused on creative outreach materials such as AIS species half-sheets, pamphlets, and a slide presentation to be used at tabling events and launch sites (when possible). This project was moderately successful and should be repeated during the next season in order to develop more comprehensive products. Another project that experienced moderate success was the Water Chestnut Pull project. This project included the steward participation in Water Chestnut Pulls and creating an outreach flyer as a guide to these events. This project should be repeated during the next season in order to develop a more comprehensive outreach guide for the public as well as developing a media campaign (social media and press releases/articles) aimed as public education of this notorious AIS.

Lastly, this season's final project was designed to create a photo catalog and digital inventory of the signage currently found at launch sites and a log determining which signs need replacement, removal, or duplication at other launches. Unfortunately, this project had marginal success because it was largely incomplete by the end of the season. Because of the travel distance associated with this project, it should be structured so that each steward contributes photos of the signage at their launch site, rather than asking one steward to travel to each site. The assigned steward should then combine the photos into the catalog and should provide regular updates during team meetings to address which launches are missing photos. It should be repeated during the next season in order to develop a more complete catalog; however, it is possible that this project will not take the full season to complete, therefore it should be combined with another task.

It was the consensus of the stewards that the steward project segment of the season was successful and that it should be continued in further seasons. While program directors and administrators collaborate on the trajectory of the WISP program, it is suggested steward projects for next season include the further development and refinement of this season's projects (i.e. a more robust water chestnut pull project) as well as new opportunities. Newly recommended projects continue to focus on the critical intersection of mission data and public engagement. As such, possible steward projects could include, the writing of articles, the creation of an educational booklet for children, attending community events, holding boat/equipment-washing workshops, season-long rake-toss specimen data, and so on. For example, the development of weekly press/articles to be submitted to local media publications would serve a two-fold purpose of providing detailed information about WISP at local launches as well as engaging and educating readers in the purpose of the program and the greater picture in the fight against AIS.

Lastly, the program introduced a greater number of non-launch activities for steward participation. In 2020 program feedback, stewards appreciated the opportunity to engage in non-launch activities like trainings and seminars. This season, Watercraft Inspection Stewards attended a variety of non-launch activities, ranging from in-person AIS specimen identification workshops to specimen collections, water chestnut pulls (*Figure 5*), and outreach opportunities like, Save The River's Trash Free River event, River Day at ZooNY and the Indian River Lakes Water Quality Conference. These non-launch opportunities allowed

stewards to apply their knowledge of AIS in the SLELO PRISM and engage with new audiences that may not have encountered a steward or be aware of the measures being taken by professionals and the public alike. Additionally, these events allowed steward to further develop their knowledge of current research and methodologies and network with other local partners. These experiences were consistently ranked as highly desirable among steward exit interviews and prove beneficial to the WISP program because they provide stewards with a greater wealth of knowledge that they may employ during inspections and interactions with the public. Having more in-depth and diverse background knowledge about the multi-faceted approach to invasive species can help stewards answer the plethora of boater questions, feel more confident, and contribute to greater job satisfaction, thereby influencing steward retention and recruitment. It is likely that these non-launch activities will continue to be incorporated into the program.

Figure 5: 2021 WISP Steward, Alex Linerode, holds water chestnut removed from Guffin Bay, near Cape Vincent, during a pull event.

While further examining program improvements, program directors and administrators have also determined that steward retention and recruitment is essential to the longevity and success of the program. The next section of the report will discuss program challenges and successes, expert suggestions, and strategies employed by contemporary steward programs.

Program Recruitment

The Watercraft Inspection Steward is an hourly, seasonal paid position; because of this, for the past two consecutive seasons, recruitment of stewards has been largely targeted toward college-aged students. While the program has been mostly successful recruiting and retaining candidates, there were significant challenges during the 2021 season with staffing and steward performance. These challenges have been felt across the region and within other steward programs. The following questions were asked of other programs and the feedback is telling as to the challenges of the program and the need for more uniformity and support at the state level.

Surrounding these discussions has been a larger question of whether our target recruitment demographic is appropriate. Due to the seasonal nature of the position and remote nature of the work, it has been assumed that college-aged individuals and students were the best fit for the program, however it is possible that other groups would be better suited to the program. Currently, qualifications for the position include, but are not limited to, the following—

1. High school diploma or equivalent required. 1-2+ years of study or training in biology, ecology, natural resources, environmental science or other applicable scientific experience preferred
2. Prior experience working with the public and/or providing education or outreach of some type preferred
3. Ability to approach the public in a respectful and courteous manner
4. Highly self-motivated and responsible
5. Ability to work independently, work within teams, and take direction from supervisors
6. Excellent written and verbal communication skills and outgoing personality
7. Attention to detail
8. Interest in and familiarity with AIS management and the Eastern Lake Ontario region and/or the St. Lawrence River
9. Familiarity with the basics of boating, angling, and outdoor recreation
10. Ability to swim
11. Must have a valid driver's license, reliable transportation and a good driving record

Figure 6: An example of social media job advertising used by TILT during recruitment for the 2021 season.

A chief challenge of recruiting and retaining stewards stems from the remote nature of the position. The program covers a large geographic area, with launches spread across 5 counties (Jefferson, Lewis, Oneida, Oswego, and St. Lawrence) therefore, requiring stewards to work remotely with little daily supervision or co-worker interaction. Although keenly aware of this aspect of the position, nearly all stewards reported dissatisfaction with the lack of supervisor or co-worker engagement. In exit interview feedback, many stewards requested increased visits from Lead Stewards and Supervisors as well as increased opportunities for whole-group activity and non-launch public engagement (ie. tabling, etc.). As we focus on recruitment and retention, it would be wise to consider ways that we can alleviate this 'out-there' feeling and engage with the steward team in more meaningful and efficient ways. For instance, creating a weekly site-visit schedule for Lead Stewards and Supervisors in addition to scheduled weekly video meetings (Zoom). This would provide opportunities for resupply, steward coaching, data review, and foster a deeper feeling of team connectivity.

A common theme that runs through the challenges faced by other watercraft inspection steward programs is that of recruitment of quality candidates. Many programs have experienced increasingly low numbers of applicants during the past two years. Speculation suggests that this may be a lasting effect of the pandemic, however, without formal research, this should not be taken as the root cause of recruitment challenges. Many programs expressed that they followed previous strategies for job advertising without seeing significant improvement to the applicant pool therefore targeted recruitment strategies should be considered. The Capital PRISM program has taken this step to hire a professional marketing group to specifically target their ideal candidate demographic on social media. Programs continue to use common

recruitment avenues, such as college job-boards, newspapers, and social media (*Figure 6*) however some of the most successful recruitment continues to come from word-of-mouth recommendations. Programs have had success asking current and previous stewards to share the position with their cohort; applicants are usually hired and high performing.

While the previous two seasons have been challenging, many programs believe that this is an anomaly and that we will see applicant numbers return to pre-pandemic levels as we enter the 2022 season. With that being said, it is still wise to examine recruitment methods and determine ways for improvement; for instance, hiring demographics continue to be a puzzle for many programs. Due to the seasonal and lower-paying elements of the job, as well as the outdoor environment, many applicants are college-aged. Multiple programs have remarked that these students are enthusiastic at first but usually by mid-season they have marked lower productivity and job attendance becomes a problem. On the other hand, these candidates are usually unperturbed by variable weather and the physical aspect of the position. Older candidates, specifically retiree-age individuals continue to be an infrequent applicant group. At times, programs have experienced great success with this demographic, however, programs also report that many of these hires experience greater seasonal fatigue and do not want to work the 40-hours each week. Furthermore, this group exhibits greater frustration with the remote and independent nature of the position. Above all, nearly every program expressed the desire for more candidates in the graduate/post-graduate demographic. These mid-late 20s/early 30s candidates typically possess enough job experience and education to help them take the role more seriously and they are interested in career advancement. This demographic is motivated to maintain optimal job performance but is concerned with the seasonal aspect of the position because as young professionals, they are seeking job security and stability. It seems that there is no true answer as to which is the ideal recruitment group, hiring managers should continue to conduct due diligence and select the best candidates possible across all applicant groups.

Identifying ideal sources for candidate recruitment continues to be a challenge for many programs, including the SLELO PRISM-TILT program. For the past two seasons, the Watercraft Inspection Steward job opportunity announcement has largely been advertised via college job boards, like Handshake, the TILT website and social media platforms, and in newspaper print ads. This variable approach is helpful because it allows the job announcement to be seen by multiple audiences, however, when comparing recruitment sources from 2020 and 2021 (*Table 3*) it seems that the majority of successfully recruited candidates are not coming from college job boards but rather word-of-mouth. Recommendations from previous stewards and stewards connected to other watercraft inspection programs have resulted in more hires than any other source. Additionally, returnee hires comprised the bulk of the 2021 season's hires with 5 stewards rehired from the 2020 season. While returnee retention is positive, it is important to note that when surveyed about returnee stewards, some programs noted low job performance with returnee stewards, however this may be due to these returnees falling within the younger age demographic. Suggested by several other programs, Lake Associations, were a surprising recruitment source that has not been previously employed but the SLELO PRISM-TILT. The Saratoga Lake Protection and Improvement District

(SLPID) and the Minnesota Department of Natural Resources (MNDNR) have partnered directly with local Lake Associations to advertise the Watercraft Inspection Program and announce job opportunities. These programs have reported strong local support for the program and consistent applicants who become highly motivated and dependable staff. Another suggested recruitment source was through local Harbor Masters, Dock Supervisors, and Marinas. The Chautauqua Lake Association (CLA) has experienced success beyond hiring because recruitment through these sources has resulted in rapport and strong relationships that have impacted the program in a big way. Program managers using this method have seen greater support for the program and higher voluntary inspection compliance at their launch sites.

Despite all of these methods, programs across the nation experienced recruitment challenges. From the need to hire 1000 stewards for the MNDNR Watercraft Inspection Program to the small crew of 2 stewards for NYS DEC Region 1 on Long Island, each program noted a decreased number of applicants. Additionally, programs have noted that large job board sites may not be ideal for recruitment. With the numerous jobs listed on these sites, a seasonal position may not seem as attractive as a permanent or long-term contract. The SLPID program noted that in six years of positing the steward position on the NYS Labor Department website, they have never received an application. Likewise, the CLA program noted that very few applicants come though large college job boards, like Handshake; greater success has been achieved through other avenues. Again, this labor shortage comes at a time of great global change and while programs look toward 2022 for more typical numbers, it is wise to consider how to make the Watercraft Inspection Steward Program an attractive position for an ideal candidate.

Program Retention

Vetted and experienced employees are the goal of any program regardless of the field. During the past two seasons, the SLELO PRISM-TILT Watercraft Inspection Steward Program has had seven individual hires that previously worked with another watercraft inspection program, such as with SUNY ESF, or worked with SLELO PRISM and TILT during the 2020 season. These returnee stewards comprised the bulk of our hires during the 2021 season and through their suggestions, we were able to recruit two additional stewards to join the team. In a year with such a significant national labor shortage and many programs scrambling for qualified staff, program returnees proved vastly valuable. Returnee demographics may play a significant role in steward retention across a longer timeline. For instance, the SLELO PRISM-TILT returnee stewards comprise mostly of the mid-late 20s/early 30s, post-college demographic. This group indicated during the exit interview survey that while they enjoy the program they will most likely not be returning for the 2022 season due to enrolling in graduate school and seeking career progression. When surveyed, other programs indicated similar responses from this demographic however, returnees that were retired or older have returned to work season after season. The MNDNR program indicated that many of their hires are seasonal residents that move to cottages on the lakes during the summer and that they have been hired since the first years of their program, every season since 2003. Likewise, the CLA program has experienced multi-year retention success when hiring educators. Some educators, looking to fill this free time, take on seasonal positions, typically committing to 6-8 weeks over the course of a summer, coinciding perfectly

with Watercraft Inspection Programs. CLA has been able to rely on these hires during the busiest months of the program, July and August, without encroaching on the educators' primary career by requiring a full season commitment. The flexibility and compromise of this schedule has resulted in multi-year retention of these stewards. Both of these examples suggest that when prioritizing multi-year retention of stewards, programs should consider targeting their recruitment efforts toward individuals not interested in career progression.

Many Watercraft Inspection Steward Programs continue to examine the structure of the program itself as a way to increase recruitment and retention odds. Many programs have received clear feedback from stewards about the program structure: hours, location, and the need for increased flexibility. Programs, such as Capital PRISM, SLPID, and NYS DEC Region 1 are working directly with stewards to develop more part-time options. Many candidates are dissuaded from applying due to the weekend work schedule, therefore SLPID has decided to hire more stewards on a part-time schedule rather than mandate the 40-hour-every-weekend structure. The Capital PRISM program is implementing a starting pay increase to $15/hour for 2022 and is considering providing stewards with the option of choosing four 10-hour days or five 8-hour days to offer stewards increased flexibility. Flexibility in scheduling seems to be a recurring theme with successful programs; of the 6 Watercraft Inspection Steward Programs surveyed, 5 reported allowing flexibility with days scheduled. These programs cited requiring weekend work, typically Friday-Sunday, and allowing stewards to choose the other days of the week in accordance with their own schedules. This flexibility and compromise has resulted in greater steward retention throughout the season, no quitting mid-season, and more multi-year returnees.

Figure 7: SLELO PRISM-TILT Watercraft Inspection Stewards lead a clean-drain-dry station during an outreach event.

Another retention effort employed by various Watercraft Inspection Steward Programs is that of offering non-launch activities. These opportunities are used as a way to incentivize stewards, provide greater work experience variety, allow for networking opportunities, and in truth, break up monotony on slow days. For example, the Capital PRISM program provides stewards with field-work days where they engage with

PRISM partners to conduct field surveys. The MNDNR program gives intern stewards opportunities to job shadow with other MNDNR professionals, learning to network and explore a variety of career pathways including stream hydrology, wildlife conservation, stewardship, terrestrial invasive species, and field surveys. Similarly, the NYS DEC Region 1 program allows stewards to work with the NYS DEC Region fisheries department; this has proved to be a convenient solution to slow launch days due to the close proximity to the program offices. The CLA program has limited non-launch opportunities but does allow stewards to assist with lake maintenance (ie. vegetation removal) during slow launch days. Meanwhile, SLPID takes a different approach and has stewards participate in local canvassing of outreach materials, the writing of articles for the SLPID newsletter, and hosting "Floating Classroom" days where the public is invited to visit a launch to learn about AIS and the Watercraft Inspection Program as well as other related topics. As varied as these approaches are, a common theme runs through them: work experience variety. Each program is working to provide its stewards with a variety of experiences within the season. Whether these opportunities are offered as a way to reduce monotony, incentivize high-performing staff, attract new candidates with an exciting season, maximize the output of staff time, or check items off a to-do list, stewards love it. As indicated in 2020 and 2021 exit interview surveys, all responding SLELO PRISM-TILT stewards enjoyed non-launch work and want more of it.

Program Recommendations

Two seasons of operation in the SLELO PRISM and the shared insight of other Watercraft Inspection Steward Programs, ranging in diversity from the MNDNR's 1000 stewards conducting 500,000 inspections during the season to NYS DEC Region 1's 2 stewards covering two 3 launches on Long Island or even SLIPID's close proximity that allows the use of walkie-talkies, have proved a wealth of information that has helped to influence the following program recommendations.

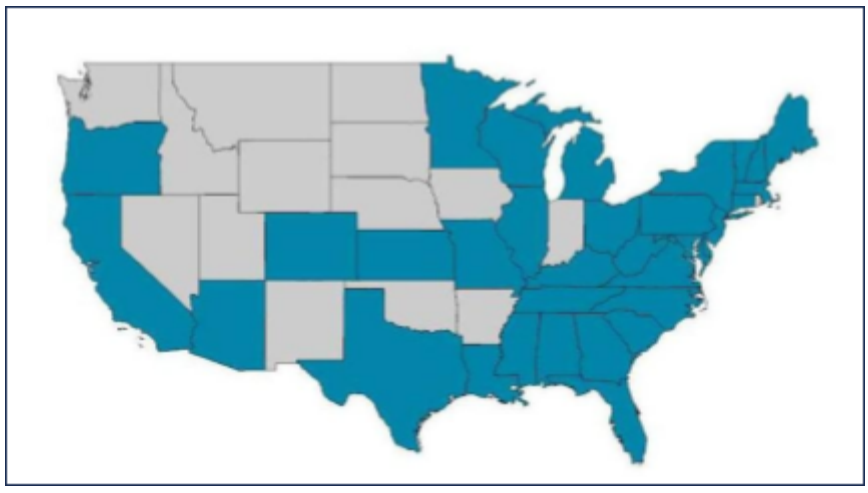

Figure 8: Registration states of watercraft inspected by 2021 SLELO PRISM-TILT stewards. Graphic featured in 2021 WISP Final Report by Brittney Rogers.

Nationally, Watercraft Inspection Programs are a ubiquitous presence on lakes, streams, ponds, and rivers from late-April to mid-September. Boaters are slowly becoming accustomed to clean-drain-dry protocols and many are not surprised to find a steward at the launch when they arrive or retrieve their watercraft. In 2021 WISPA surveys conducted by SLELO PRISM-TILT stewards, nearly 95% of boaters indicated that they had previous contact with a steward

(*Figure* 2). Additionally, these survey results also showed that boaters indicated 32 different states of watercraft registration (*Figure 8);* nationally there are 19 states that have watercraft inspection and decontamination programs (National Sea Grant Law Center). These states include, Arizona, California, Colorado, Idaho, Minnesota, Montana, Nebraska, Nevada, New Mexico, New York, North Dakota, Oregon, South Dakota, Vermont, Utah, Washington, Wisconsin, and Wyoming. The data from this season's boaters, shows that boaters had watercraft registered in 8 of these states, suggesting that it's probable that these boaters have had previous contact with a watercraft inspection program, whether through stewards conducting inspections or through participation in a decontamination station. Public familiarity with the inspection and decontamination programs is correlated to its success and many programs, such as AWI, report that once boaters have been through an inspection or decontamination, many negative preconceived notions are abated. AWI reported that voluntary participation in decontamination is a problem until boaters have been through the process at least once, afterward many realize that it is not damaging to craft, invasive of personal property or time consuming as they originally feared.

This is valuable insight because as more people take to the waters each season, the likelihood for the spread of AIS increases as well. Therefore, it's imperative that the public understands what watercraft inspection looks like and how the decontamination process works. When communicating with the public, Community-Based Social Marketing methodologies are essential to creating real, lasting behavioral change. A suggestion for future seasons is to promote and educate *before* individuals even begin to pull boats out of storage. Being able to capture these audiences off the launch is giving them the opportunity to engage with stewards and learn without the pressure of launching and retrieving their watercraft. For instance, setting up a mock Watercraft Inspection Station in a mall, outdoor store, or grocery store parking lot catches boaters in a different environment and removes the stress of the trailering process allowing them to have a neutral conversation with stewards rather than the dismissive or aggressive responses that some stewards report from boaters. Additionally, offering these education events can not only help stewards become more comfortable with the process prior to going to the launch but it is also a great time to distribute outreach materials so that boaters may familiarize themselves with clean-drain-dry, AIS in their waters, and the inspection and decontamination process before the boating season begins. This could be included in steward training prior to the season start to avoid detracting time from the launches.

An additional opportunity for public engagement and education can be found by hosting public outreach events *at the launch*. SLPID has multiple "Floating Classroom" events throughout the season where they invite the public to visit a launch and learn about a particular topic, such as AIS prevention, water quality, the aquatic habitat, etc. Feedback from the public and stewards alike is positive. Stewards get a little more diversity and enrichment to their position and the public builds rapport with the stewards and helps spread the message of the program. This could be an ideal solution to slow days at the launch and provide more of the 'field work' the stewards crave. By giving them an opportunity to lead a program SLELO PRISM-TILT can reduce time away from the launch while simultaneously achieving the goals of community engagement and steward job satisfaction.

Enrichment of the job has been a big discussion amongst contemporary programs. Many programs, SLELO PRISM-TILT included, are experimenting with ways to continue offering feasible ways to create greater experience variety through the season. Programs have employed tactics ranging from writing newsletter articles, community canvassing, to leading lessons. 2021 SLELO PRISM-TILT stewards highly ranked the project component and strongly suggest retaining it for future seasons. Potential projects could include expanding upon this season's projects, particularly when projects were found lacking, collecting water quality samples and reporting on findings, writing press releases for local print media, tracking plastic debris and reporting on findings, etc. Many project options abound for work within the scope of the program. Additionally, assigning one steward each week to research and deliver a brief presentation on a particular topic during weekly team meetings may also prove a valuable use of staff time, especially on days when weather conditions prevent on-site work. Above all however, field work remains a hot topic.

Many programs have struggled with how to justify time away from the launch in a program that focuses on consistent steward presence at the launch. As an answer to this problem and to boost steward job performance, Capital PRISM only invites high-performing stewards to field work opportunities. CLA, SLPID, and NYS DEC Region 1 report similar tactics; especially since poor job performance and steward shortage during the 2021 season was such a significant challenge for the majority of steward programs. MNDNR reported that as part of their intern program, intern stewards are offered field work to shadow other MNDNR departments and receive training to operate decontamination stations. NYS DEC Region 1 also offers stewards time for fieldwork with their fisheries department. Because of this, both MNDNR and NYS DEC Region 1 report higher multi-year retention and greater job satisfaction among these stewards. Furthermore, MNDNR reports that now they have an expanded pool of staff able to fill in if a regular DECON staff is absent, meaning the station can remain operable. By incentivizing non-launch work, programs are able to maintain greater control over non-launch work, boost staff morale and performance, and potentially cross-train employees for areas of great need.

Other incentives suggested by programs included:

-raising the base pay rate to at least $15/hour

-conducting a mid-season review with an optional merit pay increase

-allowing stewards schedule flexibility, working four 10-hour days or five 8-hour days

-offering college credit for the season

-offering high performing returnee stewards a promotion to Lead Steward

-hosting a season-end 'Thank You' party for seasonal staff (including stewards)

In addition to incentivizing stewards through the season, many of these suggestions appear helpful for attracting more and better qualified candidates. AWI is currently focused on ways to make their program more attractive to applicants and replenish their dwindling applicant pool. The 2021 labor shortage hit

programs especially hard and nearly all programs reported understaffed launches and low applications. To combat this, programs are examining hire demographics and placing emphasis on multi-year retention. For example, SLELO PRISM-TILT does not currently offer a part-time option for stewards. This would open up a new demographic of hires and potentially lead to multi-year retention of retirees, educators, and other individuals not interested in full-time work. Logistically, this could be achieved by splitting launch coverage between 2 part-timers, with each dedicated to 1 weekend-day or offering part-time stewards mid-day shifts to help full-time stewards during the busiest time of the day, namely 10am to 2pm. Additionally, part time staff may be able to fill-in when full-timers are absent, reducing instances of unattended sites. AWI has been successful with part-time shifts and reports that stewards feel like they have greater flexibility and do not feel 'stuck' working every weekend, all weekend. While weekend work is a main component of the position for all watercraft inspection and decontamination programs, it is valuable to acknowledge this and consider alternative scheduling methods or compromises that will have a positive influence on steward recruitment and retention.

Lastly, a current theme running through all of the programs addresses steward dissatisfaction with remote work and poor job performance. Many stewards, particularly college-aged and younger, feel dissatisfied by the remote and independent nature of the work. Because of the vast area covered by many programs, stewards are often assigned to secondary launch sites that may be more remote or less busy than primary sites (*Figure 9*). These secondary launch sites monitor important waterbodies but may lack boat traffic due to factors such as distance to town and cities, road access, parking, water depth, recreation opportunities, motor restrictions, and waterway connectivity and proximity to other popular sites. Furthermore, these remote sites often lack typical infrastructure amenities, like utilities and cellular service. Many programs report that stewards feel dissatisfied at these remote launch sites and prefer the busier, primary launch sites. Additionally, programs across the board reported that this same demographic has been consistently underperforming. Undesired behaviors such as lateness, time theft, absenteeism, inattentiveness, quitting mid-season, and ignoring boaters or unwillingness to engage with boaters has been a concurrent problem. Seeing as this is a two-fold problem, some programs are placing greater emphasis on site visits. CLA dedicates every Monday and Friday to conducting random site visits, stating that this boosts steward morale and performance together. Capital PRISM program management maintains steady weekly site visits for the first month then tapers off through the season, utilizing Lead Stewards to continue these visits for the

Figure 9: Secondary lauch site, Jackson Road on the Salmon River Reservoir, is increasingly remote and lacks adequate cellular service.

remainder of the season. Meanwhile, AWI, a program with approximately 120 stewards covering 67 launches, employs three Seasonal Supervisors and 7 Lead Stewards to conduct site visits through the season. Each program has found a way to incorporate regular site visits to address steward performance and assuage boredom and loneliness on slow days. This season, SLELO PRISM-TILT began to employ this tactic by scheduling Lead Stewards to make site visits once every 3 weeks, however it is clear from steward exit interviews that this is not enough. Looking forward to future seasons, the program would be wise to follow the fold of these successful programs and dedicate management and staff time to weekly site visits.

In addition to these program recommendations, the recruitment strategy for 2022 deserves a little revamping. As previously mentioned, recruitment of stewards for the 2021 season was a challenge for nearly all programs. Additionally, nearly all programs are using similar tactics such as social media and college job boards. It is important to note that in previous years these recruitment tactics were successful , therefore most programs see the 2021 labor shortage as an anomaly. Some programs, such as NYS DEC Region 1 recruit directly through a university because their program is connected to SUNY Stony Brook, therefore they have not noticed fluctuations in applicant numbers. Meanwhile, other programs, like MNDNR, SLPID, AWI and Capital PRISM have noticed a gradual decline in applicants over the past few years. As a way of combating this decline, programs are looking at new strategies to boost recruitment success, from hiring specialized marketing teams to reaching out to Lake Associations and local harbor masters.

Given the structure of the SLELO PRISM-TILT program and feedback from previous stewards and suggestions from other programs, the following recruitment strategies seem the most effective:

-Mid-Late January: Earlier advertisement of the position for college-student recruitment (job postings should be announced 6-months prior to internship start date)

-Mid-Late January: Begin series of social media posts on TILT and SLELO PRISM platforms & add job announcements (Full Time & Part Time position) to TILT website

-Mid-Late January: Continue to utilize College Job Boards (Handshake) and reach out directly to applicable departments that have led to successful recruitment (St Lawrence University, Clarkson University, SUNY Morrisville, ESF)

-Early February: Begin advertisement with local newspapers and radio, first announcement then every 4 weeks afterward until spaces are filled; ideally find ways to advertise the program without too many ads by submitting articles about the program

-Early February & reminder in late February: Utilize word-of-mouth referrals by contacting previous stewards and asking them to share the job announcement with their cohort

-Mid-February: Reach out to local lake and shoreline associations for job announcement in their newsletters and on their social media pages

-Early March: Reach out to local Harbormasters and Dock Managers to post job announcement in their newsletters and on their social media pages, and for applicant word-of-mouth recommendations

-Mid-March: Reach out to local school districts to post job announcement in Faculty Room, Break Rooms, and in the office (anywhere they allow job announcements) for educators and staff looking for summer opportunities

-Mid-March: First Hiring round

-Early April: Second Hiring round then rolling as needed

-Late April-Early May: Provide hired stewards with a preliminary schedule of trainings and meetings

-Mid-May: Steward Training and Non-Launch outreach

The emphasis on planning and preparedness cannot be overstated. If the program is to attract and retain quality candidates, SLELO PRISM-TILT must make every effort to promote clear communication and stability to these seasonal employees. Achieving a high level of pre-season organization and preparedness will make stewards feel more at ease with the remoteness of the position, make on-boarding and training more succinct, and ideally, make the lives of program administrators easier come high-season.

Decontamination Stations

Known to Invasive Species Management professionals across the country, real strides in the spread of invasive species comes from decontamination. Decontamination stations are readily found in a variety of methods, from boot brushes and scrapers at trail heads to slow the spread of invasive seeds to community-based 'pulls', and permanent AIS watercraft decontamination stations found near launches and on roadsides.

Unfortunately, while there are seemingly many decontamination efforts being made, there seems to be a general lack of public awareness of these stations, the procedure, and overall goal. This lack of information is easily seen when examining how AIS decontamination stations are presented in New York. According to the NYSDEC arcgis map, *NYS Public Boat Launches with Boat Stewards or Decontamination Stations* (*Figure 10*), there are approximately 22 DECON stations; 8 of these are roadside DECON stations, 12 are improved launches with DECON stations, and 2 are hand launches with DECON stations. This map, while helpful, is incomplete. Many programs operate portable DECON units that can be transported to different launches to meet boater demand. For instance, AWI operates 27 DECON units; only 20 of these are listed on the DEC map. Moreover, programs that operate their own units are not listed at all or have false information; SLPID has had a DECON station since 2012 however it is not listed on the map and Capital PRISM is listed as operating a Hand launch DECON station but no longer operates this site.In addition to this incorrect map,

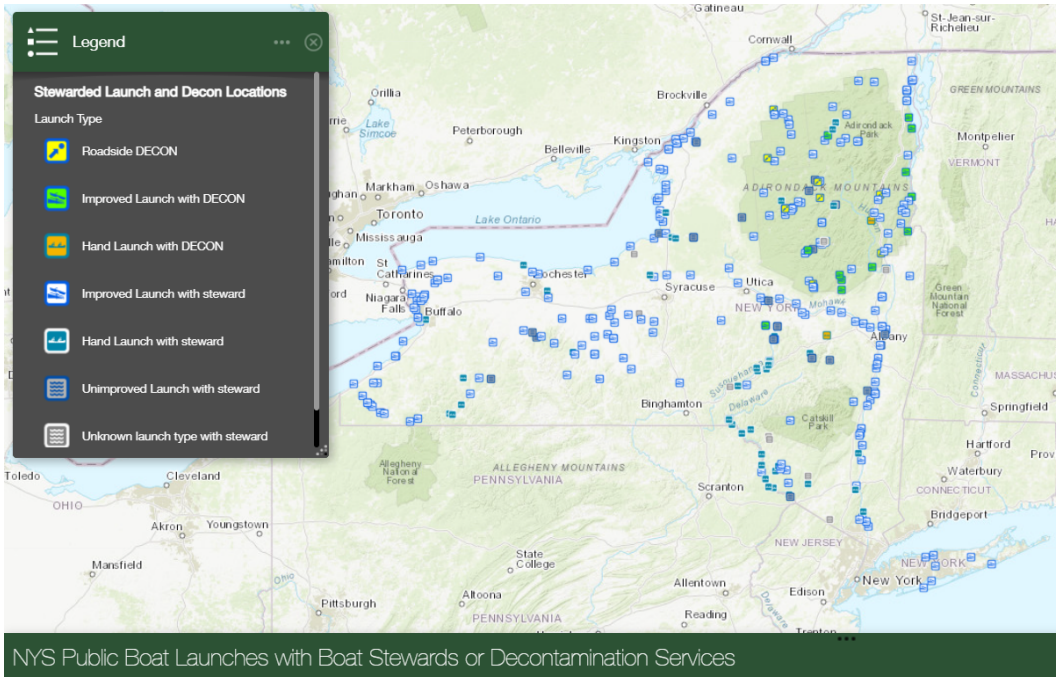

Figure 10: NYS DEC map of Public Boat Launches with Boat Stewards or Decontamination Services, as of November 2021.

the website is largely lacking in information that distinguishes what each type of station means or how it works. It can be argued that this misinformation and the sparse details provided contributes to the frustration felt by boaters when encountering a watercraft inspection steward or decontamination station for the first time. While this website is surely only one resource available to boaters, information at the state level should be a credible and reliable source for residents and visitors to our waters.

Public frustration and lack of awareness with AIS Decontamination has been felt nationwide. From extreme wait times at mandatory watercraft inspection stations at Lake Powell in Utah to dismissive boaters located within our own SLELO PRISM-TILT covered launches, stewards report that boaters are unenthused and uninformed about the process and goals of inspection and decontamination. This season, within the SLELO PRISM, 94% of boaters agreed to watercraft inspection, this is down 2% from the 2020 season. Steward exit interviews indicated that boaters vacationing from other states and bass tournament participants largely declined watercraft inspection.

This is consistent with reports from other programs, MNDNR stated that inspections were down by nearly 100,000 statewide and that the laws enforcing decontamination and inspection are unclear and not consistently enforced. In Minnesota, boaters may decline watercraft inspection if they are not immediately entering a waterbody but no timeline has been established as to what is considered immediate. Additionally, watercraft decontamination is required if AIS has been found on a vessel, but follow through is largely neglected. AWI also reported challenges stemming from boater misconceptions. Their stations are voluntary and many boaters declined use believing the process will take too long or damage their watercraft. Additionally, dismissive and disrespectful behavior of some boaters has led some stewards to stop asking boaters to use the service in an attempt to avoid conflict, thereby perpetuating boater misinformation and disuse of the stations.

Thankfully, it's not all doom and gloom. Of the boaters surveyed during the 2021 SLELO PRISM-TILT season, 76% indicated that they would use a DECON station if it was made available to them. Additionally, programs operating DECON units and stations report that boaters who have tried the process have a largely positive response and typically return to use it again after the initial service. The Utah Division of Wildlife Resources (UDWR) AIS program based on Lake Powell reports significant success with a new DECON method, the Dip Tank, with 100% of boaters reporting satisfaction with the new system and a willingness to to use it again. To sustain this positive momentum, UDWR provided Dip Tank users with swag and encouraged them to spread the word amongst other boaters.

Furthermore, retention and morale of UDWR AIS program staff was greatly enhanced with no staff quitting for the first time in many seasons. SLPID operating on Saratoga Lake noticed that most boaters were unaware of the DECON Station available to them therefore, they collaborated with their local soil and water conservation district to utilize portable billboards at launches directing boaters to the DECON station and reminding them to Clean-Drain-Dry. SLPID indicated that the signage called attention to the station and increased awareness and boater use.

These positive trends speak loudly for the development of decontamination methods within the SLELO PRISM. While New York finds itself on the cusp of AIS prevention measures, access to decontamination stations is largely barred by distance. There are no DECON stations local to SLELO PRISM-TILT program launches. The two closest stations are found at Star Lake Roadside DECON station operated by AWI and Canadarago Lake Improved Launch DECON Station operated by SUNY Oneonta, however, these stations are still 37 miles and 43 miles away from the nearest SLELO PRISM-TILT program launches. Furthermore, the majority of DECON stations within New York state are found within the Adirondack Park, vast and inconvenient distances from the area covered by the SLELO PRISM-TILT program. Additionally, it is important to note that of boaters surveyed during the 2021 WISP season, none indicated using DECON units in the Adirondack Park. When surveyed, 99% of boaters reported taking prevention measures including having their watercraft inspected, drying their watercraft, and draining the bilge. None reported visiting a decontamination station.

Distance continues to be a problem when considering alternative methods to decontamination. Rather than building a costly permanent DECON roadside or Improved Launch Station or purchasing portable equipment that must be maintained, several programs have considered employing the 'Car Wash Method'. This decontamination method suggests that boaters use public car washes. Boaters are directed to pull their watercraft and trailer through a self-service car wash that has been upgraded to meet minimum water temperature (140 degrees fahrenheit) and high pressure spray. Boaters then attend to the decontamination process themselves. When mapping car washes local to launches covered under the SLELO PRISM-TILT program most facilities were more than 10 miles away from the launches. Additionally, some facilities, while closer to launches, featured automated systems not suitable for trailered watercraft such as brushes and rollers. Additionally because these car washes are not free for the boater, many boaters may be reluctant to pay for the service when decontamination is still voluntary under current NYS

law. The SUNY Oneonta Watercraft Inspection and DECON program reported that it previously tried the car wash method, working with a local car wash that was willing to make plumbing upgrades for pressure and temperature but that the facility was out of the way and did not receive enough traffic so it closed. AWI also tried to employ the car wash method prior to investing in multiple DECON units and stations and found that of the facilities in their service area, few car washes were willing to partner, make upgrades, or were willing to let boaters bring trailered watercraft through their units. AWI abandoned this method for the permanent roadside stations and portable units it uses today. Above all, there is deep concern for the effectiveness of this method. If water pressure and temperature are not upgraded, the process is marginal at best for adequately removing and destroying AIS. For instance, UDWR stated that because these self-service facilities are unmanned by UDWR staff, the decontamination is not professionally done. AIS can be overlooked or the watercraft may not be thoroughly cleaned. Additionally, if mussel veligers are not destroyed or filtered in the process, they may enter the sewer system and create a new reproducing population. This can cause untold damage to the public wastewater system and hold numerous individuals liable. Given these reasons, the car wash method is not recommended for decontamination unless it is within reasonable proximity to a launch, has upgraded plumbing for pressure and temperature, a waste water filter in the drainage system capable of capturing veligers, and a program can dedicate staff to perform the decontamination of the watercraft.

Alternative methods of decontamination continue to pique the interest of programs. CLA, covering Chautauqua Lake, has been considering purchasing a portable self-service unit called CD3 (*Figure 12)*. These units are waterless, using compressed air, and have the option of running on solar. This off-grid approach is highly attractive to many programs that monitor launches in remote areas. AWI indicated that one of their chief challenges during the season is the lack of telecommunication and utility infrastructure at launches. While the CD3 units may be successful at removing AIS, there is no indication whether they successfully destroy veligers.It should be noted that on CD3 pamphlets, it does not state that their units *decontaminate*. There is a small sticker on the unit that says *Cleaning Station* therefore it is imperative that programs and boaters alike do not assume that these stations decontaminate. MNDNR stated that this unit could be problematic if boaters assume that merely

Figure 12: CD3 All Model Overview pamphlet provided by CD3, General Benefit Corporation. 2021.

removing visible AIS is good enough. Certainly, removal of AIS is important but until independent research can be conducted with these units, it does not seem like a wise investment.

While watercraft inspection and decontamination programs across the nation seek to evaluate other decontamination methods for cost savings, water and fuel sustainability, and effectiveness, contemporary methods utilizing high pressure and high water temperature remain the most popular. AWI reported that all of it's 27 DECON stations and units use this method. The units are portable and are able to be trailered and relocated to different launches based on demand. Additionally, these portable units are useful tools for steward training and public outreach. Staff training for these units is relatively straightforward and in New York, no certification is necessary to operate. AWI conducts two weeks of training for all of its Watercraft Inspection Stewards and DECON Technicians. During this time, Technicians complete a series of online and in-person training modules pre-season then receive on-going trainings throughout the season. Watercraft Inspection Stewards that are assigned to a launch with a DECON unit may be cross trained on the operation of the unit in order to alleviate inoperation if a Technician is unable to work. Similarly, MNDNR hires Watercraft Inspection Program Interns to specifically operate the DECON units but these students are required to complete general Watercraft Inspection Steward training as well. Cross training stewards and technicians is an absolute asset to any program whether fulfilling a labor need or increasing knowledge among staff. Staff that are knowledgeable in multiple aspects of a program feel more confident in their role and build better rapport with boaters, plus by sharing more information with launch users, these staff members increase their outreach capabilities.

Portable units are certainly favored among programs, from their ease of use to their relatively affordable price, however many programs still employ roadside and permanent stations. These stations are not meant to travel, rather they have been permanently located at a launch or roadside that a program has deemed appropriate for high traffic and high need relative to the waterbodies in the vicinity. SUNY Oneonta stated that permanent DECON stations have an advantage of being able to house larger units, tying into the grid for water and power access, pre-built road and driveway access and street scaping, and typically are eligible for local, state, and federal funding which prefers to see permanent infrastructure-like projects. A downside to these permanent stations though is their significant price tag, most stations cost upwards of $350,000; meanwhile portable units range in price from $7,500 to $19,000. (These prices may change with current inflation rates.) Additionally, some programs report that boaters do not notice the station or do not realize a launch area has a station. SLPID's DECON station is housed in a nondescript utility shed and boaters often pass by without realizing what the equipment is for. Because of this SLPID has been working on developing better signage and using road cones to direct traffic toward the shed; leading to an uptick in DECON usage this season. With increased usage comes concerns for equipment maintenance. MNDNR operates 26 portable DECON units across Minnesota. Like most programs, portable units are transported daily to launches. The portability of the units is certainly an asset, however increased travel means greater wear-and-tear on the equipment itself, as well as the trailers and trucks required to move them. At this time, MNDNR staff has been trained to perform routine maintenance on the units but outsources other maintenance tasks. AWI, also employs mostly portable DECON units however they have taken a different

approach to maintenance by hiring a DECON Program Assistant who travels daily to maintain all of the equipment as well as refill water and fuel tanks. All programs with DECON services perform pre and post season maintenance and repairs but aging equipment is beginning to make itself known. Maintenance and associated staff wages and expenses are often an overlooked expense when considering the purchase of a unit. Whether hiring outside vendors or training internal staff, it is an important factor to consider beyond the tag price of a unit.

Figure 13: The Dip Tank, located at Lake Powell, is the first watercraft decontamination station of its kind. Clean Wake, LLC 2021.

While contemporary high pressure and high temperature DECON units and stations are the norm across participating programs, the Utah Division of Wildlife Resources (UDWR) is taking a wholly new approach to watercraft decontamination. UDWR operated over 40 watercraft inspection and decontamination sites across the state, conducting over 6,000 mandatory inspections on Lake Powell alone. Utah moved to mandatory watercraft inspections and decontaminations in response to the growing quagga mussel crisis across western states. While noble, the state infrastructure for such proceedings is not currently able to keep up with the demand of local and visiting boaters. At Lake Powell, boaters are waiting anywhere from 3-4 hours for mandatory inspections. These extreme wait-times created significant conflict at inspection sites with boaters lashing out at stewards and other visitors. Combined with extreme work conditions, high UV exposure and road surface temperatures that regularly reach 140 degrees, UDWR stewards regularly quit. The program has had significant trouble meeting boater demand, securing enough hires to cover all of the launch sites, and maintaining job satisfaction to retain these hires. Seeking a better way, UDWR worked with a private firm, Clean Wake LLC, to develop a new decontamination method, the Dip Tank (*Figure 13*).

The Dip Tank, introduced in May of 2021, is a permanent DECON station located in the National Park Service Glen Canyon National Recreation Area on Lake Powell. Requiring just 5 minutes, boaters drive trailered watercraft into the tank containing 110 degree water. All exterior trailer and watercraft surfaces are simultaneously decontaminated while the boater operates propeller, bilge and livewell functions to effectively flush all internal mechanisms. UDWR stated that the two-step filtration system removes debris and dead veligers every 2-3 hours and that the tank is raked out to remove gravel once a month, meaning that recaptured water creates a low waste cycle that reduces the need for frequent refill from a cistern or whole tank replacement. Currently, the station uses propane to heat the water, fuel the pump and filtration system but engineers are working to incorporate municipal grid hook-ups and create a solar option, ideal for Utah's sunny climate.

The Dip Tank was constructed in roughly 3 months at the cost of approximately $800,000 but has already created a significant positive impact on boaters and program staff alike. 100% of surveyed boaters using the Dip Tank reported satisfaction with the system and stated that they would use it again and recommend it to others. Boaters also reported that they preferred the Dip Tank system because it felt less intrusive and was touch-free. Boaters must control their boat operations to send water through the systems and the full contact of the tank water eliminates the traditional high-pressure washing or brush scrubbing used by other DECON methods. Additionally, for the first time in several years, the UDWR Aquatic Invasive Species and Boating Access program did not suffer staffing shortages due to quitting.

In 2021, over 315,000 watercraft inspections and decontaminations were conducted from May to mid-September. According to the National Park service, Lake Powell sees around 2 million visitors each year. During the 2021 season, UDWR conducted over 6,000 inspections at Lake Powell and data shows an average increase of 20% in boating activity on the Lake in recent years. The Dip Tank was able to conduct over 450 decontaminations during the 2021 season, while not a huge number in relation to the total number of Lake Powell visitors, it is a promising start. A second Dip Tank is currently planned for the opposite end of the Lake, to be opened in the near future, with design improvements reducing the cost to approximately $650,000. In comparison to DECON methods employed by AWI, MNDNR, SLPID, and SUNY Oneonta the cost is still radical however, UDWR reports that strong state support through legislation, boater education, and partner collaboration has made the efforts worthwhile in the fight against AIS.

Conclusion

In the grand scheme of things, any tactic employed to prevent the spread of aquatic invasive species is necessary and warrants discussion. SLELO PRISM and TILT have successfully conducted two seasons of watercraft inspection, covering around 30 launches across 5 counties for a total of 22,103 watercraft and intercepting 3,095 “dirty” boats. For a program working less than 10 months in 2 years, this is a significant achievement. Therefore, as the SLELO PRISM-TILT Watercraft Inspection Program looks toward the future of program structure and weighs options for incorporating decontamination services it can be suggested that any of the recommendations found within this report will prove beneficial.

Watercraft Inspection Steward Program Recommendations

-Program Management

-conduct weekly site visits during first 30 days

-increase team meetings to weekly occurrences with stewards assigned to present various topics

-conducting a mid-season review with an optional merit pay increase

-incentivize non-launch field work inviting only highest performing stewards

-continue Lead Steward Position but increase site visits to weekly occurrences, allow Lead stewards to conduct all resupply and build in scheduled data QA/QC

-continue Project component

-develop pre-season community outreach events to educate boaters and the public

-develop mid-season outreach events at the launch, such as Floating Classrooms

-Program Schedule

-allow stewards schedule flexibility, working four 10-hour days or five 8-hour days

-develop part-time shift schedule to assist with heaviest use days/times

-allow stewards 1 weekend off each month, schedule to be set during pre-season

-Program Recruitment

-continue current job announcement methods but begin earlier (Mid January)

-develop stronger word-of-mouth relationships by working with previous steward for cohort recommendations and engaging with Harbormasters and Dock Managers

-Reach out to Lake and Point Associations for inclusion in newsletters and social media

-Reach out to local educators and community groups to recruit diverse demographics (working professionals, retirees, etc.)

Watercraft Decontamination Recommendations

-At this time, more research and information needs to be collected on the reliability and viability of utilizing local carwashes for watercraft decontamination; this could be an opportunity for a steward project in future seasons.

-waterless (compressed air) units are effective at removal of AIS for cleaning purposes but do not qualify as decontamination and may not be a smart investment over time

-contemporary high pressure and high temperature units are more widely used and more cost effective than permanent stations; these would be a good initial investment until demand warrants a permanent station at a high-use launch

-DECON sites should be highly visible and promoted during watercraft inspections, community outreach events, social media platforms and print media

-Dip Tank decontamination is a highly successful method but should not be pursued without employing contemporary high pressure and high temperature units first

-voluntary use is still widespread and creates problems for program legitimacy in the eyes of the public, therefore success is largely dependent on state legislation. Support from local and state level governments is imperative to making inspection and decontamination mandatory.

The Thousand Islands Land Trust is proud to partner with The Nature Conservancy through the efforts of the St Lawrence Eastern Lake Ontario Partnership for Regional Invasive Species Management and looks forward to implementing these program recommendations to strengthen the outcomes of each season and continue to protect our precious natural environment.

Appendix

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Tables

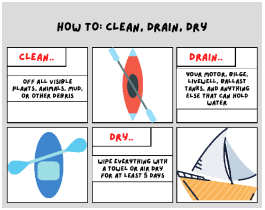
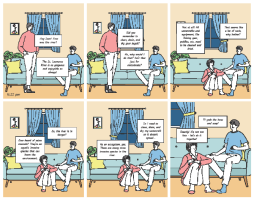
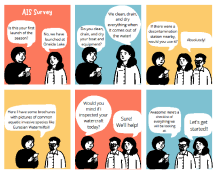
Table 1: 2021 WISP Season Photo Catalog for social media and outreach as collected by stewards completing the Social Media for Outreach season project.

2021 Season Photo Catalog											
Photo Subject	**Bellamy Harbor**	**Black Lake**	**Bonaparte**	**Cape Vincent**	**Delta Lake**	**Godfrey Point**	**Grass Point**	**Henderson Harbor**	**Heuvelton**	**Jackson**	**Keewaydin**
Interactions w/ Public											4
Stewards in action				1	1	2	1			3	7
Scenic Photos of Launches	3			3	1	2	13				10
Families fishing							1				1
Fishing gear											
People w/ fish											
Picnicking at Launches							3				
Diversity use							2				3
Wildlife encounters							1				6
Close ups of boat parts											
Kayaks/ gear							4				
Swag photos											
Nuisance disposal sites					1						
Rake tosses											5
Signage	1			5	1	1	1			2	
Species found					7	2					7
Fishing Tournaments				4							6
Boat Photos											
Classes on Water											
Photo Subject	**Mary St**	**Massena**	**Millsite**	**N. Sandy Pond**	**Sackets Harbor**	**Stony Creek**	**Three Mile Bay**	**Wellesley Island SP**	**Other**		
Interactions w/ Public									5-IRLC Kids Camp		
Stewards in action	1		9	2		6		3	11- Guffin Bay WCP		
Scenic Photos of Launches	1		2			2	6	12	2-Guffin Bay		
Families fishing								1			
Fishing gear											
People w/ fish											
Picnicking at Launches	2										
Diversity use											
Wildlife	7			2				7			
Close ups of boat parts											
Kayaks/gear											
Swag photos											
Nuisance disposal sites			4	1			1	2			
Rake tosses				1		9			1- Training		
Signage	2		10	1		2	6				
Species found	16					1					
Fishing Tournaments											
Boat Photos	29										
Classes on Water						6		3			

Table 2: 2021 WISP Season Social Media Caption table created by stewards completing the Social Media for Outreach season project, Chelsea Broughton, Felicia Kraatz-Lemcke, and Alexander Linerode.

2021 Season Social Media Caption Table

Photo to be Used	Copy Writing	Links	Other
	Cleaning, draining, and drying your watercraft is one of the most effective things you can do when it comes to helping stop the spread of aquatic invasive species in your local waterbody. **Clean:** Make sure you remove and visible plants, mud, or animals before transporting your watercraft. Aim to discard plant matter on land or in marked disposal stations at the launch, not in the water. **Drain:** Drain all parts of the watercraft that could contain water such as the bilge, live well, and ballast tank. **Dry:** Fully drying boats, trailers, and other equipment is the most effective way to ensure no invasive plants or fish species are being transported between waterbodies.		#stopthespread #protectyourwaters
	The invasive Hydrilla or “water thyme” is an aquatic plant that was initially native to Asia but has begun being found in select water bodies in New York starting 2008. It is known for being one of the most difficult invasives to both control and eradicate in the entire United States and is responsible for disrupting fish spawning sites, blocking flow in reservoirs, and decreasing water oxygen levels. The main way that hydrilla is identified is through the series of whorls of leaves (leaves growing around the stem in the same plane) of 5 or more with serrated leaves. If you believe you have found hydrilla make sure you report it to the attending watercraft steward or DEC if one is not present.		#stopaquatichitchhikers #hydrilla
	The estimated damage from invasive species in the U.S. alone is estimated to cost over 120 billion dollars annually and are the cause of more than 50 percent of native species being classified as either endangered or threatened. Make sure you help stop the spread by cleaning, draining, and drying your watercraft to help prevent the further spread of invasives!		#thedamageisreal #ipledge
	This summer has found an elevated population of invasive gypsy moths in New York state which is contributing to a significant amount of leaf damage in affected areas. Gypsy caterpillars can be identified by the five pairs of raised blue spots followed by six pairs of raised red spots along its back. If you see them in your area gypsy moth caterpillars and adults can be killed by squishing them. Egg masses can be destroyed by scraping them off trees or other structures and dropping them in a container of detergent.		#stopthespread #protectyourland #getinvolved
	Zebra and quagga mussels are known to reduce the quality of recreational activities, damage infrastructure, and clog water delivery systems. If you notice these fingernail sized mussels with dark zig-zagged stripes on their shells stuck to your watercraft, make sure you are making an effort to remove them from both your watercraft itself and related equipment through the three-step Clean, Drain, Dry process.		#stopthespread #protectyourwaters #getinvolved
	Spiny water fleas are aquatic zooplankton between ¼ and ⅝ of an inch long and while originally native to Europe and Asia have begun spreading into New York water bodies such as Lake Ontario, Erie, George, Champlain, and Saratoga. By eliminating native food sources they are responsible for large declines in native fish populations. You can help prevent the spread of spiny water fleas by checking your fishing lines and anchor ropes for what look like masses of bristled clear jelly with dark spots throughout and not allowing them to hitch rides to new lakes.	http://nyis.info/invasive_species/spiny-waterflea/	

	While originally native to Asia, Europe, and northern Africa, Eurasian water-milfoil has become one of the most widely distributed invasive plants in the U.S. Characterized by feather-like green leaves that have 12 or more segments, this plant reduces biodiversity by competing aggressively with native plants and creating dense mats which is the ideal habitat for mosquitos. In order to prevent the spread of this invasive plant make sure you continue to Clean, Drain, and Dry your watercraft before each use. If you believe you have found Eurasian water-milfoil make sure you inform the attending boat launch steward.		#cleandraindry #everytime #everywatercraft
	How do researchers know what plants are in any given body of water? Well the answer is much simpler than you might expect and is something you could even do at home! Rake tosses are a method where you essentially take a double-sided rake attached to a rope on and end and just throw it out into the water before dragging it back in by the rope. Once you've pulled the rake back in you can estimate overall plant abundance from a "zero" indicating no plants stuck to the rake to "Dense" which is so packed you can barely pull it up! From here you can separate out each individual type of plant recording species and weight before disposing.		#stopthespread #protectyourwaters #getinvolved
	Water chestnut "pulls" are one of the most commonly used population management techniques used for the plant. It can be extremely effective for how simple it is to do, groups will paddle out to the affected area on kayaks or canoes and physically pull the plant and roots out of the water and into bags to be disposed of. When done regularly this has been shown to significantly curtail the spread of water chestnut in our lakes and rivers.		#doyourpart #getinvolved
	First introduced in the 1870's the Water Chestnut spreading throughout New York's water bodies is not the same thing that you're buying in a can at the supermarket. The European Water Chestnut or *Trapa natans* has become a significant environmental nuisance in the waters it is present in as it tends to form nearly impenetrable mats on the surface of the water creating both a hazard for boaters and severely restricting the amount of light that can reach deeper into the water. They are also responsible for producing extremely hard spiny nut-like fruits that can damage both humans and animals alike. The best way to help prevent the spread of water chestnuts is to make sure you Clean, Drain, and Dry your watercraft after each use.		#stopaquatichitchhikers #ipledge
	Due to the dramatic increase in the Zebra mussel population in recent years, they are able to filter all of the water in the freshwater portion of the Hudson river in only THREE days. This is a huge increase when you think about how it took the native mussel population between two and three months to filter that same volume of water. You might be thinking "Filtering water doesn't sound so bad!", however what these mussels are filtering out are the food that is supposed to act as the base of the aquatic food web.		#zebramussels #protectyourwaters
	FAQ: Why should I care about invasive species? I didn't bring them here. A: While at first thought it may not seem like "your problem", when you look deeper into it you can see how the presence of invasive species affect everyone who uses a waterbody from boaters, to fisherman, and even to people who just own property on the water. Invasive species can decrease agricultural crop yields, clog waterways, decrease fish diversity and lower waterfront property values.		#cleandraindry #everytime
	FAQ: Why do invasive species seem to always outcompete their native counterparts when introduced into the environment? A: When species are introduced into a new habitat they are now no longer in reach of their original native predators and diseases that are the two biggest factors when it comes to keeping population in check. Without these limits in place they are able to quickly outnumber the native plants disrupting the local food web and decreasing biodiversity.		#protectyourwaters #safeguardbiodiversity
	FAQ: What plants are expected to be seen at the boat launch? A: While you might be hearing a lot about aquatic invasive species recently, many of the most common plants you'll see in the water are actually native! One example of a common native plant that you'll see is elodea or "common waterweed". This aquatic plant is recognizable from its branched stems, with three oval shaped leaves arranged in clusters around them and during the summer months actually has tiny white flowers that bloom above the water's surface!		#nativespecies

	Curly leaf pondweed or *Potamogeton crispus* is one of the most common aquatic invasive species that will be found at our launches. While originally native to Europe, Africa, and Australia it can now be found all over New York State. Characterized by its reddish-green wavy leaves it is responsible for displacing native plants and forming dense monocultures impeding both fish and boaters. Do your part to Clean, Drain, Dry to stop the spread!		#stopaquatichitchhikers #protectyourwaters #doyourpart
 16 Generic PYW.mp4	Cleaning, draining, and drying your watercraft is one of the most effective things you can do when it comes to helping stop the spread of aquatic invasive species in your local waterbody. ONLY YOU can prevent the spread of aquatic hitchhikers!		#makeadifference #protectyourwaters
 17 Generic SAH.mp4	How you can help stop aquatic Hitchhikers! o Learn to recognize aquatic invasive species and know where to look for them. o Clean, Drain and Dry all watercraft, trailers, motors, and gear every time you leave a body of water. o Never release fish, animals, or plants from one waterbody into another. o Help inform others about the threat of aquatic invasive species.		#stopaquatichitchhikers #cleandraindry
	Many of our water recreational activities depend on healthy native ecosystems to enjoy! Aquatic invasive species can negatively impact the quality of our outdoor recreation experiences, reduce access to these areas, and threaten human health and safety if we don't do our part to stop the spread. The best thing you can do to keep Millsite and other similar waterbodies safe is cleaning, draining, and drying your boat after every use!		#cleandraindry #stopaquatichitchhikers
Link Preview	If you ever find any plant you suspect might be one of the invasive species found in your area and there is no boat steward present you can report it to, the best thing to do is use the iMapInvasives or iNaturalist apps! These are easily used websites where you can report your findings for other people to see and allow researchers to track potential newly introduced invasive species! You can learn more about these programs at https://www.nyimapinvasives.org/ and https://www.inaturalist.org/	https://www.nyimapinvasives.org/ https://www.inaturalist.org/	
	Keep our waters clean! Protect places like Wellesley Island State Park by making sure that you Clean, Drain, and Dry your watercraft before and after leaving a waterbody!		#iloveny #nyoutside #protectyourwaters
	FAQ: What is that smell coming from these plants? A: Characterized by its foul and musty odor, what you might actually be smelling is Chara! While sometimes going by the names of skunkweed or muskgrass, these are actually pretty misleading as the Chara species is not actually a plant at all! But rather an advanced species of algae!		#algae #themoreyouknow

Table 3: 2020 and 2021 WISP candidate recruitment sources, including applicants.

Recruitment Source	Demographic	Platform	2020 Applicants	2021 Applicants
Boston College	School/College-age	Handshake	**N**	**N**
Brown University	School/College-age	Handshake	**N**	**N**
Champlain College	School/College-age	Handshake	**N**	**N**
Clarkson University	School/College-age	Handshake	**2 Stewards**	**N**
Colgate University	School/College-age	Handshake	**N**	**N**
Cornell University	School/College-age	Handshake	**N**	**N**
Finger Lakes Community College	School/College-age	Handshake	**N**	**N**
Hamilton College	School/College-age	Handshake	**1 Steward**	**N**
Iona College	School/College-age	Handshake	**N**	**N**
Ithaca College	School/College-age	Handshake	**N**	**N**
Le Moyne College	School/College-age	Handshake	**N**	**N**
St. John Fisher College	School/College-age	Handshake	**N**	**N**
St. Lawrence University	School/College-age	Handshake	**N**	**1 Steward**
SUNY Canton	School/College-age	Handshake	**N**	**N**
SUNY Cortland	School/College-age	Handshake	**N**	**N**
SUNY Empire	School/College-age	Handshake	**1 Steward**	**N**
SUNY Geneseo	School/College-age	Handshake	**N**	**N**
SUNY Morrisville	School/College-age	Handshake	**1 Steward**	**1 Steward**
SUNY Oswego	School/College-age	Handshake	**N**	**N**
SUNY Plattsburg	School/College-age	Handshake	**N**	**N**
Syracuse University	School/College-age	Handshake	**N**	**N**
SUNY ESF	School/College-age	Handshake	**1 Steward**	**1 Steward**
SUNY Potsdam	School/College-age	Handshake	**1 Steward**	**N**
University at Albany	School/College-age	Handshake	**N**	**N**
University at Buffalo	School/College-age	Handshake	**N**	**N**
University of Vermont	School/College-age	Handshake	**N**	**N**
Paul Smiths College	School/College-age	Handshake	**1 Steward**	**N**
Herkimer Community College	School/College-age	Purple Dragon	**N**	**N**
Mohawk Valley Community College	School/College-age	Purple Dragon	**N**	**N**
Jefferson Community College	School/College-age	Symplicity Recruit	**N**	**N**
Thousand Islands Land Trust website	General public	Website	**2 Stewards**	**2 Steward**

Thousand Islands Land Trust social media	General public	Facebook	**N**	**1 Steward**
Thousand Islands Sun newspaper	General public	TI Sun	**N**	**N**
Word-of-mouth	General public	---	**5 Stewards**	**5 Stewards**
Returnees/Previous Steward Role	Previous stewards	Previous Stewards	**2 Stewards**	**5 Stewards**
DEC Newsletter	General Public	DEC	**N**	**1 Steward**