

# **Candlewood Lake Authority**

## **2024 Lake Steward Program Final**

### **Report**



Written and Compiled By:

J. Neil Stalter

CLA Director of Ecology

*Funding Provided By: CT Department of Energy and Environmental Protection Aquatic  
Invasive Species Grant Program*

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## Results Summary

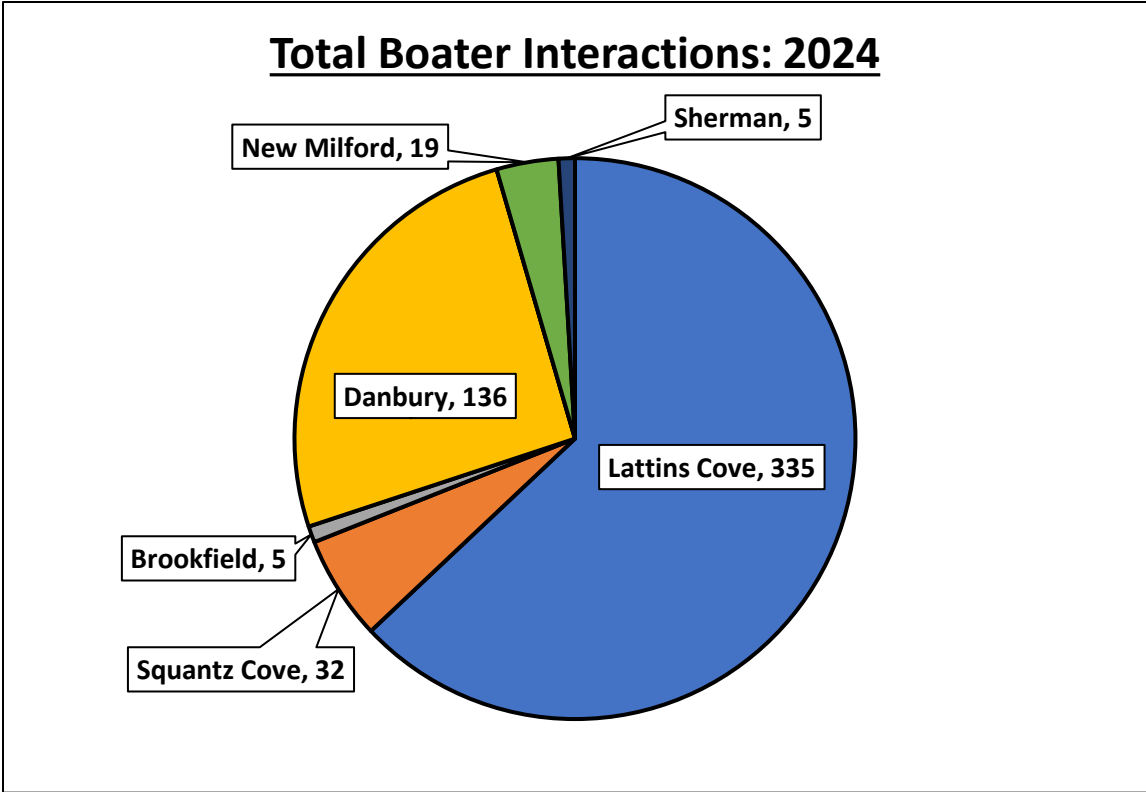
Launch	Pontoon	Bowrider	Fishing Boat	Wakeboard Boat	Enclosed Cabin	PWC	Small Craft	Total Boater Interactions
Lattins Cove	24	177	20	11	1	100	2	335
Squantz Cove	1	23	1	1	0	6	0	32
Brookfield	1	3	1	0	0	0	0	5
Danbury	9	85	6	2	0	34	0	136
New Fairfield	0	0	0	0	0	0	0	0
New Milford	1	14	3	0	0	1	0	19
Sherman	0	2	1	1	0	1	0	5
<b>Total Vessels</b>	<b>36</b>	<b>304</b>	<b>32</b>	<b>15</b>	<b>1</b>	<b>142</b>	<b>2</b>	<b>532</b>

*Table 1: Total Boater Interactions by Launch & Type of Vessel in 2024*

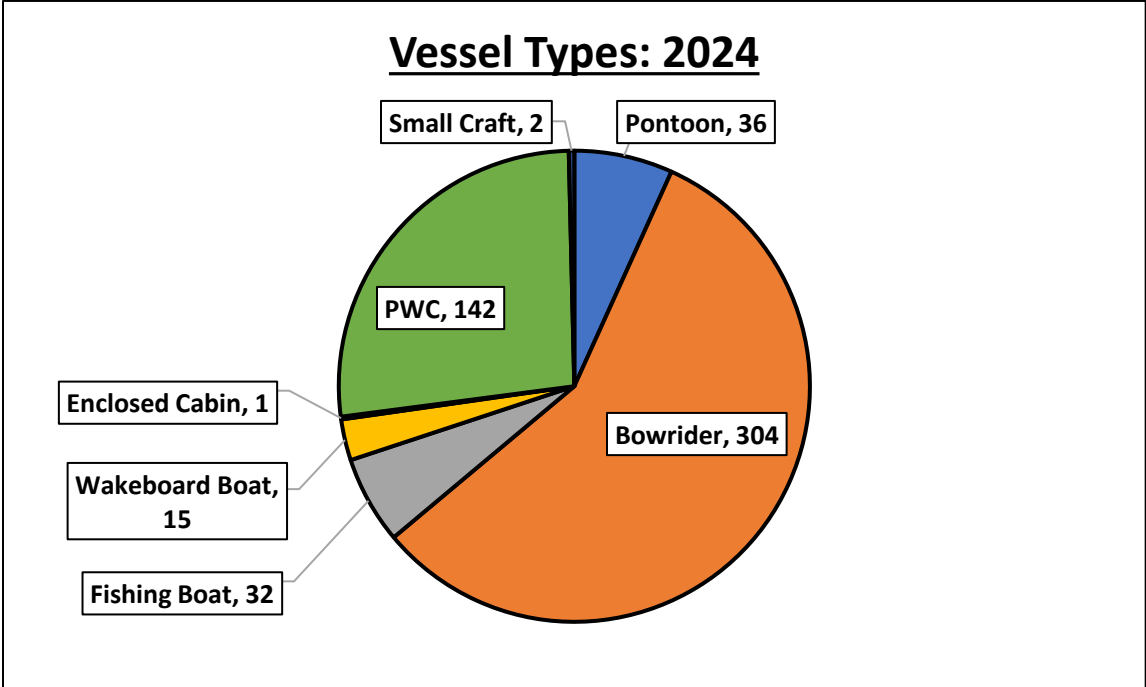
In 2024 there were a total of **532 interactions** with boaters by Lake Stewards before entering Candlewood Lake. The majority of these interactions (335) were conducted at the public Lattin’s Cove boat launch and were of bowrider type boats (304). The decision was made in 2022 to not man the launch at New Fairfield because New Fairfield due to extremely low usage by daily boaters. This year, stewards kept more diligent track of boaters who voluntarily declined an inspection at the launch. Of all 532 interactions **261 boaters accepted a thorough inspection**, leaving 271 boaters that declined an inspection (51%). While stewards have not kept count of declined inspections in the past, this constitutes a significant increase in boaters declining an inspection. There are likely a variety of reasons for this increase, but the most obvious to us are:

- 1) Because stewards were trained to count declined inspections, they likely felt that boaters declining an inspection was standard and thus didn’t “sell” the inspections as effectively as in the past.
- 2) The steward manager was a new hire this year, and thus some institutional knowledge from previous years was lost between steward managers.
- 3) The lack of plants in Candlewood Lake meant that boaters very rarely had any invasive species on their boats/trailers (since returning to Candlewood from Candlewood is by far the most common recreational pattern of visitors), convincing boaters that inspections are less necessary.

In future years, while declined inspections will continue to be tracked, lake stewards will be trained to ensure that every boater has the opportunity to undergo an inspection and understands the value of inspections in protecting lake ecosystems. Despite this change, stewards still interacted with nearly all boaters entering Candlewood Lake during shifts, and **over the 4 years of the program there have been 2599 boater interactions and 2328 thorough inspections.**

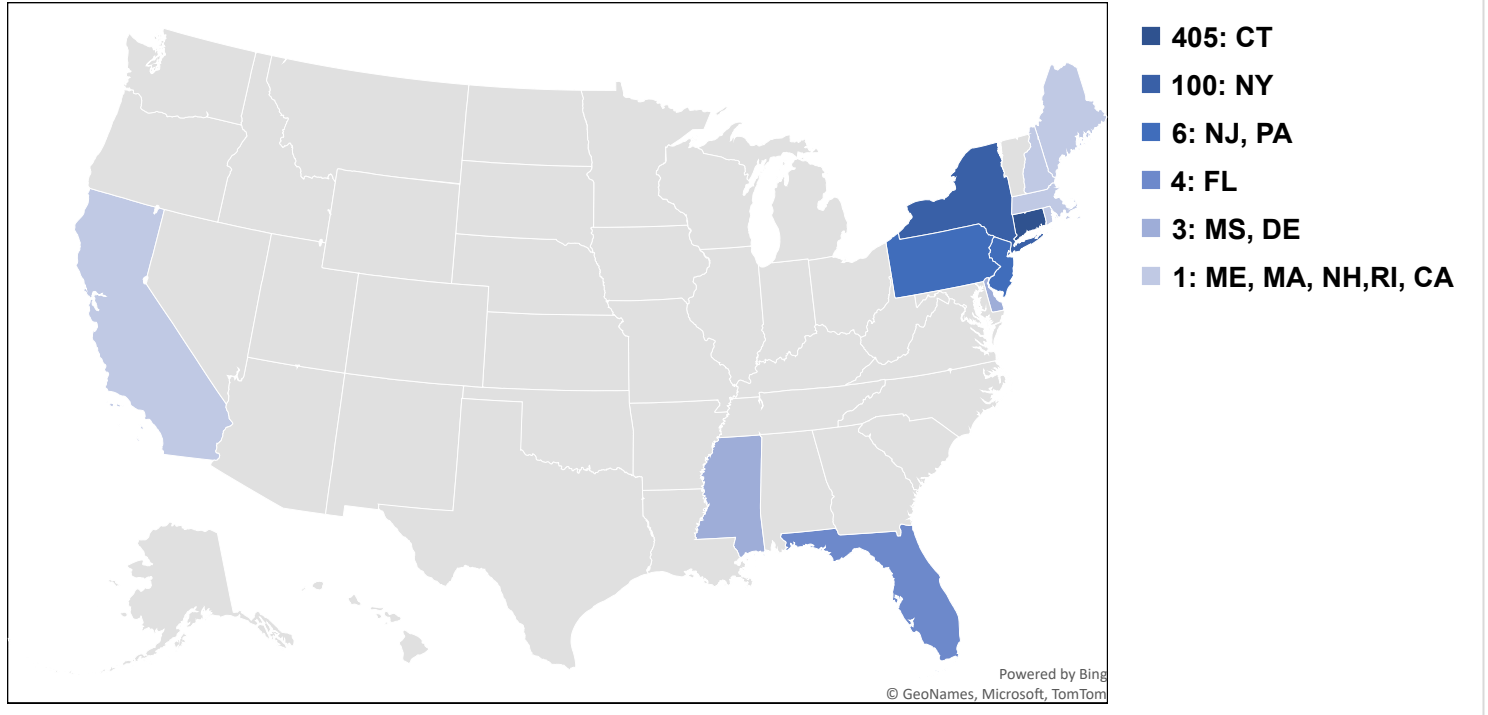


*Graph 1: Total Boater Interactions by Launch in 2024*



*Graph 2: Total Vessels in Boater Interactions by Type in 2024*

## Registration State of Boats Entering Candlewood Lake

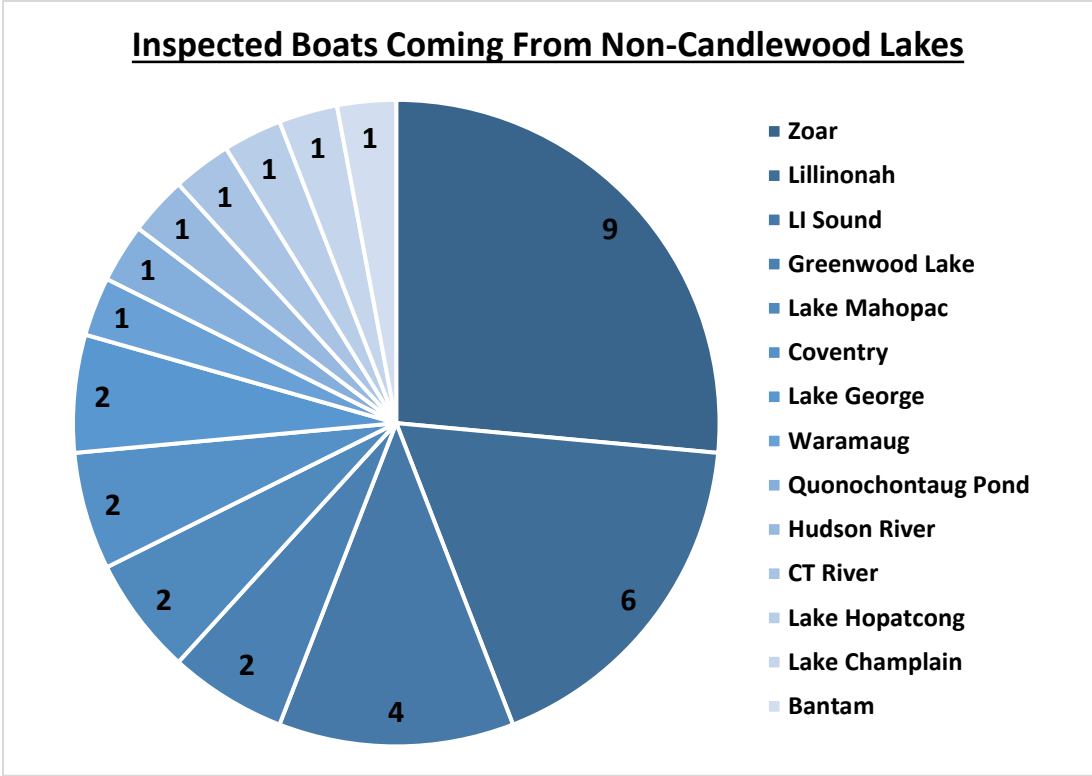


Map 1: Registration State of Boats Entering Candlewood Lake in 2024

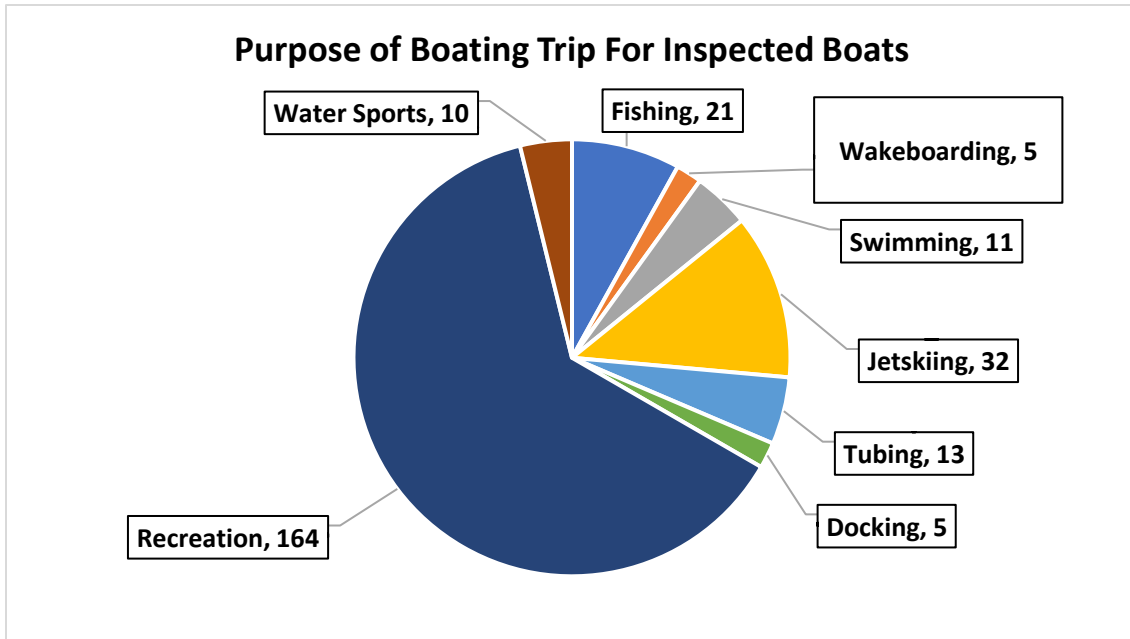
	Lattins Cove	Squantz Cove	Brookfield	Danbury	New Fairfield	New Milford	Sherman	Total
<b>CT</b>	235	17	5	126	0	18	4	<b>405</b>
<b>NY</b>	81	15	0	4	0	0	0	<b>100</b>
<b>NJ</b>	6	0	0	0	0	0	0	<b>6</b>
<b>PA</b>	4	0	0	2	0	0	0	<b>6</b>
<b>FL</b>	2	0	0	1	0	1	0	<b>4</b>
<b>MS</b>	1	0	0	2	0	0	0	<b>3</b>
<b>DE</b>	3	0	0	0	0	0	0	<b>3</b>
<b>ME</b>	0	0	0	0	0	0	1	<b>1</b>
<b>MA</b>	1	0	0	0	0	0	0	<b>1</b>
<b>NH</b>	1	0	0	0	0	0	0	<b>1</b>
<b>RI</b>	0	0	0	1	0	0	0	<b>1</b>
<b>CA</b>	1	0	0	0	0	0	0	<b>1</b>

Table 2: Registration State of Boats Entering Candlewood Lake by Launch in 2024

Previously Visited Lake	Boats
Candlewood	214
None (Docking)	16
Zoar	9
Lillinonah	6
LI Sound	4
Greenwood Lake	2
Lake Mahopac	2
Coventry	2
Lake George	2
Waramaug	1
Quonochontaug Pond	1
Hudson River	1
CT River	1
Lake Hopatcong	1
Lake Champlain	1
Bantam	1



*Table 3 & Graph 3: Previous Lake or Waterbody Visited before Candlewood. Boats re-entering Candlewood were by far the most common (85%) and were not included in the graph for ease of visualization. Boaters responding "None" for the first outing of the season were also not included.*



Graph 4: Self-Reported Purpose of Trip from Boaters During Inspection in 2024.

	Yes	No	% Yes
2022	487	70	87.43
2023	707	97	87.94
2024	139	122	53.26

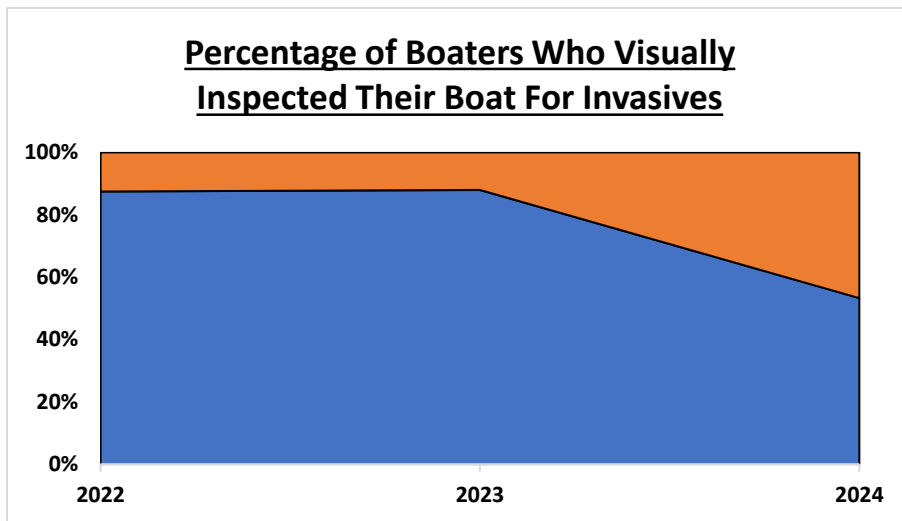


Table 5 & Graph 5: Percentage of Boaters who self-identified as having inspected their boat for invasives before leaving that day. This question was added in 2022.

	Yes	No	% Yes
2021	552	76	87.90
2022	457	97	82.49
2023	695	109	86.44
2024	204	57	78.16

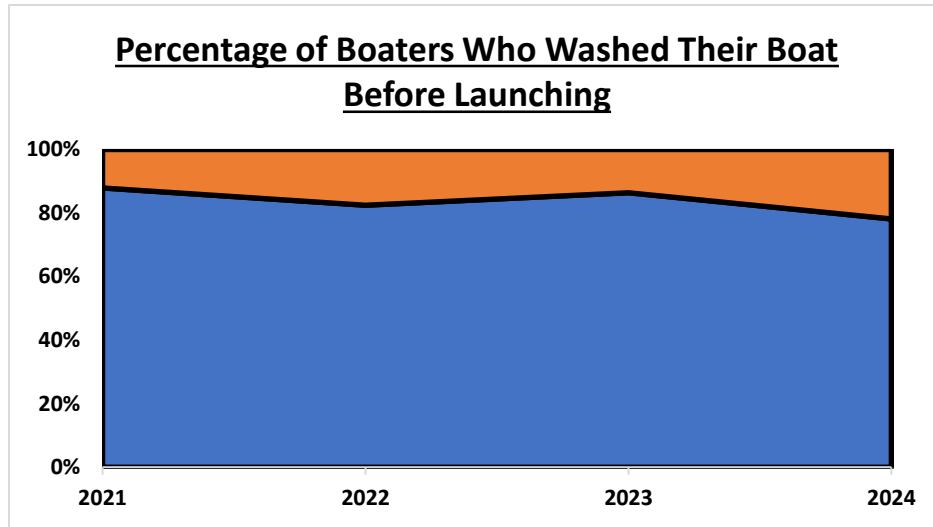


Table 6 & Graph 6: Percentage of Boaters who self-identified as having washed their boat before leaving that day.

	Yes	No	% Yes
2021	351	307	53.34
2022	291	268	52.06
2023	580	224	72.14
2024	140	119	54.05

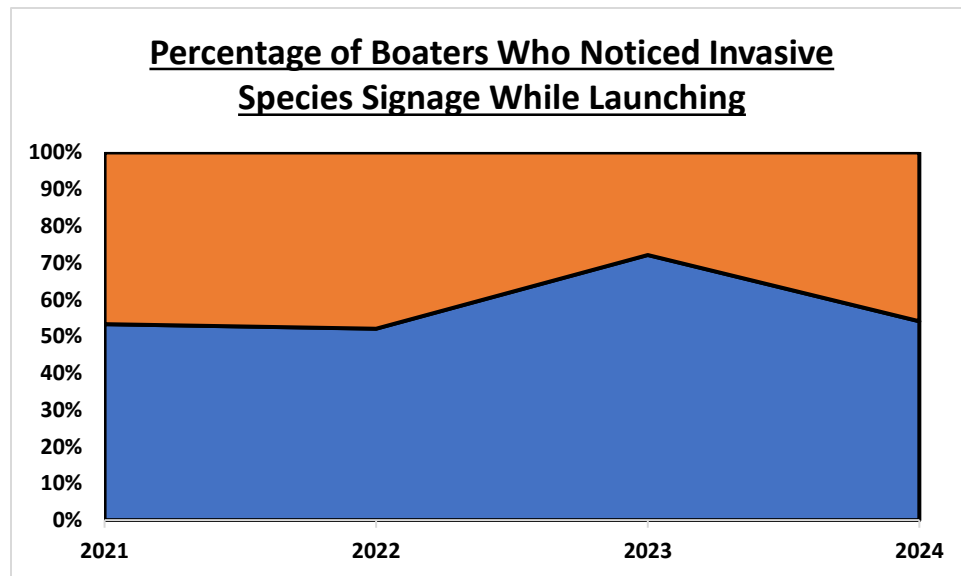


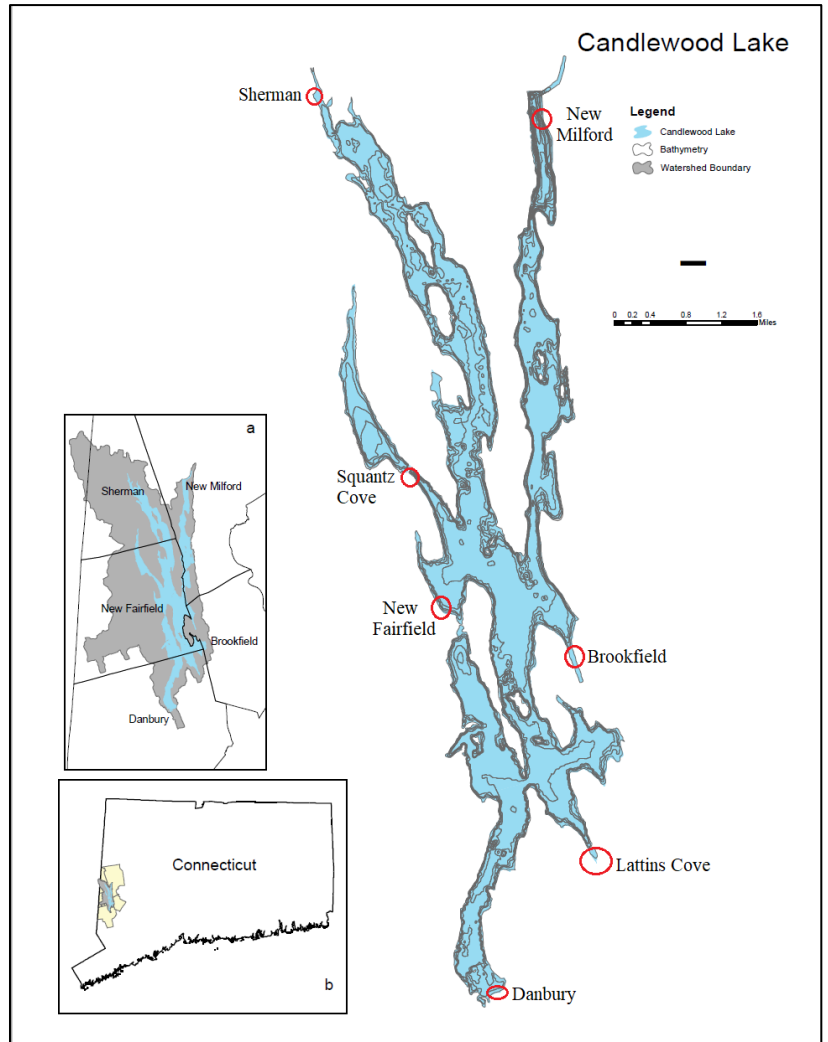
Table 7 & Graph 7: Percentage of Boaters who self-identified as having noticed Invasive Species Signage when Launching their Boats Previously.



# Program Introduction

The Candlewood Lake Authority (CLA) “Lake Steward Program” started in 2021

with a mission to help prevent the introduction of aquatic invasive species to Candlewood Lake, as well as educate recreational boaters on invasive species prevention. To accomplish these goals, the CLA stations “Stewards” at the 7 public launches around Candlewood Lake on peak boating days during the summer to offer free voluntary boat and trailer inspections to boaters. Those 7 launches include 5 municipally managed launches that are reserved for



Map 2: Candlewood Lake with 7 Public Boat Launches Highlighted.

residents of that town, as well as two public launches managed by the State of Connecticut Department of Energy and Environmental Protection (DEEP).

Historically, it has been relatively easy to launch on Candlewood Lake without a boat inspection for invasive species. The two main existing means of protection before the Lake Steward Program were educational signage at the ramps, and DEEP Boating Education Assistants (BEAs) who were tasked with conducting inspections at the two

state ramps, along with a host of other responsibilities. However, the signage can be difficult to notice along with all the other signage at the ramps, and when the BEAs get so busy with traffic control and other responsibilities they wouldn't have time to inspect every boat. CLA Stewards were meant to assist the BEAs by taking care of the inspection and invasive species education responsibilities on the busiest days, as well as add that layer of protection to the 5 municipal launches which generally just had signage. CLA Stewards would work in teams of 2, where one team member would conduct the inspection of the boat and trailer, while the other member would speak with the boater, educate them on what the program was, and collect anonymized data to help inform stakeholders about recreational patterns on the lake. Inspections and data collection were completely voluntary, and thus, not every boat entering the lake accepted



*Photo 1: Two Lake Stewards Waiting for Boaters at Lattins Cove*

an inspection, but the majority of boaters agreed to an inspection and data collection. Inspections involved a quick search of the hull, prop, and trailer, followed by asking the boater to empty their bilge, ballast, and live-well (if present). Stewards would feel the boat hull with their hands to search for small juvenile zebra mussels and other mollusk species.

Stewards were stationed at launches from roughly 8am-4pm, and would cover two different launches on Saturdays, Sundays, and holidays (Memorial Day, July 4<sup>th</sup>, and Labor Day). That would mean on any given day, two of the seven total launches would be covered. As the program progressed and we began to get an understanding of which ramps had the most activity, our efforts became more focused on the busiest ramps, while visiting most ramps semi-regularly to ensure our data was representative of the whole lake. Boater responses to the program were overwhelmingly positive, with most boaters not only agreeing to the inspections, but expressing their excitement about the program and their happiness to see steps being taken to protect Candlewood Lake. Stewards were trained both by CLA staff and volunteers, as well as attending a DEEP online training required for the BEAs. 2024 was the first year of the program where a very small majority declined/ignored inspection offers, due to a variety of factors discussed elsewhere in this report.

Funding for this program was provided by the CT DEEP's grant funding opportunity for the control of aquatic invasive species (AIS) and blue-green algae, funded through the boat registration stamp program in the state of CT.

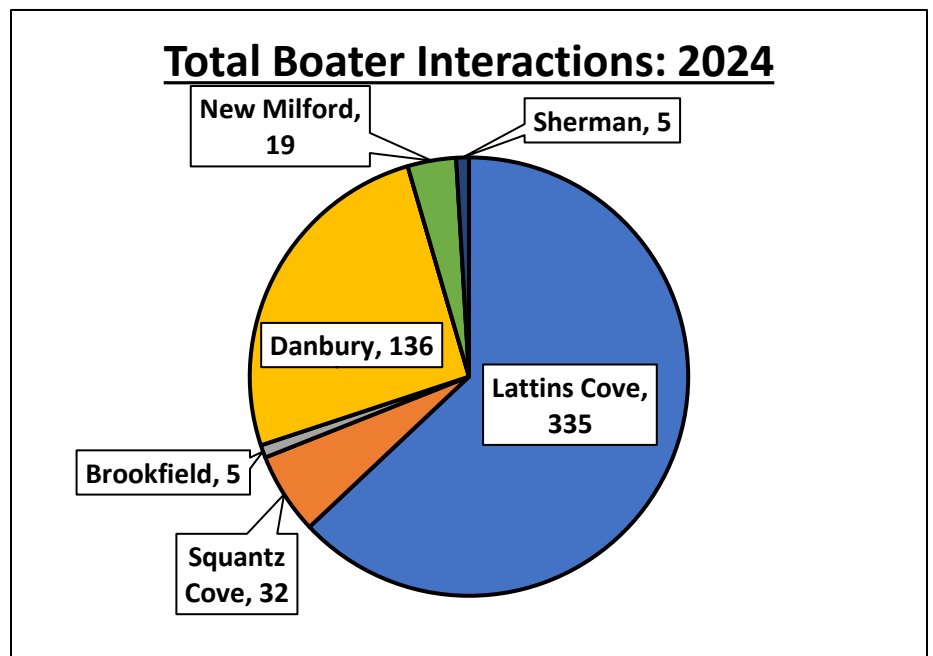
## Total Inspection Results

Launch	Pontoon	Bowrider	Fishing Boat	Wakeboard Boat	Enclosed Cabin	PWC	Small Craft	Total Boater Interactions
Lattins Cove	24	177	20	11	1	100	2	335
Squantz Cove	1	23	1	1	0	6	0	32
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*Table 1: Total Boater Interactions by Launch and Type of Vessel in 2024*

The 2024 steward season stretched from June 8<sup>th</sup>, 2024 to September 2<sup>nd</sup>. In that time, stewards had **532** boater interactions, conducted **261** thorough inspections, and stopped **2 invasive species** from entering Candlewood Lake. That is 261 boats and boaters that would likely have otherwise launched into Candlewood Lake without any

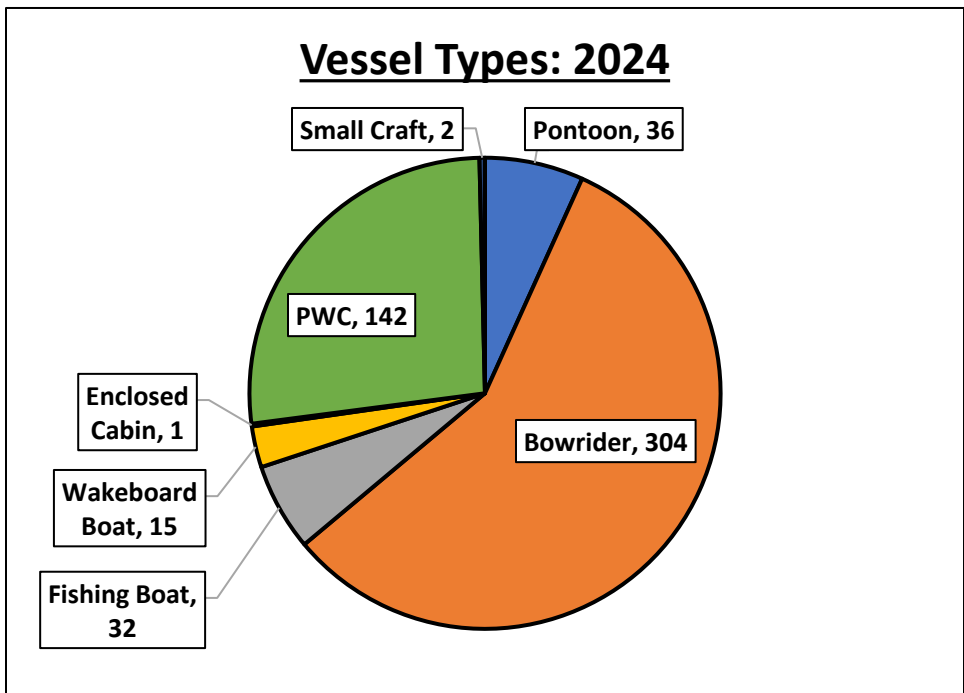
consideration of the potential invasive species impact they would have had, including 2 with known invasive species. In any of these cases, all visible plant/mussel material was removed, and the boater was educated on future invasive



*Graph 1: Total Boater Interactions by Launch*

species prevention. The only invasive species stopped was Eurasian Watermilfoil, an invasive plant that has already established a self-sustaining population in Candlewood Lake. Both instances were at Lattins Cove, one boater reporting coming from Lake Zoar, the other reporting coming from Candlewood. The stewards are trained to take photos of any species not obviously milfoil for identification.

As shown in Graph 1, the lion’s share of inspections were conducted at Lattins Cove, one of the DEEP managed launches, and the busiest on Candlewood Lake. Danbury’s municipal launch was second in inspections. We can say pretty confidently based on this and past years’ experience that the ramp utilization on Candlewood generally goes Lattins, Danbury, and then Squantz Cove (if you do not include fishing tournaments which are not covered by Lake Stewards). The other 4 municipal town ramps were not used at the same rate and had a higher use at the beginning of the boating season compared to the end.



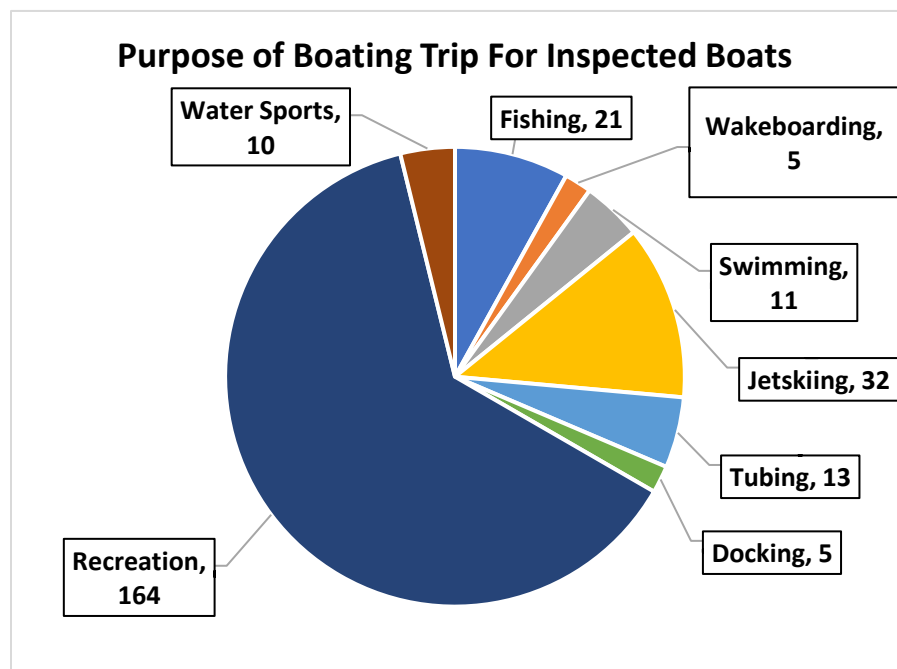
Graph 2: Total Vessels by Type in Boater Interactions

As for the share of boat types launching in Candlewood Lake, shown in Graph 2, Bowriders were far and away the most common boat type, followed far behind by Personal

Watercraft (PWCs, or Jetskis),

then pontoons and fishing boats. While the count of wakeboard boats was only 15, we still believe there was some overlap between that and the bowrider category as some of the stewards weren't familiar enough with boat types to make the distinction, however this is improving due to training. We will continue to work on ensuring that both wakeboard boats and fishing boats are properly categorized. V-hull boats also present a unique problem for invasive species inspection, requiring inspectors to look even further beneath the hull to ensure there are no species stuck between the trailer and boat. This is something our stewards were trained in and equipped with grabbers to help get plants out of difficult to reach places.

When asked the purpose of their boating trip for the day, most boaters were general with their answer, saying things like "just for fun", "recreation", or "spend time with family." Generally, most boaters visit Candlewood Lake to spend the day on the water and enjoy



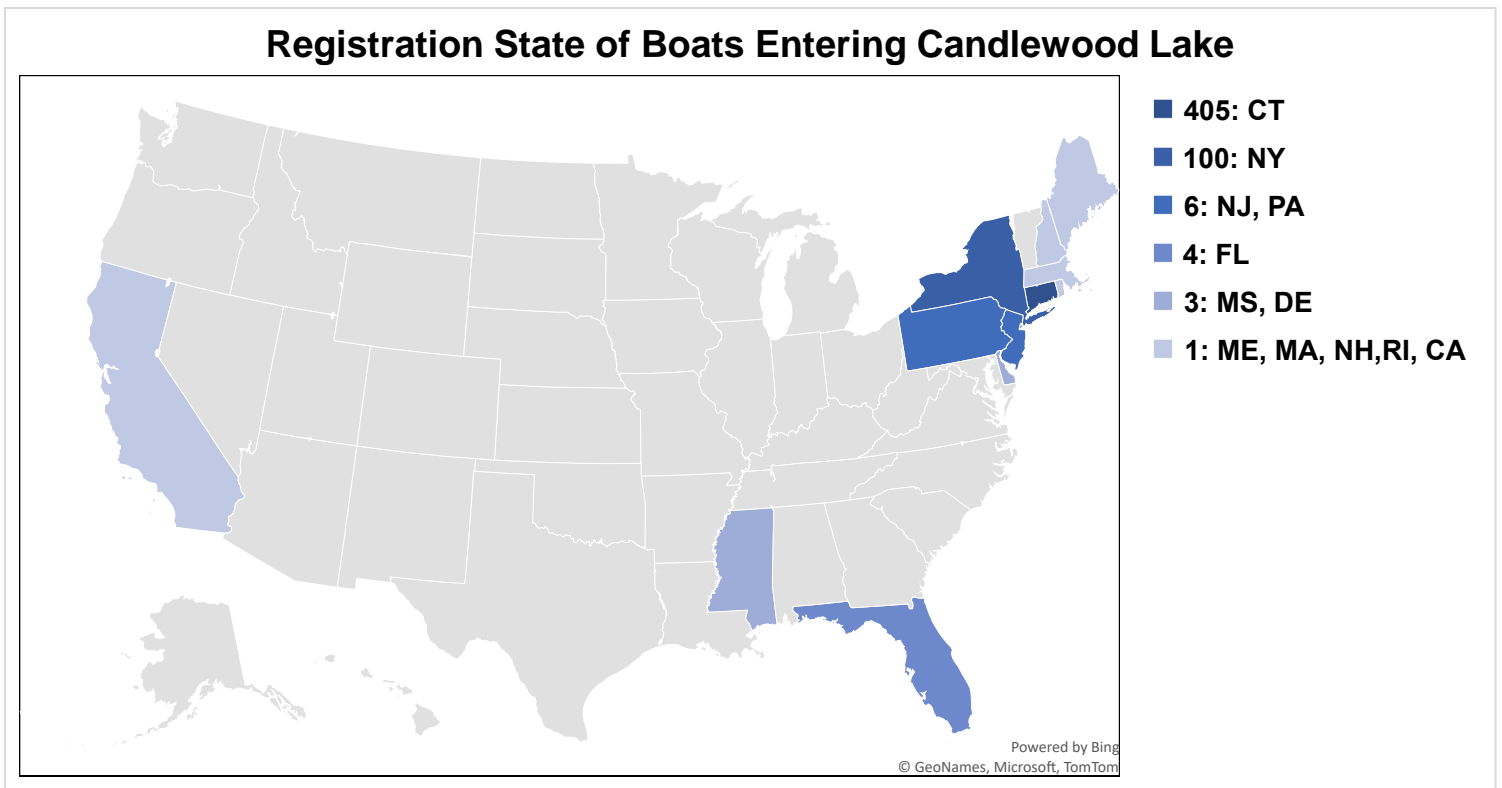
multiple different activities in one day, including: swimming, tubing, sunbathing, eating & drinking, and just driving the boat. There were a number of boaters who were visiting for the expressed purpose of fishing, but many of those boaters might also come to

Candlewood Lake during tournaments, which our stewards were not stationed at (but DEEP employees are). This year is the first year we have more detailed information in this category, with the second most popular answer being specifically “jetskiing.” As jetskis become more popular, this is becoming a primary activity on the lake and can cause congestion issues on the water. The other primary activity that can significantly increase congestion and traffic safety on the water are towed water sports, which comprised 28 respondents – including wake surfing which can create very large wakes, causing disruption to other boaters as well as shoreline recreation. Ensuring safe towing at legal distances is becoming a point of emphasis for public safety on the water. We plan to add a question focusing on visiting islands to the stewards’ workflow this year.

## Previous Location of Boaters Results

One of our priorities in data collection was to determine where boaters were coming from when visiting Candlewood to help assess the level of risk associated with transient boat traffic. If, for instance, very few boaters were coming from other areas with invasive species that hadn't yet been introduced to Candlewood, then the level of risk of introduction would be lower than we thought. Or, if most boaters were coming from a few waterbodies with known invasive infestations, we could focus our inspection and education efforts on those species specifically.

First, in an effort to get an idea of where the boaters visiting Candlewood are from (and where their boat spends most of its time), we asked each boater which state the vessel was registered in. That information is contained in Map 1, as well as Table 2



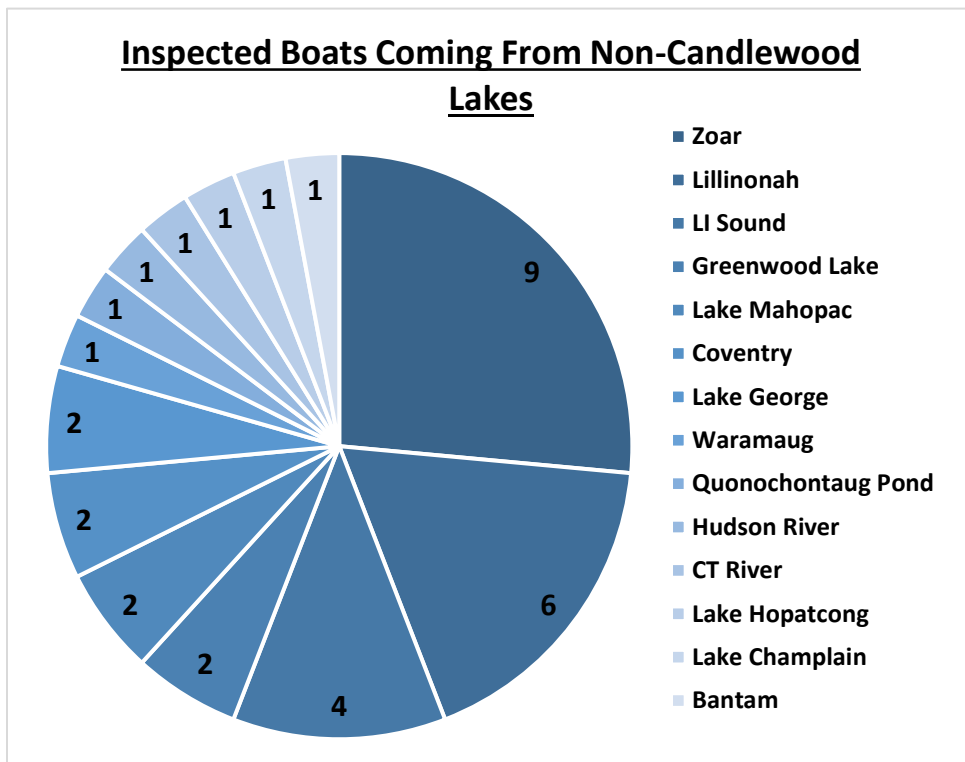
Map 1: Registration State of Boats Entering Candlewood Lake in 2022 and 2023



in the “Results Summary” section of this report. In 2024, it remained true that the vast majority (76%) of boaters visiting Candlewood had registered their boats in Connecticut. That percentage has remained consistent through all 4 years of the program. New York State, due to its proximity to the lake (including the very high population of southeastern New York) was second with 19% of the boaters. Every other state was relatively rare, comprising 5% of the total between all 10 of them. These results aren’t unexpected. Due to the public nature of the lake being open for visitors, and its closeness to the NY border, it makes sense that NY would be second most common registration state – and this percentage has remained consistent all four years of the steward program. It is worth noting that these are not necessarily new unique boaters every inspection, as boaters will often return to Candlewood many times through the course of the season. To try to understand the number of returning boaters, they were asked if they’d undergone a steward inspection before, which is discussed later in this report.

Boaters were also asked what was the most recent lake or waterbody they visited before Candlewood to get an idea of the invasive species threat presented by the transient boating community. Again, the vast majority of boaters (82%) had previously been on Candlewood before their visit, presenting no invasive species threat to Candlewood’s ecosystem. Second to that is Lake Zoar, which historically presented a relatively low invasive species risk due to it being hydrologically downstream of Candlewood and containing mostly the same invasives (with the exception of water chestnut). However, this past year Hydrilla was discovered in Lake Lillinonah (second most common in this analysis) immediately making it a lake of primary concern for invasive species spread into Candlewood, and Lake Lillinonah is directly upstream of

lake Zoar. These boaters present a very real risk of spreading invasive species of concern to Candlewood. **This “high risk” category represents 10% of all boaters inspected by our stewards this year.** This percentage would have been even higher before the program began, but since the introduction of zebra mussels in the Candlewood Ecosystem, the primary concern now are those plant species, as well as Quagga Mussels.



Previously Visited Lake	Boats
Candlewood	214
None (Docking)	16
Zoar	9
Lillinonah	6
LI Sound	4
Greenwood Lake	2
Lake Mahopac	2
Coventry	2
Lake George	2
Waramaug	1
Quonochontaug Pond	1
Hudson River	1
CT River	1
Lake Hopatcong	1
Lake Champlain	1
Bantam	1

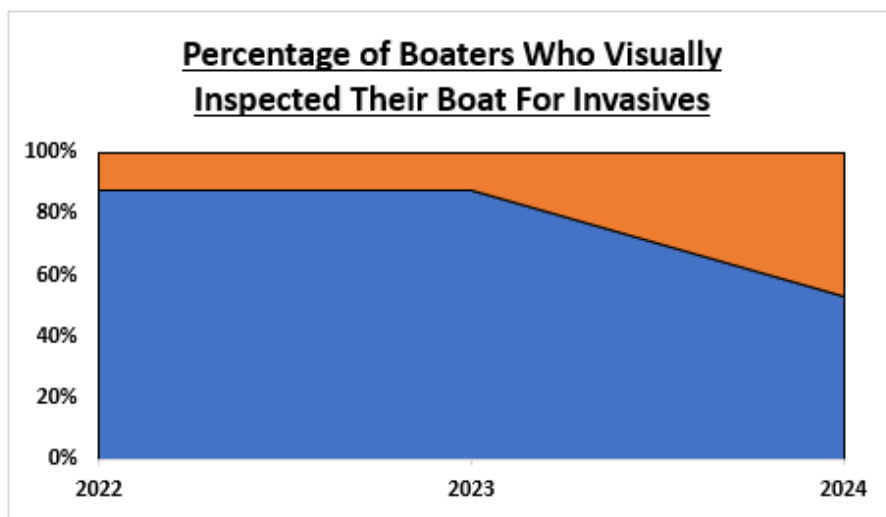
*Table 3 & Graph 3: Previous Lake or Waterbody Visited before Candlewood. Boats re-entering Candlewood were by far the most common (77%) and were not included in the graph for ease of visualization.*

## **Best Practice Implementation Results**

Our final priority in data collection was trying to assess what impact, if any, educational efforts have had on the Candlewood Boating Community. Namely, how often are people taking steps to clean, drain, and dry their boats before launching, and what impact is the signage at the ramps having on that messaging? Finally, now that the steward program has been running for a couple of years, we can begin to decipher some potential trends in the data that could inform messaging at the ramps.

First, the stewards asked whether boaters had conducted a visual inspection of their boats before leaving that day. This question was not asked in 2021 but was added in 2022 to understand who is taking basic invasive species precautions. Most boaters responded that yes, they had inspected their boat before launching. Notably this

	<b>Yes</b>	<b>No</b>	<b>% Yes</b>
<b>2022</b>	487	70	87.43
<b>2023</b>	707	97	87.94
<b>2024</b>	139	122	53.26



*Table 5 & Graph 5: Percentage of Boaters who self-identified as having inspected their boat for invasives before leaving that day. This question was added in 2022.*

decreased significantly in 2024, which is a little surprising as trends pointed to this either staying the same or improving over time. This number is noticeably lower than those who self reported to *washing* their boats before launching, perhaps indicating that people consider washing and inspecting two different activities – although it would be relatively difficult to wash your boat without at least a cursory inspection for debris and invasives. Boaters were then asked whether they had actively washed and dried their boat before leaving that day. The expectation was that fewer people would wash compared to those who only inspected, as it indicates a more comprehensive invasive species prevention strategy, but this was not the case. This question has been asked all three years.

	Yes	No	% Yes
<b>2021</b>	552	76	87.90
<b>2022</b>	457	97	82.49
<b>2023</b>	695	109	86.44
<b>2024</b>	204	57	78.16

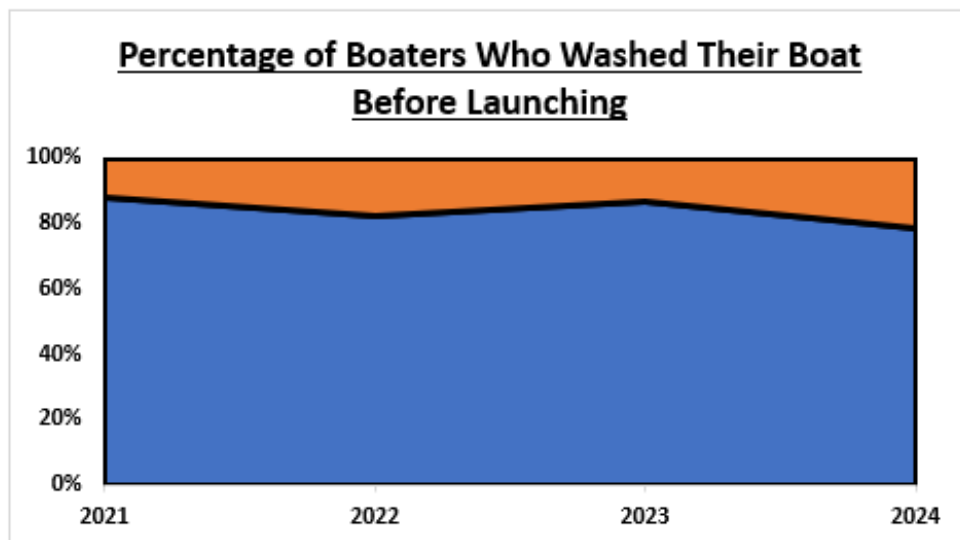


Table 6 & Graph 6: Percentage of Boaters who self-identified as having washed their boat before leaving that day.

The amount of people who self-report washing their boat has always been surprisingly high to us, and while it decreased relative to 2023, it still remained high. It's especially surprising in light of the lower self-reports of inspections in 2024. Unfortunately, this might indicate some significant social desirability bias in the data, as boaters are self-reporting behavior they expect to be "correct" rather than answering truthfully. While the inspections were voluntary, and it was clear our stewards did not have any enforcement capabilities, it is almost certain that the share of boaters who did not inspect or wash and dry their boat is larger than the amount reflected in the graphs, however the 47% reporting that they had not inspected might reflect a more honest view, while the washing likely reflects more bias. With all that said, we can still be encouraged by the fact that, 78% of boaters reported that they washed and dried their boat – meaning that at the very least they also understand that this is the best practice for protecting any lakes they visit. Perhaps we will consider a question this year asking boaters if they know the steps/critical areas to inspect for invasive species. We also plan to ask boaters if they would use a wash station at the ramp, should there be one when they arrive.

Our stewards also asked boaters if they had noticed the invasive species signage at the boat launches before. Of all the best practices results, these are probably the most interesting. While our initial results were discouraging, indicating that in year one 47% of boaters reported never having even noticed educational signage before, the change over time is significant. In 2022 new invasive species signage was

	Yes	No	% Yes
2021	351	307	53.34
2022	291	268	52.06
2023	580	224	72.14
2024	140	119	54.05

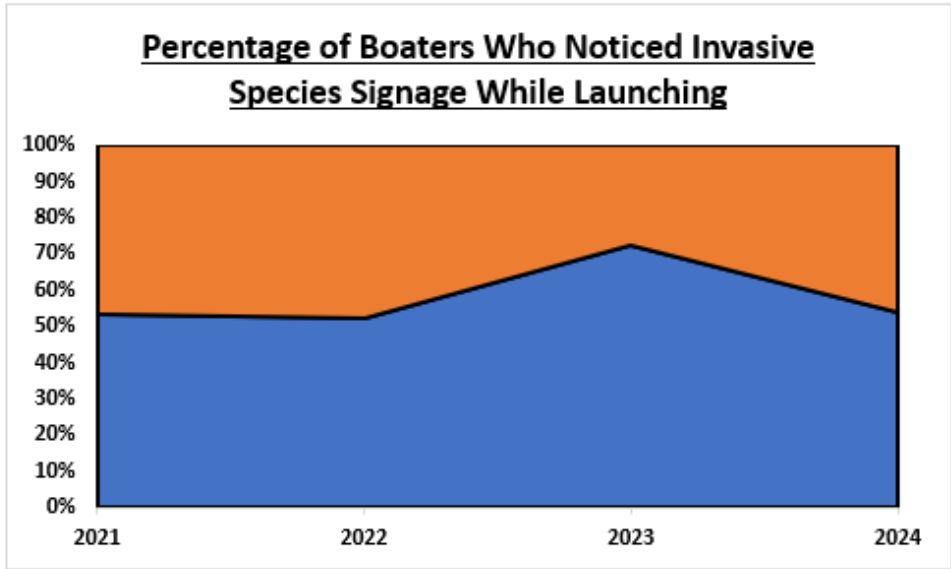
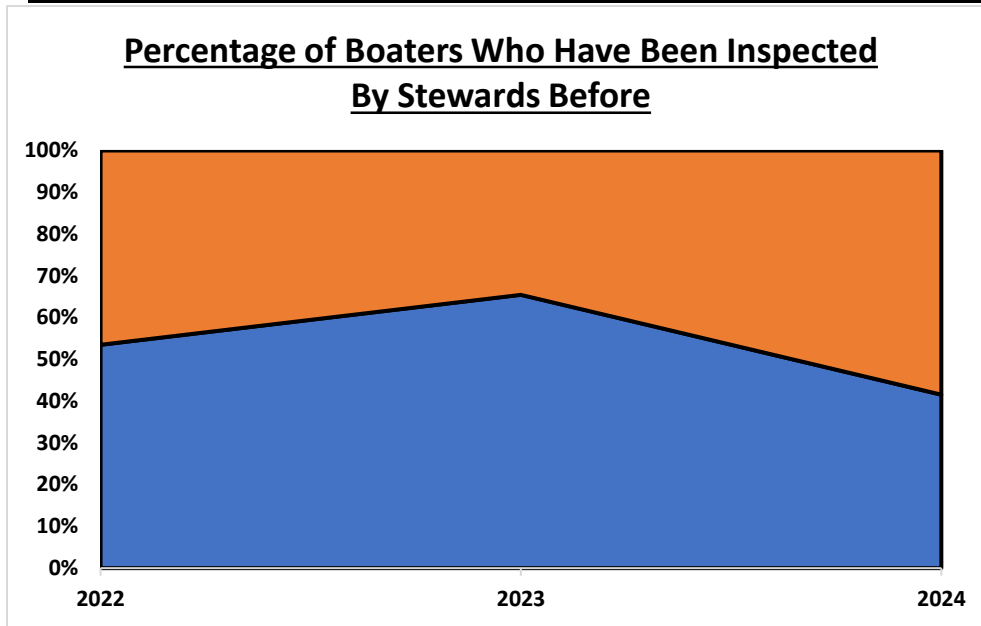


Table 7 & Graph 7: Percentage of Boaters who self-identified as having noticed Invasive Species Signage when Launching their Boats Previously.

installed at the ramps with a focus on being more visual and less wordy. Following this change, there was an initial spike in folks who noticed signage, while only one year later the reports returned to the numbers seen in 2021/22. This pretty clearly indicates novelty as a critical component for noticing education and could be a strong indication that messaging needs to be updated annually to continue to capture boaters' attention. While updating permanent signs annually isn't possible, augmenting signage with nearby messaging/new signage for stewards/BEAs could help get information across.

Finally, stewards asked whether boaters had been through a steward inspection before.

	Yes	No	% Yes
2022	299	260	53.49
2023	525	277	65.46
2024	108	152	41.54



Graph 8: Percentage of boaters who reported having undergone a steward inspection before from 2022-2023.

This question was added in 2022 to try to understand how many boaters were new and how many were returning after a previous inspection. More than half of all the boaters both years were returning, and this percentage increased the following year. In 2024 we saw a relatively significant decrease, indicating that a healthy number of new boaters were coming to the lake. This could also be related to the higher number of declined inspections this year, as many of those folks might have been through a steward inspection already and felt they didn't need another.

## Conclusions

We are extremely pleased with the continued results and progress of the CLA Lake Steward Program. Our program continues to succeed in three key areas: **inspecting 2328 boats that would have otherwise not been inspected**, reaching perhaps thousands of boaters with critical invasive species prevention messaging, and collecting new and informative data that informed this report and will continue to inform our management (both recreationally and public-safety wise) moving forward.

It is clear that the majority of boaters visiting Candlewood Lake enter through the two state launches, particularly Lattins Cove, and the Danbury municipal launch. Squantz Cove launch is generally more manageable for the DEEP BEAs than Lattins due to its traffic patterns and somewhat less convenient location. The majority of boaters are also returning to Candlewood from a past visit to Candlewood, and are registered in the state of Connecticut, with a healthy number having registered their vessel in New York. These percentages have remained very stable over three years, indicating consistency in the share of boaters from Connecticut vs. New York vs. other states. There were boaters visiting from waterbodies with invasive species of concern for Candlewood Lake: particularly Hydrilla and Water Chestnut. Both of these species were stopped and removed by stewards in 2023, but were not found in 2024. The focus will continue to be on ensuring that more transient recreational boaters are given the invasive species information necessary to know not to transfer any species between lakes.



The amount of boaters self-reporting that they washed and dried their boats prior to launching in Candlewood is encouraging for past invasive species messaging, but might be indicative of response bias in the data. While signage at the launches historically did not have the impact we would like, trends indicate that novelty in invasive species messaging is key to getting boaters' attention.

The critical piece of learning in 2024 is in regards specifically to boaters declining inspection – a relatively new trend this year. While there might be a few reasons for the increase in declined inspections, including but not limited to: new stewards/steward manager, emphasis in training on tracking declined inspections increasing the likelihood, and boaters becoming used to stewards at the launches; significant emphasis will be placed on ensuring every boater has a chance to undergo an inspection before entering the lake.

We remain encouraged by the positive feedback received from the community regarding our stewards and this new program and feel as if this is another way for the CLA, municipalities, and DEEP to reach the boating community directly and make a positive impact. There were a number of social media posts shared in local community pages celebrating the steward program and their positive impacts.

We look very forward to the future of the program, and want to thank the CT DEEP again, who's funding made this program possible. Together we hope to continue having a positive impact on the lake's ecosystem and continue to preserve Candlewood Lake for generations.

## **Acknowledgements**

The below people and organizations made the Lake Steward Program Possible:

Our Lake Steward Manager: Devin Herbstman

Our Lake Stewards: Jack Banks, Julia Elmasry, Ari Lederfeind, Ethan Rawding, Jackson Schlotter, Ryan Utter, Logan Hickey, Jack Deakin

Marie Nugent Personnel: Kathleen Nugent

DEEP Staff: Matthew Gocłowski, Joe Cassone, Gwendolynn Flynn, Peter Francis, Yolanda Cooley

CLA Staff: Mark Howarth, Dee Wright, Michael Gasperino

CLA Delegates: Will Meikle, Marianne Gaffey, Steve Kluge, Will Meikle, Bill Lohan, and all of our delegates who helped make this project possible.

Everybody at the CT State Legislature, CT DEEP, and Connecticut Federation of Lakes employees and volunteers who made the AIS grant program possible.

All municipal Parks & Rec. department staff and volunteers for working with us and our stewards throughout the year.

All municipal First Selectmen and Mayors who supported the program.

The entire Candlewood Lake Boating Community for welcoming our stewards and enjoying the program!

**Thank You!**

## **Appendix A:**

*All Raw Data Available from the Candlewood Lake Authority upon request*

to [science@candlewoodlakeauthority.org](mailto:science@candlewoodlakeauthority.org)