

State of the Lake 2023



**CANDLEWOOD
LAKE AUTHORITY**
Preserving and Protecting Candlewood Lake Since 1972

Dear Friends of Candlewood Lake,

The Candlewood Lake Authority is wholly dedicated to the safekeeping of Candlewood Lake. We promote responsible recreation, conservation and stewardship for the largest lake in CT.

We are excited to share our Annual Report which highlights the work we have done in the past year to preserve the ecological health of Candlewood Lake and provide public safety.

Please consider making a donation to the CLA to support our ongoing work in safeguarding our lake.

Enclosed is a self-addressed return envelope. You may also make a donation on our website. Together, we can make a substantial difference.

Warm regards,

Mark Howarth
Executive Director

Marianne Gaffey
Chairman

2023 Highlights

Public Safety

- Evening patrol hours increased
- Interactions with boaters increased
- 2nd of 3 custom-built Marine Patrol vessels launched and 3rd ordered, completing the strategic modernization and uniformity of our fleet
- FLIR (Forward Looking InfraRed) system introduced on new vessel to aid in search and rescue and night navigation

Ecology

- Loss of plant life addressed with carp removal, development of a plant management strategy, and protected plant monitoring
- Zebra mussel population monitoring
- Lake Steward Program prevented new invasive species from entering the lake
- New lab partnership with UConn for water quality analysis



Candlewood Lake Ecology



Zebra Mussels are an invasive species that have been present for many years in the Housatonic River. In 2011, CLA worked with FirstLight to agree to cease pumping water from the Housatonic into Candlewood when the water temperature was warm enough for the mussels to spawn. This helped prevent a population from establishing for years.

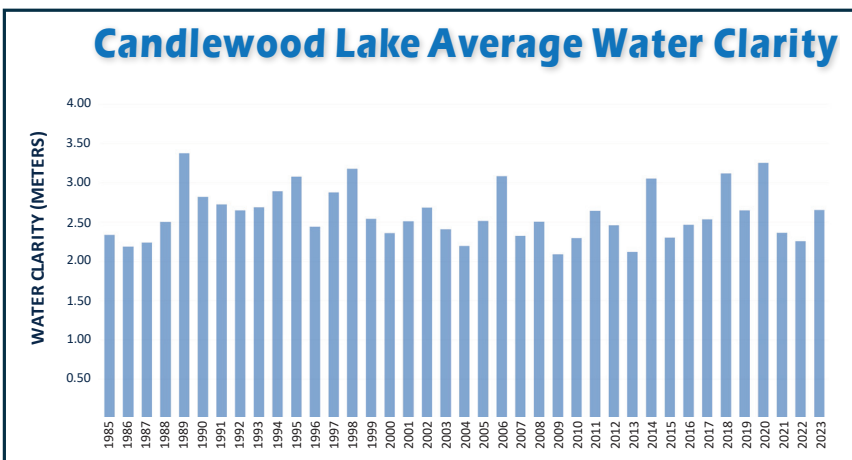
2020 - the first zebra mussel was found in Candlewood. The CLA enlisted the help of the community to map their locations. Evidence showed the zebra mussels most likely hitchhiked their way into Candlewood on infected vessels.

2021 - the CLA launched the **Lake Steward Program** to inspect boats entering the lake on public ramps. [See below]

2022 - CLA found evidence of zebra mussels reproducing in the lake which was the first sign that they were establishing a self-sustaining population.

2023 - we saw a sharp increase in their population and we now believe zebra mussels are part of our ecosystem.

Next steps: The CLA will continue to monitor the effects of the drawdown. The CLA will present a webinar this winter on what to expect and how to live with zebra mussels. Additionally, CLA is installing new signs at the public ramps to warn boaters the lake has zebra mussels and not to transport them to another water body.



Water quality testing enables us to discern long term trends and act to preserve the lake's water quality for the future.

Water clarity is an indication of the level of algae in the lake that allows us to easily compare years and see changes over time.

In 2023 water clarity was slightly better than Candlewood's historic average.

The CLA has accumulated four decades of water quality data including:

- Blue-green algae concentrations
- Water temperature
- Dissolved oxygen
- Conductivity
- pH
- Clarity
- Nitrogen concentrations
- Phosphorous concentrations
- Ions (sodium, potassium, chloride calcium, magnesium)
- Chlorophyll-a
- E. coli



This season, the **CLA Lake Stewards** inspected over **700 incoming vessels** for invasive species, **stopping 5 new invasive species** from entering the lake in the process!

CLA launched the Lake Steward Program in 2021 to inspect boats entering the lake on public ramps and remove any invasive species before they get in the lake and **they have inspected nearly 2,000 vessels** over their first three seasons.



CLA Director of Ecology Neil Stalter checks the enclosures for signs of plant growth.

In 2022 much of the **Plant Life** disappeared from the lake.

The CLA has been working on the best solution to ensure that Candlewood has enough plant life to support a healthy lake ecology.

The lake has a tendency to exist in one of two states: too many or too few plants. The challenge is in finding a balance.

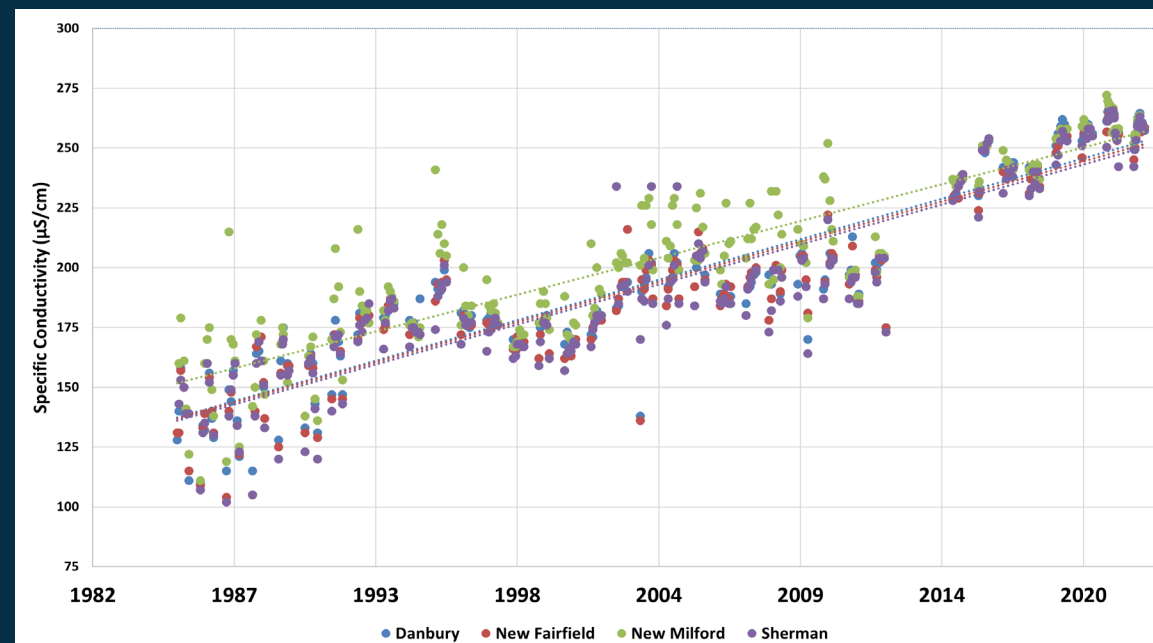
The CLA developed a comprehensive Plant Life Strategy with the DEEP so Candlewood has enough plant life to support a healthy lake ecology, while not interfering with recreation. See CLA website to learn more.

DEEP removed 219 of the original 8,000 sterile grass carp. No juvenile grass carp have been found, confirming they are not reproducing.

The CLA installed fencing enclosures in various parts of the lake to study plant growth without the interference of the carp. While it is too early to draw conclusions, we are encouraged by the growth of both native species and milfoil in 4 of the 5 enclosures. We plan continue the study next year and thank FirstLight for funding the project.



Candlewood Lake Conductivity (saltiness) Trends



Over time, Candlewood has been accumulating more and more **salt ions** mostly through stormwater runoff.

While the lake is not in imminent danger of becoming a salt lake, there are important species of fish and plankton that are sensitive to these changes.

The CLA is working with the municipalities and communities to reduce excess road salting.

CLA Marine Patrol



The CLA Marine Patrol has been providing public safety on Candlewood Lake for 51 years. They operate under the supervision of CT DEEP EnCon Police to enforce boating law. We work collaboratively with local police, fire and EMS services. Our professionally trained officers are often first to arrive on scene when an emergency occurs rendering aid until local EMS can take over. Our patrol vessels are equipped with defibrillators, Narcan, first aid supplies and more.

The Marine Patrol continues to increase its presence on the lake, redirecting hours from quieter periods to peak boating times and night shifts.

In 2020, we began replacing our aging Marine Patrol fleet with vessels that will last longer, require less maintenance, and lower costs long-term. This summer we took delivery of our second custom-built Silver Ships patrol vessel which is

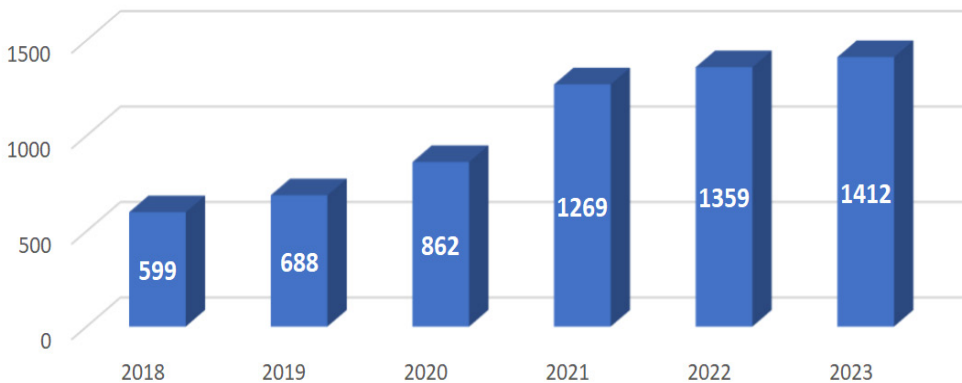
outfitted with a Forward Looking InfraRed (FLIR) system. FLIR is a thermal imaging system that detects slight differences in the surface temperature of objects. It can turn night into day and is the fastest way to detect a person in the water. This fall we ordered our third and final vessel, completing the overhaul of our aging fleet and achieving a significant milestone in our long-range plan to ensure comprehensive coverage.

Did you know?

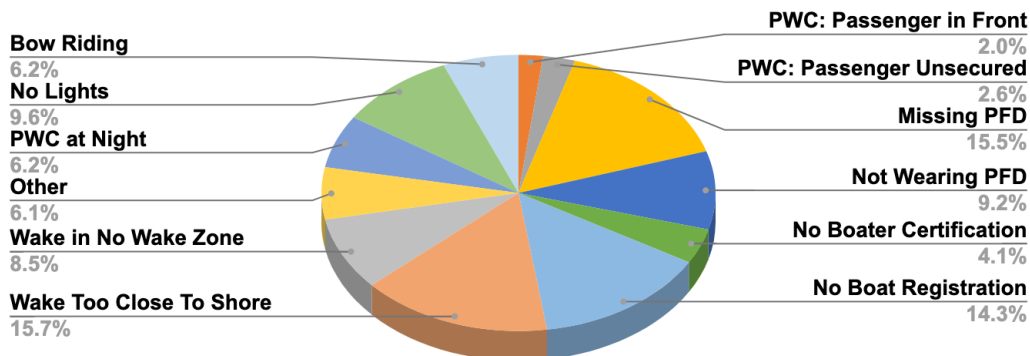
The collaboration between the CLA Marine Patrol, CT DEEP EnCon Police and local law enforcement led to multiple BUI arrests this season on Candlewood Lake.

This year, our officers made 1,412 contacts with boaters, an increase of over 100% over the past five years. A contact is any time an officer has interaction with the public and can include anything from assisting a stranded vessel and its occupants to issuing a boating violation infraction.

Number of Contacts



How Did Boating Violations Breakdown This Year?



2023 Marine Patrol

By the numbers...

2,388 Man-hours by CLA Marine Patrol on the lake this season

1,412 Interactions with boaters by the CLA Marine Patrol

1,065 Hours put on our Marine Patrol vessels in 2023

843 Verbal warnings given to boaters

169 Voyages terminated for critical safety violations

83 Stranded vessels towed to safety by the CLA Marine Patrol

4 Accidents responded to

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