



North Carolina Aquatic Invasive Species report to GSARP May 2024

This report is a compilation of AIS updates from the following NC State Agencies: NC Department of Environmental Quality (NCDEQ), NC Wildlife Resources Commission (NCWRC), NC Department of Agriculture and Consumer Services (NCDA&CS), and the NC Department of Cultural and Natural Resources (NCDNCR).

NCDEQ – Division of Water Resources (Aquatic Weed Control Program)

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Program website:

<https://deq.nc.gov/about/divisions/water-resources/water-planning/water-supply-planning/aquatic-weed-control-program>

Program Summary

The program is staffed with 2 permanent FTEs. In recent years we have been hiring two seasonal employees (assignments typically run from June to December). Recruitment and retention of seasonal staff continued to be a major challenge in 2023. We were able to bring back one of our temporary employees after their mandatory 30-day break. Their first day back was January 20th.

Management activities are supported by the Aquatic Weed Fund. Money spent from the Aquatic Weed Fund requires a 1:1 non-state dollar match. The program develops annual work plans (calendar year cycle); the 2024 Work Plan earmarked \$991,420 from the Aquatic Weed Fund for specific projects.

Gapway Swamp Giant Salvinia project (Columbus County)

This infestation of Giant Salvinia was brought to our attention during the summer of 2020. Gapway Swamp is a blackwater swamp forest in a rural setting, near the NC/SC State line. Approximately 250 acres of the watershed is infested. To our knowledge this is an isolated event and the only Giant Salvinia site in NC.

Gapway Swamp is an impounded system. The lower impoundment is called Richardson Pond and it incorporates multiple private properties. Immediately upstream of Richardson Pond is Buffkin Pond; an impoundment with a breached dam. Buffkin Pond is also on private properties. Columbus County Cooperative Extension has assisted with this project by acting as a liaison (between NCDEQ and property owners).

Giant Salvinia was likely introduced to this system between 2012-2015. The rate of spread/movement of Giant Salvinia within this site was limited due to #1: physical blockage from the relic dam at Buffkin Pond, the dam at Richardson Pond, beaver activity, and heavily vegetated conditions (extensive tussocks and stands of hardwoods), and #2: low flows within the system (average discharge at Richardson Pond is ~5 CFS).

The objective of this project is to eradicate Giant Salvinia from the site. Herbicide treatments began in 2021. The areas targeted with herbicides increased in 2022 and were expanded further in 2023. Approximately 150 acres of the site was targeted with herbicides in 2023. Targeted herbicide applications are planned to continue for 2024. Several new smaller infestations in surrounding private waterbodies were brought to the attention of DEQ staff and herbicide applications are planned at these locations.

Eno River Hydrilla project (Orange County & Durham County)

The Eno River watershed has a history of Hydrilla dating back to the early 1990's. Prior to 2005 Hydrilla was only observed in Lake Orange, an impounded section of the East Fork Eno River, a tributary in the upper reach of the watershed. During the late 2000's and early 2010's Hydrilla levels reached nuisance levels throughout the Eno River State Park. A multi-agency partnership, the Eno River Hydrilla Management Task Force, was forged to address the growing problem. In 2015 a ~16-mile section of the Eno River was treated with fluridone using an injection system which metered product into the river based on flow. This was a historic event since this was the first time that this type of treatment method was used in the State. The Eno River was treated with fluridone each year from 2015-2019. Some adjustments to the treatment and target area were made during those years. Hydrilla was removed from much of the target area but was not eradicated from the watershed.

During the years 2020-2021 the treatment was paused. The reason for the pause was to:

- Allow for an evaluation of the treatment.
- Allow time to pursue reconnaissance in the upper reaches of the watershed. Multiple "farm ponds" in the upper reach of the watershed were found to be infested.
- Allow time for the ongoing Hydrilla management operations in the West Fork and East Fork (primary tributaries of the Eno) to progress.

The injection systems were re-deployed in 2022 to continue treating the section of the Eno which passes through the Eno River State Park. The treatment continued in 2023. A visual reconnaissance survey of the treated section was conducted in September-October 2023 and no Hydrilla was observed. No tuber survey was conducted in 2023. The treatment will continue in 2024 using the injection systems. The Aquatic Weed Program is partnering with one of the local counties to fund Hydrilla treatment in private ponds in the watershed. The Task Force has set a goal of removing Hydrilla from the Eno River watershed. This is the first time this has been attempted in the state.

NCDEQ – Division of Marine Fisheries

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Blue Land Crabs

On Friday July 21, 2023, North Carolina Wildlife Resources Commission (NCWRC) Helpline received a report of an encounter with a Blue Land Crab *Cardisoma guanhumi*. The images were shared to Dr Bronwyn Williams, Research Curator at the NC Museum of Natural Science (NCMNS) for species verification who, upon receipt, agreed that the animal in the photos was a Blue Land Crab. *Cardisoma guanhumi*, is a species of land crab typically found in tropical estuarine and maritime habitats from southeast Florida and the Gulf of Mexico coast to Central and South America to Brazil. Adults can reach a carapace width of up to six inches and weigh over 500 grams. They are mostly nocturnal and omnivorous, primarily feeding on leaves and fruits but will also readily feed on insects, carrion and other crabs. Recently (since 2008) populations have extended as far north as Charleston South Carolina with reported sightings in Myrtle Beach South Carolina (2022).

Upon receipt of this report Nick Shaver, Biologist with NCWRC, shared the pertinent information with Robert Corbett, Marine Fisheries Biologist I and lead Non-native Invasive Species Biologist with the North Carolina Division of Marine Fisheries.

On August 15, 2023, Dr. Tim Ellis, Quantitative Ecologist, Albemarle-Pamlico National Estuary Partnership, hosted a special meeting involving NCWRC, NCDMF, SCDNR, & N.C. Museum of Natural Sciences to collaborate and plan our collective approach on how to respond to this current situation. During this meeting, representatives from S.C. shared the history of how they were contacted back in 2021 with a spate of sighting and the steps they took to notify the public and document all observations. In short, SCDNR developed a website for the public to easily report any observations to: <https://survey123.arcgis.com/share/73155cf36b124961a366a8b116147a54>. SCDNR advised that they would be open and willing to edit their website to begin a collaborative effort between N.C. & S.C., which they completed shortly after the meeting. In addition, during this meeting it was decided NCDMF would take lead on this situation.

NCDMF proceeded to publish a press release on September 20, 2023 (<https://www.deq.nc.gov/news/press-releases/2023/09/20/marine-fisheries-asks-public-report-blue-land-crab-sightings>) followed up by a social media post on September 23, 2023, urging members of the public to visit NCDMF's newly created blue land crab species profile page (<https://www.deq.nc.gov/about/divisions/marine-fisheries/public-information-and-education/species-profiles/blue-land-crabs>) where from there they can locate the link to the SCDNR website to report any and all sighting of blue land crabs. To date, the social media post received 51 comments and has been shared 552 times. Since the press release and social media post the SCDNR website has obtained 25 additional reports from N.C. of which 4 have been confirmed as being blue land crabs. One was in Emerald Isle (the original sightseeing from July 21st) and the other two confirmed sightings were from the north side of Bouge Sound near Wildwood west of Spooners Creek. NCDMF plans to repost the press release this upcoming spring in hopes of reigniting interest when sightings are more favorable.

Tiger Shrimp

NCDMF continues to record reports of tiger shrimp within N.C. waters. In 2023 we received 2 reports. One sighting was in the ICW along Holden Beach, caught in a 3/16", 8' cast net with which was later used as bait. The second tiger shrimp was discovered while purchasing shrimp from a dealer in Beaufort.

NCDA&CS – Plant Industry Division

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The [State Noxious Weed Regulations](#), adopted under authority of the [N. C. Plant Pest Law](#), were established to prevent the widespread establishment of harmful non-native plants that are placed on the Noxious Weed List. Any plant on the Noxious Weed List is prohibited entry into the state without a permit. Noxious Weeds already present in the state are contained by prohibiting movement of the plant outside of regulated areas. In addition to the plant itself, articles that could contain Noxious Weed propagules such as soil or hay, are also regulated. In addition, the sale of Noxious Weeds is prohibited unless exempted by provisions of the Noxious Weed Regulations. In addition to the State Noxious Weed Regulations, the General Assembly of North Carolina has adopted the [Aquatic Weed Control Act](#) providing the Department of Agriculture with the authority to regulate the importation, sale, use, and distribution of noxious aquatic weeds.

The NCDA&CS Plant Industry Division's Plant Protection Section monitors aquatic nurseries through annual inspections to ensure regulated plants are not being sold online or at retail locations and nurseries.

Yellow Floating Heart (*Nymphoides peltata*) – State of NC Class A Noxious Weed

In 2020, several new sites of yellow floating heart were identified in eastern, central and western North Carolina, bringing the total to 12 locations. These new sites, along with current infestations, continue to be treated with good progress. Several sites are now in the survey phase of the treatment process, since no yellow floating heart has been observed for at least one season. All sites will continue to be monitored in 2024.

Giant Salvinia (*Salvinia molesta*) – Federal Noxious Weed

A major infestation of Giant Salvinia was discovered in Columbus County, very close to the SC border. NCDA&CS is providing assistance to NCDEQ's efforts to contract the removal of this plant.

Woolly Frogmouth (*Philydrum lanuginosum*) First find in U.S.

Although not a regulated weed, NCDA&CS took regulatory action to prevent further spread. Initially found in August 2016, this Guam native served as a first find in the U.S. Initially treated in late 2016 and 2017, no treatment was done in 2018 because the plant could not be found. In 2019 Woolly Frogmouth was observed in its original location and also in a nearby pond. Treatments began again in 2019 and 2020. The 2020 survey revealed good control for visible plants, however, plants below the waterline were not effectively treated. The NCDA&CS, sought technical advice with the NC Wildlife Resources Commission in pursuing other treatment options in addition to the current method of control. This is because the Gopher Frog (*Rana capito*) uses borrow pits, like the one infested with Woolly Frogmouth, as nesting sites and is considered an endangered species in NC. With help from NC Emergency Programming, the water level for this pond was lowered approximately two feet to expose plants that were submersed. Treatments were carried out this way for the 2021 and 2023 seasons. Additionally, pre-treatment and post-treatment surveys are being conducted to manually remove both early and late

season plants that emerge outside our window for chemical treatment. Careful consideration for the timing and type of treatment will be adhered to.

NCDNCR – Aquariums

No report

NCDNCR – State Parks

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The North Carolina State Parks has been working on their invasive species program across the state over the last years. A recent addition to the program is an Invasive Species Coordinator named Oliver Denny. The Invasive Species Coordinator will be the program manager to focus on all invasive species issues across the state parks system. Oliver will be working closely with Jonathan Short, the Invasive Species Biologist.

There are several projects in NC State Parks related to Aquatic Nuisance Species. Those projects include two boat cleaning stations at Lake Waccamaw, treating Hydrilla in the Eno River, and a project managing Phragmites in a wetland restoration site at Carolina Beach.

At Lake Waccamaw State Park, two boat cleaning stations were installed March 2023 to help prevent the spread of invasive aquatic species. The cleaning stations are waterless systems, that have a vacuum system with hand tools, which can collect debris and water from boats before and after a boat is taken out on the lake. More information can be found in [here](#).

At Carolina Beach State Park, staff have worked to remove Phragmites since 2010. This year a wetland restoration project was started this year in the footprint of the phragmites area. At Eno River State Park, there is an ongoing project for the last 7 years to manage Hydrilla.

NCWRC – Inland Fisheries Division

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NCWRC ANS Website: [Aquatic Nuisance Species - ANS \(ncwildlife.org\)](https://www.ncwildlife.org/aquatic-nuisance-species-ans)

Zebra Mussels

In mid-September of 2023, NCWRC and Duke Energy received a report of Zebra Mussels in a private quarry in Iredell County. NCWRC coordinated with the USFWS Southeast Region Dive Team to conduct a survey of the quarry and collect water samples for eDNA and water chemistry analyses. The quarry was surveyed on Sept. 21, 2023, and Zebra Mussels were confirmed with visual detections and eDNA. The eDNA was processed by the NCWRC Conservation Geneticist. The quarry is a closed system, and the threat of spread has been contained. NCWRC has sent out a press release and is putting together an eradication plan. The owner is fully cooperating with NCWRC to eradicate Zebra Mussels. Other bodies of water under the same ownership were surveyed in mid-October by the USFWS SE dive team and using eDNA. All surveys and eDNA results were negative for Zebra Mussels. In mid-October Lake Norman

was visually inspected by staff from Duke Energy and WRC and eDNA water samples were taken. Zebra Mussels were not detected in Lake Norman.

Apple Snails

A report of Apple Snails was received by NCWRC on September 7, 2023. NCWRC investigated the report and documented Apple Snails along the Lumber River near Lumberton in Robeson County. Subsequent WRC surveys documented them near the I-95 bridge crossing and in Saddletree Swamp and Fivemile Branch. The report has been submitted to the USGS AIS database. WRC expects the species to go dormant this winter. WRC staff are currently evaluating management options.

WRC ANS Reporting Tool

Due to the recent increase in ANS reports, a NCWRC ANS reporting was launched on October 2, 2023. [NC Wildlife - Aquatic Nuisance Species Reporting \(arcgis.com\)](https://arcgis.com). To date, the tool has received a total of 32 reports from NC, FL, and Ohio. Reported species are primarily Apple Snails, Mystery Snails, Dark False Mussel, Alabama Bass, and one nuisance beaver. NCWRC has reached out to USGS about incorporating the data into the National USGS database. Updates to the reporting tool were made to limit reports outside of NC and ask people to submit observations from other states to the USGS Nonindigenous Aquatic Species Database.

NC Aquatic Nuisance Species Management Plan (NC-ANS Plan):

Points of contact:

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A copy of this plan is posted here: <https://deq.nc.gov/conservation/natural-resource-conservation>

NC ANS Management Plan steering committee reconvened on 11/1/2023. At least a couple of years had passed since this committee previously met.

NCDEQ was awarded a grant from MAPAIS for the purpose of further developing the NC ANS Management Plan

End of report

Report compiled by Drew Gay & Rob

Emens

5/20/24