

Research Summary

Applesnails are creeping further north in the Southeastern U.S.

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Background Information

The most abundant nonnative applesnails of the U.S. (*Pomacea maculata* and *Pomacea canaliculata*) were introduced via aquatic plant hitchhiking and aquarium releases in the early 1990s from South America (Karatayev et al. 2009). *Pomacea maculata*, the giant applesnail, is prevalent in the Southeastern U.S., while *Pomacea canaliculata*, the channeled applesnail, persists mostly in the Western U.S.

Pomacea maculata was first discovered in Florida in 1989 and is now found in nine U.S. states and Puerto Rico. The species was discovered in North Carolina in late summer of 2023, and appears to be established in the Lumber River ([USGS NAS Sighting Report, 2023](#)). This is the northernmost population of the species in the U.S., and if the population overwinters, it will provide valuable information about the cold tolerance of the U.S. populations of the species.



Impacts and Challenges

Impacts on agriculture: *Pomacea maculata* is a pest in many parts of the world, including the Southeastern U.S., where these voracious herbivores consume rice crops and clog crayfish traps. Control methods are currently being explored to remove these species from rice and crayfish fields (Lucero and Wilson, 2023).

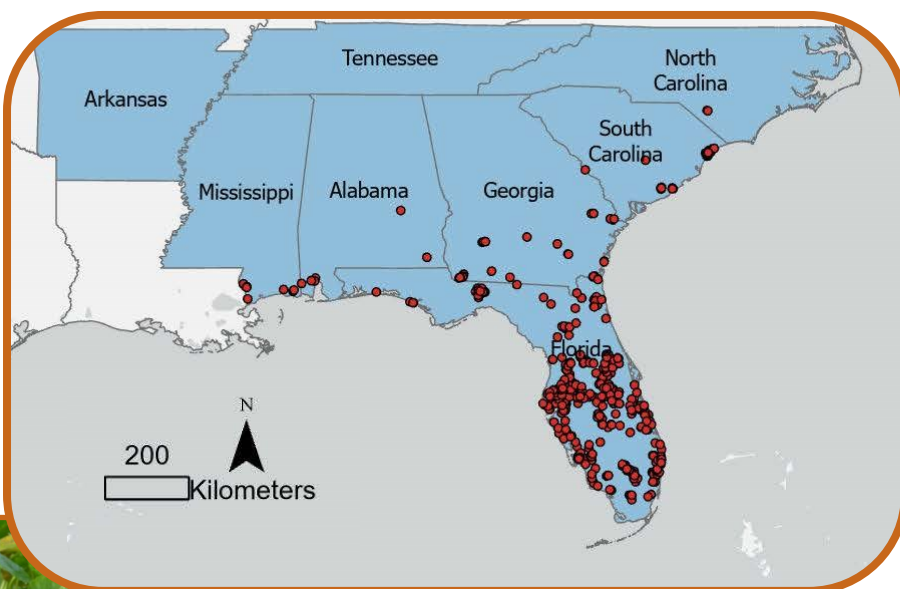


Figure 1. A detailed map of sightings throughout the Southeastern United States of *Pomacea maculata*, including novel occurrence in North Carolina; adapted from USGS

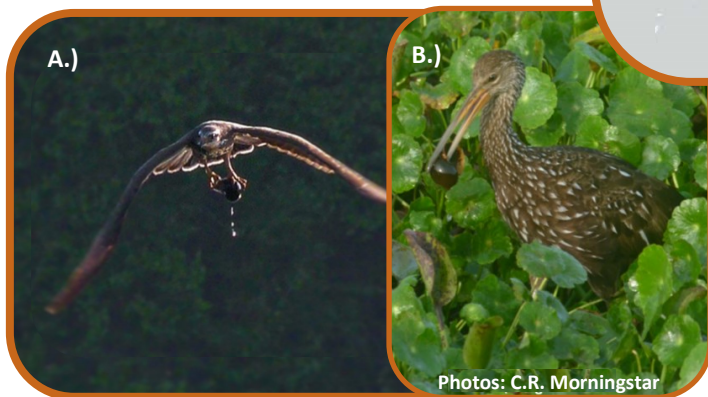


Figure 2. A.) Snail Kite (*Rostrhamus sociabilis plumbeus*) a species that has benefited by preying on them; B.) Limpkin (*Aramus guarauna*) has done similarly

Impacts on Human Health: *Pomacea maculata* carries the rat lungworm parasite (*Angiostrongylus cantonensis*), which can be spread to humans via crop contamination, causing neurological damage and death (Qvarnstrom et al. 2013).

Impacts on Native Wildlife: *Pomacea maculata* is a voracious plant-eater and can change local vegetative community structure (Smith et al. 2015). This species is also a food source for a variety of native wildlife and is credited with aiding in the range expansion of both the Limpkin (*Aramus guarauna*) and the Snail Kite (*Rostrhamus sociabilis plumbeus*) in the Southeast (Dobs 2019; Poli et al 2020).



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Life History

This species is highly fecund due to (Bernatis 2014; Burks et al. 2017):

- ◆ Large egg masses (more than 1,500 eggs in one single clutch)
- ◆ Fast maturity rate (~3-4 months of age to reproductive status)
- ◆ High oviposition rate: a single female may lay up to 56,000 eggs in a lifetime
- ◆ Female ability to hold sperm, meaning multiple egg clutches can be laid from one reproductive event



Figure 3. A large egg mass of *Pomacea*, a trait likely benefiting their establishment. Photo credit: C. R. Morningstar; USGS

IMPLICATIONS

Agriculture: Current control methods for *Pomacea*, such as manual removal, are not sufficient for targeting all stages of the species' lifecycle, and many types of chemical treatments, such as copper sulfate, may be unsafe for use on food sources, such as crayfish (El Qoraychy et al. 2015, Lucero and Wilson 2023).

Human Health: Food sources may be contaminated with *Angiostrongylus cantonensis* before the host species (in this case, *P. maculata*) is detected in the crop source. Other mollusk species can host this parasite as well, thus *P. maculata* may be a vector to spread this parasite to other species and new areas.

Wildlife: While range expansion of native species may result in impacts to local ecosystems themselves, the Floridian/Cuban subspecies of the Snail Kite is an endangered species, and the abundance of *P. maculata* in Florida has been a factor for the increased number of nesting sites for the species (Poli et al. 2020).

EDRR: Since one female animal can create a viable population of snails, and time to sexual maturity is so short, early detection and rapid response (EDRR) efforts often start when a population is already established. However, the bright pink eggs of *P. maculata* laid above the water line make them very detectable and identifiable, even to the general public. This attribute may aid in EDRR efforts.

CITATIONS

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