CHANNELED APPLE SNAILS INVADE NUMEROUS FLORIDA WATERS

Article courtesy of:

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Photo courtesy of Katasha Cornwell, FDOT.

Populations of the channeled apple snail (*Pomacea canaliculata* group), a larger relative of the native Florida apple snail (*Pomacea paludosa*), are exploding in many locations across the state. Breeding populations of these snails have been reported in scattered locations in Florida since as early as 1978, but only in the past few years has their range expanded dramatically, and has the numbers of snails occurring in many areas become so very large.

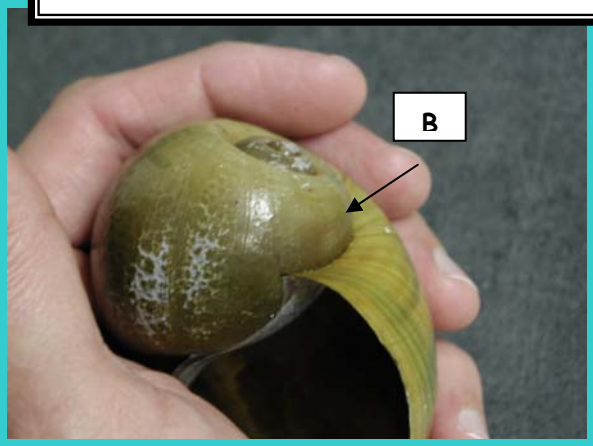
Originating in South America, channeled apple snails (also known as golden apple snails) have become serious agricultural pests in many Asian countries. In the Philippines, more than half of all rice fields are infested with these pests. Some wetlands in Thailand have become virtually devoid of aquatic vegetation due the aggressive and non-discriminate herbivory of these snails (Carlsson *et al.* 2004).

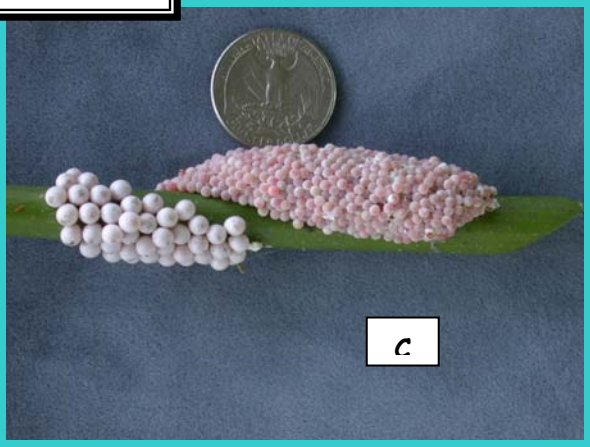
Populations of channeled apple snails have been reported in Florida, California, Texas, Georgia, Alabama, Hawaii, and Louisiana. In Florida, they pose a potentially serious threat to the ecological health of rivers, lakes, and wetlands, due to their affinity for aquatic plants, their extremely high fecundity (reproductive capability), and their tolerance for a range of environmental conditions.

Females lay masses of 100-1200 bright pink (or sometimes green) eggs an average of 1.4 times per week on any type of firm substrate available about 6 to 8 inches above the water line. Egg-laying continues year-round in central and south Florida, though it appears to slow down during the winter. Neonate snails 2mm in length hatch out in about two weeks, drop into the water, and immediately begin feeding on periphyton. At one inch in diameter, they switch to vascular plants.

How do you tell the difference between native and channeled apple snails?

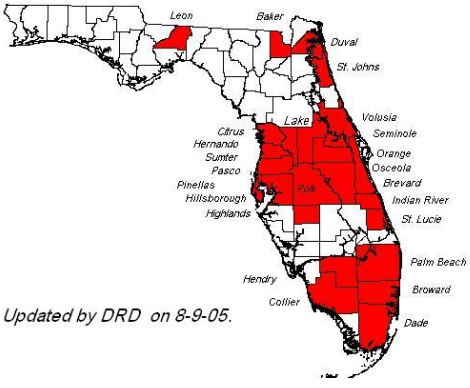
1. adult channeled much larger (A)
2. channeled have deep groove (channel) between whorls of shell (B)
3. eggs are smaller ('grit-sized'), bright pink and much more numerous (C)





In tests, they have been shown to consume almost every submersed aquatic plant species offered. *Unfortunately, they do not appear to prefer hydrilla*, but are more fond of plants like southern naiad, red ludwigia, *Cabomba*, and bladderworts. Young snails may become reproductive as early as 2 to 3 months of age. In Lake Linda in Lake County, they have removed essentially *all* of the aquatic plants present in the lake.

Like native *Pomacea*, channeled apple snails possess both a lung and a gill, as well as a snorkel-like siphon through which they can breathe atmospheric air, at the same time reducing the risk of attack by terrestrial predators. They can resist desiccation by closing their shells using their opercula, as well as by estivating (similar to hibernation) in sediments for up to 5 months. They can tolerate salinity to 8 parts per thousand, and seem unaffected by nutrient enrichment and low oxygen levels.



In Florida, populations are now reported in all central Florida counties, most south Florida counties, Leon County in the panhandle, and near Jacksonville (see map). It is likely that they will spread to many other areas, and perhaps throughout the state.

No effective control measures have yet been found. The use of molluscicides would be

expensive, and would likely have significant negative effects on non-target organisms. Although there are predators which feed on channeled apple snails (snail kites, large herons, large turtles, alligators, and most notably, limpkins), the relative abundance of these predators is eclipsed by the huge populations of channeled apple snails that have been seen in many locations. The use of water-level manipulations to drown eggs in controlled situations would probably help in reducing egg densities somewhat, but at a rate of one clutch laid every 4 or 5 days, the impact to snail populations would probably be limited. Physical removal projects have been carried out in Seminole County's Lake Brantley, and are being considered in some locations in Osceola County. These will help to reduce snail densities somewhat, but are probably most valuable as educational and media events. The most important step in lessening their impact and, especially, reducing their spread, in to educate the public about them. School groups, scientific and professional meetings, conservation organizations, and the media are all good outlets for disseminating information. Research aimed at determining the specific effects these snails might have on water quality, endangered species, and ecosystems as a whole are sorely needed.

If you find these channeled apple snails and/or their eggs, or want more information, please contact Johnny Richardson, Water Quality Scientist, Leon County Public Works, at richardsonjo@leoncountyfl.gov, or call (850) 606-1500.

Note: Many people ask whether or not these snails are edible. They are, BUT they are known to carry a parasite called *Angiostrongylus cantonensis* or rat lung worm, which can cause a serious form of meningitis. Consumption is not recommended.

FOR MORE INFORMATION:

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