

INVASIVE APPLE SNAIL MITIGATION

BLAKE WILSON



Figure 1. The large, spherical mature apple snails are easily detectable.
Photo by Blake Wilson



Figure 2. The bright pink egg masses of apple snails are laid above the water surface.
Photo by Blake Wilson

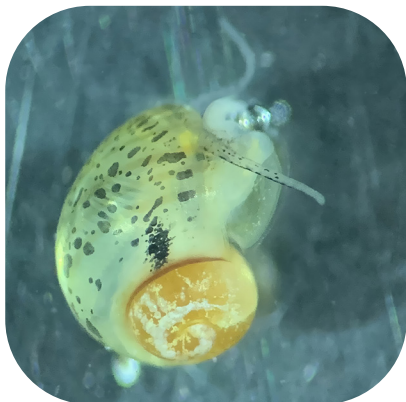


Figure 3. The hatchlings of apple snails are about the size of a BB.
Photo by Carlos Wiggins



Figure 4. All equipment used in water where snails have been observed should be washed and inspected before moving off-site.
Photo by Blake Wilson.

Invasive apple snails, *Pomacea maculata*, have become widely established along the U.S. Gulf Coast including throughout many of the freshwater systems in south Louisiana. The presence of apple snails is most easily detected by the observation of the large spherical snails (Figure 1) or the bright pink egg masses laid above the water surface (Figure 2). The apple snails are highly ecologically disruptive through their immense consumption of aquatic vegetation, and their establishment can dramatically alter our aquatic habitats. More recently, the snails have begun to infest rice and crawfish ponds in southwest Louisiana where they are having severe economic impacts. Mitigation efforts are critical to reducing the snails' impacts to our natural waterways and rice/crawfish aquaculture systems.

! STOP THE SPREAD

The range of invasive apple snails in Louisiana and other Gulf Coast states is continually expanding, and the full extent of the area they are able to colonize is unknown. Limiting the spread of apple snails to new regions is critical to reducing their environmental impacts. Apple snails move readily through interconnected bodies of freshwater, and little can be done to prevent the snails' movement through many waterways. However, their ability to move over land is limited, and prevention of human-aided movement can protect isolated bodies of water. Uninfested ponds may be kept free of apple snails by taking precautions.

Apple snails or their egg masses should not be collected or transported for any reason. Apple snail eggs are frequently laid on boats, crawfish traps, irrigation structures and other objects sticking out of infested waterways. Apple snail hatchlings are approximately the size of a BB and are not easily spotted (Figure 3). Any equipment taken from bodies of water where snails or egg masses have been

observed should be thoroughly washed and inspected before moving off-site (Figure 4). Avoid moving any equipment or plant materials from apple snail-infested waters to uninfested waters. Avoid moving any equipment/material from snail-infested waters across state boundaries. All apple snails should be sorted from crawfish captured from snail-infested ponds. Crawfish harvested from snail-infested waters should be thoroughly rinsed before transportation. Crawfish harvested from snail-infested ponds should be sold locally and not exported out of state.

MITIGATION EFFORTS

Invasive apple snails can reach explosive population levels and have severe impacts on aquatic ecosystems and rice/crawfish production. Apple snail egg masses encountered in our natural waterways should be knocked into the water with a stick or other implement. Apple snails can consume seedling rice when water is present, and water-seeding rice into snail-infested ponds should be avoided. Control of apple snails in heavily infested crawfish ponds can be obtained by treating with copper sulfate, an algacide registered for use in rice and crawfish production. Applications should target a concentration of 10 parts per million. Lowering the water level will reduce the amount of copper sulfate needed and the per acre treatment cost. Following treatment, water should be held for a minimum of three days to ensure sufficient snail mortality. Copper sulfate poses a risk to crawfish, and crawfish mortality may be observed following treatment. Mechanical control options include draining, drying and tillage. Apple snails burrow into the mud upon water removal, but remain at shallow depths where they can be targeted with tilling equipment. Apple snails that have burrowed into the mud can remain dormant under dry conditions for approximately six months. Keeping ponds dry for periods of more than one year may cause substantial snail mortality. Apple snails have extremely high reproductive potential, and populations may recover quickly from control efforts.

HEALTH RISKS

It is unsafe to handle apple snails or their eggs. The hot pink color of eggs serves as a warning to alert potential predators that the eggs are toxic. The eggs contain a protein neurotoxin called PcPV2, which has been shown to be lethal to mice, and it can cause irritation of the skin and eyes of humans. Destruction of the eggs should be done using an implement to knock egg masses into the water, where they are prevented from hatching. Skin exposed to apple snail eggs should be washed immediately. Precaution should be exercised when consuming apple snails to avoid ingestion of the parasitic rat lung worm, *Angiostrongylus cantonensis*. While cases in the U.S. are rare, infection of the rat lung worm can cause eosinophilic meningitis, a potentially fatal infection of the brain. Apple snails should never be consumed raw. The snails are edible when thoroughly cooked and properly cleaned by removing all intestinal material. Hands should be thoroughly washed after handling apple snails.

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