

The spread and potential impacts of freshwater invasive island apple snails (*Pomacea maculata*) in coastal South Carolina, USA

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ABSTRACT

The freshwater gastropod *Pomacea maculata*, native to South America, was first reported from the wild in the United States in 2002 and in South Carolina (SC) in 2008. The species is believed to have been introduced via the aquarium trade. The high fecundity and consumption rates of *P. maculata* may have negative impacts on native snail populations. *Pomacea maculata* may also harbor the parasite *Angiostrongylus cantonensis*, which has been found in other established populations and can cause eosinophilic meningitis in humans. A new survey of 100 randomly selected ponds distributed throughout coastal SC determined that the current distribution of *P. maculata* is restricted to previously known discrete populations. All ponds within a 0.5 mile radius of these established populations were surveyed to determine the extent of these localized invasions. These intensively surveyed areas were located in the West Ashley area of Charleston and a cluster of three locations near Myrtle Beach, SC. The West Ashley *P. maculata* population was also sampled biweekly to examine growth rates and abundances of snails and egg casings throughout the spawning season. All *P. maculata* egg casings encountered during surveys were destroyed, and all *P. maculata* observed were collected for genetic and parasite prevalence studies. Water quality data were taken at each surveyed pond, and other snail species encountered were collected to compare the abundance and distribution of *P. maculata* and native snails in SC. Although there was no latitudinal trend in native species diversity, eight snail species were found, including two new invasive species. As very little is known about *P. maculata* in SC, understanding the current distribution and possible secondary transfer mechanisms is important for preventing further spread and conserving healthy, natural ecosystems.