



[Back to SFRSF Home](#)

SEARCH

[About this site](#) ◀

[Upcoming Events](#) ◀

[Resource/Mgmt Exhibits](#) ◀

[Science Displays](#) ▼

[ACME / SICS](#)

[Historical Settings](#)

[Hydrology](#)

[Invasive Exotic Species](#)

[Landscape Synth/ Eco. Modeling](#)

[Mercury](#)

[Nutrients](#)

[Our Coastal Ecosystems](#)

[Sustainable Agriculture](#)

[Wildlife and Wetland Ecology](#)

[Presentations and Discussions](#) ◀

[Technology Brief](#) ◀

[May 99 Event](#) ◀



Last updated: June 11, 2007

## South Florida Restoration Science Forum

### Invasive Exotic Species

#### What controls invasive animals?

Poster presented May 1999, at the [South Florida Restoration Science Forum](#)

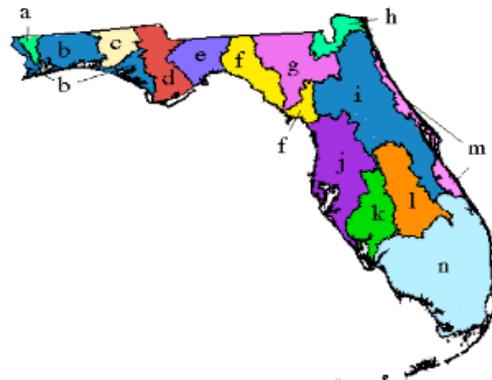
## Nonindigenous Species Introduced into South Florida

Pam L. Fuller and Amy J. Benson, U.S. Geological Survey, Biological Resources Division

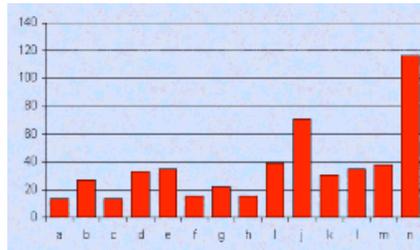
### Introduction

South Florida is host to a wide variety of nonindigenous species, more than any other drainage in the state. Many of these introduced species have become established in this disturbed habitat. A sample of some of these organisms are represented here.

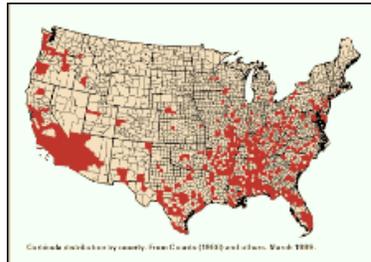
- a. Escambia
- b. Florida Panhandle Coastal
- c. Choctawhatchee
- d. Apalachicola
- e. Ochlockonee
- f. Aucilla - Waccassassa
- g. Suwannee
- h. St. Marys - Satilla
- i. St. Johns
- j. Tampa Bay
- k. Peace
- l. Kissimmee
- m. East Florida Coastal
- n. South Florida



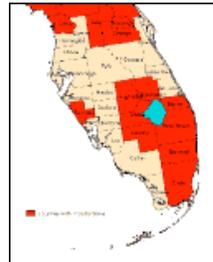
**Number of aquatic species introduced into each drainage\***  
(Letters correspond to map above.)



\* Number based on freshwater aquatic species only including fish, amphibians, reptiles, crustaceans, mollusks, and plants. Not all species established. (Click on image for full-sized version.)



Corbicula distribution. Click on image for full-sized version.



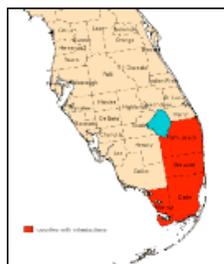
Counties showing introductions. Click on image for full-sized version.



Copyright by Richard Bryant. (Click on image for full-sized version.)

### Asian clam (*Corbicula fluminea*)

The Asian clam is a small freshwater mussel. It came to North America from China in the 1920s. The very first records are from the Columbia River basin in the Pacific Northwest. It may have been brought in as food for Chinese immigrants. Or, it may have come in with the importation of the Giant Pacific oyster also from the Asia. This clam is established in southeast Florida. The mechanism for dispersal within North America is unknown. Its maximum length is about 35 mm and lives about 3 years. It is known mostly as a biofouler of many electrical and nuclear power plants across the country. As water is drawn from rivers, streams and reservoirs for cooling purposes so are *Corbicula* larvae. Once inside the plant, this mussel can clog condenser tubes, raw service water pipes, and fire fighting equipment. Economic problems can result from the decreased efficiency of energy generation. Warm water effluents at these power plants make a hospitable environment for stabilizing populations.



Counties showing introductions. (Click on image for full-sized version.)



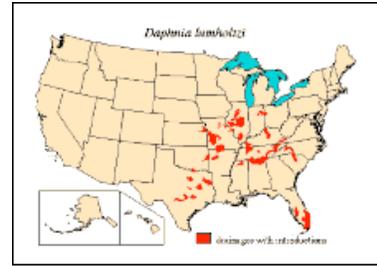
Copyright by D.J. Riebesell. (Click on image for full-sized version.)

### Spiketop applesnail (*Pomacea bridgesi*)

This snail is a tropical freshwater species native to South America. It has been introduced into Florida and is now established in Broward, Dade, Monroe, Palm Beach, and Pinellas counties. It is usually greenish in color with dark and light bands. *P. bridgesi* is a popular aquarium snail and was probably introduced by aquarium hobbyists or fish farms. One important impact of this snail is that it may be replacing the native applesnail in the Everglades. The rare Everglades Kite feeds on the native applesnail but is not able to readily feed on the introduced species because of the shape of the shell does not match that of the kite's beak (Hale 1964).



Copyright Tom Ferro. (Click on image for full-sized version.)



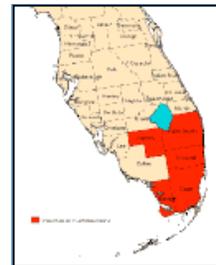
Map showing *daphnia lumholtzi*. (Click on image for full-sized version.)

### *Daphnia lumholtzi*

The native range of this daphnia is freshwater lakes of east Africa, southwest Asia, and east Australia (Havel 1993). It was first reported in Stockton Lake in southwest Missouri in 1991 and can be found in 13 states from Illinois and Ohio down to Texas across to North Carolina and south to Florida. *D. lumholtzi* has spread much faster than *Bythotrephes* for reasons unknown. The method of introduction is uncertain. But, coincidentally, one of its first appearances was a lake in Texas where the Nile perch was first introduced to North America (Havel 1993). It is well established in the U.S. Any effects or impacts are yet unknown.



Copyright Giuseppe Mazza. (Click on image for full-sized version.)



Counties showing introductions. (Click on image for full-sized version.)

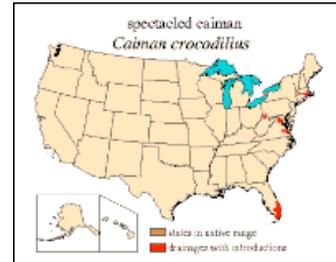
### Giant Rams-horn Snail (*Marisa cornuarietis*)

The giant rams-horn snail is native to northern South America and several of the southern islands of the Caribbean. It is an easily recognizable species, brick red in color with a flat coiled shell. Color may be darker or more vivid. Shell diameter is usually 35-50 mm (2 in.) or larger. Still or slow-moving fresh water, depending on vegetation. Easily adaptable to captivity, it may invade and damage aquarium vegetation. It is practically omnivorous and feeds on animal and vegetal detritus. Acts as a useful aquarium

scavenger when not extensively numerous. It has gills as well as a lung, to ensure an efficient underwater respiration. A hermaphrodite, it lays eggs in characteristic disk-shape clutches adhering to various substrates. It is established in Broward, Dade, Monroe, and Palm Beach counties probably as a result of releases by aquarium hobbyists. Studies revealed that this species retards the growth of water hyacinths by feeding on the roots of the plants. It has been suggested that the snail be used as weed-control agent in the canals of south Florida. The snail has been released in some areas to control hydrilla. It has also been released to control snail populations that carry schistosomiasis.



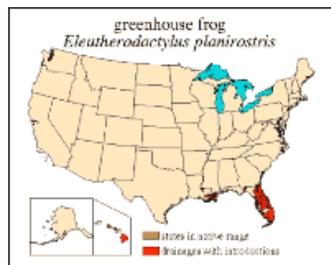
Copyright F. Wayne King, 1996. (Click on image for full-sized version.)



Map showing spectacled caiman. (Click on image for full-sized version.)

### Spectacled caiman (*Caiman crocodilius*)

Spectacled caimans are native to Central and Southern America. Although they look similar to native alligators, caimans can be distinguished by a bony ridge in front of their eyes. Coloration between the two species is also different - young alligators are black with yellow bands while caimans are greenish- to brownish-gray with dark brown bands. Adults attain a length of 6-8 feet. Caimans are established in Dade County, Florida, and have been reported in other areas of the country. They have also been observed in Everglades National Park. Discarded pets are the most likely source of introductions.



Map showing greenhouse frogs. (Click on image for full-sized version.)



Copyright R.W. Van Devender. (Click on image for full-sized version.)

### Greenhouse frog (*Eleutherodactylus planirostris*)

Greenhouse frogs were likely brought in on tropical plants from their native range in the Caribbean (Cuba, Bahamas, and Cayman Islands) and are now established in many areas of Florida. They are small frogs, only reaching 1.5" in length, and are active feeding, calling, and mating at night. Unlike other members of this genus, they are ground-dwellers (rather than arboreal) and are seldom found more than a few centimeters off the ground. They are most often found in leaf litter or under logs. The most unique trait of this frog (and other species of this genus) is that the eggs are laid in moist leaf litter, not water. The eggs then develop directly into tiny froglets, without going

through a tadpole stage, a process known as direct development.

---



From *Creatures Great and Small*. (Click on image for full-sized version.)



Map showing tree frogs. (Click on image for full-sized version.)

### **Cuban treefrog (*Osteopilus septentrionalis*)**

Cuban treefrogs are believed to have been introduced into Florida in 1931 in cargo imported from Cuba. Since then they have spread to 27 counties. They are known to prey on many native frog species including the southern toad (*Bufo terrestris*), the narrow mouthed toad (*Gastrophryne carolinensis*), the southern leopard frog (*Rana sphenocephala*), the green treefrog (*Hyla cinerea*), and the squirrel treefrog (*Hyla squirella*), as well as other Cuban treefrogs. In some areas, these frogs have caused power outages. They are attracted to the buzzing noise of electrical transformers and can short out the transformer causing a localized blackout.

---

#### **Related Links**

- [Nonindigenous Aquatic Species](#)



#### [Nonindigenous fishes of florida - with a focus on south Florida](#)

[Disclaimer for non-USGS materials](#)

U.S. Department of the Interior, U.S. Geological Survey, Center for Coastal Geology  
This page is: <http://sofia.usgs.gov/sfrsf/rooms/species/invasive/intro/index.html>  
Comments and suggestions? Contact: [Heather Henkel - Webmaster](#)  
Last updated: 11 June, 2007 @ 11:34 AM (TJE)