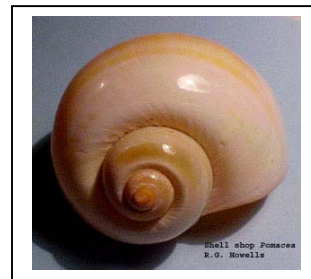
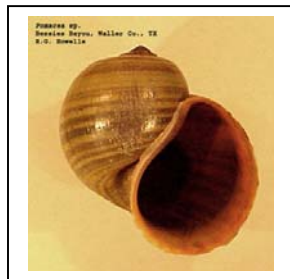
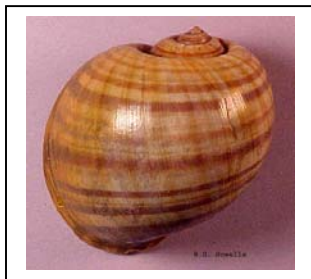


# EXOTIC APPLESNAILS IN TEXAS WATERS



Applesnails with channeled shells (*Pomacea* sp.) from southeastern Texas.

Gold-colored applesnail.

## INTRODUCTION:

The applesnail family (Ampullariidae) includes many species that are native to South and Central America, some Caribbean Islands, Africa, Asia, and peninsular Florida. None are native to Texas, but several species have been introduced here. Many species represent major ecological and economic threats. Some can also carry harmful worm parasites.

## DESCRIPTION:

Applesnails from two major groups are of interest in Texas and elsewhere in the continental U.S. First, the applesnails in the genus *Pomacea* are large, globe-shaped snails. Some grow as large as a baseball. They have an operculum or trap door that protects the opening to their shells when the animal withdraws. Applesnails in this group have both gills and a lung-like structure that allows them to breathe and feed both in and out of water. They are usually colored in bands of tan, brown, and black, but domestic gold, white, and other color morphs also exist. Florida applesnail (*P. paludosa*) has a low, flattened shell apex. Spiketop applesnail (*P. bridgesii*) has a much higher spire, square shoulders on its whorls, and is not channeled between whorls. Members of the channeled applesnail-group (*P. canaliculata*-group) have a low- to moderate apex, rounded shell whorls, and a channel or groove between whorls. Another member of the family, giant rams-horn snail (*Marisa cornuarietis*), is coiled like a ram's horn and looks quite different from its relatives. It too is usually striped in tans, browns, and blacks, but may be completely dark or light. NOTE: Until recently, applesnails with channeled shells in Texas were assumed to be true channeled applesnails (*P. canaliculata*), but DNA analysis reported in 2004 revealed that some Texas and Florida populations are actually another species with channeled shells (yet to be identified). Applesnails are usually sold in the pet trade as mystery snails (but, true mysterysnails are in another family).

## BIOLOGY:

All applesnails feed on vegetation. Spiketop applesnail eats algae. Florida applesnail and giant rams-horns eat larger aquatic plants. Members of the channeled applesnail-group aggressively feed on large plants and may even attack plants above the water line. Some species reportedly attack and consume other snails as well. Applesnails (*Pomacea*) lay eggs with hard shells in masses on solid objects above the water line. Egg clusters of many species look like masses of pink, red, or orange grapes. Giant rams-horns lay their eggs in jelly-like groups under water. Spiketop and Florida applesnails and giant rams-horns have only limited cold tolerance, but some members of the channeled applesnail-group endure winters in Korea and Japan.

## HISTORY OF INTRODUCTIONS:

In the continental U.S., releases of imported pet trade specimens occurred in Florida and elsewhere by the mid-1900s. Populations of applesnail species now occur in Texas, Florida, California, Alabama, and possibly Idaho. A release in North Carolina failed and others in Georgia have only recently been found. Channeled applesnails (*P. canaliculata* and other channeled species) were taken to Taiwan in 1979 for culture as Asian escargot. These were called "golden apple snails" to reflect the amount of money snail farmers would make. They were soon taken to other sites in Southeast Asia and the Indo-Pacific as well. Others were introduced in Hawaii and the Dominican Republic. However, no escargot market developed and snails that escaped or were released soon began to cause massive damage to important rice and taro (elephantear) crops.

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## APPLESNAILS IN TEXAS:

There were several early records of applesnail shells collected in Texas, but it was not until 1989 that a living population was found in a pond in Houston. In 2000, other living applesnails were discovered in bayous and rice irrigation canals between Houston and Galveston. These were incorrectly believed to be channeled applesnails (*P. canaliculata*). Applesnails with channeled shells (*Pomacea* sp.) are now known to occur in six southeastern counties (Chambers, Harris, Brazoria, Galveston, Fort Bend, & Waller), as well as in a pond in the Fort Worth area. Giant rams-horn snail was first found in Texas in 1981 and now occurs in the upper San Marcos, Comal, and San Antonio rivers.

## THREAT POTENTIAL:

Although "channeled" applesnails have invaded rice fields in Texas, no major crop damage has been reported to date. However, agricultural risk could increase as Texas applesnail populations grow and spread. Introduced applesnail populations in Texas waters do, however, pose a major threat to aquatic and wetland ecosystems. They have the potential to cause extensive environmental damage and alteration. Applesnails can also serve as hosts for worm parasites that can infect humans and other animals (though not found in Texas to date). Giant rams-horns in central Texas have damaged aquatic plants, but currently have small populations and are not sufficiently cold tolerant to be able to move far from headwater springs and invade new areas.

## LEGAL RESTRICTIONS:

Texas Parks & Wildlife Department prohibits both giant rams-horn snail and channeled applesnail. Possession, sale, distribution, and culture of these species is illegal. By mid-2005, it is likely that all members of the applesnail family will be prohibited except spiketop applesnail.



Applesnail eggs on a wall in Brazoria County. Giant rams-horn snail.

**CLARIFICATION:** Materials and publications relating to applesnails in Texas written prior to April 2005 may contain statements now known to be incorrect due to results of recent DNA analysis, expanding ranges, and other new discoveries.

## REPORT APPLESNAIL SIGHTINGS IN TEXAS TO:

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