

***Pomacea urceus* (a snail, no common name)**

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, May 2012

Revised, May 2018

Web Version, 8/30/2018



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http://eol.org/data_objects/13234735. (May 2018).

1 Native Range and Status in the United States

Native Range

From Traboulay (2015):

“It is most common in tropical and subtropical South America [...], including the Amazon and the Plata Basin [...]. It is also native to Trinidad and Tobago (Burky, 1974).”

Status in the United States

This species has not been reported as introduced or established in the United States.

From Cowie et al. (2009):

“Regulatory changes have banned live *Pomacea* spp., with the exception of *P. bridgesii* (i.e., *P. diffusa*), from any United States trade.”

Means of Introductions in the United States

This species has not been reported as introduced or established in the United States.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2018):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Protostomia
Superphylum Lophozoa
Phylum Mollusca
Class Gastropoda
Subclass Prosobranchia
Order Architaenioglossa
Family Ampullariidae
Genus *Pomacea*
Species *Pomacea urceus* (Muller, 1774)”

“Taxonomic Status:
Current Standing: valid”

Size, Weight, and Age Range

From Traboulay (2015):

“It can range to 124-135mm in height and 115-125mm in width.”

“The average life span for *Pomacea urceus* is 2-4 years, with some living longer (Holswade, 2013).”

Environment

From Traboulay (2015):

“*Pomacea urceus* is amphibious.”

Climate/Range

From Traboulay (2015):

“[...] tropical and subtropical [...]”

From Burky et al. (1972):

“It has been demonstrated that adult snails generally regulate their body temperature below 41° C [air temperature] under experimental conditions and that their upper lethal temperature is between 40 and 45° C.”

Distribution Outside the United States

Native

From Traboulay (2015):

“It is most common in tropical and subtropical South America [...], including the Amazon and the Plata Basin [...]. It is also native to Trinidad and Tobago (Burky, 1974).”

Introduced

From Traboulay (2015):

“[...] [it] has been introduced to Asia.”

Means of Introduction Outside the United States

No information available.

Short Description

From Traboulay (2015):

“The black conch *Pomacea urceus* has a spherical or globe-like shell with a short spire [...] Although often blackish, various colours such as yellow and olive green have added to the variety of the freshwater conch, with the inner lip of the shell being anywhere from red to white. The operculum (cover) is horny (Alderson, 2015). Four main structures of *Pomacea urceus* can be observed: the foot, visceral mass, mantle and the face. The foot is the soft muscular part that is used to move about. Its visceral mass houses the digestive apparatus and the pericardial cavity. The mantle has the function of secreting the shell and the face consist of two long tentacles, with the eyes being at their bases. Also present is a siphon, 2.5 times its body length.”

Biology

From Burky et al. (1972):

“It has long been known (Troschel, 1845; Pelseneer, 1895; Prashad, 1925, 1932) that ampullariid or "pilid" snails possess "amphibious" respiratory structures, one part of the mantle cavity containing a ctenidium (the characteristic molluscan gill) and another part being modified as a gas-filled lung cavity. This double adaptation for aquatic and aerial respiration in *Pomacea urceus* is probably most important during the rainy season (Burky and Burky, in preparation).”

“Oviposition in *Pomacea urceus* is at the beginning of the dry season after the female has burrowed into the surface mud. Clutches are laid beneath the shell aperture where the spat hatch

and aestivate until the rains start about four months later. Camouflage and temperature regulation is apparently important for the protection of spat since they are unable to survive exposure to the tropical sun under experimental conditions (this report) or in the field during the dry season (Burky, in preparation). It is also known that adults reach a shell length of at least 85 mm before going into aestivation at the beginning of the dry season (Burky, in preparation). This suggests that there may be a minimum body volume for maintenance of body temperature and for water balance during the dry season.”

From Traboulay (2015):

“*Pomacea urceus* is herbivorous (Ramnarine, 2003).”

“*Pomacea urceus* is amphibious. It would sometimes leave the swamps and rivers to search for food on land, even though they get a lot of food in marshes. They would go in search for their food at nights and then at the break of day, hide in the water to avoid predators. They are nocturnal and quite mobile.”

Human Uses

From Ramnarine (2003):

“The snail fetches a high price of \$US 5/kg, and current demand is met by collection from the wild, leading to over-exploitation. This is a potential aquaculture species, but there is the need for hatchery production of juveniles, since collection of seedstock from the wild is difficult.”

From Traboulay (2015):

“It is hunted and sought after here in Trinidad as food and is not scarce.”

From Cowie et al. (2009):

“Regulatory changes have banned live *Pomacea* spp., with the exception of *P. bridgesii* (i.e., *P. diffusa*), from any United States trade.”

Diseases

No information available. No OIE-reportable diseases have been documented for this species.

Threat to Humans

No information available.

3 Impacts of Introductions

No information available.

4 Global Distribution

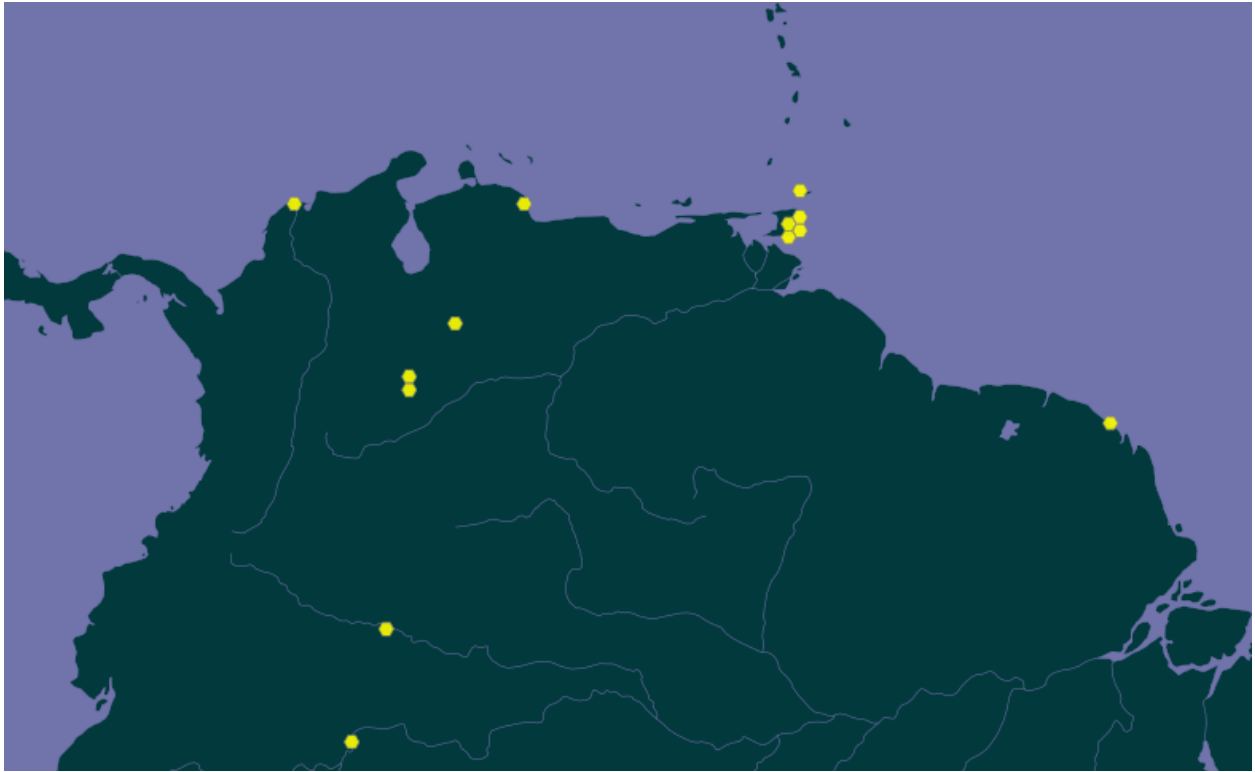


Figure 1. Known global distribution of *Pomacea urceus*, reported from northern South America. Map from GBIF Secretariat (2018).

5 Distribution Within the United States

This species has not been reported as introduced or established in the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.0, which is a low climate match. The climate match was categorically low in every state in the contiguous United States. There were areas of medium climate match in southern Florida and Texas.

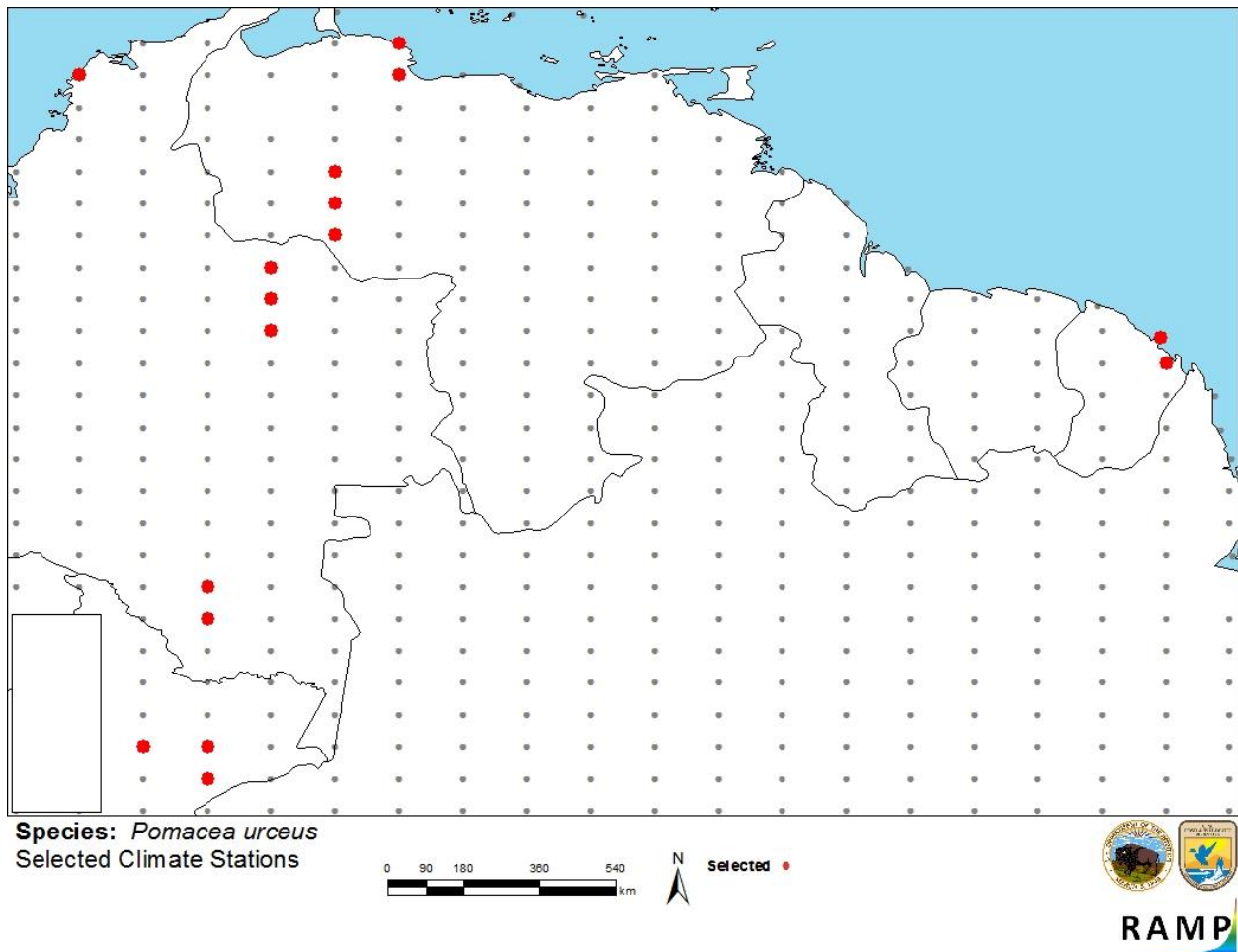


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; Peru, Colombia, Venezuela, French Guiana) and non-source locations (gray) for *Pomacea urceus* climate matching. Source locations from GBIF Secretariat (2018).

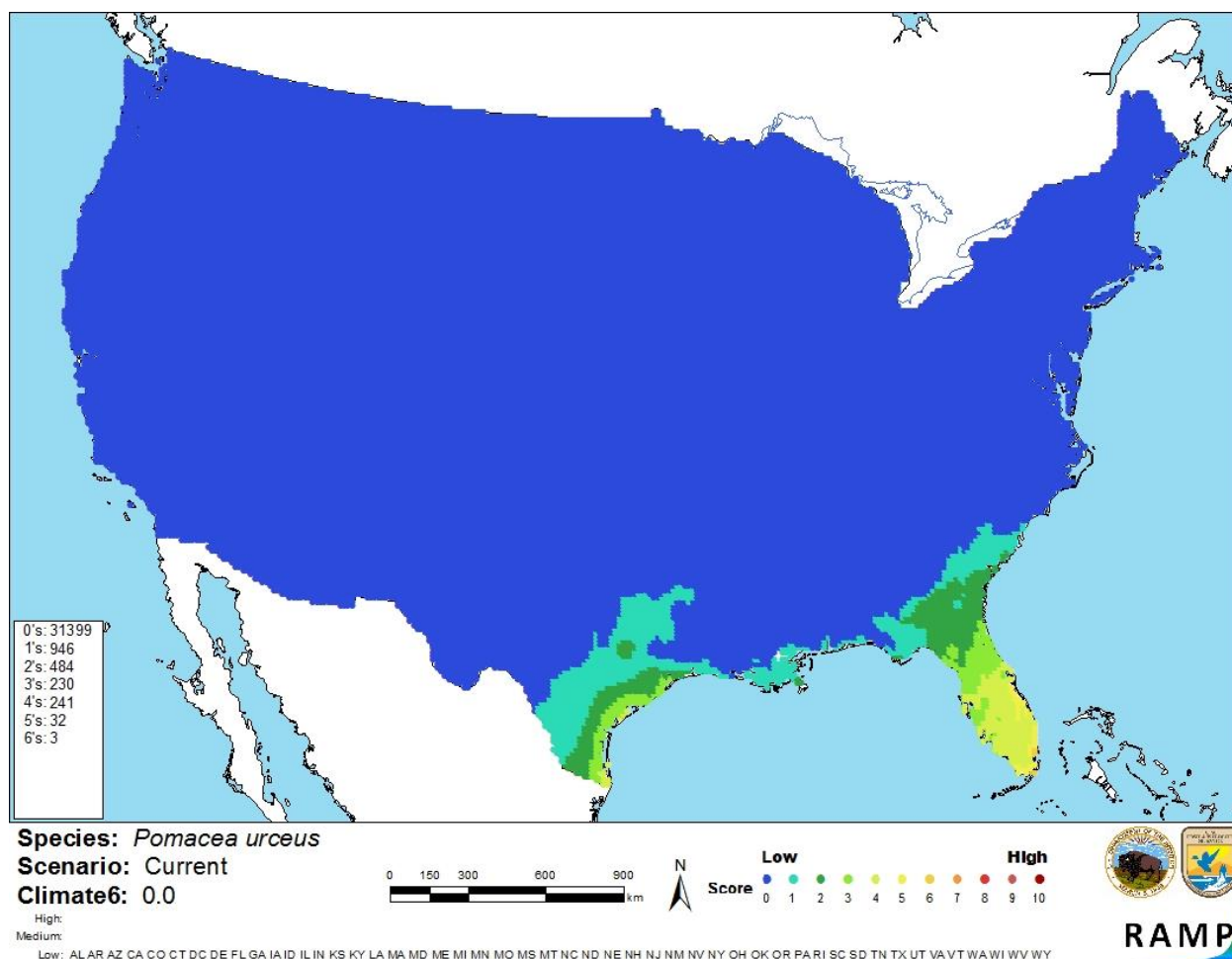


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Pomacea urceus* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). 0= Lowest match, 10= Highest match. Counts of climate match scores are tabulated on the left.

The “High”, “Medium”, and “Low” climate match categories are based on the following table:

Climate 6: Proportion of (Sum of Climate Scores 6-10) / (Sum of total Climate Scores)	Climate Match Category
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

7 Certainty of Assessment

There is very little information available about *Pomacea urceus*. Of the information available for this species, not all of it is scientifically credible. In addition, there is no information available about introductions of this species outside of its native range from which to base an assessment of risk. Additional clear, scientifically-credible information is needed to adequately assess the risk this species poses to the contiguous United States. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Pomacea urceus is an amphibious snail native to South America. This species has a low climate match with the contiguous United States. It has possibly been introduced to Asia, but no further information is available about the status of this introduction. No impacts of introduction of this species have been documented. Because further information is needed to determine the risk *P. urceus* poses to the contiguous United States, the certainty of this assessment is low, and the overall risk assessment category is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Low**
- **Overall Risk Assessment Category: Uncertain**

9 References

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.

- Burky, A. J., J. Pacheco, and E. Pereyra. 1972. Temperature, water, and respiratory regimes of an amphibious snail, *Pomacea urceus* (Muller), from the Venezuelan savannah. The Biological Bulletin 143(2):304-316.
- Cowie, R. H., R. T. Dillon Jr., D. G. Robinson, and J. W. Smith. 2009. Alien non-marine snails and slugs of priority quarantine importance in the United States: A preliminary risk assessment. American Malacological Bulletin 27(1/2):113-132.
- GBIF Secretariat. 2018. GBIF backbone taxonomy: *Pomacea urceus*, Muller, 1774. Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/2292580>. (May 2018).
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- Ramnarine, I. W. 2003. Induction of spawning and artificial incubation of eggs in the edible snail *Pomacea urceus* (Muller). Aquaculture 215(1-4):163-166.
- Traboulay, M. 2015. *Pomacea urceus* (Freshwater Conch or Black Conch). The online guide to the animals of Trinidad and Tobago. University of the West Indies, St. Augustine, Trinidad and Tobago. Available:

https://sta.uwi.edu/fst/lifesciences/sites/default/files/lifesciences/documents/ogatt/Pomacea_urceus%20-%20Freshwater%20Conch%20or%20Black%20Conch.pdf. (May 2018).

Sanders, S., C. Castiglione, and M. H. Hoff. 2014. Risk Assessment Mapping Program: RAMP. U.S. Fish and Wildlife Service.

10 References Quoted But Not Accessed

Note: The following references are cited within quoted text within this ERSS, but were not accessed for its preparation. They are included here to provide the reader with more information.

Alderson, E. G. 2015. *Pomacea (pomacea) urceus*. The apple snail website. [Source material did not give full citation for this reference].

Burky, A J. 1974. Growth and biomass production of an amphibious snail, *Pomacea urceus*, from the Venezuelan savannah. *Journal of Molluscan Studies*, 41(2):127-143.

Holswade, E. 2013. *Pomacea*. Animal Diversity Web. [Source material did not give full citation for this reference].

Pelseneer, P. 1895. *Prosobranches aeriens et Pulmones branchiferes*. *Archives de Biologie*, Paris 14:351-393.

Prashad, B. 1925. Anatomy of the common Indian apple-snail *Pila globosa*. *Memoirs of the Indian Museum* 8:91-154.

Prashad, B. 1932. *Pila* (the apple snail). *Indian Zoological Memoirs* 4:1-83.

Troschel, F. H. 1845. Anatomie von *Ampullaria urceus* und uber die Gattung *Lanistes* Montf. *Archiv für Naturgeschichte* 11:197-216.