GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Euglandina rosea***

Euglandina rosea 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Mollusca	Gastropoda	Stylommatophora	Spiraxidae

Common name Rosige Wolfsschnecke (German), rosy wolf snail (English), cannibal snail (English)

Synonym

Similar species

Summary The carnivorous rosy wolfsnail Euglandina rosea was introduced to Indian and Pacific Ocean Islands from the 1950s onwards as a biological control agent for the giant African snail (Achatina fulica). *E. rosea* is not host specific meaning that native molluscs species are at risk of expatriatioin or even extinction if this mollusc-eating snail is introduced. Partulid tree snails of the French Polynesian Islands were particularly affected; having evolved separately from each other in isolated valleys, many Partulid tree snails have been lost and today almost all the survivors exist only in zoos.

view this species on IUCN Red List

Species Description
The shell is large (up to 76 mm in height, 27.5 mm in diameter), thick and has prominent growth lines (University of Florida 2009). The shape of the shell is fusiform with a narrow ovate-lunate aperture and a truncated columella; typically, the shell color is brownish-pink (University of Florida 2009). Adult *Euglandina* grow from about seven to 10 cm long (Clifford *et al*. 2003).

Habitat Description
Euglandina rosea is usually found singly in hardwood forests, roadsides and urban gardens in its native range in Florida (Hubricht 1985, University of Florida 2009).

Reproduction
Euglandina rosea is a cross-fertilising egg-laying hermaphrodite. Chiu and Chou (1962, in Univeristy of Florida 2009) gave details of the biology of Euglandina in Taiwan. Individuals live up to 24 months. 25 to 35 eggs are laid in a shallow pocket in the soil. These hatch after 30 to 40 days.

Nutrition
Euglandina rosea feeds on other snails and slugs, which they track down by following the slime trails left by their prey (Clifford *et al*. 2003). It appears to prefer smaller individuals, which it swallows whole, but will attack large snails by entering through the shell aperture.

General Impacts
Molluscs are the group most affected by extinction according to the 2007 International Union for Conservation of Nature (IUCN) Red List (Regnier 2009). The Pacific region has a wide diversity of mollusc species, most of them unique to the region, and the majority endemic to single islands or archipelagos (Cowie 1996 1997a, in Cowie and Cook 2001). More and more, these unique species are becoming replaced with a homogenous group of tropical tramp snail and slug species that are increasingly widespread (Cowie 1998a, R.H. Cowie, unpub., in Cowie and Cook 2001). Of the 400 extinct species we listed from oceanic islands, 234 lived on islands to which *Euglandina rosea* had been introduced, and it is highly probable that of these 234 extinctions, 134 (>50%) of them were ultimately caused by the introduction of *E. rosea* (Regnier *et al*. 2009).\r\n
E. rosea contributed to the extinctions of endemic *Partula* tree snails in French Polynesia; the snails are widely distributed on most of the high islands of the tropical Pacific, except for the Hawaiian Islands (Murray *et al*. 1989, Cowie 1992, Hopper and Smith 1992, in Cowie and Cook 2001). *E. rosea* also contributed to the marked decline of endemic land snail fauna in Hawaii and Mauritius (Murry *et al*. 1988; Clarke *et al*. 1984; Hadfield 1986, Murray *et al*. 1988, Griffiths *et al*. 1993, Wells 1995, in Satoshi 2003). The best documented cases are those of the achatinelline tree snails, which are endemic to the Hawaiian Islands (Hadfield 1986, Hadfield *et al*. 1993). The native species mentioned seem especially vulnerable to heightened levels of predation because of their extremely slow rate of reproduction (Cowie 1992; Hadfield *et al*. 1993, in Cowie and Cook 2001).\r\n
The carnivorous snail was introduced to control numbers of the giant African land snail (*Achatina fulica*) (Nishida and Napompeth 1975, in Cowie 2000). However, no rigorous scientific evidence exists that *E. rosea* controls *A. fulica* (Christensen 1984, in Cowie 2000) and, as a consequence, the World Conservation Union (IUCN) has formally condemned the deliberate introduction of *E. rosea* and other carnivorous snails. Most governments and other authorities appear to be aware of the potential threat posed to native fauna by *E. rosea*, however, under pressure to do something about *A. fulica*, they may misguidedly consider the introduction of *E. rosea* (and other species such as the flatworm *Platydemus manokwari*).
Disease transmission: *E. rosea* was found experimentally to be able to serve as both an intermediate and a paratenic host of *Angiostrongylus cantonensis*.

Management Info
For a detailed account of the environmental impacts of *Euglandina rosea* please read: *Euglandina rosea* (Rosy Wolfsnail) Management Information. The information in this document is summarised below.
The future for some of French Polynesia's partulids may not be as bleak as once thought; according to recent studies relatively high genetic diversity is represented among living taxa and it may still be possible to preserve a representative sub-sampling of Raiatea and Tahiti's tree snail diversity (Lee *et al*. 2009; Ó Foighil 2009).
Physical Control: The ultimate objective of captive breeding programs is the reintroduction of viable populations of endangered species into their natural habitats (Coote *et al*. 2004). Small exclosures have been built in Hawai'I and on Moorea (French Polynesia) to protect native tree snails from attack by *Euglandina rosea*.
Legislation: It is almost impossible to prevent the within-island spread of *Euglandina* in French Polynesia (Coote *et al*. 1999). Between-island spread of *Euglandina* should be prevented by legislation. The Marqueses Islands, the Southern Cooks and the Australs provide refuges for some of the remaining partulid species (Lee *et al*. 2007a) and should be kept *Euglandina*-free. *E. rosea* is now legally considered to be a noxious species in French Polynesia; the introduction of live specimens and their transport from one island to another is forbidden (Meyer 1998).
Other: Since 1986 partulid snails have been the subject of an international breeding programme; the International Partula Conservation Programme manages a breeding programme for 25 species in 15 zoos worldwide. Introducing Society Island partulids to the Austral Islands that are free of the predator might ensure their long-term survival in the wild (Ó Foighil 2009). Coote & Loeve (2003) concluded that *E. rosea* was extinct in the wild on Huahine, strongly suggesting that the successful re-introduction of partulids into the wild on Huahine might be possible.
Conservation actions in the wild may be limited to identifying and protecting populations of partulid snails that offer some possibility of persistence in the presence of *Euglandina* (Ó Foighil 2009). Based on laboratory behavioral studies of the effect of temperature on *E. rosea* movement, Gerlach (1994, in Ó Foighil 2009) hypothesised that an altitudinal refuge above 600 to 700 m would exist for Society Island partulids.
Research and Knowledge: Further research into the biology of *E. rosea*, and particularly its population dynamics, needs to be carried out. There are no known natural predators, so a species-specific toxin in snail bait, as tested in Hawaii (M. G. Hadfield pers. comm., in Coote *et al*, 1999), could be a promising approach. A good relationship between the Pacific Island Land Snail Group (PILSG) and the French Polynesian government authorities has developed, and joint initiatives for conservation and research are being planned (Coote *et al*. 1999).
Education and Knowledge: Despite the lack of evidence supporting *Euglandina* as a successful biological control agent and despite the abundant evidence of their negative predatory impact on native snail fauna, carnivorous snail introductions continue (Cowrie 1992). Clearly public education about the French Polynesia's precious natural fauna and the dangers posed to such fauna by carnivorous biological control agents could help to reduce the likelihood of *Euglandina* being purposefully translocated to new islands. Local willingness and experience are already in place to conserve French Polynesia's partulid snails (Coote & Loeve 2003).

Principal source:

Compiler: IUCN SSC Invasive Species Specialist Group
Updates with support from the Overseas Territories Environmental Programme (OTEP) project XOT603, a joint project with the Cayman Islands Government - Department of Environment

Review: Review of updates under progress
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ALIEN RANGE

[2] AMERICAN SAMOA
[1] BAHAMAS
[1] BERMUDA
[8] FRENCH POLYNESIA
[1] GUAM
[1] HONG KONG

[2] INDIA
[3] JAPAN
[1] MADAGASCAR
[1] MAYOTTE
[1] NORTHERN MARIANA ISLANDS
[1] PAPUA NEW GUINEA
[1] SEYCHELLES
[1] SRI LANKA
[1] UNITED STATES
[1] WALLIS AND FUTUNA
[1] INDONESIA
[2] KIRIBATI
[1] MAURITIUS
[1] NEW CALEDONIA
[1] PALAU
[1] REUNION
[1] SOLOMON ISLANDS
[1] TAIWAN
[1] VANUATU

Red List assessed species 72: EX = 43; EW = 10; CR = 12; EN = 1; VU = 2; DD = 4;

Achatinella mustelina **CR**
Partula affinis **CR**
Partula atilis **EX**
Partula auriculata **EX**
Partula callifera **EX**
Partula cedista **EX**
Partula clara **CR**
Partula cuneata **EX**
Partula dentifera **EW**
Partula dolorosa **EX**
Partula exigua **EX**
Partula filosa **EX**
Partula fusca **EX**
Partula hebe **EW**
Partula imperforata **EX**
Partula leptochila **EX**
Partula levistriata **EX**
Partula lutea **EX**
Partula mooreana **EW**
Partula otaheitana **CR**
Partula planilabrum **EX**
Partula protracta **EX**
Partula remota **EX**
Partula rosea **EW**
Partula sagitta **EX**
Partula taeniata **CR**
Partula tohiveana **EW**
Partula turgida **EX**
Partula varia **EW**
Samoana abbreviata **CR**
Samoana attenuata **CR**
Samoana conica **EN**
Samoana diaphana **DD**
Samoana hamadryas **CR**
Samoana jackieburchi **EX**
Samoana oreas **CR**
Erinna newcombi **VU**
Partula arguta **EX**
Partula aurantia **EX**
Partula bilineata **EX**
Partula candida **EX**
Partula citrina **EX**
Partula crassilabris **EX**
Partula cytherea **EX**
Partula dolichostoma **EX**
Partula eremita **EX**
Partula faba **EW**
Partula formosa **EX**
Partula garretti **EX**
Partula hyalina **VU**
Partula labrusca **EX**
Partula levilineata **EX**
Partula lugubris **EX**
Partula mirabilis **EW**
Partula navigatoria **EX**
Partula ovalis **EX**
Partula producta **EX**
Partula radiata **EX**
Partula robusta **EX**
Partula rustica **EX**
Partula suturalis **EW**
Partula thalia **EX**
Partula tristis **EW**
Partula umbilicata **EX**
Partula vittata **EX**
Samoana annectens **DD**
Samoana burchi **CR**
Samoana decussatula **CR**
Samoana ganymedes **DD**
Samoana inflata **EX**
Samoana magdalinae **DD**
Samoana strigata **CR**

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Summary: Discusses the conservation related impacts of the introduction of alien land and freshwater snails and slugs to the islands of the Pacific. Provides details of the main alien species of concern, identifies islands most at risk and islands on which to focus conservation efforts. Lists distribution details for all alien snails and slugs in the Pacific.
Gargominy, O. 2008. Beyond the alien invasion: a recently discovered radiation of Nesopupinae (Gastropods: Pulmonata: Vertiginidae) from the summits of Tahiti (Society Islands, French Polynesia), *Journal of Conchology 39*(5).
Hadfield, M. G., Miller, S. E. and Carwile, A. H. 1993. The decimation of endemic Hawai&#65533;ian tree snails by alien predators. American Zoologist 33: 610-622.
Summary: Discusses the impacts of alien rats and *Euglandina rosea* on native Hawaiian tree snails.
IUCN/SSC Invasive Species Specialist Group (ISSG)., 2010. A Compilation of Information Sources for Conservation Managers.
Summary: This compilation of information sources can be sorted on keywords for example: Baits & Lures, Non Target Species, Eradication, Monitoring, Risk Assessment, Weeds, Herbicides etc. This compilation is at present in Excel format, this will be web-enabled as a searchable database shortly. This version of the database has been developed by the IUCN SSC ISSG as part of an Overseas Territories Environmental Programme funded project XOT603 in partnership with the Cayman Islands Government - Department of Environment. The compilation is a work under progress, the ISSG will manage, maintain and enhance the database with current and newly published information, reports, journal articles etc.
Mead, A. R. 1961. The giant African snail: a problem in economic malacology. Chicago, University of Chicago Press.
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Summary: Assesses the feeding prefernces of *E. rosea*, showing that it preferes snails other than *A. fulica*, and preferes small over large snails. Lists the regions into which it has been introduced and the impacts in those regions.
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