

*Ilyanassa obsoleta* 正體中文

**System:** Marine

Kingdom	Phylum	Class	Order	Family
Animalia	Mollusca	Gastropoda	Neogastropoda	Nassariidae

## Common name

## Synonym

*Nassarius obsoletus* , (Say, 1822)

*Nassa obsoleta* , (Say,1822)

## Similar species

## Summary

The eastern mudsnail, *Ilyanassa obsoleta* (= *Nassarius obsoletus*), was originally only present on the Atlantic Coast of North America. It is now extremely abundant in North American Pacific Coast locations. In the San Francisco Bay it is reported to have overtaken the native California horn snail (*Cerithidea californica*), and reduced its population by means of competition and larval predation, leaving only small populations in secluded marsh pans, which are too salty for it to establish.



[view this species on IUCN Red List](#)

## Species Description

The eastern mudsnail (*Ilyanassa obsoleta*) is a benthic prosobranch gastropod with a black or dark brown conical shell about 1.5-3cm in length containing 5-6 whorls (Cohen, 2005).

## Lifecycle Stages

Eastern mudsnail (*Ilyanassa obsoleta*) egg capsules hatch into larvae after about ten days. The larvae are free swimming but rely primarily on currents for transport. Larvae feed on phytoplankton 20-30 days before settling and metamorphosing (Cohen, 2005), although this may be delayed until they find desirable substrata (Scheltema, 1961). They remain dormant during the winter and almost all of their growth takes place during the summer months. *N. obsoletus* has a life span of approximately 5 years (Scheltema, 1964).

## Uses

The eastern mudsnail (*Ilyanassa obsoleta*) is popularly kept to clean aquariums.

## Habitat Description

Eastern mudsnails (*Ilyanassa obsoleta*) may be found in the benthic zone of intertidal flats and estuaries. They prefer brackish waters and cling to nutritious substrata (Cohen, 2005). *N. obsoletus* are temperature sensitive and have been known to develop thinner than normal shells and are known to breed up to three months early if water temperatures are disturbed (Barnett, 1972)

## Reproduction

The eastern mudsnail (*Ilyanassa obsoleta*) reproduces sexually and breeds on incoming tides during the fall and spring seasons. Mudsnails use chemo-reception to aggregate and copulate around oysters and sometimes mussels, on which they deposit capsules containing several eggs. Their deposition on living substrates is believed to decrease the likelihood of the embryo being smothered by sediment, however, they also deposit capsules among eelgrass (Rittschoff, 2002).



# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Ilyanassa obsoleta*

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## Nutrition

The eastern mudsnail (*Ilyanassa obsoleta*) is a facultative scavenger and deposit feeder which consumes diatoms, minute worms, algae, fish and crustacean remains, and other organic matter, including faeces (Frankenberg 1967) found on underwater surfaces. The mudsnail ingests sediment wholly and its digestive tract breaks down organic matter leaving almost completely inorganic waste (Scheltema 1964).

## General Impacts

The eastern mudsnails (*Ilyanassa obsoleta*) introduction to the Pacific Coast of North America has caused a change in the native fauna. In the San Francisco Bay the once dominant California horn snail (*Cerithidea californica*) has been reduced to small populations where habitats overlap. Where the salinity is higher the populations of the California horn snail is able to survive (Race, 1982).

The invasive *N. obsoletus* preys on the eggs and larvae of the endemic *C. californica* and as a result, *C. californica* is restricted to small habitats unsuitable to *N. obsoletus*. Seasonal migration of these two species has demonstrated that their competition is a recurring problem and not an isolated incident. The invading eastern mudsnail has been found in other Pacific locations but its ecological effects have yet to be evaluated. It is believed to be transported along with Atlantic oysters, the eastern mudsnail poses a threat to new habitats and should be monitored (Race, 1982).

*I. obsoleta* is also host to several trematode species including one that causes swimmers itch.

## Pathway

Eastern mudsnails are believed to be transported to the Pacific along with Atlantic oysters on which it lays its eggs (Cohen, 2005).

**Principal source:** [Carlton, J.T.1992. Introduced Marine and Estuarine Mollusks of North America: An end-of-the-20th Century Perspective. Journal of Shellfish Research, Vol. 11 No.2, 489-505.](#)

[Cohen, A. N. 2005 Guide to the Exotic Species of San Francisco Bay. San Francisco Estuary Institute, Oakland, CA. www.exoticguide.org.](#)

[Scheltema, R.S. 1964. Feeding habits and growth in the mud-snail \*Nassarius obsoletus\*. Chesapeake Science. Vol.5, No. 4, 161-166.](#)

**Compiler:** National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

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**Publication date:** 2008-03-27

## ALIEN RANGE

[1] CANADA

[3] UNITED STATES

## BIBLIOGRAPHY

15 references found for *Ilyanassa obsoleta*

Management information



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[Centre for Environment, Fisheries & Aquaculture Science \(CEFAS\), 2008. Decision support tools-Identifying potentially invasive non-native marine and freshwater species: fish, invertebrates, amphibians.](#)

**Summary:** The electronic tool kits made available on the Cefas page for free download are Crown Copyright (2007-2008). As such, these are freeware and may be freely distributed provided this notice is retained. No warranty, expressed or implied, is made and users should satisfy themselves as to the applicability of the results in any given circumstance. Toolkits available include 1) FISK- Freshwater Fish Invasiveness Scoring Kit (English and Spanish language version); 2) MFISK- Marine Fish Invasiveness Scoring Kit; 3) MI-ISK- Marine invertebrate Invasiveness Scoring Kit; 4) FI-ISK- Freshwater Invertebrate Invasiveness Scoring Kit and AmphISK- Amphibian Invasiveness Scoring Kit. These tool kits were developed by Cefas, with new VisualBasic and computational programming by Lorenzo Vilizzi, David Cooper, Andy South and Gordon H. Copp, based on VisualBasic code in the original Weed Risk Assessment (WRA) tool kit of P.C. Pheloung, P.A. Williams & S.R. Halloy (1999).

The decision support tools are available from:

<http://cefas.defra.gov.uk/our-science/ecosystems-and-biodiversity/non-native-species/decision-support-tools.aspx> [Accessed 13 October 2011]

[The guidance document](http://www.cefas.co.uk/media/118009/fisk_guide_v2.pdf) is available from [http://www.cefas.co.uk/media/118009/fisk\\_guide\\_v2.pdf](http://www.cefas.co.uk/media/118009/fisk_guide_v2.pdf) [Accessed 13 January 2009].

Miller, A. Whitman, Gregory M. Ruiz, Mark S. Minton, Richard F. Ambrose., 2007. Differentiating successful and failed molluscan invaders in estuarine ecosystems. Marine Ecology Progress Series. Vol. 332: 41-51, 2007 Published March 5

## General information

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**Summary:** Examination of effects of power stations on surrounding marine life.

Brenchley, G.A. 1982. Predation on Encapsulated Larvae by Adults: Effects of Introduced Species on the Gastropod *Ilyanassa obsoleta*. Marine Ecology-Progress Series. Vol.9, 256-262.

**Summary:** Journal article describing predators of *Nassarius obsoletus* larvae.

Byers, J. E. 1999. Competition between two estuarine snails: Implications for invasions of exotic species. Ecology: Vol. 81, No. 5, 1225-1239.

**Summary:** Similar invasive competing with the native *Cerithidea californica*.

[Carlton, J.T.1992. Introduced Marine and Estuarine Mollusks of North America: An end-of-the-20th Century Perspective. Journal of Shellfish Research, Vol. 11 No.2, 489-505.](#)

**Summary:** Article depicting several invasive species and their new locations.

Available from: [http://www.sgnis.org/publicat/papers/jsr11\\_2.pdf](http://www.sgnis.org/publicat/papers/jsr11_2.pdf) [Accessed 7 August 2007]

[Cohen, A. N. 2005 Guide to the Exotic Species of San Francisco Bay. San Francisco Estuary Institute, Oakland, CA, www.exoticguide.org.](#)

**Summary:** Profile on *Nassarius obsoletus* compiled by the San Francisco Estuary Institute.

Available from: [http://www.exoticguide.org/species\\_pages/i\\_obsoleta.html](http://www.exoticguide.org/species_pages/i_obsoleta.html) [Accessed 7 August 2007]

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**Summary:** A sampling study in Delaware.

Frankenberg, D. and Smith Jr., K.L. 1967. Coprophagy in Marine Animals. Limnology and Oceanography, Vol. 12, No. 3, 443-450.

**Summary:** Study determining coprophagy rates among various marine animals.

[ITIS \(Integrated Taxonomic Information System\), 2008. Online Database \*Nassarius obsoletus\* \(Say, 1822\)](#)

**Summary:** An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals. Available from:

[http://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=74111](http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=74111) [Accessed March 25 2008]

Kelaher, Brendan P; Levinton Jeffrey S; Hoch J. Matthew., 2003. Foraging by the mud snail, *Ilyanassa obsoleta* (Say), modulates spatial variation in benthic community structure. Journal of experimental marine biology and ecology, 2003, vol. 292, no2, pp. 139-157 [19 page(s) (article)] (2 p.3/4)

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**Summary:** Study on the effects of the invasive *Nassarius obsoletus* on native *Cerithidea californica* after its introduction to the San Francisco Bay.

Rittschof, D; Sawardecker, P.; and Petry, C. 2001. Chemical Mediation of Egg Capsule Deposition by Mud Snails. Journal of Chemical Ecology, Vol. 28, No. 11, 2257-2269.

**Summary:** Examination of the use of chemoreception to determine the location of egg deposition in *Nassarius obsoletus*.

Scheltema, R.S. 1961. Metamorphosis of veliger larvae of *Nassarius obsoletus* (Gastropoda) in response to bottom sediment. Biol. Bull. Vol. 120, 92-109.

**Summary:** Shows that *Nassarius obsoletus* larvae delay metamorphosis until they find a desirable substrate.

[Scheltema, R.S. 1964. Feeding habits and growth in the mud-snail \*Nassarius obsoletus\*. Chesapeake Science. Vol.5, No. 4, 161-166.](#)

**Summary:** Examination of the diet and life cycle of *Nassarius obsoletus*.

Available from: [http://estuariesandcoasts.org/cdrom/CPSC1964\\_5\\_4\\_161\\_166.pdf](http://estuariesandcoasts.org/cdrom/CPSC1964_5_4_161_166.pdf) [Accessed 7 August 2007]