**Alitta succinea**

System: Marine

<table>
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<th>Kingdom</th>
<th>Phylum</th>
<th>Class</th>
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<td>Animalia</td>
<td>Annelida</td>
<td>Polychaeta</td>
<td>Aciculata</td>
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Common name

ragworm (English), nereidid worm (English), pile worm (English)

Synonym

*Nereis (Neanthes) succinea*, Hartman 1945  
*Nereis alatopalpis*, Wesenberg-Lund, 1949  
*Nectoneanthes oxypoda*, Imajima 1972  
*Nectoneanthes alatopalpis*, Wu *et al*. 1985  
*Neanthes succinea*, Imajima 1972  
*Nereis succinea*, Leuckart 1847.

Similar species

The infaunal polychaete *Alitta succinea*, also known as the pileworm, is native to the Atlantic coast and now occurs along the coasts off North, Central and South America, Europe, Africa and the Black Sea. *A. succinea* can alter nutrients available in sediments, which affect other sediment dwellers.

**Species Description**

*Alitta succinea* is a sedentary worm, growing up to 190mm in length and having up to 160 segments. It has a darkly pigmented head area, with a greenish-yellow or pale red posterior region, and white or dark dots over the entire body, the ventral surface is pale. There are four pairs of tentacles, one pair of palps and one of antennae. The parapodia (feet) differ in form from the head end to the rear of the organism. This worm resides in U-shaped burrows in the sediment (NIMPIS 2006).

At sexual maturity, benthic adults metamorphose into nektonic heteronereids (Detwiler *et al*. 2002). The most obvious difference between the heteronereids and the non-reproductive forms is that the parapodia are enlarged and more lobate in the former (Chris Glasby., pers.comm., 2007). Please see PaDIL (Pests and Diseases Image Library) Species Content Page [Nereidid worm: *Alitta succinea* (Leuckart, 1847)] for a detailed description and high quality diagnostic and overview images of the pileworm.

**Notes**

*Alitta succinea* was previously known as *Neanthes succinea* (Hayes *et al*. 2005).

The infaunal polychaete *A. succinea* is the key benthic link between detritus accumulation on the sediments and higher trophic level organisms, including predaceous birds and fish (Detwiler *et al*. 2002).
Lifecycle Stages

*Alitta succinea* spend most of their life in burrows in the mud and among the masses of barnacles. Mature polychaetes leave their protective burrows at night and swim to the surface to spawn. The swimming, or epitokol, stage lasts only a few days and then the worm dies after releasing its gametes into the surface water layers (Carpelan and Linsley 1961).

**Uses**

Polychaetes are one of the most useful marine organisms to detect pollution because they live at the water-sediment interface. This layer is biologically reactive and chemically active (Rhoads and Boyer 1982, in Elías et al. 2003). Polychaetes have been used in bioassays, to monitor toxic compounds, and as pollution indicators, from community or populational levels to species level (Pocklington and Wells 1992, Reish and Gerlinger 1997, in Elías et al. 2003).

**Reproduction**

Although *A. succinea* live burrowed in sediment, they migrate to the water column to reproduce. Adult worms transform into the reproductive form called the heteronereid, which swim to the water surface and swarm in massive numbers. The swarming increases the chance of fertilisation which is triggered by light levels. Individuals die, after spawning (Detwiler et al. 2002). Eggs turn into small, setigerous two segmented larvae within approximately 36 hours (Carpelan 1961c, in Tiffany et al. 2002). Larvae are planktonic until they reach the 9 to 12 segment stage, when they begin to settle in sediments to start a benthic existence (Tiffany et al. 2002).

**Nutrition**

*Alitta succinea* is a deposit feeder, consuming mainly sediment, but has been recorded with small amphipods and polychaetes in its gut contents (NIMPIS 2006).

**General Impacts**

*Alitta succinea* can alter available nutrients in the sediment due to its burrowing activity (NIMPIS 2006). Nutrient changes may affect many species living in the sediments, and may also promote bacterial activity (NIMPIS 2006).

*A. succinea* is able to transfer contaminants from sediment to biota. *A. succinea* is a deposit-feeding invertebrate, which can uptake and accumulate persistent trace elements and organic contaminants (through sediment ingestion). In particular, it assimilates methylmercury two to 10 times more efficiently than mercury. Furthermore, assimilation of methylmercury increases when *A. succinea* is exposed to organic-rich sediment (Leatherbarrow et al. 2005).
Management Info
A two year study was undertaken for the Department of Environment and Heritage (Australia) by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) to identify and rank introduced marine species found within Australian waters and those not found within Australian waters. *Alitta succinea* was one of two (the other being *Monocorophium insidiosum*) potential domestic target species whose impact potential could not be ranked, as no questionnaires were returned. The authors, however, note that it is possible that these two species have a greater impact than the listed top ten.

The rankings determined in Hayes *et al.* 2005 will be used by the National Introduced Marine Pest Coordinating Group in Australia to assist in the development of national control plans which could include options for control, eradication and/or long term management.

For more details, please see Hayes *et al.* 2005.

Pathway

Principal source:

Compiler: IUCN/SSC Invasive Species Specialist Group (ISSG) with support from La Fondation d'entreprise Total

Review: Dr. Chris Glasby Curator of Annelids (segmented worms) Museums and Art Galleries of the Northern Territory Australia

Publlication date: 2007-05-14

ALIEN RANGE

[3] ARGENTINA
[2] AUSTRALIA
[1] BRAZIL
[1] CANADA
[1] COLOMBIA
[1] DENMARK
[1] GERMANY
[1] GREECE
[1] IRAN, ISLAMIC REPUBLIC OF
[1] JAPAN
[1] PACIFIC - EASTERN CENTRAL
[2] SWEDEN
[2] UKRAINE
[4] UNITED KINGDOM
[20] UNITED STATES
[1] URUGUAY

BIBLIOGRAPHY

32 references found for *Alitta succinea*

Management information

Summary: This study documents the composition, abundance, and seasonality of macroinvertebrates associated with specific benthic habitats in the Salton Sea.

Summary: This report is the final report of a two year study designed to identify and rank introduced marine species found within Australian waters (potential domestic target species) and those that are not found within Australian waters (potential international target species).


Summary: This is an online database that provides information about taxonomy, description, distribution, habitat, reproduction and growth, feeding preference, control methods and similar species.


Summary: The Pests and Diseases Image Library was set up to provide high quality images showing primarily exotic targeted organisms of plant health concern to Australia, assist with plant health diagnostics in all areas, provide linkage developments between training and research organisations, create educational tools for training undergraduates/postgraduates and engender public awareness about plant health concerns in Australia.


General information


Summary: This paper elucidates the role of digestive surfactants in determining bioavailability of chlorinated HOCs to deposit feeders.


Summary: This paper investigates the monophyly of currently accepted genera, subgenera and informal subgeneric groupings within the Nereidinae.

Bemvenuti, C.E. 1995. The role of habitat selection and refuge in distribution and abundance of Neanthes succinea (Frey and Leuchart, 1847). The Ecology of the Salton Sea, California, in Relation to the Sportfishery, Calif. Fish Game Fish Bull. 112: 63-76.

Summary: The role of habitat selection and refuge on the distribution and abundance of the epifaunal polychaete Neanthes succinea is studied.


Summary: This study accesses the potential impact of clam harvesting on the water column (oxygen and nutrient concentrations) and sediment layers (nutrients, macrofaunal populations and sediment trophic availability).


Summary: This paper provides information about the spawning, fertilization and larval development, plankton etc. of A. succinea.


Summary: This paper studies the polychaete composition and distribution within mussel beds in order to assess organic pollution due to domestic sewage in a rocky shore of Mar del Plata (Argentina) during 1997.
ERMS (European Register of Marine Species), 2006.
Summary: The European Register of Marine Species (ERMS) is an authoritative taxonomic list of species occurring in the European marine environment, defined as up to the strandline or splash zone above the high tide mark and down to 0.5 (psu, ppt) salinity in estuaries.

ITIS (Integrated Taxonomic Information System), 2006. Online Database Neanthes succinea.
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.

Summary: This paper investigates distribution and natural transport of sediment contaminants in San Francisco Estuary and other regions. It investigates the potential impact of contaminants on biota that utilise this water body.
Available from: http://www.sfei.org/mp/reports/Contaminant_Fate/05_No394_FateofContaminants.pdf [Accessed 27 December 2006].

Summary: This study records the polychaetes found on the submerged roots of Rhizophora mangle on San Andrés and Providence Islands, Colombian Caribbean.

Summary: This study analysed the macrobenthic community structure in the Piave River estuary.

Summary: This study investigates the distribution of macrofaunal communities in a coastal lagoon characterized by muddy sediments and high organic carbon concentrations at the basin scale. It also assesses the relationship between distribution of dominant macrofauna and sediment properties.

Summary: This study documents impoverished macrofaunal communities in the Cabrás lagoon.

Summary: This study assesses the effects of Musculista senhousia on macrobenthic biodiversity over a ten year time period in the Sacca di Goro.

Summary: Macrobenthic assemblages are studied throughout a two year period, before and after the opening of a floodgate, in order to assess the recovery of the lagoon in the Valle di Gorino, Italy.

Summary: This study compares biodiversity of macrobenthic assemblages along a gradient of disturbance.

Summary: This study provides information about the sublittoral benthic communities of the Solís Grande Stream estuary.

NOBANIS (North European and Baltic Network on Invasive Alien Species) 2006. Neanthes succinea.
Summary: The North European and Baltic Network on Invasive Alien Species (NOBANIS) has developed a network of common databases on alien and invasive species of the region. By establishing a common portal access to IAS-related data, information and knowledge in the region is facilitated. The NOBANIS network has a national contact in each of the participating countries - Denmark, Estonia, Finland, Faroe Islands, Germany, Greenland, Iceland, Latvia, Lithuania, Norway, Poland, Sweden and the European part of Russia.

Pardo, E.V. and Dauer, D. M. 2003. Particle size selection in individuals from epifaunal versus infaunal habitats are compared.
Summary: Gut contents of A. succinea individuals collected from two epifaunal and two infaunal habitats are compared.

Summary: This study surveys exotic marine species and recommends suitable monitoring and response protocols for detecting and treating invasions.

Summary: This report is part of a series describing the biology and ecology of known invasive estuarine and marine animals in the major geographic regions of the United States. It described invasive animals of the Pacific Northwest and Alaska and identified species that pose a specific threat to USACE activities.

Summary: This paper examines the relationship of particle size to species assemblage by sampling in sandy and muddy sediments within Great Sippewissett Marsh.

Summary: This study follows the restoration of some biological parameters after reduction of anthropogenous loading on the Sevastopol Bay Ecosystem during the last five to ten years.

Summary: The study presents the current composition and dynamics of the zooplankton of the Salton Sea.

Summary: This report provides a current list of marine invertebrates found in Peggy’s Cove, Nova Scotia, as well as a description of the habitat.

Summary: The study was designed to investigate the relationship of sediment concentrations of Cu, Cr, and As at varying distances from CCA bulkheads to their concentrations in the benthic biota, sediment toxicity, and benthic community structure.