# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Batillaria attramentaria***

***Batillaria attramentaria*** 正體中文

**System:** Marine

| Kingdom | Phylum | Class | Order | Family |
|---|---|---|---|---|
| Animalia | Mollusca | Gastropoda | Neotaenioglossa | Batillariidae |

**Common name** Japanese snail (English), Asian horn snail (English), Japanese false cerith (English), Asian estaurine mudsnail (English), Japanese mud snail (English)

**Synonym** *Barillaria attramentaria* , (Sowerby, 1855)
*Batillaria cumungi*

**Similar species** *Cerithidea californica*

**Summary** Batillaria attramentaria, commonly known as the Asian hornsnail, was introduced to America from Japan at some point in the late 1920s and early 1930s. It is found in the United States in California and Washington. The Asian hornsnail has become a problem because it displaces the native snail, Ceritidea californica, through superior competition for benthic diatom food resources. Its relative success over the native snail is aided due to its resistance to parasites that affect C. californica.

view this species on IUCN Red List

**Species Description**
*Batillaria attramentaria* are about 1.5cm in their first year (Whitlatch and Obreski, 1980) and they can grow as large as 3.5cm in a period of 8-10 years (Yamada, 1982).

**Notes**
In the early days of studying this species on the west coast of North America, the (incorrect) name of *Batillaris zonalis* was applied, thus some of papers from 1970's and maybe early 80's refer to *B. attramentaria* as *B. zonalis* (Dr. James (Jeb) Byers., pers.comm., May 2008).

**Lifecycle Stages**
*Batillaria attramentaria* has an average lifespan of 6 to 10 years. This species is about 3mm in its first year. In a period of 8 years, the mollusc will grow to 2-3.5cm. Though it has grown less in a longer period of time, longer growing seasons and more food could be the cause (Yamada, 1982).

**Uses**
*Batillaria attramentaria* has some positive effects on native species. In some areas like Padilla Bay, Washington living and dead shells of this species provide a novel hard substratum in an otherwise soft sediment dominated habitat. Thus its shells can increase eelgrass cover or become shelter for hermit crabs after its death (Wonham *et al*, 2005).

**Habitat Description**
*Batillaria attramentaria* are found in salt marshes, mudflats (Byers, 1999), and pannes, which are small ponds in salt marshes (Byers, 2000a).

**Reproduction**
Eggs from *Batillaria attramentaria* will attach to the mud surface on which it resides, the eggs develop directly here (Whitlatch 1972, 1974).

**Nutrition**
*Batillaria attramentaria* prefers diatoms that grow on the surface of mud. These are called epipelic diatoms and they consist of ~70-80% of their diet (Whitlatch and Obrebski 1980, Byers, 2000a).

**General Impacts**
*Batillaria attramentaria*, since its arrival to North America, has reduced native biodiversity. It is known to have decreased populations of the California hornsnail (*Cerithidea californica*) (Byers, 1999). *Batillaria attramentaria* is a superior competitor for shared food resources (benthic diatoms) (Byers 2000a). Also there are many trematode parasites that infect the California hornsnail, but only one trematode species (itself a non-native species) that infects *B. attramentaria* (Torchin *et al*. 2005). This contributes to decreases in populations of the California hornsnail because these parasites can affect the snail at higher rates (Byers, 2000a, Torchin *et al*. 2005). These parasites have obligate multi-host life cycles, so that the loss of *Cerithidea*, which is a necessary host in their lifecycles, will result in the local loss of most of the parasite fauna as well. The most important mechanism for *B. attramentaria*'s gradual displacement of the native hornsnail (*C. californica*) where they are sympatric (Byers 2000a, Wasson *et al*. 2001) is *B. attramentaria*'s lower mortality rate compared to the native (Byers and Goldwasser 2001). Contributing to this lower mortaliy rate is the fact that the invader is not as susceptible to hypoxia as the native (Byers, 2000b).

**Management Info**
Physical: Hand removal is a method used to remove the invasive *Batillaria attramentaria* (TBI, 2006).

**Pathway**
*Batillaria attramentaria* was brought to North America with *Crassostrea gigas* (Byers, 1999).

**Principal source:** Byers, J.E. 1999. The distribution of an introduced mollusc and its role in long-term demise of a native confamilial species. *Biological Invasions*. 1: 339-352.
Byers, J.E. 2000. Competition between Two Estuarine Snails: Implications for Invasions of Exotic Species. *Ecology*. 81(5): 1225-1239.

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

**Review:** Dr. James (Jeb) Byers, Assistant Professor, Dept. of Zoology, Department of Zoology University of New Hampshire. USA

**Pubblication date:** 2007-05-14

**ALIEN RANGE**

**[3]** CANADA

**[8]** UNITED STATES

**BIBLIOGRAPHY**
**16** references found for **Batillaria attramentaria**

**Managment information**

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 is available from http://www.cefas.co.uk/media/118009/fisk_guide_v2.pdf [Accessed 13 January 2009].
The Bay Institute (TBI). 2006. TBI helps tackle mud snail problem. *Bayletter*. p. 5.
**Summary:** This artilcle describes how *B. attramentaria* is a threat and how we can try and mangage this ivasive species.
Available from: http://www.bay.org/Pubs/2006vol2.pdf [Accessed March 13, 2007]

**General information**
Byers, J.E. 1999. The distribution of an introduced mollusc and its role in long-term demise of a native confamilial species. *Biological Invasions*. 1: 339-352.
**Summary:** This study shows the forseeable of exotic replacement of native species and argues that these invaders will become a problem even thoguh they seem harmless.
Byers, J.E. 2000. Competition between Two Estuarine Snails: Implications for Invasions of Exotic Species. *Ecology*. 81(5): 1225-1239.
**Summary:** This study was done to determine the resource use by an introduced and native organism. It will determine if the invader is more successful than the native.
Byers, J.E. 2000. Differential susceptibility to hypoxia aids estuarine invasion. *Mar. Ecol. Prog. Ser.* 203: 123-132.
**Summary:** This study shows how stress from microbial action affects the two snail species which helps explain the displacement of the native.
Available from: http://zoology.unh.edu/faculty/byers/PDF%20of%20papers/MEPS2000.pdf [Accessed March 13, 2007]
Byers, J. E. and L. Goldwasser. 2001. Exposing the mechanism and timing of impact of non-indigenous species on native species. Ecology 82(5): 1330-1343
Carlton, J.T. 1992. Introduced Marine and Estuary Mollusks of North America: An End-of-the-20th Century Perspective. *Journal of Shellfish Research*. 11(2): 489-505.
**Summary:** This article discusses how different bivalves found there way to the coasts of North America.
Available from: http://sgnis.org/publicat/papers/jsr11_2.pdf [Accessed March 13, 2007]
Cohen, A.N. 2004. An Exotic Species Detection Program for Puget Sound. National Estuary Program, U.S. Envrironmental Protection Agency. 1-60.
**Summary:** This report discusses what an exotic species detection plan is and how to classify species as invasive.
Available from: http://sfei.org/bioinvasions/Reports/2004-PugetSoundESDP380.pdf [Accessed March 13, 2007]
Gillespie, G.E., M. Parker, Merilees, W. 1999. Distribution, Abundance, Biology, and Fisheries Potential of the Exotic Varnish Clam (*Nuttallia obscurata*) in British Colombia. Fisheries and Oceans, Canada. 1-44.
**Summary:** This paper discusses the distribution of varnish clams and shows information on biology, ecology, and population dynamics.
Available from: http://www.dfo-mpo.gc.ca/csas/csas/DocREC/1999/PDF/99_193e.pdf [Accessed March 13, 2007]
ITIS (Integrated Taxonomic Information System), 2006. Online Database *Batillaria attramentaria.*
**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 from BioOne journals.
Available from: http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=567272 [Accessed March 13, 2007]
Torchin, M., J. E. Byers, and T. Huspeni. 2005. Differential parasitism of native and introduced snails: replacement of a parasite fauna. Biological Invasions 7(6): 885-894.
Whitlatch, R. B. 1972. The ecological life history and feeding biology of *Batillaria zonalis*. Thesis. Department of Marine Sciences, University of the Pacific, Stockton, California, USA.
Whitlatch, R. B. 1974. Studies on the population ecology of the salt marsh gastropod *Batillaria zonalis*. Veliger 17:47⁄55.
Whitlatch, R.B., S. Obrebski, 1980. Feeding Selectivity and Coexistence in Two Deposit-Feeding Gastropods. *Marine Biology*. 58: 219-225.
**Summary:** This study was to determine if two gastropod species have the same diet.
Wonham, M.J., M. O Conner, C.D.G. Harley. 2005. Positive effects of a dominant invader on introduced and native mudflat species. *Mar. Ecol. Prog. Ser*. 289: 109-116.
**Summary:** Discusses how *B. attramentaria* has positive affects on other species where it was introduced.
Yamada, S.B. 1982. Growth and Longevity of the Mud Snail *Batiilaria attramentaria.Marine Biology*. 67: 187-192.
**Summary:** This article describes how *B. attramentaria* grows throughout its life.