

Austrominius modestus

Overview

Short description of *Austrominius modestus*,

A small sessile barnacle, five -10 mm in diameter, characterised by having four shell plates. Low, conical body shape with a diamond shaped opening. Young specimens are white and smooth; adults are grayish brown and usually eroded.

Description of *Austrominius modestus*, status in GB

This barnacle is distributed around most coasts of England and Wales, a few areas of Scotland and some Scottish islands including the Outer Hebrides.

Author's name:

Natalie Sweet

Last updated:

January 6th, 2012

We try to keep these factsheets up to date, however if you notice any issues please contact us

Habitat summary: *Austrominius modestus*,

Can inhabit almost the entire intertidal zone, but is most common from mid-shore to shallow subtidal areas of estuarine and sheltered marine habitats. It attaches to a variety of substrates including rocks, stones, hard-shelled animals and artificial structures including ships, and tolerates a wide range of temperature and salinity.

Overview table

Environment:	Marine
Species status:	Non-Native
Native range:	Australia, New Zealand
Functional type:	Filter-feeder
Status in England:	Non-Native
Status in Scotland:	Non-Native
Status in Wales:	Non-Native
Location of first record:	Chichester Harbour
Date of first record:	1945

Invasion history: *Austrominius modestus*,

Origin

This barnacle is native to Australasia – New South Wales, Australia, Tasmania and New Zealand.

First Record

This species was first recorded in Britain in Chichester Harbour, Hampshire in 1946, although it is believed to have arrived sometime between 1940 and 1943.

Pathway and Method

It is thought to have been introduced during the Second World War attached to the hulls of merchant and warships. Following the initial introductions further transport by hull fouling, natural larval dispersal or association with aquaculture products may have continued the species' spread.

Species Status

After reaching Europe during the early 1940s this barnacle spread rapidly all over European Atlantic coasts; it is now found from Gibraltar to Germany with recent records from the Mediterranean. Its range in GB extended from Chichester Harbour to

Shetland in 38 years. This rapid spread has been attributed to a combination of pelagic larval dispersal and further transport by hull fouling. This species has become the dominant barnacle in a number of locations around GB.

Ecology & Habitat: *Austrominius modestus*,

Dispersal Mechanisms

Larvae are planktonic for up to a month and during this time may be transported by water currents or in ships' ballast water. Further dispersal of settled individuals may occur through attachment to other organisms or artificial substrata including ships' hulls.

Reproduction

Like most barnacles this species is a cross-fertilising hermaphrodite. Unlike native barnacle species it can breed almost continuously throughout the year, and under favourable conditions it has been reported to release broods every 10 days with each brood producing an average of 500 naupili. Breeding begins when water temperatures exceed 6 °C. Duration of larval development varies with temperature from 40 days at 6 °C to 10 days at 24 °C. Development rate is also influenced by salinity. This is a fast growing species that is quick to reach maturity, which combined with its high reproductive output gives it a competitive advantage over slower growing, less fecund native species.

Known Predators/Herbivores

Worms, whelks, fish, birds, crabs, some sea slugs and starfish are amongst the wide range of animals to prey upon acorn barnacles.

Resistant Stages

None known.

Habitat Occupied in GB

This barnacle is found throughout the intertidal zone but is more common on the mid to lower shore and may occur in shallow subtidal waters. It occurs widely in estuaries and sheltered coasts due to its tolerance of a wide range of salinities. It is more tolerant of low and fluctuating salinity than native barnacle species.

Distribution: *Austrominius modestus*,

Native range from southern Australia to New Zealand and Tasmania. In Britain it is distributed around most English and Welsh coasts, at a few locations around Scotland and some Scottish islands.

Impacts: *Austrominius modestus*,

Environmental Impact

Competes with native species for space and appears to have entirely displaced native barnacle species in some places, including Lough Hine and the Tamar estuary. Since the 1960s in Lough Hine, macroalgal cover has decreased as barnacle abundance has increased.

Health and Social Impact

None known.

Economic Impact

Fouling of vessels, equipment and interference with mariculture activities may incur costs associated with cleaning and loss of utility. Furthermore, heavily fouled ships require more fuel to maintain speed due to disruption of water flow over the hull.

References & Links: *Austrominius modestus*,

Identification

Avant, P. (2007) *Elminius modestus*, An acorn barnacle. Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme [online]. Plymouth: Marine Biological Association of the United Kingdom. Available from: <http://www.marlin.ac.uk/speciesinformation.php?speciesID=3252>

Biology, ecology, spread, vectors

Eno, N.C., Clark, R.A. & Sanderson, W.G. (1997) *Non-native marine species in British waters: a review and directory*. 152pp, Peterborough: Joint Nature Conservation Committee.

Harms, J. (1999) The neozoan *Elminius modestus* Darwin (Crustacea:Cirripedia): Possible explanations for its successful invasion in European water. *Helgoland Marine*

Research, **52**, 337-345.

Hiscock, K., Hiscock, S. & Baker, J.M. (1978) The occurrence of the barnacle *Elminius modestus* in Shetland. *Journal of the Marine Biological Association of the United Kingdom* **58**, 627-629.

Watson, D.I., O'Riordan, R.M., Barnes, D.K.A. & Cross, T. (2005) Temporal and spatial variability in the recruitment of barnacles and the local dominance of *Elminius modestus* Darwin in SW Ireland. *Estuarine, Coastal and Shelf Science*, **63**, 119-131.

Management and impact

Lawson J., Davenport J. & Whitaker A. (2004) Barnacle distribution in Lough Hyne Marine Nature Reserve: a new baseline and an account of invasion by the Australasian species *Elminius modestus* Darwin. *Estuarine, Coastal and Shelf Science*, **60**, 729-735.

Gomes-Filho, J.G.F., Hawkins, S.J., Aquino-Souza, R. & Thompson, R.C. (2010) Distribution of barnacles and dominance of the introduced species *Elminius modestus* along two estuaries in South-West England. *Marine Biodiversity Records*, **3**, 1-11.

General

Buckeridge, J. & Newman, W. (2010) A review of the subfamily Elimiiniinae (Cirripedia: Thoracica: Austrobalanidae), including a new genus, *Protelminius* nov., from the Oligocene of New Zealand. *Zootaxa*, **2349**, 39-54.

O'Riordan, R.M., Culloty, S., Davenport, J. & McAllen, R. (2009) Increases in the abundance of the invasive barnacle *Austrominius modestus* on the Isle of Cumbrae, Scotland. *Marine Biodiversity Records*, **2**, 1-4.

Witte, S. Buschbaum, C., van Beusekom, J.E.E. & Reise, K. (2010) Does climatic warming explain why an introduced barnacle finally takes over after a lag of more than 50 years? *Biological Invasions*, **12**, 3579-3589.