MarLIN
Marine Information Network
Information on the species and habitats around the coasts and sea of the British Isles

An encrusting bryozoan (*Conopeum reticulum*)

MarLIN – Marine Life Information Network
Biology and Sensitivity Key Information Review

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A colony of the sea mat *Conopeum reticulum*.
Photographer: Marco Faasse
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See online review for distribution map

Distribution data supplied by the Ocean Biogeographic Information System (OBIS). To interrogate UK data visit the NBN Atlas.

Researched by	Dr Harvey Tyler-Walters & Susie Ballerstedt	**Refereed by**	Dr Peter J. Hayward
Authority	(Linnaeus, 1767)		
Other common names	-	**Synonyms**	-

Summary

Description

Conopeum reticulum colonies form extensive gauze-like encrustations. Individuals (zooids) within the colony are approximately 0.4-0.6 x 0.2-0.3 mm in size, elongate, rectangular or polygonal in outline with a thickened, finely granular margin. The margin occasionally bears a few thin, pointed, delicate spines. The upper (frontal) surface of zooids is membranous with a semicircular light-brown operculum at one end. Triangular dwarf, non-feeding zooids are often present at the distal end of zooids in the gaps between the normal zooids.

Recorded distribution in Britain and Ireland

Recorded in a few locations on the west coast of Scotland (but probably more widespread (P. Hayward, pers. comm.)) and the north east of England. It is more common around the coast of Wales and along the south coast of Britain.

Global distribution

Present in the Kattegat and shores of the southern North Sea. Recently recorded in the western Mediterranean.

Habitat

Conopeum reticulum favours estuaries and bays on sheltered coasts. Found from the lower shore into the shallow sublittoral, on hard substrata, shells, stones, and submerged structures. Not usually associated with plants. In brackish areas, it is often abundant on the inner sides of oyster valves (*Ostrea edulis*). Rarely found off-shore.

Depth range

Intertidal to at least 42m

Identifying features

- Forms extensive gauze-like encrustations.
- Individuals (zooids) oval, approximately 0.4-0.6 x 0.2-0.3 mm in size.
- Triangular dwarf non-feeding heterozooids present between normal zooids, occasionally forming a dumbbell shape at the distal edge of the zooid.
- Operculum is broad, semicircular, light brown with a folded membranous edge.
- Polypide with 11 tentacles.
- Avicularia absent.

Additional information

Normal autozooids occasionally become irregularly shaped or larger, especially at the edges of colonies where there are sometimes large, irregular gaps to fill.

Listed by

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Biology review

Taxonomy

Phylum	Bryozoa	Sea mats, horn wrack & lace corals
Class	Gymnolaemata	
Order	Cheilostomatida	
Family	Electridae	
Genus	Conopeum	
Authority	(Linnaeus, 1767)	
Recent Synonyms	-	

Biology

Typical abundance	Low density
Male size range	
Male size at maturity	
Female size range	Small-medium(3-10cm)
Female size at maturity	
Growth form	Crustose hard
Growth rate	See additional information
Body flexibility	None (less than 10 degrees)
Mobility	
Characteristic feeding method	Active suspension feeder
Diet/food source	
Typically feeds on	Phytoplankton (<50µm), macroalgal spores, detritus, and bacteria.
Sociability	
Environmental position	Epifaunal
Dependency	Independent.
Supports	None
Is the species harmful?	No

Biology information

Growth rates

Growth, measured in zooid number, in *Conopeum reticulum* is exponential (Menon, 1972). Growth rates in bryozoans have been shown to vary with environmental conditions, especially, food supply, temperature, competition for food and space, and genotype. For example, although growth rates increased with temperature, zooid size decreased, which may be due to increased metabolic costs at higher temperature (Menon, 1972; Ryland, 1976; Hunter & Hughes, 1994). Menon (1972) reported that in culture, growth in *Conopeum reticulum* reached a plateau after about 30 days and that the growth rate had significantly reduced at the end of 6 months. In his experiments *Conopeum reticulum* colonies grew to ca 1000 zooids within ca 28 days at 12 °C and ca 18 days at 22 °C, although these rates were slower than under natural conditions (Menon, 1972). Feeding rates also varied with respect to temperature (Menon, 1974).

Feeding

The structure and function of the bryozoan lophophore was reviewed by Ryland (1976), Winston (1977) and Hayward & Ryland (1998). Ambient water flow is important for bringing food bearing water within range of the colonies own pumping ability (McKinney, 1986). Best & Thorpe (1994) suggested that intertidal Bryozoa would probably be able to feed on small flagellates, bacteria, algal spores and small pieces of abraded macroalgae.

Habitat preferences

Physiographic preferences	Open coast, Strait / sound, Ria / Voe, Estuary, Enclosed coast / Embayment
Biological zone preferences	Lower eulittoral, Lower infralittoral, Sublittoral fringe, Upper infralittoral
Substratum / habitat preferences	Macroalgae, Artificial (man-made), Bedrock, Caves, Cobbles, Large to very large boulders, Other species (see additional information), Overhangs, Pebbles, Rockpools, Small boulders, Under boulders
Tidal strength preferences	Moderately Strong 1 to 3 knots (0.5-1.5 m/sec.), Strong 3 to 6 knots (1.5-3 m/sec.), Weak < 1 knot (<0.5 m/sec.)
Wave exposure preferences	Exposed, Extremely sheltered, Moderately exposed, Sheltered, Very sheltered
Salinity preferences	Full (30-40 psu), Reduced (18-30 psu), Variable (18-40 psu)
Depth range	Intertidal to at least 42m
Other preferences	No text entered
Migration Pattern	Non-migratory / resident

Habitat Information

The distribution may be imprecise since *Conopeum reticulum* is frequently confused with other species but it is probably common off all British coasts (Hayward & Ryland, 1998). *Conopeum reticulum* has been reported from a wide variety of hard substrata including boulders, cobbles, shell and small stones on sediment, as well as the shells of *Mytilus edulis*. Colonies inhabiting stones and cobbles are probably ephemeral, removed by abrasion and rolling during winter storms. Grant & Hayward (1985) reported *Conopeum reticulum* in shallow water bryozoan assemblages in the English Channel at a mean depth of 42m.

Life history

Adult characteristics

Reproductive type	Budding
Reproductive frequency	Annual episodic
Fecundity (number of eggs)	See additional information
Generation time	<1 year
Age at maturity	Less than 1 year
Season	June - October
Life span	Insufficient information

Larval characteristics

Larval/propagule type	-
Larval/juvenile development	Planktotrophic
Duration of larval stage	1-6 months
Larval dispersal potential	Greater than 10 km
Larval settlement period	

Life history information

Reproduction

Bryozoan colonies are hermaphrodite, however, zooids may be monoecious, dioecious, protandrous or protogynous, depending on species (Hayward & Ryland, 1998). In most bryozoans the zooids are hermaphrodite and probably protandric, becoming male then female (Reed, 1991; Hayward & Ryland, 1998). Sperm are shed from pores in the polypide tentacles of male zooids (Hayward & Ryland, 1998). In bryozoans, released sperm are entrained by the tentacles of female polypides and may not disperse far, resulting in self-fertilization. However, genetic cross-fertilization is assumed in most bryozoans, although there is evidence of self fertilization (Reed, 1991; Hayward & Ryland, 1998). Female zooids develop a ciliated intertentacular organ, which collects eggs from the ovaries, passes them to the gonopore, and expels them beyond the lophophores during spawning (Reed, 1991). Fertilization is thought to occur either within the tentacular organ or just as eggs are spawned (Ryland, 1976; Reed 1991).
Conopeum reticulum breeds between June and early October in the Britain and Ireland, and yellowish-white, rounded eggs (average size 110 by 80µm) were present from July to September in the River Crouch (Cook, 1964; Hayward & Ryland, 1998). Cook (1964) reported that eggs were rarely spawned in daylight but that many were found in the morning. Day length is an important cue for spawning in some coastal species of bryozoa that spawn in the first few hours of daylight (Hayward & Ryland, 1998).

Cook (1964) reported that the intertentacular organ contained 5-9 eggs per zooid. However, while each individual zooid is not prolific, the fecundity of the colony is probably directly proportional to the number of functional zooids (Bayer *et al.*, 1994) and is probably high. Although *Conopeum reticulum* colonies could probably survive for several years, it is probably adapted to ephemeral habitats, capable of rapid growth and reproduction of numerous offspring (*r*-selected).

Larvae were present in the plankton in the same period (July to September) in the River Crouch and River Blackwater (Cook, 1964). Reed (1991) reported that planktotrophic cyphonautes larvae spend between one to three months in the plankton.

Recruitment

Bryozoan larvae are probably sensitive to surface contour, chemistry and the proximity of conspecific colonies. However, Hayward & Ryland (1998) suggested that larval behaviour at settlement is only of prime importance to species occupying ephemeral habitats. Eggleston (1972b) demonstrated that the number and abundance of species of bryozoan increased with increased current strength, primarily due to a resultant increase in the availability of stable, hard substrata (Eggleston, 1972b; Ryland, 1976). Ryland (1976) reported that significant settlement in bryozoans was only found near a reservoir of breeding colonies. Ryland (1977) suggested that marine bryozoan larvae tend to settle on the underside of submerged structures or in shaded habitats, possibly due to avoidance of accumulated sediment or competition from algae. However, *Conopeum reticulum* larvae have an extended planktonic life and *Conopeum reticulum* is a member of fouling communities (Ryland, 1967). In addition, *Conopeum* sp. have been reported to have spread into the Caspian Sea after the opening of the Volga-Don canal, possibly on shipping (Ryland 1967). Therefore, *Conopeum reticulum* probably exhibits good dispersal and potentially very rapid recruitment. For example, Hatcher (1998) reported that spring recruitment to an artificial reef in Poole Bay was dominated by tubeworms and encrusting bryozoans including *Conopeum reticulum*. *Conopeum reticulum* colonized artificial reef surfaces within 6 months from May to October 1991 (Hatcher, 1998).

Sensitivity review

This MarLIN sensitivity assessment has been superseded by the MarESA approach to sensitivity assessment. MarLIN assessments used an approach that has now been modified to reflect the most recent conservation imperatives and terminology and are due to be updated by 2016/17.

Physical Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
Substratum Loss	High	Very high	Low	Low

Removal of the substratum, be it shell, rock, or cobble will result in removal of the attached colonies of *Conopeum reticulum*. Therefore, an intolerance of high has been recorded. Recoverability is likely to be very high (see additional information below).

	Intolerance	Recoverability	Sensitivity	Confidence
Smothering	High	Very high	Low	Moderate

Smothering by 5 cm of sediment is likely to prevent feeding, and hence growth and reproduction, as well as respiration. In addition, associated sediment abrasion may remove the bryozoan colonies. A layer of sediment will probably also interfere with larval settlement. Therefore, an intolerance of high has been recorded. Recoverability has been assessed as very high (see additional information below).

	Intolerance	Recoverability	Sensitivity	Confidence
Increase in suspended sediment	Low	Immediate	Not sensitive	Low

The abundance of most bryozoan species declines with increasing suspended sediment loads. Bryozoans are suspension feeding organisms that may be adversely affected by increases in suspended sediment, due to clogging of their feeding apparatus. The abundance of bryozoans is positively correlated with supply of hard substrata and hence with current strength as strong currents decrease the potential for siltation (Eggleston, 1972b; Ryland, 1976). However, *Conopeum reticulum* has been recorded on stones and boulders, around which fine sediments tend to collect. In addition, *Conopeum reticulum* occurs in estuarine waters, such as the higher reaches of the River Tamar, Plymouth which, while below the turbidity maxima, are probably of higher turbidity and suspended sediment loads than coastal waters. However, in areas of siltation it may be restricted to vertical or steep surfaces. Therefore, *Conopeum reticulum* may be more tolerant of siltation and suspended sediment than most encrusting bryozoans, and an intolerance of low has been suggested at the benchmark level.

	Intolerance	Recoverability	Sensitivity	Confidence
Decrease in suspended sediment	Tolerant*	Not relevant	Not sensitive*	Low

A decrease in suspended sediment may reduce the availability of organic particulates. However, a decrease in particulates is likely to encourage the settlement and growth of bryozoans including *Conopeum reticulum*. Therefore, tolerant* has been recorded. A decrease in sediment load is also likely to allow competitors such as other bryozoans and ascidians to colonize the habitat.

	Intolerance	Recoverability	Sensitivity	Confidence
Dessication	Intermediate	Very high	Low	Low

Lower shore populations of *Conopeum reticulum* may be adversely affected by desiccation. *Conopeum reticulum* is restricted to damp habitats or rockpools on the shore. Therefore, an increase in desiccation at the benchmark level, or resulting from overturning of boulders or stones to which colonies are attached, would probably kill the affected colonies. Therefore, an intolerance of intermediate has been recorded to represent loss of the populations extent in the intertidal. The subtidal is unlikely to be exposed to desiccation. Recoverability is likely to be very high (see additional information below).

Increase in emergence regime Intermediate Very high Low Low

An increase in emergence will result in a larger proportion of the population being exposed to intertidal conditions, increased extremes of temperature, reduced ability to feed and an increased risk of desiccation (see above). Therefore, an intolerance of intermediate has been recorded. Recoverability is likely to be very high (see additional information below).

Decrease in emergence regime Tolerant* Not relevant Not sensitive* Low

A decrease in emergence, at the benchmark level, is likely to provide additional habitat for colonization by *Conopeum reticulum* as well as other bryozoans and epifauna, and reduce the risk of desiccation to existing colonies. Therefore, tolerant* has been recorded.

Increase in water flow rate Intermediate Very high Low Low

Conopeum reticulum has been reported in strong to weak tidal streams (JNCC, 1999). Therefore, it is probably tolerant of a wide range of water flow. However, an increase in water flow from e.g. moderately strong to very strong may interfere with larval settlement and remove shells and small stones, to which colonies were attached. Therefore, a proportion of the population may be lost and an intolerance of intermediate has been recorded. Recoverability is likely to be very high (see additional information below).

Decrease in water flow rate Intermediate Very high Low Low

Conopeum reticulum has been recorded from sites subject to strong to weak tidal streams (JNCC, 1999). The abundance of bryozoans is positively correlated with supply of hard substrata and hence with current strength as strong currents (Eggleston, 1972b; Ryland, 1976). Bryozoans are active suspension feeders, however, their feeding currents are probably fairly localized and they are dependent on water flow to bring adequate food supplies within reach (McKinney, 1986). A decrease in water flow to very weak, in the absence of compensatory wave action, is likely to reduce food availability and increase the risk of siltation. Therefore, a proportion of the population may be lost and an intolerance of intermediate has been recorded. Recoverability is likely to be very high (see additional information below).

Increase in temperature Low Immediate Not sensitive Moderate

Menon (1972, 1974) reported *Conopeum reticulum* acclimated to temperatures between 6 to 22 °C and that increasing temperature increased growth and feeding rate but reduced zooid size. Acclimation to increased temperatures increased the median lethal temperature. Menon (1972) reported an upper lethal temperature of 30 °C in colonies acclimated to 22 °C and 32 °C in colonies grown at 22 °C. Therefore, it is likely that colonies will tolerate higher temperatures in the summer months than in the winter months. However, Menon (1972) noted that colonies kept at 6 or 22 °C in culture did not reach sexual maturity. Overall, *Conopeum reticulum* exhibited the highest temperature tolerance of the bryozoans studied by Menon (1972). *Conopeum reticulum* is probably widely distributed around the British Isles and into the Mediterranean, and occurs in the Cochin backwaters of the southwest coast of India (Menon, 1973). Therefore, it is probably tolerant of long term change in temperatures in British waters. It would probably also tolerate acute temperature change at the benchmark level. Therefore, an intolerance of low has been recorded, to represent the effects of temperature on growth and reproduction.

Decrease in temperature Low Immediate Not sensitive Moderate

Menon (1972) reported that colonies acclimated to 6 and 12 °C survived below zero,

polypides only dying at ca -1.8 °C when ice crystals appear in seawater. Polypides of colonies acclimated to higher temperatures died above zero, e.g. at 2.5 °C in colonies acclimated to 22 °C. Therefore, colonies are probably more tolerant of low temperatures in winter than summer. However, Menon (1972) noted that colonies kept at 6 or 22 °C in culture did not reach sexual maturity. Eggleston (1972a) noted that the unusually cold winter of 1962/63 delayed the onset of reproduction in some species of bryozoan by up to 2 months. However, Ryland (1970) suggested that temperature was but one factor controlling summer growth and reproduction in temperate bryozoans.
Conopeum reticulum is probably widely distributed in the British Isles and has been suggested to occur in boreal waters (Hincks, 1880; Menon, 1972). It is unlikely to be adversely affected by long term chronic or short term acute changes in temperature at the benchmark level in British waters. Intertidal specimens may nevertheless succumb to sharp frosts when emersed. Overall, an intolerance of low has been recorded to represent the effects of temperature on growth and reproduction.

Increase in turbidity	Low	Immediate	Not sensitive	Low

An increase in turbidity will decrease light penetration, and hence primary productivity, potentially decreasing the food available to *Conopeum reticulum*. However, *Conopeum reticulum* would probably be able to feed on organic particulates. It may be more intolerant in the summer months, when lack of food would reduce growth and reproduction. In addition, larval growth may be delayed, and hence larval mortality increased. Therefore, an intolerance of low has been recorded.

Decrease in turbidity	Tolerant	Not relevant	Not sensitive	Not relevant

A decrease in turbidity is likely to result in an increase in primary productivity and phytoplankton availability. Therefore, tolerant has been recorded.

Increase in wave exposure	Intermediate	Very high	Low	Low

Conopeum reticulum has been recorded from wave exposed to extremely wave sheltered habitats (JNCC, 1999). Its encrusting habit may allow this species to survive in areas of greater wave exposure. However, its intolerance will probably depend on its substratum. Colonies on stable hard substrata such as bedrock will probably survive, whereas colonies of boulders, rocks or cobbles are likely to be destroyed by rolling or overturning. In addition, colonies on stones on sediment may be destroyed by additional sediment abrasion. Therefore, an increase in wave exposure from sheltered to exposed will probably not adversely affect the population, whereas an increase from moderately exposed to very exposed may result in loss of a proportion of the population, depending on substratum, and an intolerance of intermediate has been recorded. Recoverability is likely to be very high (see additional information below).

Decrease in wave exposure	Low	Immediate	Not sensitive	Low

Conopeum reticulum is recorded from wave exposed to extremely wave sheltered habitats. A further decrease in wave exposure may increase the risk of deoxygenation (stagnant conditions) or siltation (see above) unless the tidal streams were sufficient to ensure adequate water exchange. Suspension feeding organisms are reduced in abundance or absent from areas with little water movement (either due to currents or wave action or both). Therefore, in areas of sufficient water flow due to currents a further reduction in wave exposure may have negligible effects. Therefore, an intolerance of low has been recorded. Populations in areas subject to only weak or negligible current are likely to be more intolerant.

Noise	Tolerant	Not relevant	Not sensitive	High

The species is unlikely to be sensitive to changes in noise vibrations.

Visual Presence Tolerant | Not relevant | Not sensitive | High

The species is unlikely to be sensitive to changes in visual perception.

Abrasion & physical disturbance Intermediate | Very high | Low | Very low

Conopeum reticulum has been recorded on boulders, rocks and stones on sediment (JNCC, 1999). Therefore, it is probably tolerant of some sediment scour. However, it is likely that *Conopeum reticulum* colonies on stones and rocks, and to some extent boulders, are probably ephemeral, being removed by scour by increased wave action due to winter storms. Abrasion by a passing anchor is likely to roll or overturn stones, to which colonies are attached, and damage but not remove colonies on bedrock. A passing scallop dredge is likely to damage but not remove colonies, unless they are removed with rocks to which they are attached (see substratum loss). Overall, an intolerance of intermediate has been recorded, although recoverability is probably very high (see additional information below).

Displacement High | Very high | Low | High

Conopeum reticulum may be displaced together with the rocks or cobbles to which they are attached. If they are displaced to suitable habitats they will probably survive as long as they were not crushed in the process. However, removal of a colony from its substratum would probably be fatal, and encrusting bryozoa are not known to be able to reattach. Therefore, an intolerance of high has been recorded. Recoverability is likely to be very high (see additional information below).

Chemical Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
Synthetic compound contamination	Intermediate	Very high	Low	Very low

Bryozoans are common members of the fouling community, and amongst those organisms most resistant to antifouling measures, such as copper-containing anti-fouling paints (Soule & Soule, 1977; Holt *et al.*, 1995). Bryan & Gibbs (1991) reported that there was little evidence regarding TBT toxicity in bryozoa with the exception of the encrusting *Schizoporella errata*, which suffered 50% mortality when exposed for 63 days to 100ng/l TBT. Rees *et al.* (2001) reported that the abundance of epifauna (including bryozoans) had increased in the Crouch estuary in the five years since TBT was banned from use on small vessels. This last report suggests that bryozoans may be at least inhibited by the presence of TBT. Hoare & Hiscock (1974) suggested that Polyzoa (Bryozoa) were amongst the most sensitive species to acidified halogenated effluents in Amlwch Bay, Anglesey but did not record *Conopeum* spp. in their survey. Overall, an intolerance of intermediate has been recorded to represent the likely intolerance of bryozoans to synthetic contaminants. Recoverability is likely to be very high (see additional information below).

Heavy metal contamination Low | Immediate | Not sensitive | Very low

Bryozoans are common members of the fouling community, and amongst those organisms most resistant to antifouling measures, such as copper-containing anti-fouling paints (Soule & Soule, 1977; Holt *et al.*, 1995). Bryozoans were shown to bioaccumulate heavy metals to a certain extent (Holt *et al.*, 1995). For example *Bowerbankia gracilis* and *Nolella pusilla* accumulated Cd, exhibiting sublethal effects (reduced sexual reproduction and inhibited resting spore formation) between 10-100 µg Cd /l and fatality above 500 µg Cd/l (Kayser, 1990). However, given the tolerance of bryozoans to copper based anti-fouling treatments, and assuming similar physiology between species, an intolerance of low has been recorded albeit with very low confidence.

Hydrocarbon contamination High Very high Low Low

Little information on the effects of hydrocarbons on bryozoans was found. Houghton *et al.* (1996) reported a reduction in the abundance of intertidal encrusting Bryozoa (no species given) at oiled sites after the *Exxon Valdez* oil spill. Soule & Soule (1979) reported that the encrusting bryozoan *Membranipora villosa* was not found in the impacted area for 7 months after the December 1976 Bunker C oil spill in Los Angeles Harbour. Of the eight species of bryozoan recorded on the nearby breakwater two weeks after the incident, only three were present in April and by June all had been replaced by dense growths of the erect bryozoan *Scrupocellaria diegensis*. Mohammad (1974) reported that *Bugula* spp. and *Membranipora* spp. were excluded from settlement panels near a Kuwait Oil terminal subject to minor but frequent oil spills. Encrusting bryozoans are also probably intolerant of the smothering effects of oil pollution, resulting in suffocation of colonies. Therefore, given the above evidence of intolerance in other Membraniporidae, a intolerance of high has been recorded, albeit at low confidence. Recoverability is probably very high (see additional information below).

Radionuclide contamination Not relevant Not relevant

Insufficient information

Changes in nutrient levels Not relevant Not relevant

A moderate increase in nutrient levels may increase the food available to *Conopeum reticulum*, either in the form of phytoplankton or detritus. Jakola & Gulliksen (1987) reported that encrusting bryozoans were excluded from the vicinity of a sewage outfall from Tromsö, Norway. However, they suggested that the effect was primarily due to sedimentation. Little other information on the effects of nutrients enrichment on bryozoans were found.

Increase in salinity Not relevant Not relevant

Conopeum reticulum may be found intertidally in damp locations, under boulders and in rockpools. It may, therefore be exposed to increased salinity due to evaporation and is probably more tolerant than subtidal bryozoans. However, no information sufficient to make an assessment was found.

Decrease in salinity Low Immediate Not sensitive Low

Conopeum reticulum is found in marine and estuarine waters and is considered to be euryhaline, although Ryland (1970) noted that its estuarine distribution may be inaccurate due to common confusion with *Conopeum seurati* and *Electra crustulenta*. However, *Conopeum reticulum* was abundant in the higher reaches of the Crouch and Tamar estuaries at salinities of 21- 32psu (Cook, 1964; Hayward & Ryland, 1998). Menon (1973) reported that *Conopeum reticulum* occurred in the outer reaches of the Cochin backwaters in southern India, which were affected by significant freshwater runoff during the monsoon season. In the Cochin backwaters *Conopeum reticulum* was more abundant in the shallow subtidal (1-2m) and absent from the intertidal.

Conopeum reticulum would probably survive a reduction in salinity from full to reduced in the short or long term but be excluded form sites if the salinity became low (<18psu). Therefore, an intolerance of low has been recorded at the benchmark level.

Changes in oxygenation Low Immediate Not sensitive Moderate

Little information concerning the effects of hypoxia on bryozoans was found. Sagasti *et al.* (2000) reported that epifauna communities, including dominant species such as *Conopeum tenuissimum* and *Membranipora tenuis*, were unaffected by periods of moderate hypoxia (ca 0.35 -1.4 ml/l) and short periods of hypoxia (<0.35 ml/l) in the York River, Chesapeake Bay.

Therefore, assuming similar physiology between species of *Conopeum*, an intolerance of low has been recorded.

Biological Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
Introduction of microbial pathogens/parasites		Not relevant		Not relevant

No information found

	Intolerance	Recoverability	Sensitivity	Confidence
Introduction of non-native species		Not relevant		Not relevant

No information found

	Intolerance	Recoverability	Sensitivity	Confidence
Extraction of this species	Not relevant	Not relevant	Not relevant	Not relevant

Conopeum reticulum is unlikely to be subject to specific extraction.

	Intolerance	Recoverability	Sensitivity	Confidence
Extraction of other species	Not relevant	Not relevant	Not relevant	Not relevant

Conopeum reticulum is not known to be associated with species or habitats subject to extraction.

Additional information

Recoverability
Conopeum reticulum has a planktonic larva with a protracted life in the plankton and potentially extended dispersal. The larvae are present in estuarine and coastal waters between July and September. *Conopeum reticulum* can also colonize a wide variety of substrata and is a member of fouling communities. For example, Hatcher (1998) reported that *Conopeum reticulum* colonized artificial reef surfaces within 6 months from May to October 1991 (Hatcher, 1998). Therefore, it is likely to be able to colonize new habitats or free space rapidly, probably in 6 months or less. It grows and probably matures quickly, within a year or less, and subsequent expansion of the population and recovery of abundance, aided by the proximity of breeding colonies is also likely to occur rapidly, possibly within a few years at most.

Importance review

Policy/legislation

- no data -

Status

National (GB) importance	-	**Global red list (IUCN) category**	-

Non-native

Native	-		
Origin	-	**Date Arrived**	-

Importance information

Bryozoans are grazed by sea urchins such as *Echinus esculentus* and *Psammechinus miliaris* in the subtidal. Bryozoans are also preyed on by pycnogonids (sea spiders) and nudibranchs (sea slugs) (Ryland, 1976).

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