



MarLIN

Marine Information Network

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

Honeycomb worm (*Sabellaria alveolata*)

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

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The Marine Life Information Network, Marine Biological Association of the United Kingdom.

Please note. This MarESA report is a dated version of the online review. Please refer to the website for the most up-to-date version [<https://www.marlin.ac.uk/species/detail/1129>]. All terms and the MarESA methodology are outlined on the website (<https://www.marlin.ac.uk>)

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Rock covered entirely with tubes of *Sabellaria alveolata*.

Photographer: Keith Hiscock

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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	Angus Jackson	Refereed by	Prof. Steve J. Hawkins
Authority	(Linnaeus, 1767)	Synonyms	-
Other common names	-		

Summary

🔍 Description

A frequently gregarious segmented worm that builds tubes from sand or shell fragments. Found intertidally (although occasionally subtidally) in exposed areas. Tubes often densely aggregated forming a honey comb pattern. May form large reefs up to several metres across and a metre deep.

📍 Recorded distribution in Britain and Ireland

In Britain, most abundant on the south and west coasts with isolated records from the south east and east coasts. The northern limit is the Outer Hebrides. It is also found on south, west and north coasts of Ireland.

📍 Global distribution

Mediterranean, north Atlantic south to Morocco. The British Isles form the northern limits of the distribution in the north east Atlantic

🏠 Habitat

Found on hard substrata on exposed, open coasts with moderate to considerable water movement where sand is available for tube building. Typically on the bottom third of the shoreline but also in the shallow sub-tidal.

↓ Depth range

MTL - 10 metres

🔍 Identifying features

- Usually forms sheets or reefs.
- Inhabits tube made from coarse, cemented sand or shell grains.
- Thorax with three pairs of flattened chaetal sheaths.
- Inner and middle rows of opercular chaetae with asymmetrically angular spines pointing distally and transversely respectively.

🏛️ Additional information

At low densities tubes are attached to the substratum along the entire length but at greater densities competition for space results in the tubes overlapping and may cause the tubes to be built outwards, away from the substrate. Tube colour varies according to the colour of sand grains

✓ Listed by

🔗 Further information sources

Search on:

    **NBN WoRMS**

Biology review

☰ Taxonomy

Phylum	Annelida	Segmented worms e.g. ragworms, tubeworms, fanworms and spoon worms
Class	Polychaeta	Bristleworms, e.g. ragworms, scaleworms, paddleworms, fanworms, tubeworms and spoon worms
Family	Sabellariidae	
Genus	Sabellaria	
Authority	(Linnaeus, 1767)	
Recent Synonyms	-	

🌿 Biology

Typical abundance	High density
Male size range	3 -4cm
Male size at maturity	
Female size range	Small-medium(3-10cm)
Female size at maturity	
Growth form	Tubicolous
Growth rate	12cm/year
Body flexibility	
Mobility	
Characteristic feeding method	Active suspension feeder
Diet/food source	
Typically feeds on	Seston
Sociability	
Environmental position	Epifaunal
Dependency	Independent.
Supports	Substratum a variety of associated fauna and flora depending on form and age of colony: particularly mussels, barnacles and ephemeral algae
Is the species harmful?	No

🏛️ Biology information

Size refers to individual worms. It is typically gregarious forming colonies of sheets, hummocks or reefs. In Cornwall, their tubes are up to 20 cm in length and around 5 mm in diameter at the external opening. Each tube has an additional porch over the opening. In northern France, the tubes were reported to grow in length at 12 cm/year.

This species appears to be favoured by elevated winter temperatures associated with cooling water discharges (Bamber & Irving, 1997) but growth is inhibited below 5 C

Communities associated with *Sabellaria alveolata* are not particularly remarkable being species poor on young dense reef and up to 38 species on older reefs. Honeycomb worm aggregations that bind together mobile cobbles increase heterogeneity.

Habitat preferences

Physiographic preferences	Open coast
Biological zone preferences	Lower eulittoral, Mid eulittoral, Sublittoral fringe, Upper infralittoral
Substratum / habitat preferences	Bedrock, Cobbles, Large to very large boulders, Pebbles, Small 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.)
Wave exposure preferences	Exposed, Moderately exposed, Very exposed
Salinity preferences	Full (30-40 psu)
Depth range	MTL - 10 metres
Other preferences	No text entered
Migration Pattern	Non-migratory / resident

Habitat Information

The honeycomb worm appears to be absent from many exposed peninsulas, probably due to the effects of water movement on recruitment. Although a hard substratum is required for attachment, there needs to be adequate sand or small shell particles from which to construct the tubes.

It is typically found in the low intertidal but occasionally found subtidally (e.g. in the Severn estuary). It typically colonizes bedrock or large boulders but in some sites binds together small cobbles in a complex with mussels.

It has a strong settlement preference for adult tubes or sites currently or previously used by the species.

Life history

Adult characteristics

Reproductive type	Gonochoristic (dioecious)
Reproductive frequency	Annual episodic
Fecundity (number of eggs)	100,000-1,000,000
Generation time	Insufficient information
Age at maturity	In good conditions worms mature within the first year.
Season	July - July
Life span	2-5 years

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	Insufficient information

Life history information

Most individuals have a lifespan of 3 to 5 years but there are records for 7 and even 9 year old individuals. *Sabellaria alveolata* reefs undergo cycles of development and decay over a period of a few years. Although individual reefs come and go - areas that are good for *Sabellaria alveolata* tend to remain so.

Spawning occurs each July but actual recruitment levels vary considerably from year to year. Larvae spend between 6 weeks and 6 months in the plankton.

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.

A Physical Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
Substratum Loss	High	Moderate	Moderate	Low
The species is fixed to the substratum so substratum removal will cause mortality. Variability in recruitment (dependent on suitable environmental conditions) means that recovery could take several years.				
Smothering	Low	Immediate	Not sensitive	High
Tolerant to burial under sand for up to several weeks. Feeding and growth will be curtailed. Depending on timing this may interfere with reproduction. Recoverability is almost immediate (Wilson, 1971).				
Increase in suspended sediment	Low	Very high	Very Low	Low
Tube growth is dependent on the presence of suspended particles hence a reduction in siltation may hinder tube construction. An increase in siltation may facilitate tube building but clog up feeding apparatus. Recovery occurs when the population is able to recommence feeding and growing.				
Decrease in suspended sediment				
Desiccation	Intermediate	High	Low	Low
Species is typically intertidal and so is regularly exposed to drying influences. When exposed to the air the worm retracts into its tube and closes the operculum over the entrance reducing evaporation. Changes in desiccation for the period of a year may cause some of the population to die. Variability in recruitment (dependent on suitable environmental conditions) means that recovery could take a few years. The presence of some remaining adults will assist in larval settlement as this is the preferred substratum (Wilson 1929).				
Increase in emergence regime	Intermediate	High	Low	Low
A reduction in the amount of time spent under water could cause a proportion of a colony to die due to restricted feeding. The species also occurs subtidally so a decrease in emergence time will have no effect. Variability in recruitment (dependent on suitable environmental conditions) means that recovery could take a few years. The presence of some remaining adults will assist in larval settlement as this is the preferred substratum (Wilson 1929).				
Decrease in emergence regime				
Increase in water flow rate	Intermediate	High	Low	Low
The species inhabits areas with high water flow so an increase in rate is likely to have little effect. A reduction of water flow by two categories is likely to cause exposure to conditions outside the normal range for the species. This may be sufficient to reduce availability of suspended particles, hindering growth and repair and feeding. Variability in recruitment				

(dependent on suitable environmental conditions) means that recovery could take a few years. The presence of some remaining adults will assist in larval settlement as this is the preferred substratum (Wilson 1929).

Decrease in water flow rate

Increase in temperature Intermediate High Low Low

The species is typically intertidal. Intolerance assessment is in relation to short term acute temperature change. Growth inhibited below 5 degrees C. Damaged or killed by frost. Long term slight increase in temperature is unlikely to have any effect on British populations as global distribution extends South to Morocco. Long term slight decrease in temperature may reduce viability of populations. Variability in recruitment (dependent on suitable environmental conditions) means that recovery could take a few years. The presence of some remaining adults will assist in larval settlement as this is the preferred substratum (Wilson 1929).

Decrease in temperature

Increase in turbidity Tolerant Not relevant Not sensitive Low

No reliance on visual sense for feeding, reproducing etc.

Decrease in turbidity

Increase in wave exposure Intermediate High Low Low

Requires sufficient water action to suspend coarse sand particles in order to build tubes and so is found in quite exposed areas. Most colonies die through eventual break up by wave action. Increased exposure will result in potentially shorter colony life. Reduced exposure may mean the population exists outside of its preferred conditions with insufficient water action to provide sand particles or food. Variability in recruitment (dependent on suitable environmental conditions) means that recovery could take a few years. The presence of some remaining adults will assist in larval settlement as this is the preferred substratum (Wilson 1929).

Decrease in wave exposure

Noise Tolerant Not relevant Not sensitive High

The species is unlikely to respond to noise vibrations

Visual Presence Tolerant Not relevant Not sensitive High

Most polychaetes have photoreceptors but the species is probably unable to resolve moving objects. The worms may retract into tube on disturbance. Whether this is through light detection or mechanical stimulus is uncertain.

Abrasion & physical disturbance Intermediate High Low Moderate

Abrasion through trampling can affect this species but it is surprisingly tolerant (Cunningham *et al.*, 1984). The main cause of colony destruction is through wave action. Variability in recruitment (dependent on suitable environmental conditions) means that recovery could take a few years. The presence of some remaining adults will assist in larval settlement, as this is the preferred substratum (Wilson 1929). Variability in recruitment (dependent on suitable environmental conditions) means that recovery could take several years.

Displacement High Moderate Moderate High

Worms are not able to rebuild tubes if removed from them (Wilson 1929).

Chemical Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
Synthetic compound contamination				Not relevant
Although the larvae are potentially very intolerant of some oil dispersants it is unlikely that <i>Sabellaria alveolata</i> has any special intolerance to chemicals (Holt <i>et al.</i> , 1998).				
Heavy metal contamination				Not relevant
Insufficient information				
Hydrocarbon contamination				Not relevant
Insufficient information				
Radionuclide contamination				Not relevant
Insufficient information				
Changes in nutrient levels				Not relevant
Insufficient information				
Increase in salinity	Intermediate	High	Low	Low
Species only occurs in fully marine environment, however, as it frequently occurs in the intertidal, it must be able to tolerate some reduced salinity caused by precipitation run off. Variability in recruitment (dependent on suitable environmental conditions) means that recovery could take a few years. The presence of some remaining adults will assist in larval settlement as this is the preferred substratum (Wilson 1929).				
Decrease in salinity				
Changes in oxygenation	Intermediate	High	Low	Very low
Cole <i>et al.</i> (1999) suggest possible adverse effects on marine species below 4 mg/l and probable adverse effects below 2 mg/l. There is no information about <i>Sabellaria alveolata</i> tolerance to changes in oxygenation. Variability in recruitment (dependent on suitable environmental conditions) means that recovery could take a few years. The presence of some remaining adults will assist in larval settlement as this is the preferred substratum (Wilson 1929).				

Biological Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
Introduction of microbial pathogens/parasites				Not relevant
Insufficient information				
Introduction of non-native species				Not relevant
Insufficient information				
Extraction of this species	Intermediate	High	Low	Low
Extraction by bait digging is a possibility. Automatically assessed as intermediate assuming 50 percent removal. Variability in recruitment (dependent on suitable environmental conditions)				

means that recovery could take a few years. The presence of some remaining adults will assist in larval settlement as this is the preferred substratum (Wilson 1929).

Extraction of other species **Intermediate** **High** **Low** **Low**

Bait collection occurs in Portugal for crabs etc. living in the gaps between worm tubes.

Additional information

Importance review

Policy/legislation

★ Status

National (GB)
importance

Not rare/scarce

Global red list
(IUCN) category

-

Non-native

Native

-

Origin

-

Date Arrived

-

Importance information

Few crevice fauna are associated with reefs. The main colonizing species are epifaunal. Fishermen occasionally dig out the worms from reefs for use as bait.

Well established reefs can exclude other organisms such as weed, barnacles and limpets from the substrate. *Sabellaria alveolata* reefs are well represented in candidate SACs. *Sabellaria alveolata* does not have its own Species Action Plan but is covered in its reef form by a Habitat Action Plan. Actively growing reefs can out-compete all other littoral species for space.

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