MarLIN

Marine Information Network

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

Sand mason (*Lanice conchilega*)

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

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A report from:
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/1642]. All terms and the MarESA methodology are outlined on the website (https://www.marlin.ac.uk)

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***Lanice conchilega*, sand mason worm.**
Photographer: Sue Scott
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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	Olwen Ager	**Refereed by**	This information is not refereed.
Authority	(Pallas, 1766)		
Other common names	-	**Synonyms**	-

Summary

Description

Lanice conchilega is a polychaete worm up to 30 cm in length and yellow, pink and brownish in colour. Its body is divided into between 150 and 300 segments, with 17 segments (chaetigers) in the front region. *Lanice conchilega* has 3 pairs of bushy gills that are blood red in colour. It makes a tube out of sand grains and shell fragments, which has a characteristic frayed end that protrudes above the sand. *Lanice conchilega* uses its crown of white tentacles to trap particles of food.

Recorded distribution in Britain and Ireland

Lanice conchilega is found around all coasts of Britain and Ireland.

Global distribution

Lanice conchilega is found from the Arctic to the Mediterranean, in the Arabian Gulf and the Pacific.

Habitat

Lanice conchilega is found in intertidal and subtidal sediments

Depth range

Intertidal to 1700m

Identifying features

- Up to 30 cm long.
- Body with 150-300 segments.
- 17 segments (chaetigers) in front region.
- 3 pairs of bushy gills.
- Rear parapods as rectangular flaps.
- Yellow, pink or brown in colour.
- Crown of white tentacles.
- Makes tube out of sand grains and shell fragments.

Additional information

No text entered

Listed by

Further information sources

Search on:

NBN WoRMS

Biology review

Taxonomy

Phylum	Annelida	Segmented worms e.g. ragworms, tubeworms, fanworms and spoon worms
Order	Terebellida	
Family	Terebellidae	
Genus	Lanice	
Authority	(Pallas, 1766)	
Recent Synonyms	-	

Biology

Typical abundance	Moderate density
Male size range	25-30cm
Male size at maturity	
Female size range	Medium-large(21-50cm)
Female size at maturity	
Growth form	Tubicolous
Growth rate	
Body flexibility	High (greater than 45 degrees)
Mobility	
Characteristic feeding method	Active suspension feeder, Surface deposit feeder
Diet/food source	
Typically feeds on	Detritus
Sociability	
Environmental position	Infaunal
Dependency	-
Supports	-
Is the species harmful?	No information

Biology information

Sociability

Lanice conchilega can be found as a solitary individual or in populations of several thousand per m^2.

Feeding

Buhr & Winter (1977) suggested that *Lanice conchilega* is unlikely to be just a surface deposit feeder as the fringed ends of its tube form an extensive network meaning that detritus will be trapped in the fringe. They suggest that feeding method is density dependant. At low densities (several dozen individuals per m^2) *Lanice conchilega* will preferentially deposit feed. At high densities (several thousand individuals per m^2) competition at the sediment surface will force animals to adopt suspension feeding.

Habitat preferences

Physiographic preferences	Open coast, Offshore seabed, Strait / sound, Estuary, Enclosed coast / Embayment
Biological zone preferences	Bathybenthic (Bathyal), Circalittoral offshore, Lower circalittoral, Lower eulittoral, Lower infralittoral, Sublittoral fringe, Upper circalittoral, Upper infralittoral
Substratum / habitat preferences	Coarse clean sand, Fine clean sand, Muddy sand, Sandy mud
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.), Very Weak (negligible), Weak < 1 knot (<0.5 m/sec.)
Wave exposure preferences	Extremely sheltered, Moderately exposed, Sheltered, Very sheltered
Salinity preferences	Full (30-40 psu), Variable (18-40 psu)
Depth range	Intertidal to 1700m
Other preferences	No text entered
Migration Pattern	Non-migratory / resident

Habitat Information

Hartmann-Shröder (1971; cited in Carey, 1987) reported that *Lanice conchilega* was found from the low water neap tide mark down to 1700m.

Life history

Adult characteristics

Reproductive type	Gonochoristic (dioecious)
Reproductive frequency	No information
Fecundity (number of eggs)	No information
Generation time	Insufficient information
Age at maturity	Insufficient information
Season	April - October
Life span	Insufficient information

Larval characteristics

Larval/propagule type	-
Larval/juvenile development	Planktotrophic
Duration of larval stage	1-2 months
Larval dispersal potential	Greater than 10 km
Larval settlement period	Insufficient information

Life history information

Reproduction

Adult *Lanice conchilega* were seen to release gametes over several hours in June 1991 (Ansell, 1995). Kuhl (1972) remarked that the larvae of *Lanice conchilega* occur from April to October. The larvae spend up to 60 days in the plankton, so that larvae could potentially disperse over a great distance, depending on the hydrographical regime.

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	High	Moderate	Low

Lanice conchilega lives in the sediment, a loss of substratum would cause a loss of the population. Therefore an intolerance of high has been recorded. A recoverability of high has been recorded (see additional information below).

	Intolerance	Recoverability	Sensitivity	Confidence
Smothering	Low	High	Low	Low

Lanice conchilega lives in the sediment and uses sand grains and shell fragments to make a tube that rises several centimetres above the sediment surface. It is therefore, unlikely that silt will smother the worm. It is also likely that *Lanice conchilega* will be able to move up through the extra sediment, therefore intolerance has been recorded as low. However, smothering by impermeable material is likely to result in anoxic conditions and have a greater impact.

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

Lanice conchilega is a deposit and/ or suspension feeder and unless the feeding crown is clogged is unlikely to be troubled by an increase in suspended sediment and tolerant has, therefore, been recorded.

	Intolerance	Recoverability	Sensitivity	Confidence
Decrease in suspended sediment	Low	High	Low	Low

A decrease in suspended sediment may mean a reduction in the amount of available food for *Lanice conchilega*, however the protruding part of the tube affects the near bottom flow rate which can lead to an increase in sediment re-suspension (Jones & Jago, 1993) In any case, any adverse affect will lead to a loss of condition rather than mortality. Therefore, an intolerance of low has been recorded.

	Intolerance	Recoverability	Sensitivity	Confidence
Dessication	Intermediate	High	Low	Low

Lanice conchilega is found on the lower shore and is therefore tolerant to some level of desiccation. It can retract into its tube, which can be up to 65cm long, avoiding the effects of desiccation. Only individuals at the upper limit of distribution are likely to be killed, therefore, intolerance has been recorded as intermediate. Desiccation is most likely to be a factor in coarse sands which drains rapidly.

	Intolerance	Recoverability	Sensitivity	Confidence
Increase in emergence regime	Intermediate	High	Low	Low

Lanice conchilega tubes can be seen on sandflats at low tide. An increase in emergence may lead to an increase in predation by wading sea birds, an increase in exposure to desiccation (see above) and changes in temperature (see below). Intolerance has therefore been recorded as intermediate and a recoverability of high has been recorded (see additional information below).

	Intolerance	Recoverability	Sensitivity	Confidence
Decrease in emergence regime	Tolerant*	Not relevant	Not sensitive*	Low

Lanice conchilega thrives in the subtidal zone and therefore could potentially benefit from a decreased emergence regime. It is possible that decreased emergence would allow the species to colonize further up the shore. Hence, tolerant* has been recorded.

Increase in water flow rate Intermediate High Low Low

Increased water flow will remove finer sediments or possibly sediments altogether. It may also interfere with feeding. The distribution and extent of the population may be altered due to changes in the preferred substratum of *Lanice conchilega*. Therefore, an intolerance of intermediate has been recorded.

Decrease in water flow rate Intermediate High Low Low

A decrease in water flow will lead to deposition of finer sediments and the possibility of reduced food supply. Changes in water flow rate are likely to change the distribution and extent of the population due to changes in the preferred substratum of *Lanice conchilega*. Therefore, an intolerance of intermediate has been recorded.

Increase in temperature Low High Low Low

No information was found regarding tolerance of *Lanice conchilega* to high temperatures. *Lanice conchilega* is found over a wide geographical range, in the Arctic, Mediterranean, Arabian Gulf and Pacific. Therefore, it is likely to be tolerant of a wide range of temperatures. An acute increase in temperature may result in physiological stress but is unlikely to lead to mortality. An intolerance of low has therefore been recorded.

Decrease in temperature High High Moderate High

Lanice conchilega is a species that is intolerant of low temperatures (Beukema, 1990). An intertidal population of *Lanice conchilega*, in the northern Wadden Sea, was wiped out during a severe winter of 1995/96 (Strasser & Pielouth 2001). The population took 3 years to fully recover, as there was low recruitment for the first 2 years. Crisp (1964) found there to be mortality of *Lanice conchilega* between the tidemarks but not at lower levels. After other hard winters *Lanice conchilega* recovered fast due to a good larval supply. Intolerance has, therefore, been recorded as high. Recoverability has been recorded as moderate (see additional information below).

Increase in turbidity Tolerant Not relevant Not sensitive Not relevant

Lanice conchilega is found in estuarine regions which experience high levels of turbidity. An increase in turbidity would lead to reduced light penetration of the water column. *Lanice conchilega* is not light dependant, therefore, tolerant has been recorded.

Decrease in turbidity Tolerant Not relevant Not sensitive Not relevant

Lanice conchilega is not affected by light availability therefore tolerant has been recorded.

Increase in wave exposure High High Moderate Moderate

Rees *et al*. (1977) found that only 1% of the *Lanice conchilega* population in Colwyn Bay apparently survived after winter storms. An increase in wave exposure is likely to lead to a high mortality of *Lanice conchilega*, therefore, intolerance has been recorded as high. Recoverability has been recorded as high (see additional information below).

Decrease in wave exposure Low High Low Low

A decrease in wave exposure in combination with weak tidal streams will invariably lead to a decrease in food supply. If, however the wave exposure is decreased but there are moderate tidal streams it is unlikely *Lanice conchilega* will be adversely affected. Therefore an intolerance of low has been recorded.

Noise Tolerant | Not relevant | Not sensitive | Low

No information was found concerning the intolerance of *Lanice conchilega* to noise. However, it is unlikely to be affected by noise and vibration at the level of the benchmark

Visual Presence Tolerant | Not relevant | Not sensitive | Low

Lanice conchilega lives in a tube and its visual range is probably very limited. Not sensitive has therefore been recorded.

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

Lanice conchilega inhabits a permanent tube and is likely to be damaged by any activity that penetrates the sediment. Ferns *et al.* (2000) investigated the effect of mechanical cockle harvesting (see extraction below). The tubes of *Lanice conchilega* were damaged but this damage was seen to be repaired. An intolerance of intermediate has therefore been recorded. A recoverability of very high has been recorded (see additional information below). This assessment is for minor abrasion or disturbance, major abrasion, or disturbance would be similar to substratum removal.

Displacement Intermediate | Very high | Low | Low

Displacement of *Lanice conchilega* would lead to increased risk of predation from flat fish (Ansell, 1995). Yonow (1989) observed *Lanice conchilega* re-establishing tubes immediately after removal from the sediment into a suitable sediment in the laboratory. Intolerance has therefore been recorded as intermediate.

Chemical Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
Synthetic compound contamination	High	High	Moderate	Very low

No information was found directly relating to the effects of synthetic chemicals on *Lanice conchilega*. However, there is evidence from other polychaete species. Collier & Pinn (1998) investigated the effect on the benthos of Ivermectin, treatment for infestations of sea-lice on farmed salmonids. The ragworm *Hediste diversicolor* was particularly susceptible, exhibiting 100% mortality within 14 days when exposed to 8 mg/m^2 of Ivermectin in a microcosm. *Arenicola marina* was also intolerant of Ivermectin through the ingestion of contaminated sediment (Thain *et al*., 1998; cited in Collier & Pinn, 1998) and it was suggested that deposit feeding was an important route for exposure to toxins. Beaumont *et al*. (1989) investigated the effects of tri-butyl tin (TBT) on benthic organisms. At concentrations of 1-3 g/l there was no significant effect on the abundance of *Hediste diversicolor* or *Cirratulus cirratus* after 9 weeks in a microcosm. However, no juvenile polychaetes were retrieved from the substratum and hence there is some evidence that TBT had an effect on the larval and/or juvenile stages of these polychaetes. The high mortality of polychaetes due to exposure to Ivermectin suggests a high intolerance to synthetic chemicals, but with very low confidence in the absence of direct evidence for *Lanice conchilega*. Recoverability is recorded as high (see additional information below).

Heavy metal contamination Intermediate | High | Low | Low

Crompton (1997) suggests the following concentrations of heavy metals would result in the mortality of annelids after short term (4-14 days) exposure:

- Hg 0.1-1mg/l.
- Cu 0.01-0.1mg/l.

- Cd 1-10mg/l.
- Zn 1-10mg/l.
- Pb 0.1-1mg/l.
- Cr 0.1-1mg/l.
- As 1-10mg/l.
- Ni 10-100mg/l.

Bryan (1984) suggests polychaetes are fairly resistant to heavy metals therefore intolerance has been recorded as intermediate. A recoverability of moderate has been recorded (see additional information below).

Hydrocarbon contamination Intermediate High Low Moderate

Soft sediment communities and especially infaunal polychaetes are particularly effected by oil pollution (Suchanek, 1993). A 20 year study investigating community effects after the *Amoco Cadiz* oil spill of 1978 (Dauvin, 2000) found that a population of *Lanice conchilega* was established between 1978-84 but disappeared after 1985. An intolerance of intermediate has been recorded. A recoverability of moderate has been recorded (see additional information below) as oil may be retained in sediments preventing re-establishment of populations.

Radionuclide contamination Not relevant Not relevant

No evidence was found regarding the intolerance of *Lanice conchilega* to radionuclide contamination.

Changes in nutrient levels Intermediate Moderate Moderate Very low

Moderate nutrient enrichment may be beneficial but increased nutrient enrichment may result in a community dominated with opportunist species (e.g. capitellids). This results in an increase in abundance but a decrease in species richness eventually leading to abiotic, anoxic sediments (Pearson & Rosenberg, 1978). Intolerance has therefore been recorded as intermediate.

Increase in salinity Not relevant Not relevant Not relevant Not relevant

No information was found concerning the reaction of *Lanice conchilega* to hypersaline conditions (>40psu). It is unlikely that *Lanice conchilega* would experience hypersaline conditions and therefore not relevant has been recorded.

Decrease in salinity Intermediate High Low Low

Lanice conchilega is found in estuaries but in smaller numbers than fully saline conditions. Intolerance has therefore been recorded as intermediate as a decrease in salinity may lead to a reduction in population numbers. Recoverability has been recorded as high (see additional information below).

Changes in oxygenation Intermediate High Low Low

No information was found on the tolerance of *Lanice conchilega* to changes in oxygenation. However, Cole *et al.* (1999) suggest adverse effects on marine species at oxygen concentrations below 4mg/l and probable adverse effects below 2mg/l. Intolerance has therefore been recorded as intermediate. Recoverability has been recorded as high (see additional information below).

Biological Pressures

Intolerance Recoverability Sensitivity Confidence

Introduction of microbial pathogens/parasites				Not relevant

No information was found on diseases of *Lanice conchilega*.

Introduction of non-native species				Not relevant

No information was found on alien species which may compete with *Lanice conchilega*.

Extraction of this species	Not relevant	Not relevant	Not relevant	Not relevant

No information was found that *Lanice conchilega* is extracted deliberately therefore not relevant has been recorded.

Extraction of other species	Intermediate	Moderate	Moderate	Moderate

Ferns *et al*. (2000) investigated the effect of mechanical cockle harvesting on intertidal communities, they found that the harvesting damaged *Lanice conchilega* as they live in permanent tubes and are therefore incapable of movement, they can however repair damage to tubes. Intolerance has therefore been recorded as intermediate. Recoverability has been recorded as moderate (see additional information below).

Additional information

Recoverability

Lanice conchilega spends up to 60 days in the plankton and could disperse over a wide area. Heuers & Jaklin (1999) found that areas with adult worms or artificial tubes were settled and areas without these structures were not. Strasser & Pielouth (2001) reported that larvae were seen to settle in areas where there were no adults (see decrease in temperature) but took 3 years to re-establish the population. Recoverability is, therefore, probably quicker in areas that already have a population of *Lanice conchilega* but will occur in suitable substratum within only a few years even in the absence of existing populations.

Importance review

Policy/legislation

- no data -

Status

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

Non-native

Native	-		
Origin	-	Date Arrived	-

Importance information

Structure

The tube which *Lanice conchilega* builds provides structure to the sediment, very much like a hollow rod stabilising the sediment (Jones & Jago, 1993). *Lanice conchilega* consolidates the sediment, obstructing the activities of predatory burrowers and enabling other sedentary animals to establish themselves (Wood, 1987).

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