



# MarLIN

## Marine Information Network

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

## Lobe shell (*Philine quadripartita*)

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/1412>]. All terms and the MarESA methodology are outlined on the website (<https://www.marlin.ac.uk>)

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*Philine aperta* on sediment surface.  
 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.

<b>Researched by</b>	Emily Wilson	<b>Refereed by</b>	This information is not refereed.
<b>Authority</b>	Ascanius, 1772		
<b>Other common names</b>	-	<b>Synonyms</b>	-

## Summary

### 🔍 Description

*Philine quadripartita* is 1 to 3 cm in length and white in colour. The soft body is divided into four lobes: a frontal 'cephalic' shield, a posterior shield, and two parapodial lobes either side of the body. The body is white. The cephalic shield is longer than the posterior shield. The posterior shield has a small internal shell that can be felt at the hind end of the animal. This species characteristically secretes sulphuric acid as a defence against predators.

### 📍 Recorded distribution in Britain and Ireland

Recorded all around the British Isles.

### 📍 Global distribution

Recorded from the North East Atlantic and the Mediterranean.

### 🏠 Habitat

A sublittoral sea slug spending most of its life beneath the surface of the sand/muddy sand in which it seeks its prey.

## ↓ Depth range

0-500m

## 🔍 Identifying features

- Quadripartite; right and left parapodial lobes, cephalic shield (head), and posterior mantle lobe over the visceral mass.
- White in colour with white dots; up to 3 cm in length.

## 🏛️ Additional information

Records of *Philine quadripartita* in the British Isles were misidentified as *Philine aperta* (Price *et al.*, 2011). Outwardly, most species of *Philine* are very similar in morphology and a detailed examination of their internal anatomy, especially the shape of the internal shell, gizzard and penial papilla, is required to differentiate the species (Price *et al.*, 2011). *Philine aperta* is recorded from South Africa and Mozambique.

## ✓ Listed by

## 🔗 Further information sources

Search on:

     

## Biology review

### ☰ Taxonomy

Phylum	Mollusca	Snails, slugs, mussels, cockles, clams & squid
Class	Gastropoda	Snails, slugs & sea butterflies
Order	Cephalaspidea	Bubble snails
Family	Philinidae	
Genus	Philine	
Authority	Ascanius, 1772	
Recent Synonyms	-	

### 🌿 Biology

Typical abundance	Moderate density
Male size range	3 cm
Male size at maturity	
Female size range	Small (1-2 cm)
Female size at maturity	
Growth form	Globose
Growth rate	Data deficient
Body flexibility	Low (10-45 degrees)
Mobility	Burrower
Characteristic feeding method	Predator
Diet/food source	Carnivore
Typically feeds on	<i>Pectinaria koreni</i> , <i>Echinocyamus pusillus</i> , foraminiferans, and small infaunal lamellibranchs and gastropods.
Sociability	Solitary
Environmental position	Infaunal
Dependency	Independent.
Supports	No information
Is the species harmful?	Yes Sulphuric acid secretion from the skin give it some protection from predators, which include fish.

### 🏠 Biology information

- *Philine quadripartita* lives just beneath the surface of fine sediment. The species 'ploughs' through the sediment as it moves and should not really be considered as burrowing species.
- Although the species has an internal shell, this is small relative to the total body size and there is therefore, some flexibility.
- A scavenging habit was observed under laboratory conditions on freshly killed bivalves.

### 🖼️ Habitat preferences

<b>Physiographic preferences</b>	Data deficient
<b>Biological zone preferences</b>	Lower eulittoral, Sublittoral fringe, Upper infralittoral
<b>Substratum / habitat preferences</b>	Fine clean sand, Muddy sand, Sandy mud
<b>Tidal strength preferences</b>	
<b>Wave exposure preferences</b>	
<b>Salinity preferences</b>	Data deficient
<b>Depth range</b>	0-500m
<b>Other preferences</b>	No text entered
<b>Migration Pattern</b>	No information found

### Habitat Information

No text entered

## Life history

### Adult characteristics

<b>Reproductive type</b>	Permanent (synchronous) hermaphrodite
<b>Reproductive frequency</b>	Annual episodic
<b>Fecundity (number of eggs)</b>	10,000-100,000
<b>Generation time</b>	Insufficient information
<b>Age at maturity</b>	Insufficient information
<b>Season</b>	April - August
<b>Life span</b>	2-5 years

### Larval characteristics

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

## Life history information

Longevity is believed to be 3-4 years. In Britain spawning has been recorded from spring to summer when flask-shaped egg masses are laid. Egg masses may each contain up to 50,000 white ova. Veliger larvae hatch after a few days.

## 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
<b>Substratum Loss</b>	High	High	Moderate	Moderate
<p><i>Philine quadripartita</i> is an infaunal species and so loss of substratum would result in loss of the population. Intolerance is therefore, assessed as High. Recovery would be high due to the fast growth, fast reproductive rates of the species and recolonization from other areas as the species is common where it occurs.</p>				
<b>Smothering</b>	Tolerant	Not relevant	Not sensitive	Moderate
<p><i>Philine quadripartita</i> lives just beneath the surface of the sediment and is capable of moving through it. Therefore, smothering by a layer of 5 cm would have little or no effect on the species and a rank of not sensitive is recorded. Impermeable materials, such as concrete, oil or tar, are likely to have a greater effect.</p>				
<b>Increase in suspended sediment</b>	Tolerant	Not relevant	Not sensitive	Moderate
<p><i>Philine quadripartita</i> is a carnivore and lives buried under the sediment surface, therefore an increase in suspended sediments is unlikely to have an effect on the population or the burrowing organisms that they feed on.</p>				
<b>Decrease in suspended sediment</b>				
<b>Desiccation</b>	Not relevant	Not relevant	Not relevant	Moderate
<p>The subtidal position and soft-bodied nature of this species suggests that it is unlikely to tolerate desiccation. However, the species is sufficiently mobile and capable of burrowing therefore, it is likely to be able to move to an area which is more favourable. Recovery would be high, provided conditions were suitable, due to the fast growth, fast reproductive rates of the species and recolonization from other areas as the species is common where it occurs.</p>				
<b>Increase in emergence regime</b>	Not relevant	Not relevant	Not relevant	Moderate
<p>The subtidal position and soft-bodied nature of this species suggests that it is unlikely to tolerate emersion as it would suffer desiccation. However, the species is sufficiently mobile and capable of burrowing therefore, it is likely to be able to move to an area which is more favourable. Recovery would be high due, provided conditions were suitable, to the fast growth, fast reproductive rates of the species and recolonization from other areas as the species is common where it occurs.</p>				
<b>Decrease in emergence regime</b>				
<b>Increase in water flow rate</b>	High	High	Moderate	Moderate
<p>The species is found predominantly on finer sediments which are associated with sheltered locations. Increased water flow rate is likely to change the nature of sediment and hence the character of the habitat as fine particles are washed away. Increased water flow rate could</p>				

also sweep adults away and so intolerance is recorded as high.

### Decrease in water flow rate

**Increase in temperature**      **Low**      **High**      **Low**      **Low**

Spawning, hatching and time to metamorphosis are all temperature dependent. Spawning occurs during the warmest months of the year (April to August) (Lancaster, 1983). Laboratory results showed hatching occurred after 3.5 days at 23°C and 8 days at 13°C (Thompson, 1976) and time to metamorphosis occurred after 35-40 days at 12-13°C and 30 days at 15°C (Hansen & Ockelmann, 1991). A change in temperature at the benchmark level would be unlikely to have lethal effects however, and an intolerance of low is recorded. Colder temperatures would delay development and recruitment to a population.

### Decrease in temperature

**Increase in turbidity**      **Tolerant**      **Not relevant**      **Not sensitive**      **Moderate**

Neither the species or the burrowing organisms on which it lives are dependant on light availability, so it would not be affected by a change in turbidity.

### Decrease in turbidity

**Increase in wave exposure**      **High**      **High**      **Moderate**      **Moderate**

The species is found predominantly on finer sediments which are associated with wave sheltered locations. Increased wave exposure is likely to erode fine sediments and displace adult *Philine quadripartita*. Intolerance to wave exposure is therefore assessed as High.

### Decrease in wave exposure

**Noise**      **Tolerant**      **Not relevant**      **Not sensitive**      **Low**

The species probably has very limited capacity for noise perception.

**Visual Presence**      **Tolerant**      **Not relevant**      **Not sensitive**      **Low**

The species probably has very limited capacity for visual perception.

**Abrasion & physical disturbance**      **Intermediate**      **High**      **Low**      **Moderate**

The species is soft bodied and has a delicate internal shell and therefore likely to be damaged on impact by a passing scallop dredge. Therefore, a proportion of the population is likely to be lost and an intolerance of intermediate has been recorded. Recovery would be high due to the fast growth, fast reproductive rates of the species and recolonization from other areas, as the species is common.

**Displacement**      **Tolerant**      **Not relevant**      **Not sensitive**      **Moderate**

*Philine quadripartita* is sufficiently mobile to be able to deal with displacement provided a suitable substratum is found.

## Chemical Pressures

**Intolerance**      **Recoverability**      **Sensitivity**      **Confidence**

**Synthetic compound contamination**      **Not relevant**

Insufficient information

**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**

Not relevant

Insufficient information

**Decrease in salinity**

**Changes in oxygenation**

Not relevant

Insufficient information

 **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**

Not relevant

Not relevant

Not relevant

Low

It is extremely unlikely that this species would be subject to extraction as it has no commercial and limited research value. A small number may be removed or damaged by benthic trawls and dredges.

**Extraction of other species**

Tolerant

Not relevant

Not sensitive

Low

*Philine quadripartita* has no known obligate relationships.

**Additional information**

## Importance review

### Policy/legislation

- no data -

### Status

National (GB)  
importance -

Global red list  
(IUCN) category -

### Non-native

Native -

Origin -

Date Arrived -

### Importance information

-none-

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## Datasets

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