Banded chink shell (*Lacuna vincta*)

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

Angus Jackson
2007-06-07

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/1287]. All terms and the MarESA methodology are outlined on the website (https://www.marlin.ac.uk)

This review can be cited as:

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The banded chink snail *Lacuna vincta* on kelp.

Photographer: Zoe Cairns

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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.

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Researched by Angus Jackson

Authority (Montagu, 1803)

Other common names

Refereed by Dr John Grahame

Synonyms *Lacuna carinata* (Montagu, 1803)

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**Summary**

**Description**

A common, small sea snail with a distinctly conical shape. Generally a pale horn-colour becoming purplish towards the apex. Brown bands on whorls quite characteristic but sometimes faint or absent. Up to 12 mm high and 5 mm wide.

**Recorded distribution in Britain and Ireland**

Found on all British and Irish coasts.

**Global distribution**

Circumboreal extending south to Brittany.

**Habitat**

Commonly found near the low tide level or in shallow water on seaweed. Often common on *Fucus serratus* and dense red seaweed turf. Inhabits a wide variety of coastlines but requires the shelter of crevices or dense weed in more exposed areas.

**Depth range**
Identifying features

- A conical shell with five or six smooth whorls and a pointed apex.
- Umbilicus has a prominent groove or chink.
- Foot has two short flat metapodial tentacles characteristic of the genus.
- Typically pale horn-coloured with brown bands on the whorls.

Additional information

The taxonomy of the Gastropoda has been recently revised (see Ponder & Lindberg 1997, and Taylor 1996). Ponder & Lindberg (1997) suggest that Mesogastropoda should be included in a monophyletic clade, the Caenogastropoda.

Listed by

Further information sources

Search on:

G G NBN WoRMS
Biology review

### Taxonomy

- **Phylum**: Mollusca - Snails, slugs, mussels, cockles, clams & squid
- **Class**: Gastropoda - Snails, slugs & sea butterflies
- **Order**: Littorinimorpha
- **Family**: Littorinidae
- **Genus**: Lacuna
- **Authority**: (Montagu, 1803)
- **Recent Synonyms**: Lacuna carinata (Montagu, 1803)

### Biology

- **Typical abundance**: Moderate density
- **Male size range**: 3-12mm
- **Male size at maturity**: 6mm
- **Female size range**: 6mm
- **Female size at maturity**: 6mm
- **Growth form**: Turbinate
- **Growth rate**: Data deficient
- **Body flexibility**:
- **Mobility**:
- **Characteristic feeding method**:
- **Diet/food source**: Typically feeds on detritus, periphytic microalgae, macroalgae epidermis.
- **Sociability**:
- **Environmental position**: Epifaunal
- **Dependency**: Independent.
- **Supports**: None
- **Is the species harmful**: No

### Biology information

*Lacuna* is a northern genus and the British Isles are near the southern edge of the range of this species. *Lacuna vincta* is rare in France but in north-east England densities have been recorded at 300 per square metre. In eastern Canada over 1,500 have been recorded per square metre. Adults die after spawning and very few can be found on the shore after April (in southern Britain). The population is at a maximum in July (in southern Britain). Immediately after metamorphosis the young snail is about 0.55mm high. The brown bands on the shell develop following settlement. There is a very slight but not conclusive sexual dimorphism with the females being slightly larger. As the snail eats, the radula becomes worn down. Teeth are replaced through new growth. The form of the teeth varies depending on what the snail typically feeds on. This is important for determining feeding effectiveness. Sharp teeth are used for rasping and eating macroalgae whereas broader blunter teeth are used for scraping microalgae from the surface of plants. They do not graze algal film on rocks like the similar winkles.
### Habitat preferences

<table>
<thead>
<tr>
<th>Physiographic preferences</th>
<th>Open coast, Sea loch / Sea lough, Ria / Voe, Estuary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological zone preferences</td>
<td>Macroalgae</td>
</tr>
<tr>
<td>Substratum / habitat preferences</td>
<td>Macroalgae</td>
</tr>
<tr>
<td>Tidal strength preferences</td>
<td>Moderately Strong 1 to 3 knots (0.5-1.5 m/sec.), Very Weak (negligible), Weak &lt; 1 knot (&lt;0.5 m/sec.)</td>
</tr>
<tr>
<td>Wave exposure preferences</td>
<td>Extremely sheltered, Moderately exposed, Sheltered, Very sheltered</td>
</tr>
<tr>
<td>Salinity preferences</td>
<td>Full (30-40 psu), Low (&lt;18 psu), Reduced (18-30 psu), Variable (18-40 psu)</td>
</tr>
<tr>
<td>Depth range</td>
<td>0-40</td>
</tr>
<tr>
<td>Other preferences</td>
<td>No text entered</td>
</tr>
<tr>
<td>Migration Pattern</td>
<td>Seasonal (reproduction)</td>
</tr>
</tbody>
</table>

### Habitat Information

The species is found on a wide variety of coasts round the British Isles. It occasionally settles from the plankton as high as the mid tide level but is more typically found much further down the shore. The larvae settle out on a variety of algal species. The preferred species in the British Isles include *Fucus serratus*, *Laminaria* spp. and on red algal turf, particularly *Lomentaria articulata*. Also sometimes found on *Zostera* spp. *Lacuna vincta* has been recorded in salinities as low as 12-13 psu. Larval settlement from the plankton may occur in water velocities of 2.2m/s. There is a possible inshore migration by subtidal individuals in spring for breeding. The species requires considerable shelter from wave action and water flow. It acquires this shelter by selecting suitable habitats. Exposure to adversely strong water currents may result in lifting of the foot and production of long sticky mucus threads allowing passive drifting in the water column to disperse to better conditions.

### Life history

#### Adult characteristics

<table>
<thead>
<tr>
<th>Reproductive type</th>
<th>Gonochoristic (dioecious)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive frequency</td>
<td>Annual protracted</td>
</tr>
<tr>
<td>Fecundity (number of eggs)</td>
<td>10,000-100,000</td>
</tr>
<tr>
<td>Generation time</td>
<td>&lt;1 year</td>
</tr>
<tr>
<td>Age at maturity</td>
<td>Insufficient information</td>
</tr>
<tr>
<td>Season</td>
<td>January - December</td>
</tr>
<tr>
<td>Life span</td>
<td>&lt;1 year</td>
</tr>
</tbody>
</table>

#### Larval characteristics

<table>
<thead>
<tr>
<th>Larval/propague type</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larval/juvenile development</td>
<td>Planktotrophic</td>
</tr>
<tr>
<td>Duration of larval stage</td>
<td>1-6 months</td>
</tr>
<tr>
<td>Larval dispersal potential</td>
<td>Greater than 10 km</td>
</tr>
</tbody>
</table>
Larval settlement period  Peak May/June or September: See additional info.

Life history information

In the field the species survives for a year or less. Survival rates are very low. Only 2-5 percent of the population will reach maturity. An estimate of the number of eggs per female per season is 53,500. Each spawn mass contains 1,000 - 1,500 eggs. The egg mass has a definite ring doughnut shape and the colour of the mass varies with diet. Individual egg size is around 100 microns. Development inside the egg takes 2.5 to 3.5 weeks. Spawning occurs throughout the year but there is a distinct peak. In southern Britain this peak is in winter resulting in main larval settlement in late May / early June. Further north settlement peaks in September. Cold temperatures may delay oviposition. Settlement is probably induced by organic properties of substrata beneficial to the adult rather than the presence of or exudate from other individuals of the species.
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**

<table>
<thead>
<tr>
<th>Substratum Loss</th>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lacuna vincta uses a variety of seaweed species as substrata. The snail population will be lost along with the weed substrata if removed. The annual life cycle, high fecundity and long planktonic larval stage means that successful recruitment from other populations is likely.</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
<td>Low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Smothering</th>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lacuna vincta does not live on the seabed itself. It uses a variety of algal species as substrata. Smothering may affect populations that inhabit substrata close to the seabed such as Zostera spp., Fucus serratus or Rhodophycota. Populations on taller plants like Laminaria spp will be little affected by smothering. The annual life cycle, high fecundity and long planktonic larval stage means that successful recruitment from other populations is likely.</td>
<td>Intermediate</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Increase in suspended sediment</th>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detritus forms one of the main food sources for this species so increased siltation may be beneficial. Increases in sediment deposition may also hinder locomotion. Once the increase in sedimentation has been removed then the ability to move freely should be restored and recovery should be immediate.</td>
<td>Low</td>
<td>Immediate</td>
<td>Not sensitive</td>
<td>Low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Decrease in suspended sediment</th>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lacuna vincta is only found low on the shore. No species of the genus can tolerate long periods of desiccation. The species has some ability to relocate through crawling. Alternatively, dispersal by mucus thread drifting may be used to move away from unfavourable conditions when the tide is in. The annual life cycle, high fecundity and long planktonic larval stage means that successful recruitment from other populations is likely.</td>
<td>Intermediate</td>
<td>High</td>
<td>Low</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Increase in emergence regime</th>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lacuna vincta is only found low on the shore. No species of the genus can tolerate long periods of emergence. The species has some ability to relocate through crawling. Alternatively, dispersal by mucus thread drifting may be used to move away from unfavourable conditions when the tide is in. The annual life cycle, high fecundity and long planktonic larval stage means that successful recruitment from other populations is likely.</td>
<td>Intermediate</td>
<td>High</td>
<td>Low</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Decrease in emergence regime</th>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Increase in water flow rate</th>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased water flow rates may cause the snail to be washed away or restrict the ability to move and feed. In areas of higher water flow rates, this species selects microhabitats that provide considerable shelter - the dense turf formed by some red algae for example, often in</td>
<td>Intermediate</td>
<td>High</td>
<td>Low</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
crevices etc. The annual life cycle, high fecundity and long planktonic larval stage means that successful recruitment from other populations is likely.

**Decrease in water flow rate**

**Increase in temperature**
- Intermediate
- High
- Low
- Moderate

The British Isles are near the southern limit of the *Lacuna vincta* range. Long term increases in temperature may limit the survival of the snail, restricting subsequent distribution. Short term acute temperature increases may cause death. The species distribution extends considerably northwards into colder waters so decreases in water temperature are unlikely to have any effect. Exposure to below zero air temperatures appears to have no effect. The annual life cycle, high fecundity and long planktonic larval stage means that successful recruitment from other populations is likely.

**Decrease in temperature**

**Increase in turbidity**
- Low
- Very high
- Very Low
- Low

This species probably has very limited facility for visual perception and as such is unlikely to be affected by turbidity. The algal substrata of *Lacuna vincta* also forms the main food source. Increased turbidity will reduce the photosynthetic capability of the algae and reduce the available food for the snail. However, the species is frequently found in turbid waters such as in estuaries and around the NE coast of England. As such it is unlikely to be particularly sensitive to changes in turbidity. If reduced food quality food causes a decline in condition or fitness then recovery may take a few weeks or months after restoration of food quality.

**Decrease in turbidity**

**Increase in wave exposure**
- Intermediate
- High
- Low
- Moderate

Increased wave exposure may cause the snail to be physically damaged, washed away or restrict the ability to move and feed. In areas of higher wave exposure this species selects microhabitats that provide considerable shelter - the dense turf formed by some red algae for example, often in crevices etc. The annual life cycle, high fecundity and long planktonic larval stage means that successful recruitment from other populations is likely.

**Decrease in wave exposure**

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

This species probably has very limited facility for vibration detection and as such is unlikely to be sensitive to noise.

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

This species probably has very limited facility for visual perception and as such is unlikely to be sensitive to visual presence.

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

The species is small and the shell is probably quite easily damaged, abrasion is likely to cause death. The annual life cycle, high fecundity and long planktonic larval stage means that successful recruitment from other populations is likely.

**Displacement**
- Tolerant
- Not relevant
- Not sensitive
- Low

The species is mobile and can use mucus thread drifting to move away from unsuitable conditions. Displacement will have no effect.
### Chemical Pressures

<table>
<thead>
<tr>
<th></th>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synthetic compound contamination</td>
<td></td>
<td></td>
<td></td>
<td>Not relevant</td>
</tr>
<tr>
<td>Heavy metal contamination</td>
<td></td>
<td></td>
<td></td>
<td>Not relevant</td>
</tr>
<tr>
<td>Hydrocarbon contamination</td>
<td>Intermediate</td>
<td>High</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Observations following the Amoco Cadiz oil spill at Roscoff showed that gastropod populations were greatly reduced. Populations had recovered a year later. The annual life cycle, high fecundity and long planktonic larval stage means that successful recruitment from other populations is likely.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radionuclide contamination</td>
<td></td>
<td></td>
<td></td>
<td>Not relevant</td>
</tr>
<tr>
<td>Changes in nutrient levels</td>
<td>Tolerant</td>
<td>Not relevant</td>
<td>Not sensitive</td>
<td>Low</td>
</tr>
<tr>
<td>The species occurs on all British and Irish coasts, including lower salinity areas such as estuaries where nutrient loading is likely to be higher than elsewhere. Higher nutrients may benefit the algal substrata and food used by the snail.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase in salinity</td>
<td>Tolerant</td>
<td>Not relevant</td>
<td>Not sensitive</td>
<td>Moderate</td>
</tr>
<tr>
<td>The species is found in a range of salinities and has been recorded in salinities as low as 12-13 psu.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decrease in salinity</td>
<td>Intermediate</td>
<td>High</td>
<td>Low</td>
<td>Very low</td>
</tr>
<tr>
<td>Living in sheltered microhabitats with little water exchange, some individuals may die as a result of lowered oxygen concentrations. The annual life cycle, high fecundity and long planktonic larval stage means that successful recruitment from other populations is likely.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes in oxygenation</td>
<td>Intermediate</td>
<td>High</td>
<td>Low</td>
<td>Very low</td>
</tr>
</tbody>
</table>

### Biological Pressures

<table>
<thead>
<tr>
<th></th>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction of microbial pathogens/parasites</td>
<td></td>
<td></td>
<td></td>
<td>Not relevant</td>
</tr>
<tr>
<td>Introduction of non-native species</td>
<td></td>
<td></td>
<td></td>
<td>Not relevant</td>
</tr>
<tr>
<td>Extraction of this species</td>
<td>Not relevant</td>
<td>Not relevant</td>
<td>Not relevant</td>
<td>Low</td>
</tr>
<tr>
<td>It is highly unlikely that there would be a reason for extraction of this species. Despite its abundance, its small size means that it is too small to eat and not a popular subject for scientific research.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extraction of other species</td>
<td>Intermediate</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Some of the algal species used by the snail as substratum and food may be extracted for commercial use as fertiliser etc (Laminaria spp. for example). The annual life cycle, high...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
fecundity and long planktonic larval stage means that successful recruitment from other populations is likely.

Additional information
Importance review

Policy/legislation

- no data -

Status

National (GB) -

Global red list (IUCN) category -

Non-native

Native -

Origin -

Date Arrived -

Importance information

Very limited use in research. National abundance classification is not available but is probably widespread.
Bibliography


Datasets


