Lagoon cockle (*Cerastoderma glaucum*)

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

Nicola White
2002-07-15

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/1315](https://www.marlin.ac.uk/species/detail/1315). All terms and the MarESA methodology are outlined on the website ([https://www.marlin.ac.uk](https://www.marlin.ac.uk)).

This review can be cited as:

The information (TEXT ONLY) provided by the Marine Life Information Network (MarLIN) is licensed under a Creative Commons Attribution-Non-Commercial-Share Alike 2.0 UK: England & Wales License. Note that images and other media featured on this page are each governed by their own terms and conditions and they may or may not be available for reuse. Permissions beyond the scope of this license are available here. Based on a work at [www.marlin.ac.uk](http://www.marlin.ac.uk).
(page left blank)
Three *Cerastoderma glaucum* with siphons extended.
Photographer: Dennis R. Seaward
Copyright: Dennis R. Seaward

### Summary

**Description**

The cockle, *Cerastoderma glaucum* is a filter feeding bivalve which burrows shallowly in soft sediments. The species exists in two forms, a typical thin-shelled variety found in brackish lagoon habitats and a thicker shelled variety occurring in estuaries. It is widely distributed in north-west Europe.

**Recorded distribution in Britain and Ireland**

Orkney, Firth of Forth, East Anglia, Deben & Orwell estuaries, south coast of England, south Wales, the west coast of Scotland, and south and west coasts of Ireland.

**Global distribution**

Occurs from Norway and the Baltic to the Mediterranean and Black Seas.

**Habitat**

The species is found submerged in saline lagoons or more rarely on the low shore of estuaries. Adults usually burrow shallowly in soft sediments. The failure of the species to colonize the higher shore is believed to be due to an inability to tolerate aerial exposure and its consequent conditions. The species’ distribution is believed to be restricted by the damaging effect of wave
action on the newly settled spat.

Depth range
Shallow

Identifying features

- Rounded globular shell with 22-28 conspicuous radiating ribs.
- Anterior margin of shell crenulate, posterior margin smooth.
- Hinge line with cardinal and lateral teeth.
- Adductor muscle scars roughly the same size.
- Pallial sinus absent.

Additional information
No text entered

Listed by

Further information sources
Search on:

NBN WoRMS
Biology review

### Taxonomy

**Phylum**  | Mollusca  | Snails, slugs, mussels, cockles, clams & squid  
**Order**  | Cardiida  
**Family**  | Cardiidae  
**Genus**  | Cerastoderma  
**Authority**  | (Bruguière, 1789)  
**Recent Synonyms**  | Cardium lamarckii (Bruguière, 1789)

### Biology

**Typical abundance**  | Low density  
**Male size range**  | Up to 5cm  
**Male size at maturity**  
**Female size range**  | Small-medium(3-10cm)  
**Female size at maturity**  
**Growth form**  | Bivalved  
**Growth rate**  | 9.6mm/year  
**Body flexibility**  
**Mobility**  
**Characteristic feeding method**  | Active suspension feeder, No information  
**Diet/food source**  
**Typically feeds on**  
**Sociability**  
**Environmental position**  | Infaunal  
**Dependency**  | No information found.  
**Supports**  | No information  
**Is the species harmful?**  | No  

### Biology information

The species exists in two forms, a typical thin-shelled variety found in brackish lagoon habitats and a thicker shelled variety occurring in estuaries. Growth rate during the first year takes place at a mean of 9.6 mm per year in Essex. Thereafter growth rate decreases to 4.9 mm in the second year and 2.5 mm in the third year (Boyden, 1972).

### Habitat preferences

**Physiographic preferences**  | Estuary, Isolated saline water (Lagoon)  
**Biological zone preferences**  | Lower eulittoral, Sublittoral fringe  
**Substratum / habitat preferences**  | Coarse clean sand, Fine clean sand, Mud, Muddy sand, Sandy mud  
**Tidal strength preferences**  | Weak < 1 knot (<0.5 m/sec.)
Wave exposure preferences  
Sheltered, Very sheltered

Salinity preferences  
Low (<18 psu), Variable (18-40 psu)

Depth range  
Shallow

Other preferences  
No text entered

Migration Pattern  
Non-migratory / resident

Habitat Information

The adult and juvenile populations are distributed differently. Juveniles (0.5-10 mm) attach to filamentous algae by means of byssus threads. When they reach a certain age, they migrate to the adult free-living sediment population (Labourg & Lasserre, 1980).

Life history

Adult characteristics

Reproductive type  
Gonochoristic (dioecious)

Reproductive frequency  
Annual episodic

Fecundity (number of eggs)  
No information

Generation time  
Insufficient information

Age at maturity  
Insufficient information

Season  
May - July

Life span  
2-5 years

Larval characteristics

Larval/propagule type  
-

Larval/juvenile development  
Planktotrophic

Duration of larval stage  
11-30 days

Larval dispersal potential  
No information

Larval settlement period  
Insufficient information

Life history information

Veliger larvae have a pelagic life of from 11 to 30 days. Newly settled young attach temporarily by byssus threads to filamentous algae before becoming buried in the top few centimetres of sediment. Gametogenesis occurs in early spring and spawning takes place from May to July. Individuals live for about five years.
Lagoon cockle (*Cerastoderma glaucum*) - Marine Life Information Network

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>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substratum Loss</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

*Cerastoderma glaucum* lives embedded within the substratum and would be removed upon substratum loss. The species has slow recovery due to its restricted distribution.

<table>
<thead>
<tr>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smothering</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

Bivalves have rather limited ability to burrow upwards so the species would be buried upon smothering. *Cerastoderma glaucum* has slow recovery due to it's restricted distribution.

<table>
<thead>
<tr>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in suspended sediment</td>
<td>Tolerant</td>
<td>Not relevant</td>
<td>Not sensitive</td>
</tr>
</tbody>
</table>

The species is probably tolerant of siltation because it lives in estuaries and lagoons where siltation frequently occurs.

<table>
<thead>
<tr>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease in suspended sediment</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dessication</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

The low shore position of *Cerastoderma glaucum* suggests that it has a low tolerance of desiccation. Boyden (1972) observed that the species can tolerate 33 percent water loss and that death occurs between 33 and 38 percent water loss. Recovery would be low due to the restricted distribution of this species.

<table>
<thead>
<tr>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in emergence regime</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

The low shore position of *Cerastoderma glaucum* suggests that its has an inability to tolerate exposure to air and it's consequent conditions. Unlike *Cerastoderma edule* the shells of *Cerastoderma glaucum* remain closed upon exposure to air. The species may suffer desiccation, increased metabolic cost and exposure to predation by birds. Recovery would be low due to the restricted distribution of this species.

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

<table>
<thead>
<tr>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in water flow rate</td>
<td>Intermediate</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

The species and its preferred habitat could be washed away by increased water flow rate. Recovery would be slow due to the restricted distribution of the species.

<table>
<thead>
<tr>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease in water flow rate</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in temperature</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

*Cerastoderma glaucum* can tolerate a wide range of temperatures. Populations have been observed to survive in lagoons in conditions from almost freezing to more than 30 degree C. However, a high mortality of cockles was observed in South East England after the exceptionally cold winter of 1962/3. Boyden (1972) observed that *Cerastoderma glaucum* has a LD50 of 62.3 hours at 20 degrees C in air.
Decrease in temperature

Increase in turbidity

Low  High  Low  Low

The species is a suspension feeder so may benefit from increased turbidity by a greater food supply. However, if turbidity is caused by silt particles additional feeding costs would be imposed.

Decrease in turbidity

Increase in wave exposure

High  Low  High  Low

It has been suggested that the juveniles of *Cerastoderma glaucum* are very intolerant of wave exposure which controls the species' distribution. The species is restricted to sheltered sites which suggests it is intolerant of increased wave exposure. Increased wave exposure may also remove the species preferred habitat. Recovery would be low due to the species' limited distribution.

Decrease in wave exposure

Noise

Not relevant  Not relevant

Insufficient information

Visual Presence

Not relevant  Not relevant

Insufficient information

Abrasion & physical disturbance

Intermediate  Moderate  Moderate  Very low

The shells of *Cerastoderma glaucum* are rather thin and brittle, so it is probably quite intolerant of abrasion.

Displacement

Tolerant  Very high  Not sensitive  Moderate

The species is not sensitive to displacement. A population of *Cerastoderma glaucum* established itself in Emsworth Harbour by displacement of animals from adjacent lagoon habitats (Barnes, 1973).

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>Insufficient information</td>
<td>Not relevant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy metal contamination</td>
<td>Insufficient information</td>
<td>Not relevant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrocarbon contamination</td>
<td>Insufficient information</td>
<td>Not relevant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radionuclide contamination</td>
<td>Insufficient information</td>
<td>Not relevant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes in nutrient levels</td>
<td>Intermediate  Low  High  Low</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

An increase in nutrients may lead to eutrophication and reduced oxygen levels. Juveniles of the species are very intolerant of reduced oxygen concentration. Recovery would be low due to the restricted distribution of this species.
Increase in salinity

The species can survive in lagoons where salinity varies from 7 psu to 84 psu, so it has a high tolerance of different salinities.

Decrease in salinity

Changes in oxygenation

Juveniles of *Cerastoderma glaucum* are very intolerant of low oxygen concentrations. However adults can survive for 84 hours in oxygen free water (Boyden, 1972).

### Biological Pressures

<table>
<thead>
<tr>
<th>Introduction of microbial pathogens/parasites</th>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not relevant</td>
<td>Not relevant</td>
<td>Not relevant</td>
<td></td>
</tr>
</tbody>
</table>

Insufficient information

<table>
<thead>
<tr>
<th>Introduction of non-native species</th>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not relevant</td>
<td>Not relevant</td>
<td>Not relevant</td>
<td></td>
</tr>
</tbody>
</table>

Insufficient information

<table>
<thead>
<tr>
<th>Extraction of this species</th>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not relevant</td>
<td>Not relevant</td>
<td>Not relevant</td>
<td></td>
</tr>
</tbody>
</table>

Insufficient information

<table>
<thead>
<tr>
<th>Extraction of other species</th>
<th>Intolerance</th>
<th>Recoverability</th>
<th>Sensitivity</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not relevant</td>
<td>Not relevant</td>
<td>Not relevant</td>
<td></td>
</tr>
</tbody>
</table>

Insufficient information

Additional information

None
Importance review

Policy/legislation
Northern Ireland Priority Species ✔

Status
National (GB) importance Not rare/scarce
Global red list (IUCN) category -

Non-native
Native -
Origin - Date Arrived -

Importance information
The species is harvested in Yugoslavia for human consumption, and may be harvested elsewhere.
Bibliography


Datasets


Outer Hebrides Biological Recording, 2018. Invertebrates (except insects), Outer Hebrides. Occurrence dataset:
https://doi.org/10.15468/hpavud accessed via GBIF.org on 2018-10-01.

