

# Lagoon sand shrimp

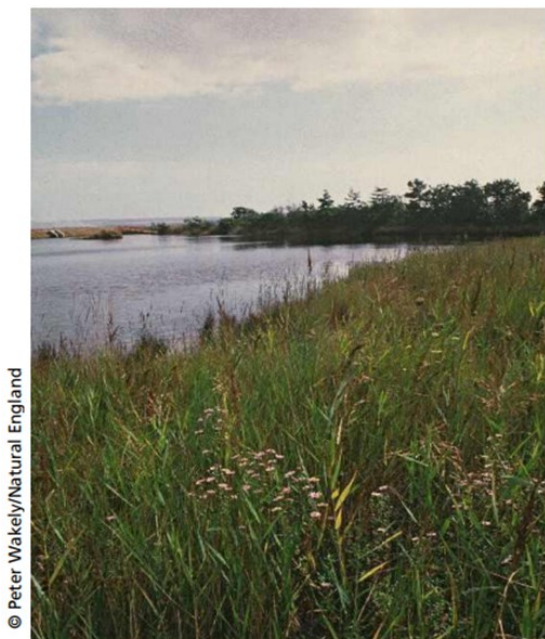
## *Gammarus insensibilis*

### Species Profile

*A rare and threatened crustacean*

The lagoon sand shrimp *Gammarus insensibilis* is a rare and threatened crustacean, which lives in saline lagoons around the coast of the UK. The extreme conditions of a saline lagoon, limit the number of species which can survive. As a result they develop a specialist flora and fauna which is restricted to this habitat type.

Saline lagoons are also uncommon features within a coastal landscape and are listed as priority habitats under the European Habitats Directive. In spite of this protection, they face a number of threats including sea-level rise, coastal development, pollution and nutrient enrichment from agricultural run-off and sewage outlets, invasive non-native plants and changes in water and salinity levels.



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Eight Acre Pond, Lymington is 2.9ha but less than 1m deep across almost its entire surface area. This is an important site for many saline lagoon species including Lagoon Sand Shrimp *Gammarus insensibilis*, Starlet Sea Anemone *Nematostella vectensis* and Foxtail Stonewort *Lamprothamnium papulosum*.

Keyhaven-Lymington lagoon system. Following seawall construction the western section became hypohaline (low salinity due to dilution from freshwater and disconnection from the sea). This led to the loss of Lagoon Sand Shrimp *Gammarus insensibilis* from the lagoon.

The lagoon sand shrimp has a preference for lagoons that have a regular input of sea water, as this maintains high salinity levels, but they can be found in a range of brackish habitats including saline muds and shingle.

The best lagoons are sheltered and shallow, being less than one metre deep and where they have limited disturbance from waves. If levels are artificially raised, freshwater inputs can put the habitat at risk; when nutrients and pollutants flow into the pool. Permanent loss of water can be equally detrimental. Both too much freshwater and no water at all, will change the water chemistry of the lagoon and put the levels of salinity outside of the ecological tolerance of the shrimp. There is however, surprisingly little biological and ecological information about lagoon sand shrimp and the best conditions have, to date, been worked out through observations.

Plant communities in the lagoon are likely to be important, particularly the lagoonal-specialist green spaghetti algae. This plant forms a floating mat which the shrimp use as part of their habitat. Both the lagoon macrophyte and shrimp need a permanent pool of water.

The salinity of the habitat has also been detailed as a key factor, with lagoon sand shrimp favouring 15-40 parts per thousand (‰). However, they have been recorded to tolerate 10-58 ‰, which allows for some freshwater inputs from rainfall or land run-off or evaporation from a pure sea water pool (roughly 35 ‰). Just not too much either way.



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Lagoonal-specialist green Spaghetti Algae. A plant that forms floating mats the shrimp use as part of their habitat.



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Lagoon sand shrimp

An exposed lagoon could also lead to the loss of the species. The lagoon sand shrimp grows to about 19mm in length, and as a small invertebrate it can be easily transported with the moment of water. The turnover of water in the lagoon should be less than 40% to maintain stability, but with some input so that lagoon remains permanently filled with water.

There have been national declines in lagoon sand shrimp populations and other lagoon species over the last 50-100 years, due largely from habitat loss of this area of coast, below the high water spring tide mark but above the mean high water neap tide mark, a combination of climate change and coastal squeeze.

The Keyhaven-Lymington lagoon system experienced some of this loss, after the western section of the seawall was constructed. The lagoon became hypohaline, when the seawall disconnected the lagoon from the sea and the freshwater inputs diluted the waters salt content.

The best hope, to protect the lagoon sand shrimp and other lagoon species, is to increase the amount of suitable saline lagoon habitats. Allowing new lagoons to develop in areas where sea levels rise is permitted without creating coastal squeeze. The salinity of the habitat has also been observed as a key factor, with lagoon sand shrimp favouring a 15-40 parts per thousand (‰). However, they have been recorded to tolerate 10-58 ‰, this allows for some freshwater inputs from rainfall or land run-off or evaporation from a pure sea water pool (roughly 35 ‰).