

PINK SEAFAN EUNICELLA VERRUCOSA INFORMATION CD

For use by public aquaria / information centers and museums to display information about the species in UK waters.

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TAXONOMY

Phyla: Cnidaria

Superclass: Anthozoa

Class: Octocorallia

Order: Gorgonacia

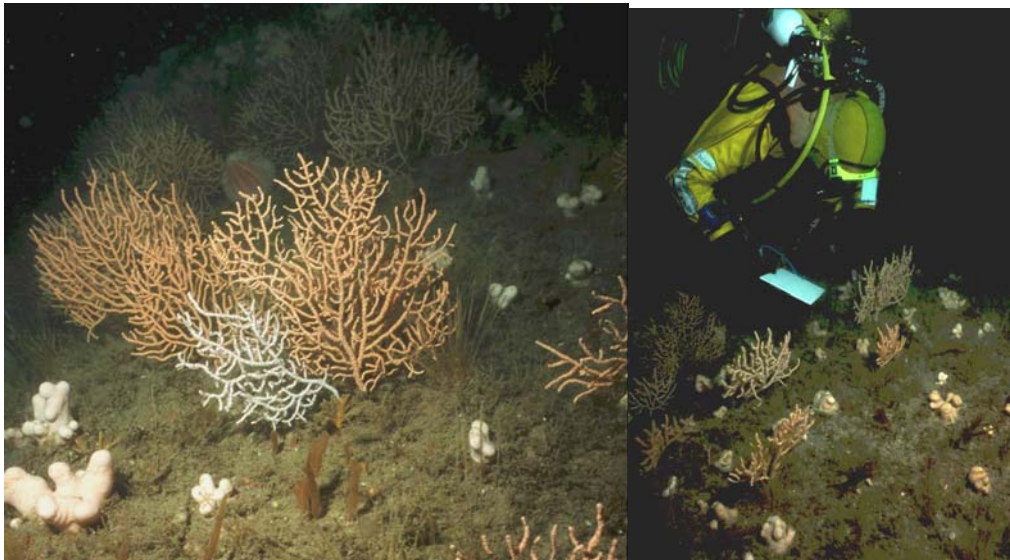
Family: Plexauridae

Genus: *Eunicella*

Species: *verrucosa*

BASIC DESCRIPTION

The "pink" sea fan may be white to deep pink in colour. Colonies branch profusely and the branches are covered in warty protuberances from which the small anemone-like polyps emerge. Colonies may be up to 80 cm high but more often up to 25 cm and are usually oriented in one plane (at right angles to the prevailing water currents).

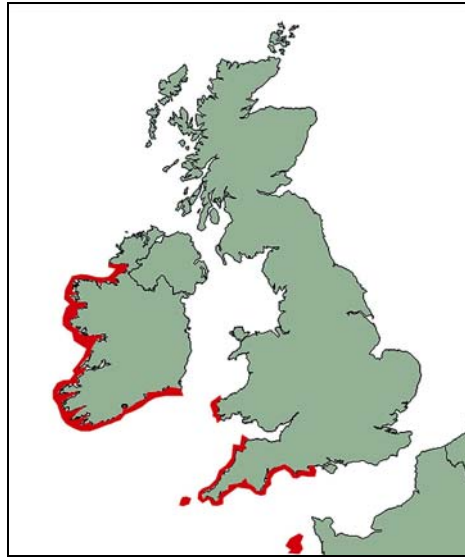


(Photos: Chris Wood)

DISTRIBUTION:

North West Africa, Western Europe (Spain, Portugal and France), and western Mediterranean. Extends into western and southern British Isles and Ireland. Northern

extent may increase as a result of global warming. Unconfirmed sightings have been received by Seasearch in north Wales and Anglesey.



Confirmed sightings and estimated pink sea fan distribution in the UK and Ireland (as of late 2003). (Source: Wood, 2003)

HABITAT

Generally found on bedrock and areas of hard substratum where water flow is considerable. It can also be found on the hard (metal or wood) surfaces of shipwrecks and other human-derived debris. It ranges between 4 and 50 (at least) metres depth.

1. **Physiographic preferences:** Open coast / offshore seabed / Straight or Sound
2. **Biological zone preferences:** Upper and lower circalittoral
3. **Substratum preferences:** Bedrock / Large to very large boulders that wont be upturned during the heaviest wave action.
4. **Tidal strength:** Moderately strong (1-3 knots)
5. **Wave exposure preferences:** Very exposed / exposed / moderately exposed / sheltered.
6. **Salinity preferences:** Full (30-40 ppt).

BASIC BIOLOGY

- Movement:** Colonies are fixed to the substrate with a 'holdfast' (similar to that of kelp plants), and never move during their adult phase.
- Feeding:** Feeds by using genetically identical anenome-like polyps to capture zooplankton (floating food) from the water column. Colonies are orientated at right angles to the current, such that their largest surface area faces the current (this is the same with many other gorgonian species). The pink sea fan is a related to tropical corals, but like tropical gorgonian species, only feeds by capturing food from the water column.
- Respiration:** Pink sea fans respire using oxygen combined with digestion of zooplankton food to produce required energy for metabolic function. They are heterotrophs.
- Growth rate:** Approximately 10mm per year, but this will depend on the age of the colony, differences in levels of food supply and

environmental variables (water temperature/depth/currents) between sites.

REPRODUCTION

- Colonies appear to be separate sexes.
- Eggs and sperm mature in adults between March and July in observed coral colonies.
- Pink sea fan corals produce gametes (sperm and egg) for release in approximately late August or early September, coincident with maximum water temperatures.
- Colonies produce large numbers of egg and sperm, with data collected showing about 3.38 oocytes (eggs) per polyp, and 7.27 spermaries per polyp. As there are approximately 29 polyps per cm on East Tennants reef colonies, each cm of the colony could well produce up to 98 mature oocytes (eggs), and 210 mature spermaries (bundles of sperm).
- It appears that *E. verrucosa* expends a great deal of energy on reproduction to produce such large quantities of egg and sperm relative to other gorgonian species.
- Spawned eggs probably drift away from the female colonies to be fertilized externally in the water column by sperm from male colonies. This cannot be confirmed from studies carried out to date.
- Estimates of dispersal capability of fertilized eggs are put at anything between 10's to 1000's of metres.

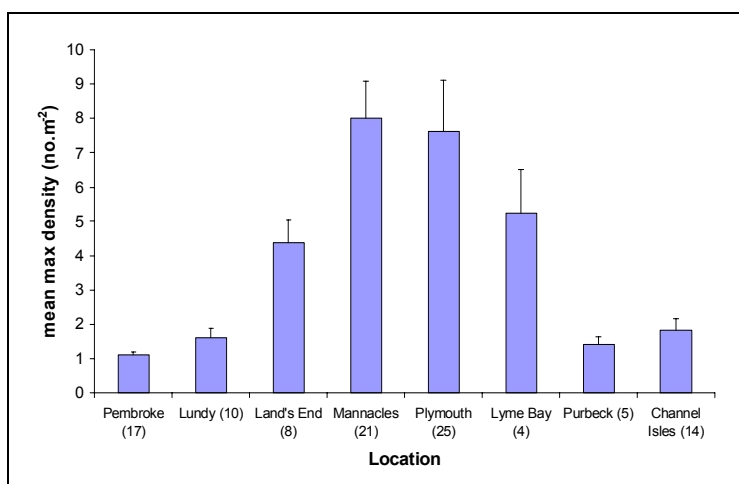
(Results from assessment of Lyme Bay and Skomer Island corals – Munro and Munro / Reef Research (2004) *Determining the reproductive cycle of Eunicella verrucosa*. Report to English Nature)

POPULATION DYNAMICS AROUND THE UK

Greatest densities

of seafans:

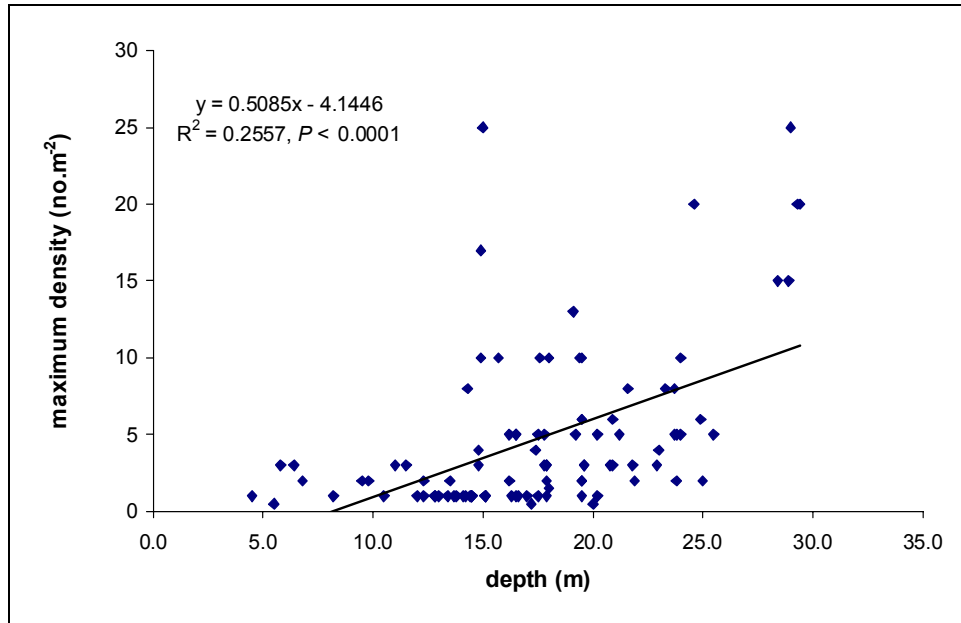
Surveys carried out by the Marine Conservation Society and Seasearch (www.seasearch.org) have shown the most dense areas of sea fan colonies to be located in South Devon and Cornwall.



(data from 104 dives from 8 different locations) (Ref: Solandt and Wood, unpublished data)

Change in seafan

density with depth: The density of sea fan populations increased with depth with the greatest densities seen on deep wrecks in areas of strong water flow.

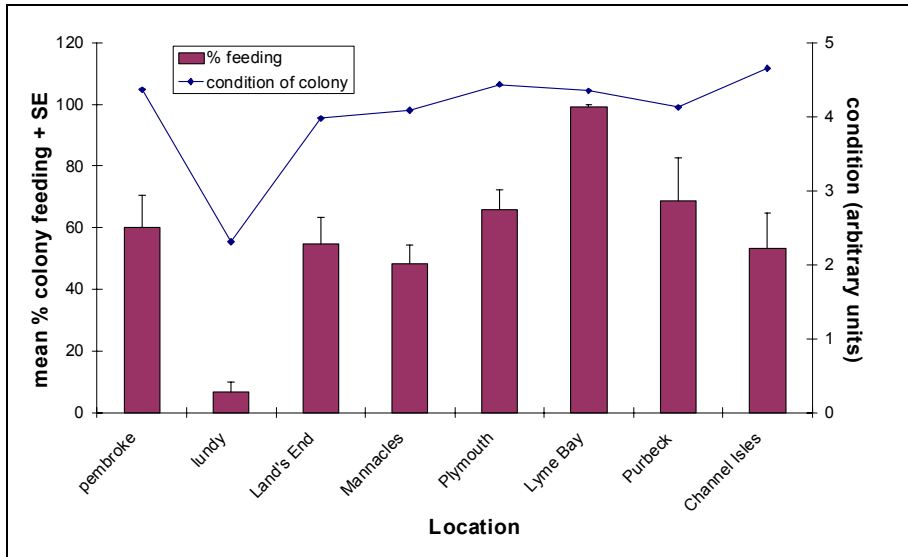


(n = 98 samples taken from 8 different UK locations) (ref: Solandt and Wood, unpublished data)

HEALTH

Relative condition of sea fans:

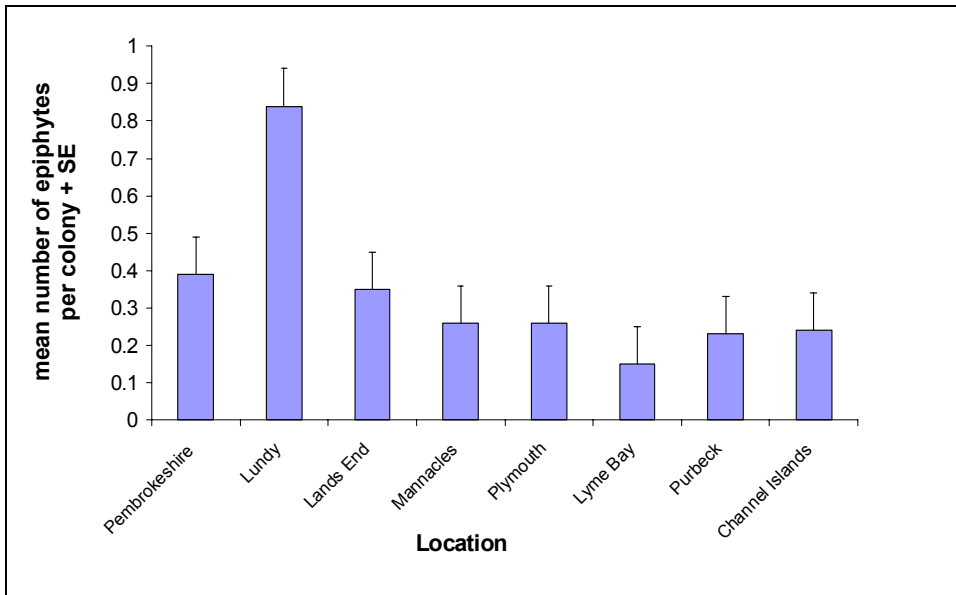
Sea fans appear to be in good condition at most UK locations surveyed over a wide area. Ironically, surveys in 2001 and 2002 indicated that seafans from the Lundy Island Marine Nature Reserve, and those colonies inside the eastern No Take Zone were in poor condition. (Condition of colonies is a combination of ratio of dead to live tissue / epiphyte load and qualitative assessment by volunteer divers as part of the Seasearch project).



(Ref: Solandt and Wood, unpublished data)

Number of epiphytes:

Number of epiphytes per colony was monitored for all UK locations as surveyed by the Seasearch divers. Again, Lundy Island showed significantly higher rates of colonization by algae, bryozoans, nudibranchs and other unidentified marine life.



(Ref: Solandt and Wood, unpublished data)

CURRENT FACTORS CAUSING LOSS OR DECLINE OF THE SPECIES

The collection as souvenirs, including commercial collection, occurred during the late 1960s and may have reduced populations.

The effects that climate change may have on the current UK distribution of this species are not known. Natural environmental factors affecting pink sea-fan populations globally need to be identified in order to differentiate them from local, anthropogenic impacts. Disease may be causing some problems for highly localized populations.

The long-term effects of intensive potting and netting and bottom trawling for fish and shellfish on local populations can be significant. Entanglement in fishing nets and line is a problem in some areas as it is known to damage soft tissue and may ultimately kill colonies. Fin-strike damage by scuba divers on pink sea-fan colonies may also cause damage to the coral.

Sea-fans can die whilst still attached to the seabed after becoming smothered by other organisms called epiphytes (such as by ephemeral seaweeds at shallow depths during early summer).

CONSERVATION

Listed on the UK Wildlife and Countryside Act, 1981. It is illegal to intentionally disturb this species on the seabed, or be in possession of its parts.

It is also subject to the UK Biodiversity Action plan (written in 1994 as UK government aims to fulfill biodiversity protection commitments made at the 1992 convention on biodiversity).

Intended targets of the BAP for *E. verrucosa* are to:

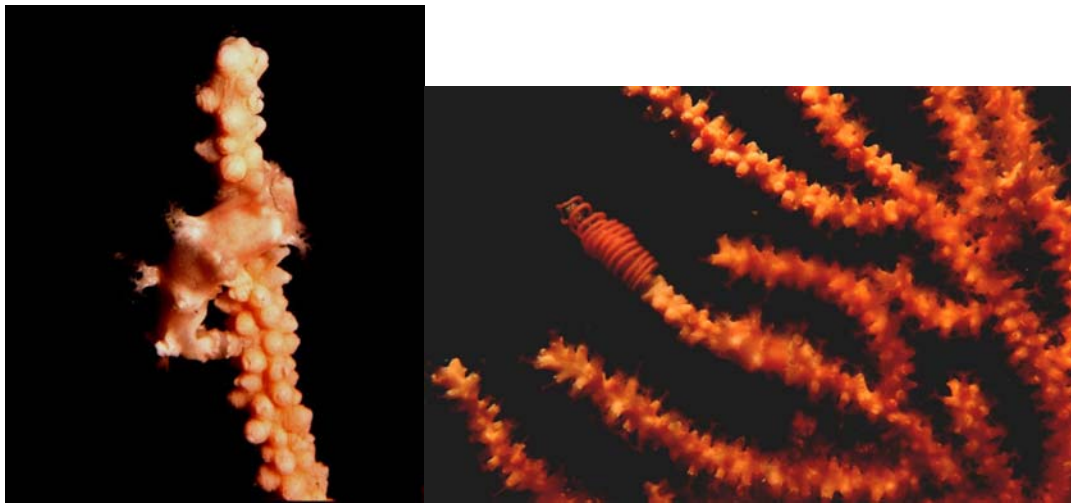
1. Ensure that management of SACs and MNRs take into account location of the pink sea fan.
2. Ensure that where pink sea fans exist in voluntary no take zones, management measures are taken to avoid damage to existing populations.
3. Investigate causes of decline, and take appropriate management measures where human activities are implemented. (*MarLIN, University of Plymouth*).
4. Increase awareness amongst general population/divers and inshore fishermen of the sensitivity and where it is known to exist. (*work being carried out by the Marine Conservation Society, Seasearch, English Nature, CCW and MarLIN*).
5. Continue to monitor known populations of pink sea fans where they are known to exist, and continue to monitor populations inside SACs wherever they occur. (*Seasearch, MCS, Keith Hiscock, English Nature, CCW*)
6. Undertake a programme of spot surveys in three years between 1999 and 2004. The surveys are to be conducted at locations where pink sea fan are known to occur, from 'forest' areas to areas where abundance is sparse. Sites at the present limit of distribution should also be included. This can be linked to long-term monitoring of climate change. The data to be recorded should include density, size structure, colour, 'fouling', percentage 'infestation' by predators (the seaslug *Tritonia nilsodhneri*, and the prosobranch *Simnia patula*). Data is also required on the occurrence and density of the sea-fan anemone *Amphianthus dohrnii* (often found attached to the pink sea-fan). (*work being carried out by the Marine Conservation Society and Seasearch*)
7. Research factors which affect recruitment and survival of the pink sea fan. (*work being carried out by Reef Research, the Marine Biological Association and University of Plymouth*).
8. Provide information on the pink sea-fan and the pink seafan anemone *Amphianthus dohrnii*. Distribute as appropriate to recreational divers and lobster potters through leaflets, posters, displays and talks. (*MCS and Seasearch*).

9. Consider including in public aquaria (with *Amphianthus dohrnii*) to increase general awareness of marine biodiversity. (MCS, National aquaria).
10. Synthesise and disseminate data from existing sea-fan monitoring and research programmes as appropriate. (MCS, National aquaria).

THE PINK SEA FAN AS A HABITAT FOR EPIPHYTES

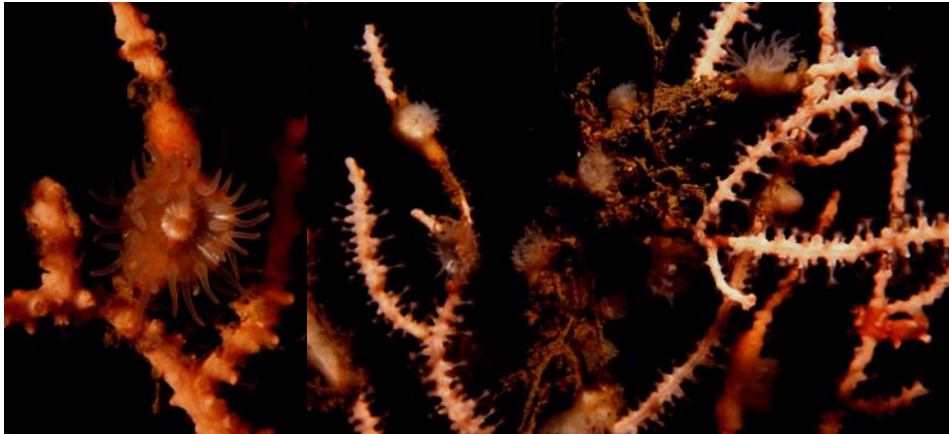
The pink sea fan provides habitat for many other species, one of which is a BAP.

1. The nudibranch *Tritonia nislodhneri* - Is a predator of polyps on the pink sea fan, and lays eggs on the colony. Currently it is thought that the predation on the coral by the nudibranch doesn't harm the colony, and it is clear that the colony can regenerate polyps after predation.



Tritonia nislodhneri (left) and an egg mass laid on the tip of a pink sea fan colony (right).
(Both images by Chris Wood).

2. The pink seafan anenome - The other obligate species (a species that cannot live on any other animal/habitat) is the sea fan *Amphianthus dohrnii* which lives on the colony, feeding on passing plankton, in much the same way as the pink sea fan. This species is very rare and has its own associated Biodiversity Action Plan (www.ukbap.org.uk). Recent studies by Seasearch indicate that the species damages the coral host, but how it does this is currently unknown.



Amphiانthus dohrnii as seen on a pink sea fan colony in close up (at left), and a heavily infested colony on the right. (Both images by Chris Wood).

3. Algae – Many different species of ephemeral, turf-like and more developed species of algae are known to colonise the surface of pink seafans. During the 2001-2002 pink seafan survey by Seasearch, algae was the principal colonizer of pink seafan colonies.



Amphiانthus dohrnii and various species of ephemeral and long-lived algae attached to the fronds of a pink seafan colony. (photo: Chris Wood)

4. Bryozoans – otherwise known as seamats (Phylum Bryozoa). These ancient colonial organisms can take an encrusting growth form where they can grow attached to other organisms (algae and soft corals), and on rock surfaces. They are filter-feeding animals closely related to sponges.
5. Sponges – Sponges (Phylum Porifera) are rare colonists on pink seafans, and don't often take up a great deal of the surface area of the pink seafan colony surface. These are primitive (first multicellular) filter feeding organisms.
6. Barnacles – barnacles (Class - Cirrepedes) are rarely found attached to pink seafan, although the species *Solidobalanus fallax* has been seen more commonly on pink seafans in recent years. Barnacles are filter feeding organisms.

7. Sea squirts – sometimes sea squirts (Class - Ascidians) are seen attached to the branches of pink seafans. These either take colonial or solitary forms.
8. Featherstars – featherstars (class - Crinoids) are filter feeders often found in areas of great current, and it is logical that they would attach to any organism that are found in areas of strong current.
9. Hydroids - (Order - Hydrozoa) plantlike, often colonial primitive animals related to jellyfish (as they have stinging cells).
10. The beautiful prosobranch gastropod *Simnia patula* is a predator found on the pink seafan, feeding on polyps of the animal. *Simnia* also feeds on dead mens fingers *Alcyonium digitatum*, another common soft coral found in abundance on shallow UK rocky reefs.



Simnia patula feeding on an adult pink seafan colony (photo by Keith Hiscock of MarLIN, www.marlin.ac.uk)

11. Shark egg cases – sometimes hard-shelled shark egg cases can be laid within the fronds of pink seafan colonies, which can lead to problems damaging individual colonies, however the occurrence of these colonists is so rare that it never threatens any localized population of seafans.



Mermaids purse (shark) egg case laid within the fronds of a pink seafan. Egg cases hold the young sharks for 6-9 months after which they hatch fully developed young sharks. (photo by Chris Wood).