

Pink Sea Fan Survey Report Cornwall 2004-2005



Simon Burt

INTRODUCTION

Surveys were undertaken with the specific aim of recording the numbers and condition of pink sea fans, *Eunicella verrucosa*, at sites where the species had previously been identified. The pink sea fan is a Biodiversity Action Plan species and is one of the very few marine species which is protected under the Wildlife and Countryside Act 1981. Surveyors used the MCS/ Seasearch recording methodology, which was developed in 2001 and has been used to record pink sea fans at a number of sites throughout the UK. Pink sea fans were also recorded at new sites using wreck recording forms. This report will summarise the findings of the pink sea fan surveys carried out between 2004 and 2005



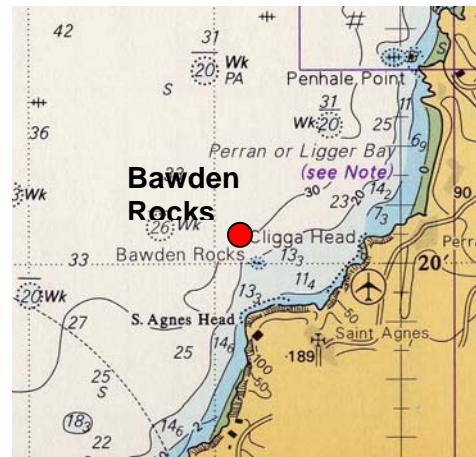
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Surveyor photographing pink sea fan.

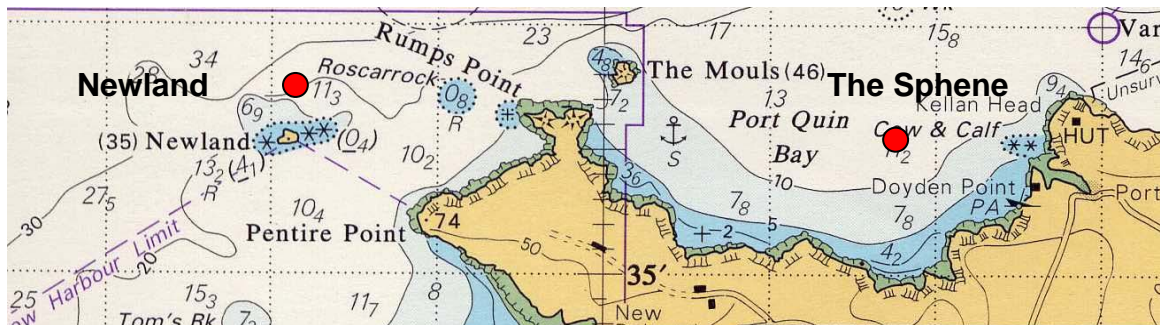
RESULTS

North Cornwall

Surveys were carried out at three sites on the North coast of Cornwall; Newland Island, the Sphegne Wreck and Bawden Rocks. Fans were 'common' at all sites and were in very good condition. Sea fans at Newland and Bawden Rocks were on average the largest fans, in terms of surface area, height and width, recorded throughout Cornwall during 2005. These sites are both exposed and experience good flow of water and strong currents, however the largest fans tended to be found in more sheltered microhabitats. A total of 116 pink sea fans were surveyed on the North coast.



Admiralty charts * showing the locations of Bawden Rocks, Newland and the Sphegne wreck.

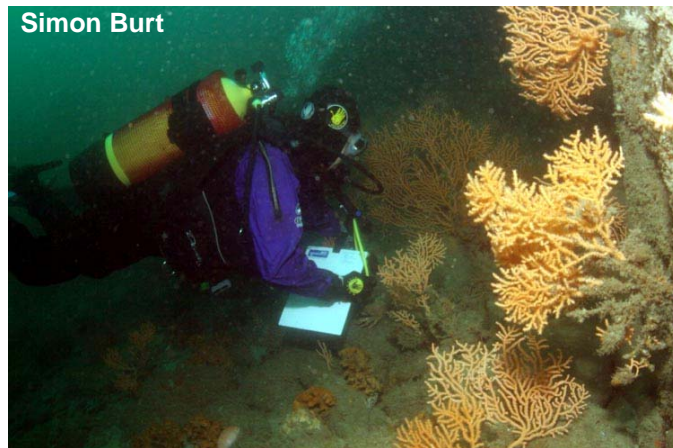


* All charts reproduced from Admiralty chart (2005) by permission of the controller of Her Majesty's Stationary Office and the UK Hydrographic Office (www.ukho.gov.uk). Not to be used for navigation.

Newland Rock

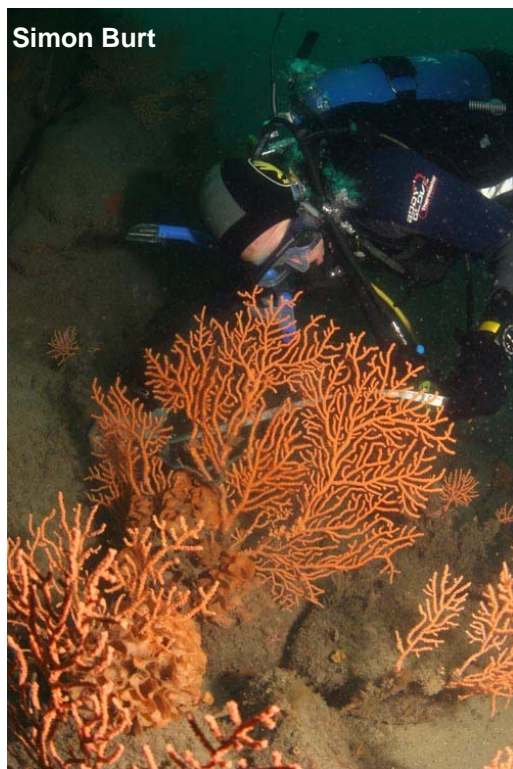
50°35.340N; 4°56.500W

Newland rock is situated about 1 mile off Pentire Point in Hayle Bay, North Cornwall. The island is very exposed, subject to strong tidal conditions and sometimes large surge. The site consists of a series of rocky outcrops, pinnacles, boulders and gullies with some steep, vertical walls. A total of 31 pink sea fan colonies were measured and photographed at this site by two survey teams on the 1st August 2005.



Diver surveying pink sea fans.

Each team consisted of one recorder, who would undertake the measurements of the fans and a photographer. Pink sea fans were measured between 16.5 and 22.5m Chart Datum. The fans were concentrated on the lower sections of sloping walls. In general the sea fans observed here were in good condition (average = 3.9) and some were very large. Their density was rated overall as 'common' although in patches they were very densely populated and resembled a forest. No fishing debris was encountered on the colonies inspected. Average colony dimension (height x width) was 26.3cm x 27.7cm, surface area (SA) = 728.5cm². The largest colony measured was 39cm x 51 cm, (SA= 2184 cm²). 39% of colonies measured (12) did not have any fouling organisms. Fouling organisms were recorded on 19 colonies and included *Alcyonium digitatum* (deadman's fingers), *Pentapora fascialis* (Ross coral), *Corynactis viridis* (jewel anemones), bryzoans and algae. The pink sea fan nudibranch *Tritonia nilshodhneri* was recorded on 5 colonies and egg circles were recorded on only 3. No *Amphianthus dohrnii* (pink sea fan anemones) were observed.



Surveyor measuring pink sea fan dimensions.

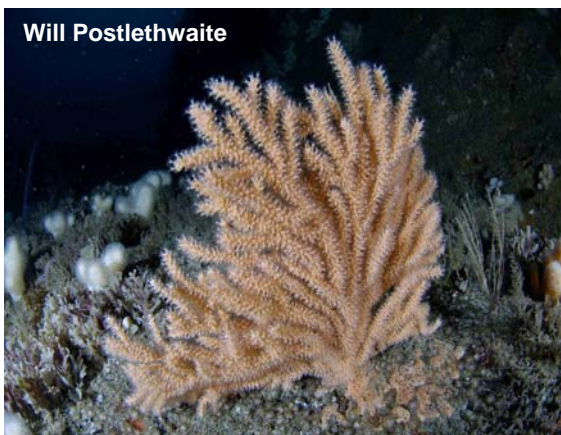
The Sphene Wreck Port Quin

The Sphene was an 815 ton steam ship which sank in 1946. This flattish wreck sits on a sandy seabed at about 20m Chart Datum and acts as an oasis in an otherwise barren seascape attracting marine life from all around. Pink sea fans are 'common' on the Sphene occurring on the vertical sides of the wreck and on the surface. Colonies on the surface are significantly smaller than those in sheltered nooks and crannies in the same area. Some of the larger fans are well tucked away and quite difficult to record. The survey was conducted on the 7th July 2005 however due to the strong surge and poor visibility only three colonies were recorded before surveying was abandoned. These three colonies were recorded on the surface of the wreck. The average dimensions were 13cm x 2.4 cm (height x width) and these were all in excellent condition (average = 4.7). Only one nudibranch was recorded on one colony and filamentous algae were the only fouling organisms recorded.

Bawden Rocks, off St. Agnes
50°20.12N; 5°13.35W

Bawden rock is an exposed rock situated off Trevaunance Cove, St. Agnes. Beneath the waves the rocky reef descends to approximately 28m depth. Surveys were carried out on the reef extending from the west of the rock and 82 pink sea fans were measured. Pink sea fans were 'common' in this location and tended to be clustered together in small groups situated between 14.5 and 25.5m depth Chart Datum. Pink sea fans were generally quite large averaging 24.9 x 27.2cm (SA=705.12 cm²). The largest sea fan recorded was 30 x 55cm (SA= 1650cm²). The condition of the sea fans overall was good (average = 4.3) and 67.1% of colonies were free from fouling. Fouling organisms were extremely varied and included, *Mytilus edulis*, *Halichondria panacea* (breadcrumb sponge), bryozoans, barnacles, tunicates, hydroids, anemones, topshells, kelp, red and brown algae, mermaid's purses and squid eggs. *T. nilshodhneri* nudibranchs were abundant and recorded on 27 colonies, with a maximum of 6 found per colony. Height was not measured for 9 colonies and 17 colonies were not given a condition rating. Three sea fans had fishing line or monofilament net wrapped around them and two had plastic bags entangled around them. Photographs were taken of all sea fans surveyed and were catalogued.

Images from the Bawden Rocks pink sea fan photographic catalogue



Feeding pink sea fan with polyps clearly visible.



Large pink sea fan in very good condition.



Pink sea fans close together on a vertical wall.



Small pink sea fan with a lot of fouling organisms including deadman's fingers and sponge.

Vase Rock

50°03.00N; 5°02.30W

The Vase is a very pretty, colourful reef dive. It is a rock that is wedding cake shaped with three tiers at varying depths and current here can be exceptionally strong. The rocks are covered in kelp, sea fans, sponges and jewel anemones of all colours. Five pink sea fan colonies were surveyed at Vase Rock during 2004 between 15.5 and 20.5m depth Chart Datum. They were rated as 'occasional' at this site and were found on sloping rock substrate. Average colony dimensions were small; 13.8 x 11.6cm (or SA= 172.2 cm²). The largest colony measured was 21 x 18cm (SA= 378 cm²). Condition of the colonies was excellent (average = 4.6) and 80% (4) were free from fouling. No nudibranchs, eggs or *Amphianthus dohrnii* (sea fan anemone) were recorded.

The Mohegan

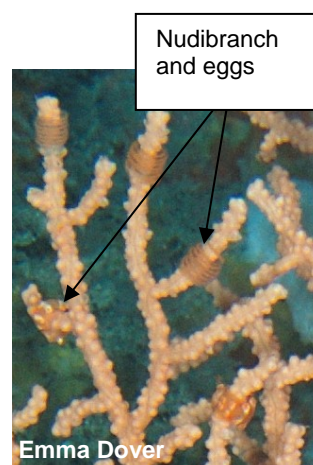
50°02.72N; 5°02.60W

The broken remains of the Victorian steamship *Mohegan* is probably the best-known and most intensively dived wreck on the treacherous Manacles Reef off the Lizard, Cornwall. The wreck lies in a north to south direction and the seabed shallows towards the west. The currents can be strong here. 28 pink sea fan colonies were recorded here between 17.4 and 20m depth Chart Datum. Their density was rated overall as occasional and fans were located close together on flat plates of the wreck. In general the sea fans observed were in excellent condition (average = 4.1) and some were very large and well branched. The average colony dimension (height x width) was 18.6 x 14cm (SA= 266.2 cm²). Die back was noticed at the base of two fans. No fishing debris was encountered on the colonies inspected, however some fans were observed bent over on their sides which may have been a result of diver damage, considering the popularity of this dive site. The largest colony measured was 23cm x 32 cm (or SA = 736 cm²). 75% of colonies measured (21) were free from fouling. Fouling organisms were recorded on 7 colonies and included algae and hydroids. The pink sea fan nudibranch *Tritonia nilshodhneri* was recorded on 5 colonies and their eggs were recorded on 4, one of which did not have any adults on it. No pink sea fan anemones were observed.

Pencra Reef

50°03.420N; 5°03.129 W

Pencra reef lies off the shore between Porthkerris and Porthoustock with a selection of wildlife, anchors and bits and pieces. The shallow reef here goes a good half a mile out to sea, but there is also a wall from 20 or 25 metres to past 30 metres on the east and south-east sides of the reef. 32 pink sea fans were recorded here between 14 and 22m Chart datum over a period of two days (28th and 29th May 2005). The general abundance of pink sea fans at this site was common although they did form forests in some localised areas. The overall condition of the sea fans was mediocre (average = 3.2). On average colonies were slightly larger than those recorded on the Mohegan with average dimensions (height x width) of 19.3 x 18.9cm (or surface area 375.8 cm²). The largest colony measured was 27 x 30cm (SA = 810 cm²). Only 33% of fans measured (10) were free from fouling organisms and die back was noted on one colony. No fishing debris was encountered however a plastic bag was found entangled in the branches of one colony. A large diversity of fouling organisms were recorded including echinoderms (*Asterias rubens* and featherstars), crustaceans (barnacles), tunicates, sponges, cnidaria (*A. digitatum*, *Metridium senile* and hydroids), bryozoans including *Pentapora foliacea* (ross coral) and various algae. *T. nilshodhneri* was recorded on 5 colonies and their eggs were recorded on 6, two of which had no adults on it. One pink sea fan anemone was recorded on a pink sea fan, which also had a mass of nudibranch eggs, a featherstar, barnacles and *A. digitatum* growing on it.



Pink sea fan with *T. nilshodhneri* nudibranch and eggs.

Unnamed Pinnacle

50°02.670N; 05°03.365 W

Twenty-six pink sea fans were recorded here during two surveys on the 28th May 2005 and the 14th August 2005. Pink sea fans were recorded between 8 and 21.3m depth Chart Datum and their density was noted as common. They were generally found in clusters of 8-10 colonies and were in good condition (average = 4.3). Mean colony dimensions were 19 x 15cm, height x width (SA = 332.5 cm²). The largest colony measured was 30 x 25 cm (SA = 750 cm²). Little fouling was observed; 77% of colonies (20) were free from fouling. Those colonies on which fouling was observed, were only lightly fouled with general crud and hydroids. No fishing debris was recorded on the sea fans. *T. nilshodhneri* was recorded on 4 colonies and their eggs were recorded on 4, one of which had no adults on it. No pink sea fan anemones were observed.

The Volnay

50°04.380N; 05°04.000 W



Pink sea fan with fouled fishing line entangled around it.

The Volnay, which went down on the 14th December 1914, is an old steamship. There is little current running through this area and the substrate is very silty around the wreck. Twenty-four pink sea fans were recorded on the Volnay wreck on the 28th May 2005 between 14.9 and 16.9m Chart Datum. Pink sea fans were rated as 'common' at this site and predominantly occurred in large groups on flat surfaces of the wreck. The sea fans were quite small here with average colony height x width of 16 x 11.7cm (SA = 207.8 cm²). The largest fan recorded was 25 x 20 cm (SA= 500 cm²). The fans were in moderate condition

(average = 3.5) with 58% of fans free from fouling organisms. Brown and red algae were the only fouling organisms recorded. *T. nilsodhneri* was recorded on 5 colonies and their eggs were recorded on 6, two of which had no adults on it. No pink sea fan anemones were observed.

Woodford's Wall

50°02.870N; 5°02.410 W

This site consists of a sheer wall dropping from about 6 to 45m. Twelve sea fans were surveyed on sloping rocky seabed with some flat ledges between 13.6 and 18.6m Chart Datum on the 29th May 2005. The abundance of pink sea fans at this site was rated as 'common' and they were in relatively good condition (average = 4.1). Average colony height x width was 18.5 x 16.6cm (SA= 310.3 cm²). The largest colony recorded was 18 x 30cm (540 cm²). 66% of colonies (8) had no fouling. Fouling organisms recorded were *A. digitatum*, tunicates, featherstars and brown algae. Pink sea fan nudibranchs were recorded on 4 colonies and eggs on 3. No pink sea fan anemones were seen.

James Egan Layne

50°19.609N; 04°14.720W

The 130m long James Egan Layne, which sank in 1945 lies on a sandy gravelly seabed in Whitsand Bay. Fifty-six sea fans were recorded off the starboard side bow of the wreck and on the stern between 14m and 20m Chart Datum over two surveys on the 12th June 2005 and the 6th September 2005. The abundance of pink sea fans at this site was rated as 'common'. Average pink sea fan height x width was 15.8 x 10.1 cm (SA=177.2 cm²). The largest sea fans measured were 25 x 18cm and 30 x 15cm (both SA= 450cm²). Average condition of the pink sea fans recorded was 3.9 and one colony was recorded as 'dead'. Six colonies were very spindly or showed signs of die back. One colony was entangled in fishing line however, 77% of colonies were free from fouling. Fouling organisms included *Scypha compressa* (purse sponge), brown algae and 'turf'. *T. nilsodhneri* nudibranchs were recorded on 8 colonies and their eggs on 8 colonies, two of which had no adults on them.

Hatt Rock

50°10.523N; 04°29.088W

Hatt rock is an offshore, exposed site consisting of an isolated flat-topped reef with a sheer cliff face from 25m to 40m which then slopes off to 50m. Most sea fans were below 35m and were not measured. Occasional sea fans were seen on the west side, one on vertical wall at 33m and a dense group were found in a small sheltered area on a 30m ledge on southeast side. Pink sea fans were rated as 'common' at this site. Ten sea fans were surveyed here on the 12th June 2006. Average pink sea fan height x width was 19.1 x 19.8 cm (SA = 394.5 cm²). The largest sea fans measured were 23 x 25cm (SA = 575cm²). Average condition of the pink sea fans recorded was very good (average = 4.7) and 80% of colonies were free from fouling. Die back was recorded at the base of one colony. Fouling organisms included *Simnia patula* and 'turf'. One *T. nilsodhneri* nudibranch was recorded on one colony but no eggs were recorded. One *A. dohrnii* (sea fan anemone) was recorded on the largest pink sea fan surveyed and one 'white' pink sea fan was also recorded; it was the smallest fan recorded at this site.



Will Postlethwaite

Diver descending down a wall to survey pink sea fans.

Hands Deep

50°12.630N; 04°20.360W

Hand Deeps lying a few miles west of Eddystone is a plateau that comes up to 15m. One side has a craggy cliff face that drops to 27m. At the bottom of the cliff there are giant boulders and then a long ramble down to the seabed. Twenty-seven pink sea fans were measured on the 11th June 2005 on the northwest side of the reef. Pink sea fans were found between 26 and 30m and had a variety of orientations and were rated as 'common'. A number of fans were 4 way X plan fans, which indicates that there may be a variety of currents at this site. Average length x height was 16.2 cm x 16.2 cm (SA = 309.9 cm²). The largest sea fan recorded was 27 x 44cm (SA = 1188cm²). Pink sea fans were in very good condition (average= 4.5) and 89% of colonies were free from fouling. Fouling species included *P. foliacea*, *A. digitatum*, *Marthasterias glacialis* (starfish), hydroids and algae. Fishing line was recorded on one pink sea fan. No nudibranchs, eggs of anemones were recorded on these colonies.

Wreck Recording Forms

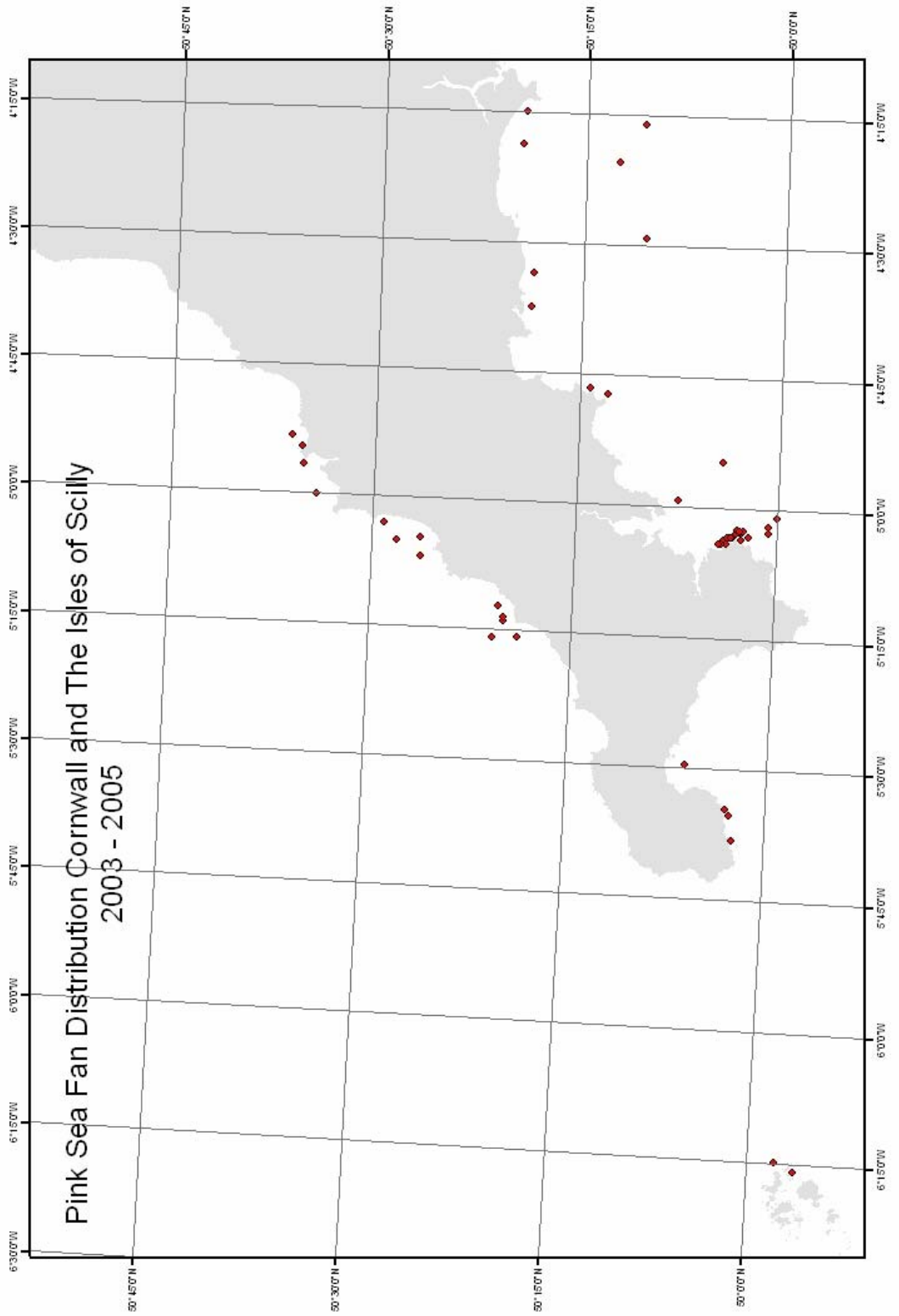
Pink sea fans were also recorded on wrecks and reefs using wreck recording forms, which are specifically designed for wreck divers who may not have time to carry out individual measurements but their observations can provide useful information on the pink sea fan depth and habitat ranges. One wreck diver reported pink sea fans from depths of 80m, which is the deepest record of pink sea fans to date (Table 1). There were also a few reports of pink sea fans in Mounts Bay however, they were rarely encountered at these sites. A pink sea fan forest was located at Rosehill in Whitsand Bay.

Table 1. Results of the pink sea fan wreck survey forms carried out on the north and south coasts of Cornwall.

Wreck	Date	Location	Habitat	Depth range	Density	No. fans
Unnamed Wreck	08/12/04	10 Km S Falmouth	Sloping/vertical wreck	70-80 m	Occasional	25
Liddy Wreck	08/10/04	10 Km S Falmouth	Sloping/vertical wreck	70-75 m	Occasional	15
HMS Eksdale	08/09/04	8 Km SE Falmouth	Flattish wreck	65-70m	Occasional	8
Alice Marie	06/11/05	Mounts Bay	Flattish wreck	24m	Rare	1
Bucks Reef	06/11/05	Mounts Bay	Rocky Reef	22m	Rare	1
Low Lee Ledges		Mounts Bay	Rocky Reef	17m	Rare	1
Rosehill	18/09/05	Whitsand Bay	Flattish wreck	27-29m	Forest	many
The Syracuse	04/05/03	Off Newquay	Wreck	Not known	Not known	Not known

Pink Sea Fan Distribution

The location of all pink sea fan records for Cornwall and The Isles of Scilly taken from all Seasearch database and including observer forms, surveyor forms, pink sea fan survey forms and pink sea fan wreck recording forms from 2003-2005, are shown on the map overleaf. There is an obvious clustering around the Manacles. There is a gap in records from the west of Mounts Bay around to the Manacles, and north of Lands End to St. Agnes. Along the south coast there is a lack of pink sea fan records between Zone Point and Dodman point. From this distribution map it appears that pink sea fans tend to occur in exposed locations and are not found within sheltered and enclosed bays. Wrecks also provide excellent substrates for pink sea fan colonisation. Their distribution is presumably limited by the substrate type, as they require hard substrates for colonization. There are probably many more sites where pink sea fans occur and these could be identified through general Seasearch survey dives over time.



SUMMARY

A total of 335 pink sea fans were surveyed over 13 sites on both the north and south coasts of Cornwall. Pink sea fans were 'common' at most sites, but were only 'occasional' at Vase Rock and the Mohegan wreck. In general the fans were in good condition at all sites, having a condition rating >3. The fans at the Sphene wreck and Hatt Rock were in the best condition however, the sample size at both sites was small which may have confounded results (Figure 1). Other locations where sea fans were in good condition were Bawden rocks, Vase Rock, Unnamed pinnacle and Hands Deep. The fans at Pencra reef and the Volnay, which both lie north of the Manacles, were in poorest condition (3.2 and 3.5). However, the largest colony measured at the Manacles was recorded at Pencra and measured 27x 30cm (SA = 810 cm²).

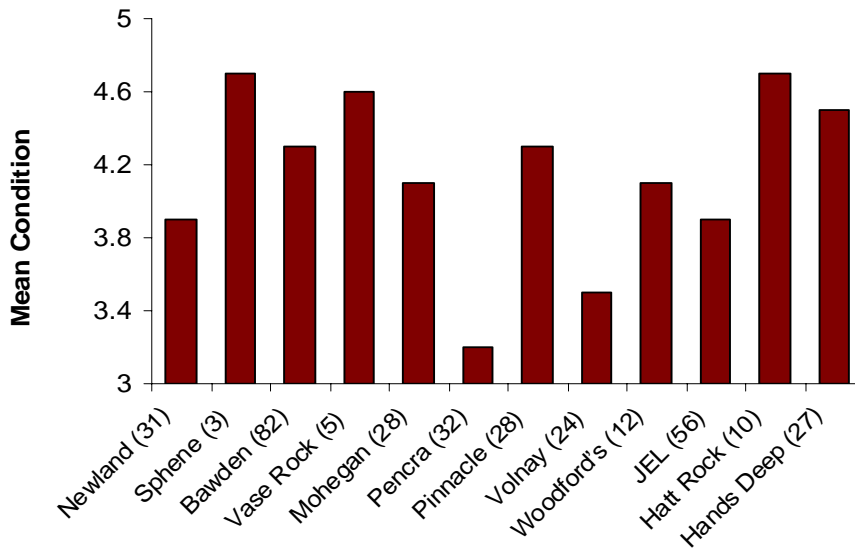


Figure 1. Mean condition of pink sea fans surveyed at 12 sites (no. fans surveyed in brackets) Cornwall.

Over all sites, pink sea fans were largest at Newland and Bawden Rock (Figure 2) on the north coast of Cornwall. The largest pink sea fan was recorded at Newland and measured 39 x 51cm (SA = 2184 cm²). The smallest sea fans were recorded at the Sphene, however only 3 fans were surveyed and these were on an exposed location on the wreck, where the fans were generally smaller than elsewhere. Pink sea fans were also smaller at Vase rock, James Egan Lane and the Volnay.

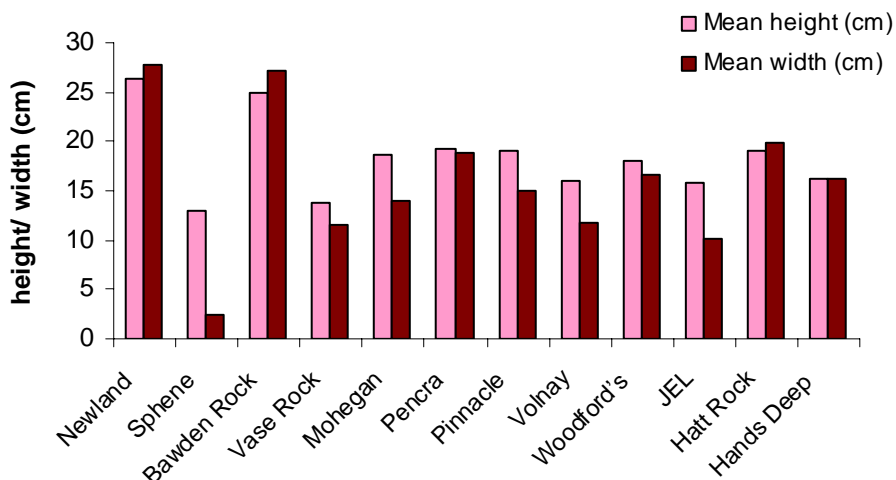


Figure 2. Mean height and width of pink sea fans surveyed at 12 sites in Cornwall.

The least fouled colonies were located at Hands Deep, Hatt Rock, Vase Rock, Unnamed pinnacle and the James Egan Lane. Colonies at Pencra and Newland had the most fouling (Table 2). Although colonies at Newland were more heavily fouled they were the largest colonies and appeared to be in good condition over all. Fouling organisms were wide ranging but the most common included sponges, tunicates, hydroids, anemones, *Alcyonium digitatum*, brown and red algae and bryozoans including *Pentapora fascialis*. Mermaid's purses and squid eggs were also found on colonies at Bawden Rocks.

Table 2. Summary results of the pink sea fan surveys carried out on the north and south coasts of Cornwall.

Site	No. recorded	Abundance	Condition	Mean height (cm)	Mean width (cm)	Mean SA (cm ²)	Mean % colonies not fouled
Newland	31	Common	3.9	26.3	27.7	728.5	39
Sphene	3	Common	4.7	13	2.4	30.9	67
Bawden Rock	82	Common	4.3	24.9	27.2	705.1	67
Vase Rock	5	Occasional	4.6	13.8	11.6	172.2	80
The Mohegan	28	Occasional	4.1	18.6	14	266.2	75
Pencra reef	32	Common	3.2	19.3	18.9	375.8	33
Unnamed pinnacle	28	Common	4.3	19	15	332.5	77
Volnay	24	Common	3.5	16	11.7	207.8	58
Woodford's Wall	12	Common	4.1	18.5	16.6	540	66
James Egan Lane	56	Common	3.9	15.8	10.1	177.2	77
Hatt Rock	10	Common	4.7	19.1	19.8	394.5	80
Hands Deep	27	Common	4.5	16.2	16.2	309.9	89

The pink sea fan nudibranch *T. nilsodhneri* was recorded on pink sea fans at most sites except at Vase Rock, the Sphene and Hands Deep (Figure 3). As these are so small and difficult to see it is possible that they do exist at these sites but were not seen by the surveyor on this occasion. Further surveys will establish whether they do occur at these sites. 33% of fans at Bawden Rocks and at Woodford's wall had nudibranchs on them. The presence of nudibranchs does not appear to have a negative effect on the overall condition of pink sea fans at any one site. *Amphianthus dohrnii* (sea fan anemones) were only recorded at Pencra reef and at Hatt rock.

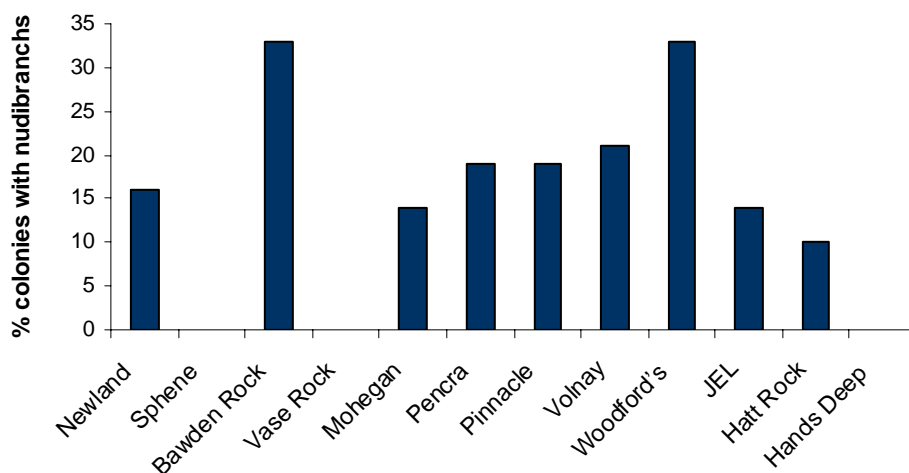


Figure 3. Mean percentage of pink sea fan colonies on which the nudibranch, *T. nilsodhneri* was found.

Anthropogenic impacts were apparent at some sites; bent fans lying on their side—a possible result of diver damage—was noted at the popular dive site the Mohegan. Fishing line and monofilament net was found entangled around pink sea fans at Bawden Rocks, James Egan Layne and Hands Deep. Plastic bags were found entangled around fans at Bawden Rocks. Die back was noted on a few individuals at Hatt Rock, the Mohegan, and the James Egan Layne.



Chris Whitworth

Plastic bag entangled in pink sea fan.

RECOMMENDATIONS

- Survey pink sea fans at reefs off Newquay including Poltexas reef, Pells reef, Bedruthan rock and the Syracuse wreck. Also survey the Rosehill in Whitsand bay and in other locations where they have been reported from but not yet surveyed.
- Re-survey pink sea fans at the Sphene.
- Re-survey all sites at least every two years to monitor general condition of pink sea fans.
- Attempt to re-survey the same area at all sites (by marking it if possible).
- General Seasearch surveys should be carried out in areas where sea fans might be expected to occur according to the location and substrate type.
- Record presence or absence of *T. nilsodhneri* nudibranchs at Vase Rock, the Sphene and Hands Deep.
- Develop a photographic catalogue of pink sea fans surveyed.
- Monitor diver impact on pink sea fans during surveys and consider the need to introduce minimum peak performance buoyancy for divers or to restrict the number of divers at any one time at very popular sites.
- Continue to collect data on pink sea fan entanglement in marine litter and remove litter, with the aim of reducing this in the long-term.
- Create awareness of the pink sea fan amongst divers, fishermen and the general public.
- Consider protection of the sea fans where they occur in greatest abundance and are currently not protected, such as at the Manacles, the reefs off Newquay, Bawden Rocks and Newland. These areas could be designated as a Special Area of Conservation for their reef habitat and associated biodiversity.

Report prepared by: Joana Doyle, Cornwall Wildlife Trust

Financial support for the survey work and for the preparation of this report has been provided by English Nature.



Seasearch is a volunteer underwater survey project for recreational divers to contribute to the conservation of the marine environment. Surveyors taking part in the sea fan surveys were: Victoria Cartwright, Emma Dover, Will Postlethwaite, Emily Priestly, George Gall, Chris Whitworth, Victoria Cartwright, Jonathan Smith, Ed Smith, Steve Adams, Sally Sharrock, Chris Wood, Ruth Williams, Sam Cook, Graham Bates, Darren Murray, Susan Howson, Vicki Billings, Rick Stodden, John Abbot, Matt Slater and Andy Squirrel. Thank you to everyone who participated in, and initiated surveys. Special thanks to the St. Agnes gang for all their interest and effort in pink sea fan recording, and to George for the use of his boat. Thanks to all the photographers who supplied the wonderful images of the fans. Finally thanks to Dave at Dive Newquay and Dive Action for providing boats, air and knowledge.