

Seasearch East Report 2017

This report summarises the activities of Seasearch in East Anglia during 2017



Shoal of Seabass – *Dicentrarchus labrax* on the wreck of the Rosalie at Weybourne



A rare day of 'good' visibility for checking colonisation plates at Orfordness visitor pontoons

We started 2017 with three main aims; exploring sites with little previous diving, returning to sites first explored in 2016 to consolidate baseline data and to introduce and support new Seasearch Observers who could go on to be useful long-term members of Seasearch East.

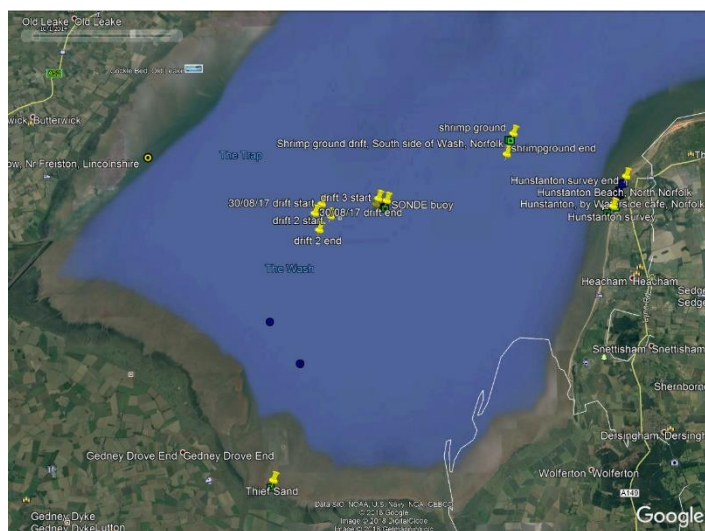
The diving season was a full month shorter than previous years, due to very early winter storms, with a last dive taking place on October 16th at Cley. In addition, an annoying virus took out several recorders for the month of July, but a good number of quality forms (155, of which 91 were survey forms and 64 Observer, compared to 194 in 2016) were received.

Several keen new trainees worked through the Observer training process and went on to take part in exploratory mapping dives at Salhouse and Overstrand, forming a good group of solid buddy pairs by the end of the season.

Very long transects (up to 800m) were mapped at Overstrand, Salhouse, Weybourne and Sheringham, revealing interesting new habitats to explore more fully in 2018. Sites at Lowestoft in Suffolk, the Blackwater estuary and in the centre of the Wash were returned to and seasonal changes recorded.

The following pages explore each of the counties dived in more detail, working from North to South.

Lincolnshire and the Wash



Wash dive sites

Four different sites were covered on two days diving by five divers using the EIFCA survey vessel; three drift dives and one static dive on the colonisation array attached to the SONDE buoy.

SONDE Buoy

One dive was conducted with the EIFCA on the colonisation plate array attached to the SONDE buoy in the centre of the Wash, resulting in one Survey form from the dive pair. It was discovered that the action of the buoy chain and some very rough weather had done some damage to the array, causing it to collapse into the sediment and become buried. The array will need to be lifted and repaired in 2018 before it can gather more data. Photographs of biofouling on the SONDE buoy chain were taken on ascent to aid with its later removal.

Many *Echinocardium cordatum* tests had been revealed and collected by sediment movements, suggesting that the animals occur quite frequently in the local seabed.



One of many *Echinocardium cordatum* tests seen on Lincolnshire dives

Shrimp ground drifts

Three separate areas were surveyed by drift dive as part of a proposed trial of brown shrimp fishing gear, resulting in six Survey and two Observer forms. Species lists and photographs from each drift were made available to the EIFCA to help with their decision-making process. GPS trackers synchronised with underwater cameras towed by each dive pair enabled the underwater habitat to be surveyed with great accuracy.

The burrowing sea cucumber *Paracucumaria hyndmani* was recorded by Michael Southwood on the second of the three drifts, a new species for us!



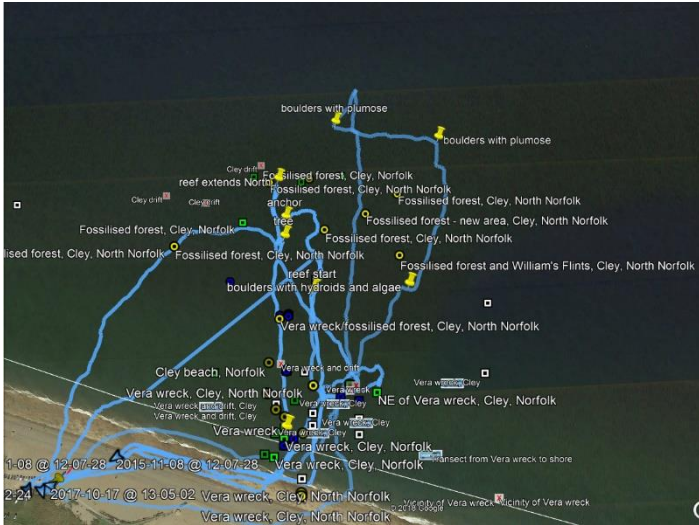
Paracucumaria hyndmani – a burrowing sea cucumber

Norfolk

This section covers all the records taken between Cley in the NW and Overstrand in the SE, and several wreck and seabed sites accessed from Sea Palling. Most dives were within or adjacent to the new Cromer Shoals MCZ.

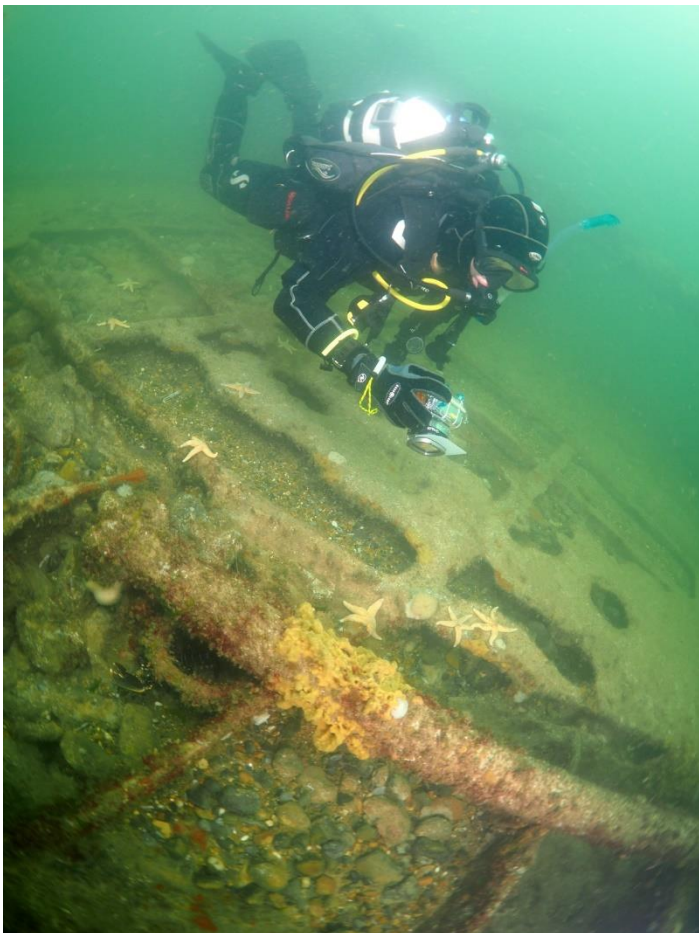
Cley

Cley was very popular with divers during 2017, with 12 dives resulting in 18 forms received for the Vera wreck and the fossilised forest another 350m out. The forest was further explored to the North and West of the areas mapped in 2016 and ropes were replaced between some of the more interesting features.



Current dive sites and GPS tracks for Cley

A very large area of cobbles and flint boulders level with the wood reef was also explored further to the East, using a towed buoy with a GPS unit attached for mapping.



New Seasearch Observer Louise De Lisle explores the Vera wreck at Cley.

Enormous amounts of fishing-related litter were recorded and removed where possible from the site; lost nets and pots entangled in the wreckage, live pot strings laid straight through the wreck with no hope of recovery, cooked crab, lobster and filleted fish waste, often inside plastic bin bags, rubber gloves, fish boxes and huge amounts of lost rope and pot anchors.



Lobster pot laid within the wreck of the Vera. Full of lobsters, it is very likely to snag on the wreckage and be lost, causing unnecessary suffering.

Salthouse



Current dive sites and GPS tracks for Salthouse

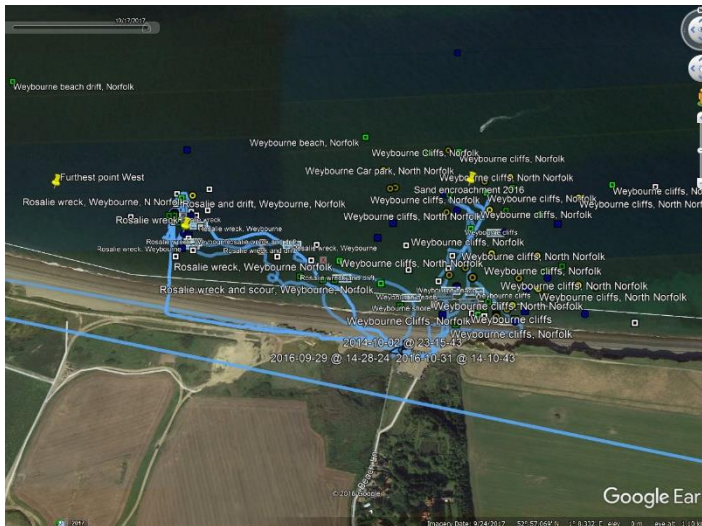
Seven dives were done at Salthouse in 2017, resulting in 13 forms. This was in part due to the use of a new dive bus which meant that we could spend the night on site and catch the early morning slacks before the very scarce parking filled. Some interesting new areas were explored; repeating parallel clay reefs to the West of the car park, a combined reef of clay, chalk and wood just offshore, a soft boulder plain (possibly carr stone) with very dense diverse life to the Northeast and the remains of a large wreck with a 3m long anchor, slightly further out.

Juvenile red mullet were seen several times and the area was very rich in masked crabs, with more than 12 being seen per dive in fairly small areas.



Typical soft rock community at Salthouse of sponges, anemones, crustaceans and mixed algae.

Weybourne



Dive sites at Weybourne – the Rosalie wreck and chalk reef, with drifts between and beyond.

As ever, Weybourne was the most popular site for less experienced Seasearchers, with the wreck of the Rosalie to the West and pleasant chalk gullies directly off the car park. 32 separate dives were done resulting in 45 Seasearch forms. Some very long (more than 500m) and interesting drifts over vast sand mason beds, boulder plains and scattered wreckage were undertaken, notable species seen include *Pectenaria belgica* and *Palio nothus* feeding on *Bowerbankia citrina* flourishing on an abandoned telegraph cable.

Once again, a lot of fishing related litter was present, with cooked crab waste and angling tackle making up the bulk of sightings. The angling tackle was removed where possible.

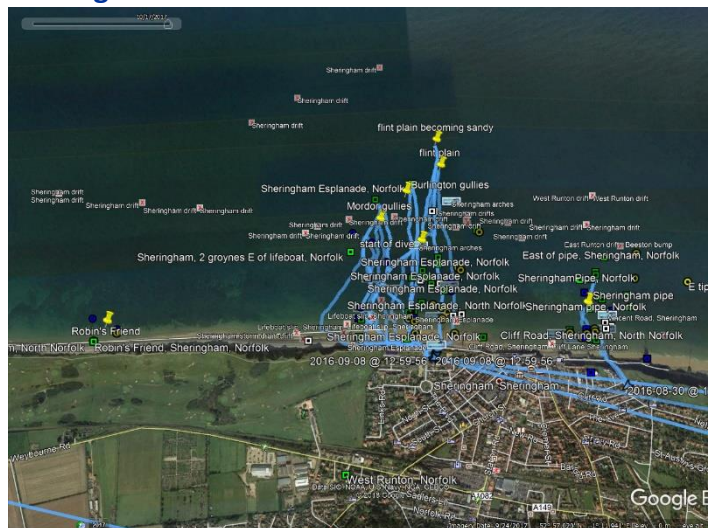
The mobile sand waves noted in 2016 were still present and beginning to encroach further into the inshore chalk plain, burying its inhabitants. It is hoped

that the very severe storms over the winter will have pushed the sand back out to sea again.



Recovered ghost fishing net from the Rosalie wreck

Sheringham

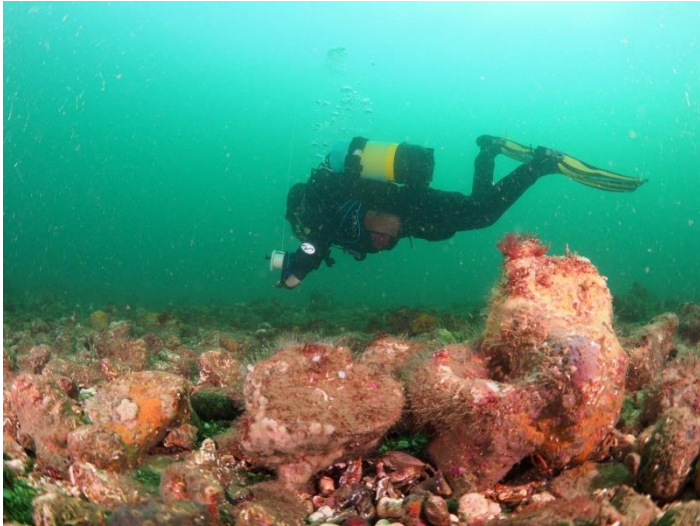


Sheringham sites – Robin's Friend to the West, The Esplanade and Burlington gullies and then the Pipe to the East.

There were 17 dive events resulting in 31 forms received for Sheringham in 2017, with efforts made to cover and map new ground.

The reef to the West of town known as Robin's Friend was only explored as low tide shore surveys, but The Pipe at the East end of town now hosting the Sheringham snorkel trail and the area off the Esplanade containing the most rugged gullies (up to 3m high) were thoroughly explored. Towed buoys with

GPS units were used to map dives up to 800m offshore on the flint boulder plain beyond the chalk gullies.



Typical community of sponges and hydroids on the deep flint plain

Notable species seen included the pinhead squirt *Pycnoclavella stolonialis*, which had become very rare in the previous few years, a branching purple *Haliclona* sp. sponge which Bernard Picton thought possibly a new species (Norfolk seems to specialise in purple sponges!), the stalked jelly *Calvadosia campanulata* and *Suberites massa* sponge appearing quite frequently on the deeper chalk.



Unknown species of purple branching *Haliclona* sponge

Corkwing wrasse were very common in 2017, especially on the snorkel trail. Unfortunately, the severe storms in early 2018 resulted in many being washed up dead on the local beaches; the effect on local population numbers remains to be seen.

West Runton

Only a single pair of dives was undertaken at West Runton, resulting in two survey forms. A second *Calvadosia campanulata* was recorded, along with several examples of the seldom-seen sponge *Dysidia pallescens*.



Calvadosia campanulata stalked jelly from West Runton



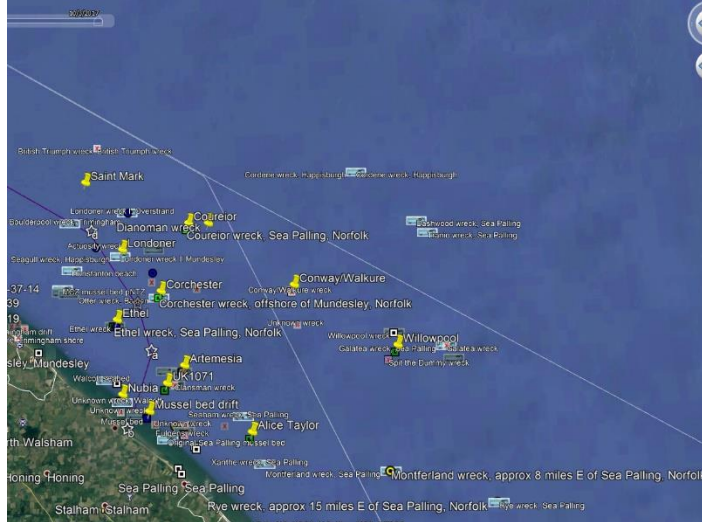
Sponge currently known as 'green *Amphilectus fucorum*' from West Runton. A bright yellow version is also widespread on flint and chalk boulders.

East Runton

Three dives giving 7 forms were received from East Runton, *Calvadosia campanulata* was again found here by Ben Moore and Claire Brooks on the Observer course.

accompanied by grey seals and one lucky group were visited by two harbour porpoises!

Unfortunately, all the wrecks had lost nets attached and were festooned with lost angling tackle. The site previously known for a huge blue mussel bed had still not recovered from being trawled in 2011 and no live mussels were seen, though there were some small areas of *Sabellaria spinulosa*.

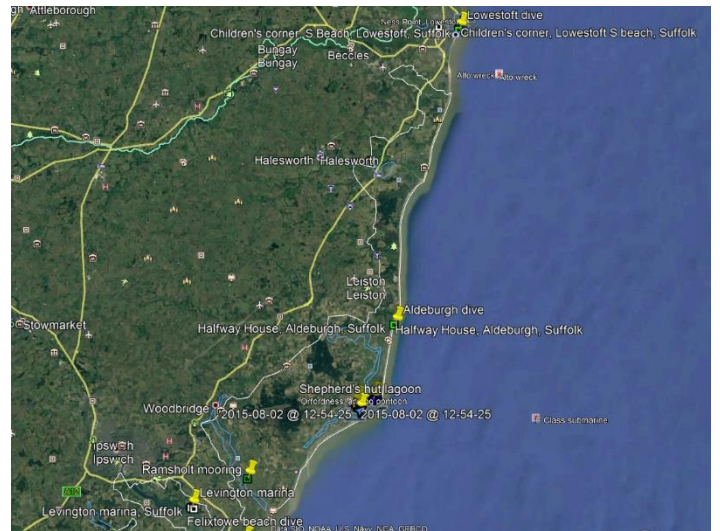


Current dive sites around Sea Palling



Sabellaria spinulosa off Sea Palling

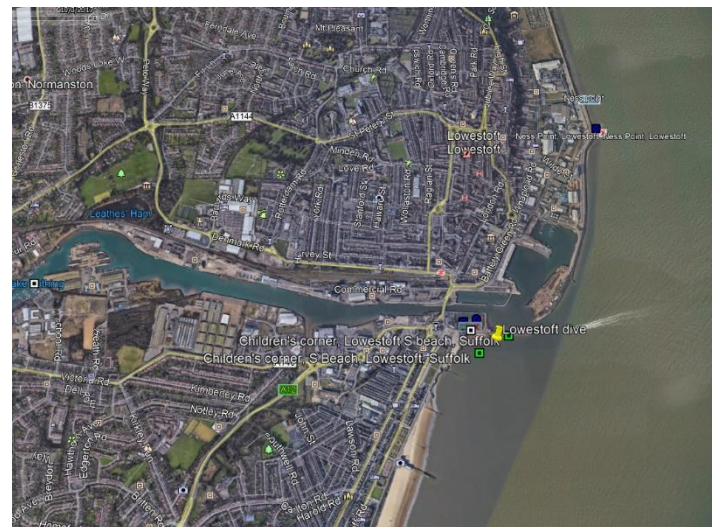
Suffolk



After 2016 being a very good year for Suffolk, with a brief period in September when visibility at the shore got up to a mighty 1-2m, visibility once again returned to the usual 'drinking chocolate' seen locally in 2017.

Lowestoft

A short period of reasonable visibility was taken advantage of and a single site ('Children's Corner') was dived twice in two weeks off the beach outside the harbour wall. Visibility was only 0.5m, but it was enough to see small *Sabellaria spinulosa* reefs and a wall dominated by the bryozoan *Chartella papyracea*, a species largely absent from the East coast of the UK on the NBN. Other rarely recorded species on the East coast included *Phoronis hippocrepia* and *Clathrina lacunosa*. These dives were supplemented by angling records from Mark Crame during the spring, including *Raniceps raninus*, *Parablennius gattorugine* and *Gobius paganellus*.



Current dive sites around Lowestoft

Orfordness



Current sites around Orfordness

Unfortunately, time constraints meant that work on Orfordness had to be put on hold. The colonisation project resumed again in March 2018 with two extra sites.

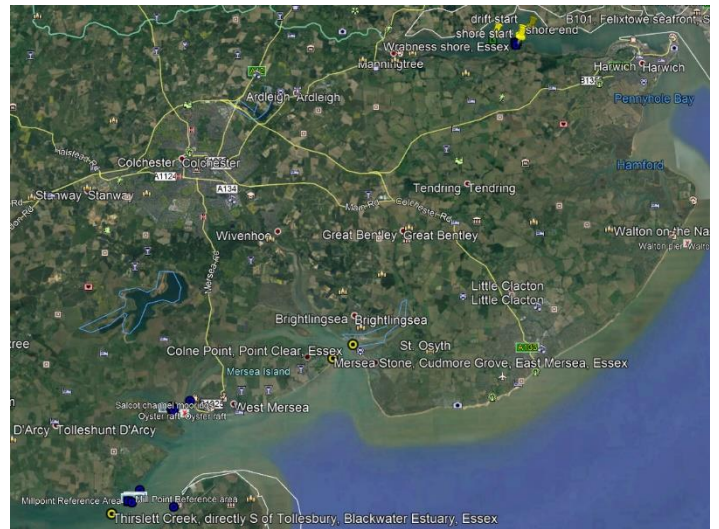
Felixstowe Ferry

A single dive was done on a permanent boat mooring and muddy riverbed very close to the mouth of the river Deben. Visibility was less than 5cm, so samples were removed from the mooring chain and examined in a tray. The seabed was also sampled, but found to be very soft mobile mud with no visible life present. The mooring chain was host to four algae species and *Jassa*, *Caprella* and *Tubularia indivisa*.



Dive site at Felixstowe Ferry – note opaque brown water!

Essex



Current dive sites in Essex

A single dive was made by a pair of divers with the assistance of Phil Page from Colchester BSAC in the Thirslett Creek area of the Blackwater estuary, resulting in one Survey form. The dive was a gentle drift over 1m high soft mud waves with slipper limpet and fanworm mini reefs providing anchorage for diverse, sponge dominated life at 7 to 8.2m below sea level. The sponge *Suberites massa* was common and adult *Raja clavata* and some *Aplysia punctata* spawn were seen.



Typical mix of squirts and sponges in the Blackwater estuary

Other activities

Courses



Phil Page sneaks up on unsuspecting plastic fish

An underwater photography course with a practical element in a heated pool proved popular in January and we also ran a well-attended Observer course in Sheringham in early July and managed course dives in Sheringham, Cley and Weybourne.

Involvement with the local community

We ran marine ID practical sessions for local Wildlife Trust volunteers and National Trust visitors in January and August in the rockpools at West Runton and Sheringham respectively. The volunteers were very stoic about putting their hands in rockpools for an hour in January!



Excitedly gathering round a hapless squat lobster

In April, we made a presentation about the MCZ and snorkel trail at the Sheringham town meeting, which was greeted with enthusiasm by local businesses and councillors.



Sheringham town meeting – the committee has just left the stage to get a better look at the presentation!

Coordinator workshop



Cat herding in preparation for a group photo in Menai

Lin Baldock and Nick Owen came across to Norfolk in July to discuss topics and questions for the Coordinator workshop, which then took place in Menai in October.



The rather lovely blue whale skeleton at the NHM, photographed during the end of year coordinator's meeting

Species records

The appendix below lists all the species recorded by Seasearch East volunteers during 2017, with a grand total of 326 for the whole of East Anglia.

The table is broken down by county and phylum with totals in bold at the end of each section.



Palio nothus, a nudibranch which feeds on bryozoans in the *Bowerbankia* genus

Species lists

Scientific name	Common name	Lincs and Wash	Norfolk	Suffolk	Essex	East Anglia
Porifera						
Sponges						
<i>Halichondria panicea</i>	Breadcrumb sponge		R-F	O		R-F
<i>Halichondria bowerbankii</i>	A sponge		R-C		F	R-C
<i>Oscarella sp</i>	A sponge		O-F			O-F
<i>Sycon ciliatum</i>	Vase sponge		R-C	R	C	R-C
<i>Grantia compressa</i>	Purse sponge		R-F		C	R-C
<i>Haliclona sp</i>	A sponge		R			R
<i>Haliclona oculata</i>	Mermaid's glove		R-F	O-F	O	R-F
<i>Haliclona viscosa</i>	A sponge		R			R
<i>Haliclona cinerea</i>	A sponge		R-O			R-O
<i>Halisarca dujardini</i>	A sponge		R-F			R-F
<i>Raspailia ramosa</i>	Chocolate fingers sponge		R-O			R-O
<i>Cliona celata</i>	Boring sponge		R-F		O	R-F
<i>Amphilectus fucorum</i>	Shredded carrot		R-C		C	R-C
<i>Leucosolenia sp</i>	Spikey lace sponge		R-F	O	C	R-C
<i>Porifera ind.</i>	Massive sponge sp		O			O
<i>Porifera ind</i>	Crust sponge sp		R-F			R-F

Scientific name	Common name	Lincs and Wash	Norfolk	Suffolk	Essex	East Anglia
<i>Dysidea fragilis</i>	Goosebump sponge		R-F			R-F
<i>Dysidia pallescens</i>	Pink goosebump		O			O
<i>Clathrina coriacea</i>	Lace sponge		R-F			R-F
<i>Clathrina lacunosa</i>	A sponge			R-O		R-O
<i>Hymedesmia</i> sp	Norfolk purple sponge		R-C			R-C
<i>Polymastia penicillus</i>	Chimney sponge		R-O			R-O
<i>Suberites</i> sp	A sponge		R			R
<i>Suberites ficus</i>	Sea orange		R-O			R-O
<i>Suberites massa</i>	A sponge		O-F		C	O-C
		0	24	5	8	25

Cnidaria	Hydroids and anemones					
<i>Actinia equina</i>	Beadlet anemone		R-F	R		R-F
<i>Metridium dianthus</i>	Plumose anemone	R	R-A			R-A
<i>Sagartia elegans</i>	Elegant anemone	O	R-C	O		R-C
<i>Sagartiogeton undatus</i>	An anemone	R-O				R-O
<i>Urticina felina</i>	Dahlia anemone	R-F	R-C	R-O	R	R-C
<i>Urticina eques</i>	Horseman anemone		R-O			R-O
<i>Diadumene cincta</i>	Orange anemone		O-C	F-C		O-C
<i>Tubularia indivisa</i>	Oaten pipes		R-A	O-S		R-S
<i>Ectopleura larynx</i>	Oaten pipes		O-C	O		O-C
<i>Hydractinia echinata</i>	Hermit fur	R-O	O-F			R-F
<i>Sertularia cupressina</i>	White weed	R-F	R-C	O-F	O	R-C
<i>Eudendrium</i> sp	A hydroid	R-F	O-F		O	R-F
<i>Eudendrium arbuscula</i>	A hydroid		O-F			O-F
<i>Abietinaria abietina</i>	A hydroid		R-F			R-F
<i>Halecium halecinum</i>	A hydroid	R	R-F	R-O		R-F
<i>Hydralmania falcata</i>	Helter skelter hydroid	R-F	R-F	O	F	R-F
<i>Clytia hemisphaerica</i>	A hydroid	R	O-C	F-C		R-C
<i>Plumularia setacea</i>	A feathery hydroid		R-C	F		R-C
<i>Obelia</i> sp	A hydroid				C	C
<i>Obelia dichotoma</i>	A hydroid		R-O			R-O
<i>Amphisbetia operculata</i>	A hydroid		R-O			R-O
<i>Garveia nutans</i>	A hydroid		O-F			O-F
<i>Hydrozoa</i> sp	A feathery hydroid	O	O-C	A		O-A
<i>Kirchenpaueria pinnata</i>	A feathery hydroid		O-C			O-F
<i>Coryne eximia</i>	A hydroid		R-F	O		R-F
<i>Dynamena pumilla</i>	A hydroid		F-C			F-C
<i>Nemertesia antenina</i>	Antenna hydroid	R	R-O	R		R-O
<i>Nemertesia ramosa</i>	Antenna hydroid	R				R
<i>Sertularella rugosa</i>	A hydroid	O	R-F	F		R-F
<i>Aequorea</i> sp	A hydroid		R			R
<i>Aequorea forskalea</i>	A hydroid		R			R
<i>Alcyonium digitatum</i>	Dead mens fingers		R-C	O-F		R-C
<i>Aurelia aurita</i>	Moon jelly		R			R
<i>Chrysaora hysoscella</i>	Compass jelly		R-O			R-O
<i>Cyanea capillata</i>	Lion's mane jelly		R			R

Scientific name	Common name	Lincs and Wash	Norfolk	Suffolk	Essex	East Anglia
<i>Cyanea lamarkii</i>	Blue jelly		R			R
<i>Craterolophus convolvulus</i>	A stalked jelly		R			R
<i>Lucernariopsis campanulata</i>	A stalked jelly		R			R
		14	35	16	5	38

Annelida		Segmented worms				
<i>Arenicola sp</i>	Lugworm		O			O
<i>Arenicola marina</i>	Lugworm		R-C			R-C
<i>Arenicola defodiens</i>	Lugworm		O-F			O-F
<i>Sabella pavonina</i>	Peacock fanworm	R	R-C			R-C
<i>Aphrodita aculeata</i>	Sea mouse	R-O				R-O
<i>Lanice conchilega</i>	Sandmason worm	O-C	R-S			R-S
<i>Harmothoe sp</i>	A scaleworm		R			R
<i>Hediste diversicolor</i>	A ragworm	R				R
<i>Polydora ciliata</i>	A tubeworm	R-O	O-S			R-S
<i>Salmacina dysteri</i>	Coral worm		R-O			R-O
<i>Spirobranchus</i>	Keel worms	R-O	R-C	O		R-C
<i>Sabellaria spinulosa</i>	Ross worm		O-F	O-C		O-C
<i>Spirorbis</i>	Spiral worm		R-O			R-O
<i>Janua sp</i>	Spiral worm				O	O
Serpulidae	A tubeworm		O			O
<i>Pectenaria belgica</i>	A tubeworm	R	R			R
<i>Tubulanus annulatus</i>	Football jersey worm		R			R
		7	14	2	1	17

Crustacea		Barnacles, crabs, shrimp and lobsters				
<i>Cirripedia</i>	Barnacles	R-O	R-S	O-S	O	R-S
<i>Cancer pagurus</i>	Edible crab	R-F	R-C	O-F	R	R-C
<i>Carcinus maenas</i>	Shore crab	R-F	R-F	O-F	O	R-F
<i>Necora puber</i>	Velvet swimming crab	O	R-C	O-F		R-C
<i>Pilumnus hirtellus</i>	Hairy crab		O			O
<i>Portumnus latipes</i>	Pennant's swimming crab		R			R
<i>Liocarcinus depurator</i>	Harbour crab	R-F	R-C			R-C
<i>Liocarcinus navigator</i>	Arch fronted crab				O	O
<i>Corystes cassevelaunus</i>	Masked crab	R	R-F			R-F
<i>Hyas araneus</i>	Sea toad	O	R-O			R-O
<i>Inachus sp</i>	A spider crab		R-F			R-F
<i>Macropodia sp</i>	Long legged spider crab	O-F	R-F	O	F	R-F
<i>Pisidia longicornis</i>	Long clawed porcelain crab		R-O			R-O
<i>Ebalia cranchii</i>	Nut crab		R			R
<i>Pagurus bernhardus</i>	Common hermit crab	O-F	R-O	R	O	R-F
Paguridae	Hermit crab	R-F	R-F			R-F
<i>Galathea intermedia</i>	A squat lobster		R			R
<i>Galathea squamifera</i>	Brown squat lobster		R-C			R-C
<i>Homarus gammarus</i>	Common lobster		R-C	O		R-C
<i>Palaemon serratus</i>	Common prawn		R-C	O-C		R-C
<i>Palaemon sp</i>	A prawn		O			O

Scientific name	Common name	Lincs and Wash	Norfolk	Suffolk	Essex	East Anglia
<i>Palaemon elegans</i>	Rockpool prawn		R			R
<i>Crangon crangon</i>	Brown shrimp	R-F	R-C			R-C
<i>Pandalus montagui</i>	Northern prawn		R-F			R-F
<i>Eulalus</i> sp	A shrimp		O			O
<i>Hippolytes varians</i>	Chameleon prawn	R	R-F			R-F
<i>Caprella</i> sp	Skeleton shrimp		R-C	O		R-C
<i>Mysida</i> sp	Mysid shrimps	R	R-F	O		R-F
<i>Gammarid</i>	A shrimp		R-O			R-O
<i>Amphipoda</i> sp	An amphipod		R			R
<i>Ampelisca</i> sp	An amphipod		O-A			O-A
<i>Jassa</i> sp	An amphipod	C	O-S	O-S		O-S
<i>Idotea</i> sp	An isopod		R			R
<i>Idotea linearis</i>	An isopod		R-C		C	R-C
<i>Idotea neglecta</i>	An isopod		O			O
		14	34	11	7	34

Mollusca		Molluscs				
<i>Polyplacophora</i>	Chiton		O			O
<i>Aplysia punctata</i>	Sea hare (eggs)				F	F
<i>Nudibranchia</i> sp	Nudibranch eggs		R-O	O		R-O
<i>Doto</i> sp	A nudibranch		O	O		O
<i>Doto pinnatifida</i>	A nudibranch		R			R
<i>Doto millbayana</i>	A nudibranch		O			O
<i>Ancula gibbosa</i>	A nudibranch				R	R
<i>Dendronotus frondosus</i>	Xmas tree sea slug		R			R
<i>Flabellina lineata</i>	A nudibranch		R			R
<i>Janolus cristatus</i>	Crystal slug		R-O	O		R-O
<i>Acanthodoris pilosa</i>	A nudibranch		R-F			R-F
<i>Doris pseudoargus</i>	Sea lemon		R-O			R-O
<i>Facelina bostoniensis</i>	A nudibranch		R			R
<i>Palio nothus</i>	A nudibranch		R			R
<i>Palio dubia</i>	A nudibranch		O			O
<i>Flabellina</i> sp	A nudibranch		R-O			R-O
<i>Flabellina pedata</i>	Violet sea slug		R-O			R-O
<i>Aeolidia</i> sp	A nudibranch		R			R
<i>Aeolidia papillosa</i>	A nudibranch		R			R
<i>Crepidula fornicata</i>	Slipper limpet	R-O	R-O		S	R-S
<i>Gibbula cineraria</i>	Grey topshell		R-C	R	O	R-C
<i>Caliostoma zizyphinum</i>	Painted topshell	R-F	R-C		R	R-C
<i>Buccinum undatum</i>	Common whelk	R-F	R-C		O	R-C
<i>Littorina saxatilis</i>	Rough periwinkle				O	O
<i>Rissoa</i> sp	A gastropod		R			R
<i>Rissoa parva</i>	a gastropod		O-S			O-S
<i>Nucella lapillus</i>	Dog whelk		R-O			R-O
<i>Nassarius reticulatus</i>	Netted dog whelk		O			O
<i>Patella vulgata</i>	Common limpet		R-F			R-F
<i>Mytillus edulis</i>	Edible mussel	C	O			O-C
<i>Crassostrea gigas</i>	Pacific oyster				F	F

Scientific name	Common name	Lincs and Wash	Norfolk	Suffolk	Essex	East Anglia
<i>Barnea candida</i>	White piddock		F-C			F-C
<i>Ensis magnus</i>	Razor shell	F	F-S			F-S
<i>Sepiola atlantica</i>	Little cuttlefish	R	R-O			R-O
<i>Alloteuthis subulata</i>	Small squid eggs	O	R			R-O
		7	31	4	8	35

Bryozoa		Sea mats and sea mosses				
<i>Bryozoa</i>	Encrusting bryozoan indet	R	R-A			R-A
<i>Conopeum reticulatum</i>	Encrusting bryozoan		O-S		O	O-S
<i>Electra pilosa</i>	Frosty sea mat	O	O-C	O-F		O-C
<i>Membranipora membranacea</i>	Kelp mat		R			R
<i>Schizomavella linearis</i>	Encrusting bryozoan		O-F	O-F		O-F
<i>Bowerbankia citrina</i>	A bryozoan		R-C	O-F		R-F
<i>Bowerbankia imbricata</i>	A bryozoan		O-F			O-F
<i>Bowerbankia pustulosa</i>	A bryozoan		R-C			R-C
<i>Bicellariella ciliata</i>	A bryozoan	O	R-C	F-C	C	R-C
<i>Flustra foliacea</i>	Hornwrack	R-F	R-C	O	F	R-C
<i>Chartella papyracea</i>	A laminar bryozoan		O-A			O-A
<i>Alcyonidium diaphanum</i>	Finger bryozoan		R-F	O-C	O	R-C
<i>Alcyonidium gelatinosum</i>	A bryozoan		F			F
<i>Alcyonidioides mytili</i>	A bryozoan	O				O
<i>Anguinella palmata</i>	A bryozoan		F	C-A	O	O-A
<i>Scrupocellaria sp</i>	A bryozoan		O-F	O-F	O	O-F
<i>Vesicularis spinulosa</i>	A bryozoan	R-F	R-O	O		R-F
<i>Eucratia loricata</i>	A bryozoan		R			R
<i>Bugula sp</i>	Bottlebrush bryozoan		C			C
<i>Bugula plumosa</i>	Bottlebrush bryozoan		R-C	F-A		R-A
<i>Bugula flabellata</i>	Bottlebrush bryozoan		O-F			O-F
<i>Bugula turbinatum</i>	Bottlebrush bryozoan		O			O
<i>Crisia eburnea</i>	A bryozoan		O			O
<i>Crisia sp</i>	A bryozoan		R-A	F		R-A
<i>Plagioecia patina</i>	A disc bryozoan		R-O			R-O
<i>Disporella hispida</i>	A disc bryozoan		R-O			R-O
		6	25	11	6	26

Echinodermata		Starfish, urchins and brittlestars				
<i>Ophiura albida</i>	Sand brittlestar	R-C	O		F	R-C
<i>Ophiura ophiura</i>	Sand brittlestar	R-C	R		C	R-C
<i>Ophiothrix fragilis</i>	Common brittlestar				C	C
<i>Asterias rubens</i>	Common starfish	R-F	R-C	O	R	R-C
<i>Henricia sp</i>	Bloody henry	R	R-C			R-C
<i>Crossaster papossus</i>	Common sunstar	R-C	C			R-C
<i>Psammechinus miliaris</i>	Green urchin	R-F				R-F
<i>Echinus esculentus</i>	Edible urchin		R			R
<i>Echinocardium cordatum</i>	Heart urchin	R-F				R-F
<i>Paracucumaria hyndmani</i>	A gravel cucumber	R				R
		8	6	1	4	10

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Tunicata		Sea squirts				
<i>Ascidia</i>	A tunicate			O		O
<i>Perophora listeri</i>	a tunicate	R	R-C			R-C
<i>Perophora japonica</i>	An invasive tunicate		R-F			R-F
<i>Ascidia mentula</i>	A tunicate				O	O
<i>Ascidia aspersa</i>	A tunicate		R-F			R-F
<i>Molgula complanata</i>	A tunicate		O-F			O-F
<i>Molgula</i> sp	A tunicate		R-A			R-A
<i>Styela clava</i>	Leathery squirt			R		R
<i>Ciona intestinalis</i>	Yellow ringed squirt				O	O
<i>Polycarpa pomaria</i>	A tunicate		O			O
<i>Polycarpa scuba</i>	A tunicate				A	A
<i>Dendrodoa grossularia</i>	Baked bean squirt		O-F			O-F
<i>Diplosoma spongiforme</i>	Sponge squirt		R-C		R	R-C
<i>Diplosoma listerianum</i>	A tunicate		O			O
<i>Botrylloides leachii</i>	A tunicate	R	R-F			R-F
<i>Botrylloides</i> sp	A tunicate		R-F			R-F
<i>Botryllus schlosseri</i>	Star squirt		R-F		O	R-F
<i>Didemnum maculosum</i>	Snowflake squirt		R-C		F	R-C
<i>Didemnum fulgens</i>	A tunicate		O			O
<i>Lissoclinum perforatum</i>	A tunicate		O		F	O-F
<i>Polyclinum aurantium</i>	A tunicate		R-O			R-O
<i>Clavelina lepadiformis</i>	Lightbulb sea squirt		R-C			R-C
<i>Corella eumyota</i>	An invasive tunicate	R				R
<i>Archidostoma aggregatum</i>	A tunicate		R-C			R-C
<i>Polysyncraton bilobatum</i>	A tunicate		R-F			R-F
<i>Morchellium argus</i>	A club squirt		R-O			R-O
<i>Aplidium turbinatum</i>	A tunicate		O-F			O-F
<i>Aplidium glabrum</i>	A tunicate		R-O			R-O
<i>Distaplia rosea</i>	A tunicate		R-O			R-O
<i>Pycnoclavella stolonialis</i>	Pinhead squirt		R			R
		3	24	2	7	30
Pisces		Fishes				
<i>Raja clavata</i>	Thornback ray		R		R	R
<i>Anguilla anguilla</i>	European eel		R			R
<i>Syngnathus</i> sp	Pipefish sp		R-F			R-F
<i>Syngnathus acus</i>	Greater pipefish		R-F			R-F
<i>Syngnathus rostellatus</i>	Lesser pipefish	R-O	R-O			R-O
<i>Entelurus aequoreus</i>	Snake pipefish		R			R
<i>Callionymus</i> sp	A dragonet	R	R-F			R-F
<i>Callionymus reticulatus</i>	Reticulated dragonet	R	R-F			R-F
<i>Callionymus lyra</i>	Common dragonet	R	R-C			R-C
<i>Pomatoschistus</i> sp	Sand goby		R-C	R	R	R-C
<i>Pomatoschistus minutus</i>	Sand goby	O-C				O-C
<i>Pomatoschistus pictus</i>	Painted goby		R-C			R-C
<i>Gobius paganellus</i>	Rock goby		R	O		R-O
<i>Gobiusculus flavescens</i>	Two spot goby		R-F			R-F

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<i>Lipophrys pholis</i>	Shanny		R-O	R		R-O
<i>Parablennius gattorugine</i>	Tompot blenny		R-O	R		R-O
<i>Aphia minuta</i>	Transparent goby		R-F			R-F
<i>Agonas cataphractus</i>	Pogge		R			R
<i>Echiichthys vipera</i>	Lesser weever		R-O			R-O
<i>Taurulus bubalis</i>	Long spined sea scorpion		R-C			R-C
<i>Myoxocephalus scorpius</i>	Short spined sea scorpion		R			R
<i>Ciliata mustela</i>	5 bearded rockling		R			R
<i>Pollachius pollachius</i>	Pollack		R-O			R-O
<i>Dicentrarchus labrax</i>	Sea bass		R-F			R-F
<i>Trisopterus luscus</i>	Bib		R-A	O		R-A
<i>Gadus morhua</i>	Cod		R			R
<i>Mullus surmuletus</i>	Striped red mullet		R-O			R-O
<i>Pholus gunnellus</i>	Butterfish		R-O			R-O
<i>Symphodus melops</i>	Corkwing wrasse		R-C	R		R-C
<i>Labrus bergylta</i>	Ballan wrasse		R-C	R		R-C
<i>Ctenolabrus rupestris</i>	Goldsinny		R			R
<i>Raniceps raninus</i>	Tadpole fish			R		R
<i>Ammodytes sp</i>	Sand eel		O-F			O-F
<i>Hyperoplus lanceolatus</i>	Greater sand eel		R			R
<i>Eutriglia gurnardus</i>	Grey gurnard		R-O			R-O
<i>Platichthys flesus</i>	Flounder		R			R
<i>Pleuronectes platessa</i>	Plaice	R	R		R	R
<i>Limanda limanda</i>	Dab	R-F	R-O			R-F
<i>Solea solea</i>	Dover sole		R			R
		7	37	8	3	39

Algae	Seaweeds	Lincs and Wash	Norfolk	Suffolk	Essex	East Anglia
<i>Algae</i>	Mixed algae		R-C			R-C
<i>Ulva sp</i>	Sea lettuce		R-O	F		R-F
<i>Ulva lactuca</i>	Sea lettuce		R-C			R-C
<i>Ulva linza</i>	Gut weed		O-C	O-C		O-C
<i>Chaetomorpha sp</i>	A green algae		R			R
<i>Chaetomorpha melagonium</i>	A green algae		R			R
<i>Chaetomorpha linum</i>	Brick weed		R-O			R-O
<i>Derbesia sp</i>	A green algae		O			O
<i>Cladophora sp</i>	A green algae		O-F	F		O-F
<i>Cladophora pellucida</i>	A green algae		R			R
<i>Cladophora rupestris</i>	Rope weed		O-C	O-C		O-C
<i>Bryopsis plumosa</i>	Mossy feather weed		R-F			R-F
<i>Bryopsis hypnoides</i>	Mossy feather weed		O	O		O
<i>Diatoms</i>	Diatoms		F			F
<i>Sargassum muticum</i>	Japanese wireweed				O	O
<i>Dictyota dichotoma</i>	Brown fanweed		R-F	O		R-F
<i>Taonia atomaria</i>	Dotted peacock weed		R-C			R-C

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<i>Cutleria multifida</i>	Cutler's many cleft weed		R-O			R-O
<i>Phaeophyceae</i>	Filamentous brown		C			C
<i>Cladostephus spongiosus</i>	Hairy sand weed		R-O			R-O
<i>Fucus vesiculosus</i>	Bladderwrack		O-C			O-C
<i>Fucus serratus</i>	Serrated wrack		R			R
<i>Halidrys siliquosa</i>	Podweed		R			R
<i>Rhodophyta</i>	Red algae		R-A	C		R-A
<i>Corallinaceae crusts</i>	Pink encrusting algae		R-A			R-A
<i>Corallina officianalis</i>	Common coral weed		R-O	O		R-O
<i>Gracilaria gracilis</i>	Slender wartweed		R-A			R-A
<i>Chondria dasyphylla</i>	Diamond cartilage weed		R-F	O		R-F
<i>Halurus flosculosus</i>	Mrs Griffith's little flower		R-O	O		R-O
<i>Naccaria wiggii</i>	A red algae		R			R
<i>Halurus equisetifolius</i>	Sea Horsetail		R-F			R-F
<i>Chondrus crispus</i>	Irish moss		R-F	F		R-F
<i>Rhodomela confervoides</i>	A red algae		R			R
<i>Pterothamnion plumula</i>	Bushy feather weed		O			O
<i>Ceramium echinotum</i>	A pincer weed		O			O
<i>Ceramium sp</i>	A pincer weed		R-F	F-C	O	R-C
<i>Polysiphonia elongata</i>	A siphon weed		R-F			R-F
<i>Polysiphonia sp</i>	A Siphon weed		O-F			O-F
<i>Cryptopleura ramosa</i>	Fine-veined crinkle weed		R-F	O-F		R-F
<i>Grateloupia filicina</i>	Grateloup's fern weed		R-O			R-O
<i>Plocamium sp</i>	Comb weed		O-C	F		O-C
<i>Plumaria plumosa</i>	Soft feather weed		R-F			R-F
<i>Mastocarpus stellatus</i>	Grape pip weed		F			F
<i>Phyllophora pseudoceranoides</i>	Stalked leaf bearer		O-F			O-F
<i>Cystoclonium purpureum</i>	Purple claw weed		O			O
<i>Hypoglossum hypoglossoides</i>	Under tongue weed		R-O	O-F		R-F
<i>Scinaia furcellata</i>	Scina's weed		R-F			R-F
<i>Rhodymenia holmesii</i>	Holme's rose weed		R-C			R-C
<i>Rhodymenia ardissoni</i>	Spikey rose weed		O-C			O-C
<i>Heterosiphonia plumosa</i>	Siphoned feather weed		R-F	O		R-F
<i>Calliblepharis ciliata</i>	Eyelash weed		R-C	O		R-C
<i>Rhodothamnion floridula</i>	Sandbinder		F			F
<i>Brongniartella byssoides</i>	Brongniart's thread weed		O-F			O-F
<i>Osmundea sp</i>	Fern weed		R-F			R-F
<i>Gastroclonium reflexum</i>	Reflexed grape weed		R-F			R-F
<i>Porphyra sp</i>	Lava		O-C	F		O-C
<i>Halarachnion ligulatum</i>	Sea spider weed		R-O			R-O
<i>Polyides rotunda</i>	Discoid fork weed		O-F			O-F

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<i>Furcellaria lumbricalis</i>	Clawed forkweed		R-F			R-F
<i>Ahnfeltia plicata</i>	Black scour weed		O-A			O-A
<i>Spermothamnion repens</i>	A red algae		R			R
<i>Griffithsia corallinoides</i>	Mrs Griffith's coral weed		R			R
		0	61	18	2	62
Others	Other phyla					
<i>Halichoerus grypus</i>	Grey seal		R			R
<i>Phocoena phocoena</i>	Common seal	R				R
<i>Pedicellina sp</i>	Entoprocts		O-F	F		O-F
<i>Pycnogonidae</i>	White sea spider		R-O			R-O
<i>Pycnogonidae</i>	Red sea spider		O			O
<i>Halyphysema tumanowiczii</i>	A foraminiferan			F		F
<i>Pleurobrachia pileus</i>	Sea gooseberry			R		R
<i>Phoronis hippocrepia</i>	Horseshoe worm		R	O		R-O
		1	5	4	0	
Total		67	297	82	51	326

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