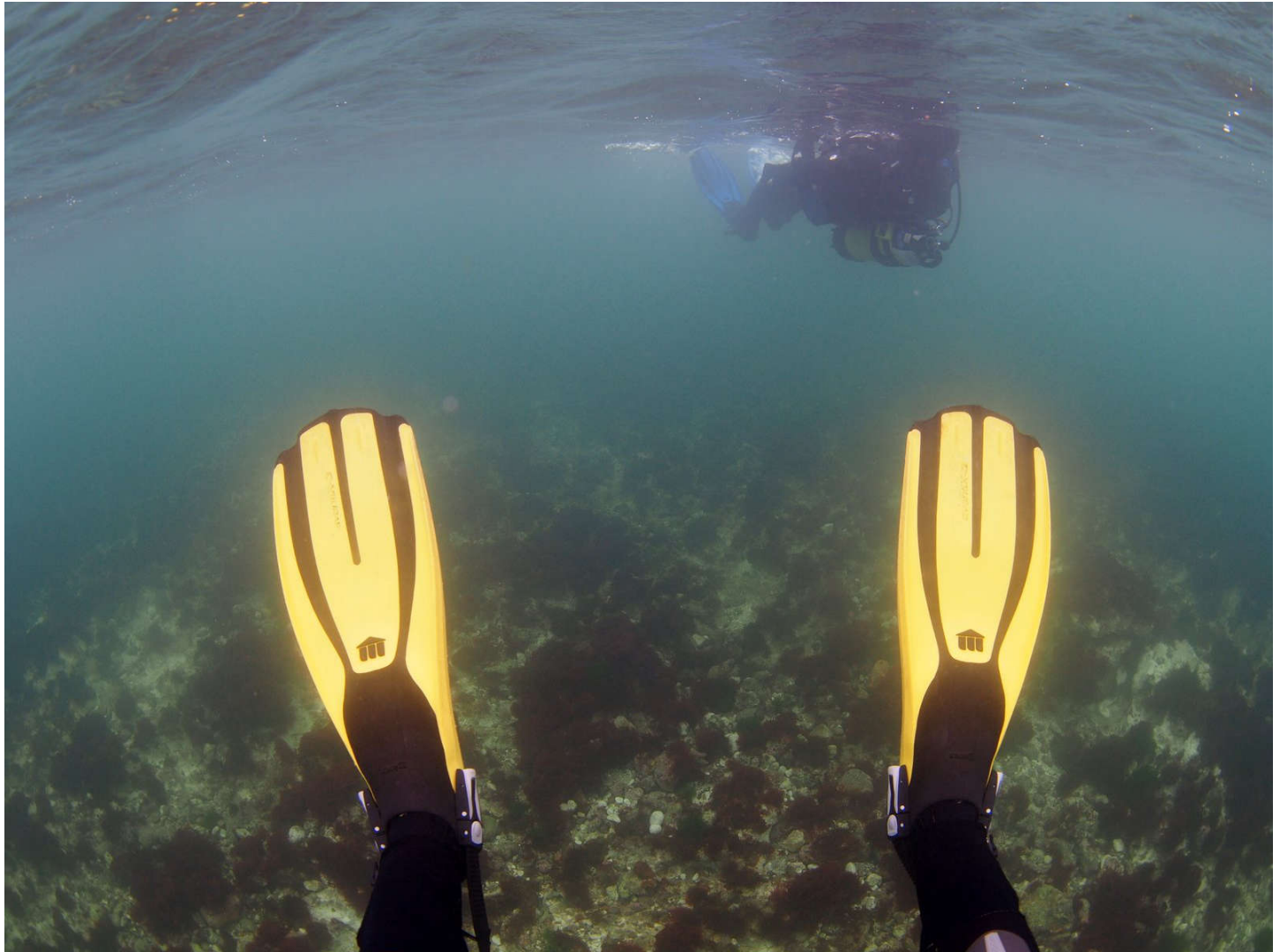


Seasearch East Report 2019

This report summarises the activities of Seasearch in East Anglia during 2019



Swimming out to the Burlington gullies 600m North of Sheringham Esplanade, Norfolk in July



Divers preparing to take images for a 3D representation of the chalk reef

We had a very late start to 2019, with the first record being an intertidal form from Lincolnshire on May 1st. Our last records of the year were both on December 31st; a live octopus washed up at Brancaster in Norfolk and a marina survey at Levington in Suffolk.

Despite the late start, we managed a healthy 181 forms in total, a slight improvement on the year before. Of the forms received, 89 (49%) were Observation and 92 (51%) were the more detailed Survey forms.

Several keen new trainees worked through the Observer training process and went on to take part in dives and intertidal surveys over the season, including Louise Heinemann who went on to be our

Seasearcher of the year, turning in Observation forms of a higher quality than many of the Survey forms received!

Species highlights included *Athanas nitescens*, *Iphimedia obesa*, *Hermaea bifida*, *Raniceps raninus* and *Lamellaria perspicua*, all seen for only the second time since we started recording and a congregation of *Scylliorrhinus canicula* off East Runton late in the year.



***Iphimedia obesa* at a new site near Salthouse in Norfolk**

Our most impressive find however, was a very tiny calcareous tubeworm called *Pileolaria berkeleyana* which went from a first sighting of a few individuals on a night dive early in the season to dominant species at East Runton and Cromer in Norfolk by late September, though not seen at surrounding dive sites – it will be interesting to see how it survives the winter! This is an invasive species, otherwise only seen on the South coast.



***Pileolaria berkeleyana*, a new species for East Anglia**

Leopard spotted gobies – *Thorogobius ephippiatus* were seen at a few sites around Sheringham in reasonable numbers, we have only seen single individuals very rarely in the past.

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

Lincolnshire and the Wash

Only 2 forms were received for Lincolnshire this year – an intertidal Observation form for Ingoldmells and another for the colonisation array removed from the SONDE buoy in the centre of the Wash. Sadly, available dates and suitable weather failed to line up with the EIFCA for dives from their boats and their time and budget were used up on a NE diving event off Sheringham. We hope to dive with them during 2020, investigating chalk damage caused by fishing activities in the Cromer Shoals MCZ.

Norfolk



Red Mullet – *Mullus surmulletus* at Weybourne

This section covers all the records taken between Brancaster 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.

Brancaster

A single Observation form was received from Brancaster beach of a live Curled octopus – *Eledone cirrhosa* – stranded by the tide. The animal was returned to the sea by a surprised member of the public on new year's eve.

Cley

Only 19 forms were received for Cley this year, a big drop from 2018, reflecting the wider range of sites dived during 2019, leaving the popular wrecks at Cley and Weybourne for other recreational divers.

Many volunteers made their way out to the wood reef at 300m N of shore for the first time, and were very excited by the diversity of wildlife seen on the wood itself, as well as in the layer of glacial clay and on the 3m long anchor standing on the reef.



Divers with massive anchor on the wood reef at Cley

One interesting feature on the anchor is a patch of Hermit fur – *Hydractinia echinata* – covering a square metre or so which was seen to be brooding eggs and sperm in preparation for a breeding event.



Hydractinia echinata hydroid with developing gametes

Salthouse



Carrstone boulders at Salthouse

14 forms were received for Salthouse, mainly concentrating on the extensive reef of carr stone boulders approximately 250m NE of the entry point,

but also exploring the 2 new sites known confusingly as East Bank and West East Bank, which are both between Salthouse and Cley.

East bank is mainly sand with bands of chalk and flint boulders, while West East Bank has a band of clay gullies in the shallows, facing out to sea. Both require a very long walk of around a kilometre from the car park to the beach, so only a few hardy souls have tried them so far!

Weybourne



Pollack – *Pollachius pollachius* on the Rosalie

Always popular with trainees and photographers, Weybourne provided us with our second biggest number of forms this year – 42, equally divided between the wreck of the Rosalie and the pretty chalk gullies under the Eastern cliffs.



Processa sp prawn on the chalk reef at night

Once again, a lot of fishing related litter was present, with cooked crab waste and angling tackle making up the bulk of sightings, but also some worryingly inept attempts at lobster potting – one professional fisherman using lengths of hosepipe on his ropes to allow him to pot within the wreckage (the pots quickly became tangled and stuck) and a diver using a collapsible pot to collect large numbers of lobsters.

The collapsible pot was destroyed by weather and removed as litter.

In another unpleasant incident, a pollack was found left badly wounded by a spear fisherman, its back broken.



Cerebratulus sp worm – a first for East Anglia

Notable species records for Weybourne this year include a *Cerebratulus* worm, several pieces of *Sacchoriza latissima* kelp drifting by, invasive *Corella eumota* squirts, shoals of Red Mullet and Pollack, a Tadpole fish, *Pycnoclavella stolonialis*, *Processa sp* shrimps and *Polycera quadrilineata* nudibranchs.

Sheringham

45 forms were received for Sheringham, making it slightly more popular than Weybourne for the first time. The forms were spread equally over several sites from Robin Friend in the far NW to the new snorkel trail at the East end of town.



Leopard spotted goby – *Thorogobius ephippiatus*

Leopard spotted gobies – *Thorogobius ephippiatus* and many stalked jellies were seen, also *Raspailia ramosa* sponge, *Athanas nitescens* hooded shrimp and *Micronephrys lillejborgii* sea scorpion. *Lamellaria*

perspicua and the blue sponge *Terpios gelatinosa* were seen for the first time.



A stalked jelly *Calvdosia campanulata*

Potting effort around the town has more than doubled in the last year, which has led to some distressing scenes of lost pot strings wrapping around chalk gullies and outcrops and causing massive damage through impacts and severe rope cuts.

West Runton

12 forms were generated for West Runton, which included a few intertidal records from a blown out Observer course.

Pagurus cuanensis, the Hairy hermit crab was seen a few times, as was *Raspailia ramosa* sponge. There were many stalked jellies on the inshore algae.

There was a great deal of damage to the chalk reef by pot strings and large amounts of cooked crab and lobster waste in piles under the pots.



Cooked lobster tail under a live pot string off West Runton

East Runton

15 forms were received for East Runton, with at least half coming from night dives. This is a simple site to navigate in the dark and the cliffs are well lit for an easy exit.



Hermaea bifida, a rarely recorded species

Notable sightings here included the rarely seen slug *Hermaea bifida*, the invasive worm *Pileolaria berkleyana* mentioned in the introduction which had to be sampled and identified by an expert in Wales and a large congregation of lesser spotted catsharks, *Scyliorhinus canicula* at the end of the year. This still remains the site with the most diverse algae, helped by the microhabitats caused by freshwater springs.



Lesser spotted catshark, *Scyliorhinus canicula*

Cromer

8 forms were received for Cromer, which now has an extra site at the East End of town called Happy Valley. Reached via 110 steps and numerous sloping paths after crossing a park, divers are generally very happy to have survived the walk!

This site has the most damaged chalk seen so far, undulating bedrock with over 70% of the surface damaged by pot strikes at depth and almost no algae or animal turf managing to grow back.



Parasabella langerhansi, a fanworm at Cromer

New species seen included the worm *Parasabella langerhansi* and the hooded shrimp *Athanas nitescens*. *Pileolaria berkleyana* was also seen, but not in such dense congregations as at East Runton



Athanas nitescens, the Hooded shrimp. Rarely seen, as it hides under boulders during the day.

Overstrand

The continuing presence of mobile sand waves off Overstrand to approximately 9m deep meant that only 3 hardened volunteers were prepared to make the long swim out to the glacial clay and boulders at depth. This is a great shame, as the unique topography at Overstrand provides a range of species not yet seen anywhere else along the coast.

The seabed deepens to 17m at approximately 500m offshore, before shallowing up again, reaching only 7.5m deep 2km offshore, with a rugged chalk reef. This means that water rushes in and out of the inshore basin, providing good conditions for species that prefer a high energy site and making life very difficult for divers at the beginning and end of slack time!



Delessaria sanguinea – Sea Beech off Overstrand

Unusual species seen here include the algae *Delessaria sanguinea* and *Desmarestia ligulata*, both seen several times on the offshore chalk, both with only single previous records for the East coast.



Desmarestia ligulata – a brown algae

Further Southeast – wreck dives

9 forms were received for dives between Trimmingham and Sea Palling, including several from 2 days of diving in conjunction with Anglian Divers BSAC club from their RHIB. These included two wreck and two drift dives and we hope to have similar days out in 2020.

Interesting species seen included the squirt *Pycnoclavella stolonialis*, which was also seen for the first time in several years on the wreck at

Weybourne, and the orange anemone, *Diadumene cincta*.



Pycnoclavella stolonialis – the aptly named Pinhead squirt seen on a drift off Trimmingham

The wrecks dived were heavily covered in lost commercial fishing gear and had live strings of pots still being laid in.



String of lost pots embedded in the wreckage of the Nubia 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 has once again returned to the usual 'drinking chocolate' ever since...

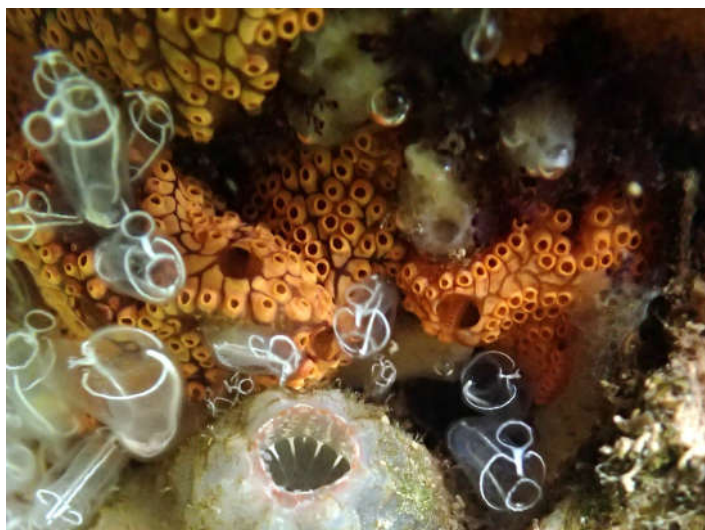
Southwold

Two intertidal Observation forms were received from Southwold, both of which contained records of attached live *Sargassum muticum*, the invasive 'Wireweed'. These are the most northerly records we have so far for this species in East Anglia.

Levington Marina

2 Survey forms were received for May and December from pontoon surveys during seaweed collection. The

invasive algae species *Sargassum muticum* and *Undaria pinnatifida* were seen on both occasions with the invasive squirt species *Botrylloides diagensis*.



Botrylloides diagensis at Levington marina



Sargassum muticum at Levington marina

Other activities

Courses

We ran one Observer course in Norfolk and several 'courselets' in Suffolk in 2019, a planned Observer course on the isle of Arran was postponed until May 2020 due to organisational difficulties.

Courselets

A series of half day 'courselets' covering a range of subjects including ID within a phylum, photography skills and aspects of form filling were arranged in Suffolk for the quiet months of April to June, attracting people who wouldn't normally join us in North Norfolk. A nominal fee was charged and lunch included.

These are being repeated as online sessions in the evenings during lockdown in 2020.

Sheringham Observer



Theory session at Sheringham YHA

Our usual July Observer course at Sheringham in Norfolk was well attended by 9 new students, several refreshers and a few non-divers who wanted to use the knowledge for snorkel and intertidal surveys. The practical dives were replaced by an intertidal session at Weybourne rock pools due to poor weather and students completed their dives over several subsequent weekends.



Practical Observer session at West Runton – look at the white horses in the distance!

Talks

Northants BSAC 3rd February

We were invited to talk to the Northants dive club at their dry meeting in Towcester, which was right on the border of 'East Anglia', but worth the trip as we got extra students for the Observer course and interested the club generally in diving in North Norfolk instead of the South coast, opening up possibilities for future diving together.

Anglian divers 2nd July

Anglian divers are one of our local BSAC clubs, now working in collaboration with a PADI shop in Norwich to complete early training. This has given both bodies an extra set of people whose interests overlap.

The club was looking for new ways to encourage members new and old, so we did a talk in early July and several members signed up for the Observer course, some as very lapsed refreshers!



Happy club boat divers

We then did some dives together in their boat as part of their dive week, reaching wrecks and drifts that we don't otherwise have an opportunity to visit.



Diver on the Nubia wreck

Hopefully, we will be able to repeat the experience in 2020!

Snorkel day

A day of snorkelling was organised at the new snorkel trail in Sheringham Norfolk, to introduce the trail to local wild swimmers, offer support for new



Treasure from the sea!

snorkellers and give help with Seasearch form filling for snorkellers and divers

Unfortunately, it was a rather breezy cold day, but a hardy band of snorkellers and divers ventured into the sea at low slack, then sat together in the warmth of the Offshore Cafe (the owners are interested in promoting the trail) to fill in forms. One snorkeller suddenly realised that she'd lost a valuable string of pearls during the morning, somewhere between her car and 200m out to sea! Everywhere on land was searched and they were thought to be gone forever.

A week later, Rob Spray was diving at the same site and found them in a spot sheltered from the tide and with only a small amount of rust on the fastener; a happy ending!

Form filling day

A day was held in Suffolk in December to help volunteers complete any outstanding Observation and Survey forms they might have for the year – a selection of ID books were provided, together with blank forms and help and advice for anyone needing it. It was decided that the format was very successful, but needed to be offered earlier in the year to catch people as they started to fall behind, rather than once they had a big backlog to complete.



Sand smelt, *Atherina presbyter* seen on a night dive at East Runton. These fish smell strongly of cucumber!

NBN award

Seasearch East was presented with the NBN award for marine wildlife recording at an event in Nottingham in November in recognition of how much the quantity and quality of Seasearch records from East Anglia have improved over the last 14 years, going from the part of England with the least form returns in 2005 to the highest in 2019! Well done everyone!



Dawn Watson and Rob Spray Seasearch East 2019

Shanny – *Lipophrys pholis* refusing to accept an award

Species records



Dawn Watson and Rob Spray Seasearch East 2019

Bloody Henry, *Henricia* sp having a nice sit down at Overstrand



Dawn Watson and Rob Spray Seasearch East 2019

The appendix below lists all the species recorded by Seasearch East volunteers during 2019, with a grand total of 356 for the whole of East Anglia – the same number of individual records as 2018, but with many which were only to genus or phylum being replaced with definite species names.



Dawn Watson and Rob Spray Seasearch East 2019

Nut crab, *Ebalia tumefacta* at West Runton

The table is broken down by county and phylum with totals in bold at the end of each section. No records were made for Essex in 2019; we intend to do quite a lot of dives there in 2020, with projects monitoring native oysters and eelgrass beds.



Dawn Watson and Rob Spray Seasearch East 2019

Crystal nudibranch, *Antiopella cristata*, with the amphipod parasite *Doridicola agilis* (the orange bunny face)

Species lists

Scientific name	Common name/description	Lincs and Wash	Norfolk	Suffolk	East Anglia
Porifera		Sponges			
<i>Halichondria bowerbankii</i>	a sponge		O-F	F-C	O-C
<i>Halichondria panicea</i>	Breadcrumb sponge			O-C	O-C
<i>Oscarella sp</i>	a sponge		R-F		R-F
<i>Sycon ciliatum</i>	Vase sponge		O-F	O	O-F
<i>Grantia compressa</i>	Purse sponge		R-O		R-O
<i>Haliclona oculata</i>	Mermaid's glove		R-O		R-O
<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-O		R-O
<i>Raspallia ramosa</i>	Chocolate fingers sponge		R-O		R-O
<i>Terpios gelatinosa</i>	a blue sponge crust		R		R
<i>Cliona celata</i>	Boring sponge		R-F		R-F
<i>Amphilectus fucorum</i>	Shredded carrot sponge		O-C		O-C
<i>Porifera sp</i>	blue shredded carrot		R-O		R-O
<i>Porifera sp</i>	yellow shredded carrot		R-O		R-O
<i>Leucosolenia sp</i>	Spiky lace sponge		R-O	F	R-F
<i>Porifera ind.</i>	massive sponge sp		R		R
<i>Porifera ind</i>	crust sponge sp		O-F		O-F
<i>Myxilla incrustans</i>	yellow sponge crust		O		O
<i>Dysidea fragilis</i>	Goosebump sponge		R-C		R-C
<i>Dysidia pallescens</i>	Pink goosebump		R-F		R-F
<i>Aplysilla sulfurea</i>	a sponge		R-O		R-O
<i>Clathrina coriacea</i>	Lace sponge		O-F		O-F
<i>Hymedesmia sp</i>	Norfolk purple sponge		R-F		R-F
<i>Polymastia penicillus</i>	Chimney sponge		R-F		R-F
<i>Suberites massa</i>	a sponge		R-F		R-F
<i>Stelligera rigida</i>	a sponge		O		O
Cnidaria		Hydroids and anemones			
<i>Alcyonium digitatum</i>	Dead mens fingers		R-C		R-C
<i>Actinia equina</i>	Beadlet anemone		O-F		O-F
<i>Metridium dianthus</i>	Plumose anemone		F-A		F-A
<i>Sagartia elegans</i>	Elegant anemone		O-C		O-C
<i>Sagartia troglodytes</i>	an anemone		O-C		O-C
<i>Urticina felina</i>	Dahlia anemone	O	O-C		O-C
<i>Urticina eques</i>	Horseman anemone		R-F		R-F
<i>Diadumene cincta</i>	Orange anemone		C	O	O-C
<i>Tubularia indivisa</i>	Oaten pipes		R-C		R-C
<i>Hydractinia echinata</i>	Hermit fur		R-F		R-F
<i>Sertularia cupressina</i>	White weed		R-C		R-C
<i>Eudendrium sp</i>	a hydroid		O-C	R	R-C
<i>Abietinaria abietina</i>	a hydroid		O		O
<i>Halecium halecinum</i>	a hydroid		R-F		R-F
<i>Halecium beanii</i>	a hydroid		O-F		O-F
<i>Hydrallmania falcata</i>	Helter skelter hydroid	R	O-F		R-F

Scientific name	Common name/description	Lincs and Wash	Norfolk	Suffolk	East Anglia
<i>Clytia hemisphaerica</i>	a hydroid		O-F	O	O-F
<i>Halopteris catharina</i>	a hydroid		R-C		R-C
<i>Plumularia setacea</i>	a feathery hydroid		O-F		O-F
<i>Obelia dichotoma</i>	a hydroid	O	O-C		O-C
<i>Obelia geniculata</i>	Kelp fur			F	F
<i>Garveia nutans</i>	a hydroid		F		F
<i>Hydrozoa sp</i>	a feathery hydroid		O-C		O-C
<i>Kirchenpaueria pinnata</i>	a feathery hydroid		R-S		R-S
<i>Coryne eximia</i>	a hydroid		R-F		R-F
<i>Dynamena pumila</i>	a hydroid	R	O		R-O
<i>Nemertesia antennina</i>	Antenna hydroid		R-O		R-O
<i>Nemertesia ramosa</i>	Branched antenna hydroid		R		R
<i>Sertularella rugosa</i>	a hydroid		O-C		O-C
<i>Tima bairdii</i>	a hydroid medusa		O		O
<i>Aequorea forskalea</i>	a hydroid medusa		R		R
<i>Aurelia aurita</i>	Moon jelly		O	O	O
<i>Chrysaora hysoscella</i>	Compass jelly		R-O		R-O
<i>Cyanea capnea</i>	Lion's mane jelly		R		R
<i>Cyanea lamarckii</i>	Blue jelly		R		R
<i>Craterolophus convolvulus</i>	a stalked jelly		O		O
<i>Calvadosia campanulata</i>	a stalked jelly		O-F		O-F
<i>Stauromedusae sp</i>	a stalked jelly		R-O		R-O
Annelida	Segmented worms				
<i>Arenicola sp</i>	Lugworm		R		R
<i>Arenicola marina</i>	Lugworm		O-F		O-F
<i>Arenicola defodiens</i>	Black lugworm		R-O		R-O
<i>Sabella pavonina</i>	Peacock fanworm		O-A	F-C	O-A
<i>Parasabella langerhansi</i>	a fanworm		R		R
<i>Lanice conchilega</i>	Sandmason worm	O	O-A		O-A
<i>Cirratulus cirratulus</i>	a worm		O		O
<i>Harmothoe sp</i>	a scaleworm		R-O		R-O
<i>Myrianida pinnigera</i>	a polychaete		R		R
<i>Polydora ciliata</i>	a tubeworm		O-S		O-S
<i>Salmacina dysteri</i>	Coral worm		R-F		R-F
<i>Spirobranchus</i>	Keel worms	F	R-C		R-C
<i>Sabellaria spinulosa</i>	Ross worm		O-C		O-C
<i>Spirorbis</i>	a spiral worm		O-F		O-F
<i>Pileolaria berkleyana</i>	a spiral worm		R-A		R-A
<i>Terebellid sp</i>	a tubeworm		R		R
<i>Tubulanus annulatus</i>	Football jersey worm		R		R
<i>Cerebratulus sp</i>	a worm		R		R
<i>Cycloporus papillosus</i>	a flatworm		R		R
Crustacea	Barnacles, crabs, shrimp and lobsters				
<i>Cirripedia</i>	a barnacle	F-C	R-A	F-C	R-A
<i>Eliminius modesta</i>	a barnacle			F	F
<i>Cancer pagurus</i>	Edible crab		O-C	R	R-C
<i>Carcinus maenas</i>	Shore crab	R	R-C	O	R-C
<i>Necora puber</i>	Velvet swimming crab		R-C		R-C

Scientific name	Common name/description	Lincs and Wash	Norfolk	Suffolk	East Anglia
<i>Pilumnus hirtellus</i>	Hairy crab		R		R
<i>Portumnus latipes</i>	Pennant's swimming crab		R		R
<i>Liocarcinus depurator</i>	Harbour crab		R-O		R-O
<i>Liocarcinus holsatus</i>	Flying crab		R-F		R-F
<i>Corystes cassivelaunus</i>	Masked crab		R-O		R-O
<i>Hyas araneus</i>	Sea toad		R-O		R-O
<i>Inachus sp</i>	Sponge spider crab		R-F		R-F
<i>Macropodia sp</i>	Long legged spider crab		R-F		R-F
<i>Pisidia longicornis</i>	Long clawed porcelain crab		R-F		R-F
<i>Ebalia tumefacta</i>	Nut crab		O		O
<i>Ebalia sp</i>	a nut crab		R		R
<i>Pagurus bernhardus</i>	Common hermit crab		O-F		O-F
<i>Pagurus cuanensis</i>	Hairy hermit crab		R-O		R-O
<i>Paguridae</i>	a hermit crab		O-C		O-C
<i>Anapagurus sp</i>	a hermit crab		R		R
<i>Galathea intermedia</i>	a squat lobster		R		R
<i>Galathea squamifera</i>	Brown squat lobster		R-A		R-A
<i>Homarus gammarus</i>	Common lobster		R-C		R-C
<i>Palaemon serratus</i>	Common prawn		R-C		R-C
<i>Palaemon elegans</i>	Rockpool prawn		O	O	O
<i>Crangon crangon</i>	Brown shrimp		R-F		R-F
<i>Pandalus montagui</i>	Northern prawn		R-O		R-O
<i>Eualus sp</i>	a prawn		R		R
<i>Hippolytes varians</i>	Chameleon prawn		O-F		O-F
<i>Processa sp</i>	a prawn		R-O		R-O
<i>Athanas nitescens</i>	Hooded shrimp		R		R
<i>Caprella sp</i>	a skeleton shrimp		O-C	O	O-C
<i>Mysida sp</i>	a mysid shrimp		R-F		R-F
<i>Gammarid</i>	a shrimp		R	O	R-O
<i>Amphipoda sp</i>	an amphipod		O	O	O
<i>Doridicola agilis</i>	parasite on nudibranch		R-O		R-O
<i>Iphimedia obesa</i>	an amphipod		R		R
<i>Jassa sp</i>	an amphipod		F-S	R	R-S
<i>Idotea sp</i>	an isopod		O	R	R-O
<i>Idotea linearis</i>	an isopod		R		R
<i>Idotea neglecta</i>	an isopod		O	O	O
<i>Ostracoda sp</i>	an Ostracod		C		C
Mollusca	Molluscs				
<i>Polyplacophora</i>	a chiton		O		O
<i>Hermaea bifida</i>	a sea slug		R		R
<i>Lamellaria perspicua</i>	a mollusc		R		R-O
<i>Nudibranchia sp</i>	nudibranch eggs		R-O		R-O
<i>Doto sp</i>	a nudibranch		R-F		R-F
<i>Doto pinnatafidita</i>	a nudibranch		R-O		R-O
<i>Fjordia lineata</i>	a nudibranch		R		R
<i>Edmundsella pedata</i>	Violet sea slug		R-F		R-F
<i>Polycera quadrilineata</i>	Four lined polycera		R		R
<i>Polycera faeroensis</i>	a nudibranch		R		R

Scientific name	Common name/description	Lincs and Wash	Norfolk	Suffolk	East Anglia
<i>Antiopella cristata</i>	Crystal slug		R-C		R-C
<i>Lomanotus marmoratus</i>	a nudibranch		R		R
<i>Facelina bostoniensis</i>	a nudibranch		R		R
<i>Facelina auriculata</i>	a nudibranch		R		R
<i>Palio nothus</i>	a nudibranch		R-O		R-O
<i>Catriona aurantia</i>	a nudibranch		R		R
<i>Aeolidia sp</i>	a nudibranch		R-O		R-O
<i>Aeolidia filomenae</i>	a nudibranch		R-F		R-F
<i>Trivia sp</i>	a cowrie		R		R
<i>Trivia monarcha</i>	a cowrie		R		R
<i>Crepidula fornicata</i>	Slipper limpet	R-O	R	R	R-O
<i>Steromphala cineraria</i>	Grey topshell		O-F		O-F
<i>Calliostoma zizyphinum</i>	Painted topshell		R-F		R-F
<i>Buccinum undatum</i>	Common whelk		R-O	O	R-O
<i>Littorina saxatilis</i>	Rough periwinkle		O-F		O-F
<i>Rissoa sp</i>	a gastropod		O-S		O-S
<i>Lacuna vincta</i>	Banded chink shell		O		O
<i>Nucella lapillus</i>	Dog whelk		R-O		R-O
<i>Ocenebra erinacea</i>	Sting wrinkle		R		R
<i>Patella vulgata</i>	Common limpet		O	O	O
<i>Tectura virginea</i>	White tortoiseshell limpet		R-O		R-O
<i>Limecola balthica</i>	a tellin		O		O
<i>Mytilus edulis</i>	Edible mussel	R	R	R	R
<i>Magallana gigas</i>	Pacific oyster			R-F	R-F
<i>Barnea candida</i>	White piddock		F		F
<i>Ensis magnus</i>	a razor shell		R-A		R-A
<i>Sepiolo atlantica</i>	Little cuttlefish		R-F		R-F
<i>Alloteuthis subulata</i>	small squid eggs		R		R
<i>Loligo sp</i>	Common squid eggs		R		R
<i>Eledone cirrhosa</i>	Curled octopus		R		R
Bryozoa	Sea mats and sea mosses				
<i>Bryozoa</i>	encrusting bryozoan indet		R-O		R-O
<i>Conopeum reticulatum</i>	encrusting bryozoan	A	O-A		O-A
<i>Electra pilosa</i>	Frosty sea mat	C	O-C	R	R-C
<i>Schizomavella linearis</i>	encrusting bryozoan		O-C		O-C
<i>Bowerbankia citrina</i>	a bryozoan		O-F		O-F
<i>Bowerbankia imbricata</i>	a bryozoan		O-C		O-C
<i>Bicellariella ciliata</i>	a bryozoan		O-F		O-F
<i>Flustra foliacea</i>	Hornwrack		R-C		R-C
<i>Alcyonidium diaphanum</i>	Finger bryozoan		O		O
<i>Alcyonidium hirsutum</i>	a bryozoan		O-F		O-F
<i>Anguinella palmata</i>	a bryozoan		F-C		F-C
<i>Scrupocellaria sp</i>	a bryozoan		O-C	O	O-C
<i>Scrupocellaria reptans</i>	a bryozoan		F		F
<i>Vesicularis spinulosa</i>	a bryozoan		R-O		R-O
<i>Bugulidae</i>	a spiral bryozoan	O			O
<i>Bugula neritina</i>	an invasive bryozoan			O	O
<i>Crisularia plumosa</i>	Spiral bryozoan		R-C		R-C

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<i>Bugulina flabellata</i>	a spiral bryozoan		R-O		R-O
<i>Bugulina turbinata</i>	a spiral bryozoan		O		O
<i>Caberea boryi</i>	a bryozoan		O-F		O-F
<i>Crisia eburnae</i>	a bryozoan		C-A		C-A
<i>Crisia denticulata</i>	a bryozoan		F		F
<i>Crisia sp</i>	a bryozoan	O	R-C	R	R-C
<i>Nolella stipata</i>	a bryozoan		O		O
<i>Disporella hispida</i>	a disc bryozoan		R-F		R-F
<i>Plagioecina patina</i>	a disc bryozoan		R-F		R-F
Echinodermata	Starfish, urchins and brittlestars				
<i>Ophiura albida</i>	Sand brittlestar		R		R
<i>Ophiura ophiura</i>	Sand brittlestar		O		O
<i>Amphipholis squamata</i>	a brittlestar		O		O
<i>Amphiura sp</i>	a brittlestar		R		R
<i>Ophiothrix fragilis</i>	Common brittlestar		R		R
<i>Asterias rubens</i>	Common starfish		O-C		O-C
<i>Henricia sp</i>	Bloody henry		R-O		R-O
<i>Crossaster papossus</i>	Common sunstar		R-F		R-F
<i>Echinus esculentus</i>	Edible urchin		R		R
Tunicata	Sea squirts				
<i>Perophora listeri</i>	a tunicate		O-C		O-C
<i>Perophora japonica</i>	an invasive tunicate		R-F		R-F
<i>Asciidiella aspersa</i>	a tunicate		R	C-A	R-A
<i>Ascidia mentula</i>	a tunicate			F	F
<i>Asciidiella scabra</i>	a tunicate		R		R
<i>Molgula complanata</i>	a tunicate	R	O		R-O
<i>Molgula sp</i>	a tunicate		R-S		R-S
<i>Styela clava</i>	Leathery squirt			O-F	O-F
<i>Ciona intestinalis</i>	Yellow ringed squirt			F-C	F-C
<i>Polycarpa scuba</i>	a tunicate		R-F		R-F
<i>Dendrodoa grossularia</i>	Baked bean squirt		O-F		O-F
<i>Diplosoma spongiforme</i>	Sponge squirt		O-A		O-A
<i>Diplosoma listerianum</i>	a tunicate		O		O
<i>Botrylloides leachii</i>	a tunicate		R-O		R-O
<i>Botrylloides diagensis</i>	an invasive tunicate			F	F
<i>Botrylloides sp</i>	a tunicate			C	C
<i>Botryllus schlosseri</i>	Star squirt		R-O	O	R-O
<i>Didemnum maculosum</i>	Snowflake squirt		R-C		R-C
<i>Trididemnum cereum</i>	a tunicate		O-F		O-F
<i>Lissoclinum perforatum</i>	a tunicate		R-O		R-O
<i>Polyclinum aurantium</i>	a tunicate		R-F		R-F
<i>Clavelina lepadiformis</i>	Lightbulb sea squirt		R-F	A	R-A
<i>Pycnoclavella stolonialis</i>	Pinhead tunicate		R-O		R-O
<i>Corella eumyota</i>	an invasive tunicate		R-O		R-O
<i>Archidostoma aggregatum</i>	a tunicate		O-A		O-A
<i>Polysincraton 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		R-F		R-F

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<i>Aplidium glabrum</i>	a tunicate		R-O		R-O
<i>Aplidium sp</i>	pink colonial tunicate		R-O		R-O
<i>Distaplia rosea</i>	a tunicate		R-O		R-O
Pisces	Fishes				
<i>Scyliorhinus canicula</i>	Lesser spotted catshark		R-O		R-O
<i>Anguilla anguilla</i>	European eel		R		R
<i>Syngnathus sp</i>	a pipefish sp		O		O
<i>Syngnathus acus</i>	Greater pipefish		R		R
<i>Syngnathus rostellatus</i>	Lesser pipefish		R-O		R-O
<i>Callionymus sp</i>	a dragonet		R		R
<i>Callionymus reticulatus</i>	Reticulated dragonet		R-F		R-F
<i>Callionymus lyra</i>	Common dragonet		R		R
<i>Pomatoschistus sp</i>	a sand goby		O-F		O-F
<i>Pomatoschistus minutus</i>	Sand goby		O		O
<i>Pomatoschistus pictus</i>	Painted goby		O-F		O-F
<i>Gobiusculus flavescens</i>	Two spot goby		O-F		O-F
<i>Gobius paganellus</i>	Rock goby		R		R
<i>Thorogobius ephippiatus</i>	Leopard spotted goby		O		O
<i>Lipophrys pholis</i>	Shanny		R		R
<i>Aphia minuta</i>	Transparent goby		O-F		O-F
<i>Agonus cataphractus</i>	Pogge		R		R
<i>Ranina raniceps</i>	Tadpole fish		R		R
<i>Echiichthys vipera</i>	Lesser weever		R-O		R-O
<i>Taurulus bubalis</i>	Long spined sea scorpion		R-O		R-O
<i>Myoxocephalus scorpius</i>	Short spined sea scorpion		R		R
<i>Micrenophrys lilljeborgii</i>	Norway bullhead		R		R
<i>Atherina presbyter</i>	Sand smelt		F		F
<i>Pollachius pollachius</i>	Pollack		R-F		R-F
<i>Dicentrarchus labrax</i>	Sea bass		O-C	O	O-C
<i>Trisopterus luscus</i>	Bib		R-C		R-C
<i>Trisopterus minutus</i>	Poor cod		R-O		R-O
<i>Gadus morhua</i>	Cod		R		R
<i>Molva molva</i>	Ling		R		R
<i>Mullus surmuletus</i>	Striped red mullet		O-F		O-F
<i>Pholus gunnellus</i>	Butterfish		R		R
<i>Symphodus melops</i>	Corkwing wrasse		R-F		R-F
<i>Labrus bergylta</i>	Ballan wrasse		O-F		O-F
<i>Ctenolabrus rupestris</i>	Goldsinny		O		O
<i>Ammodytes sp</i>	a sand eel		R-C		R-C
<i>Hyperoplus lanceolatus</i>	Greater sand eel		R-O		R-O
<i>Eutriglia gurnardus</i>	Grey gurnard		R		R
<i>Platichthys flesus</i>	Flounder		R		R
<i>Pleuronectes platessa</i>	Plaice		R-O		R-O
<i>Limanda limanda</i>	Dab		R-O		R-O
<i>Solea solea</i>	Dover sole		R		R
<i>Microstomus kitt</i>	Lemon Sole		R		R
Algae	Seaweeds				
<i>Algae</i>	mixed algae		C		C

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<i>Ulva sp</i>	a sea lettuce	C	R-C	O-C	R-C
<i>Ulva lactuca</i>	Sea lettuce		R		R
<i>Ulva linza</i>	Gut weed		F-A		F-A
<i>Ulva rigida</i>	a sea lettuce		R-O		R-O
<i>Chaetomorpha linum</i>	Brick weed		R-O	O	R-O
<i>Chlorophyta</i>	'green fluff'		C		C
<i>Derbesia sp</i>	a green algae		O-F	O	O-F
<i>Cladophora sp</i>	a green algae		O		O
<i>Cladophora rupestris</i>	Rope weed		R-F		R-F
<i>Bryopsis plumosa</i>	Mossy feather weed		O-F	O-F	O-F
<i>Bryopsis hypnoides</i>	Mossy feather weed		R-F		R-F
<i>Diatoms</i>	diatoms		O-C	O	O-C
<i>Phaeophyta</i>	brown algae		F-C		F-C
<i>Undaria pinnatifida</i>	Wakame			C	C
<i>Sargassum muticum</i>	Wireweed			R-O	R-O
<i>Spongonema tomentosum</i>	a brown algae			O	O
<i>Asperococcus fistulosus</i>	Sausage weed			O	O
<i>Dictyota dichotoma</i>	Brown fanweed		R-F		R-F
<i>Taonia atomaria</i>	Dotted peacock weed		R-C		R-C
<i>Cutleria multifida</i>	Cutler's many cleft weed		O-F		O-F
<i>Petalonia fascia</i>	Broad leaf weed		R-F		R-F
<i>Cladostephus spongiosus</i>	Hairy sand weed		R-O		R-O
<i>Colpomenia peregrina</i>	Oyster thief		R-O		R-O
<i>Fucus vesiculosus</i>	Bladderwrack		F-C	F-C	F-C
<i>Fucus serratus</i>	Serrated wrack		R-C		R-C
<i>Fucus spiralis</i>	Spiral wrack		C		C
<i>Ascophyllum nodosum</i>	Egg wrack			O-C	O-C
<i>Halidrys siliquosa</i>	Podweed		R-O		R-O
<i>Desmarestia viridis</i>	Desmarest's green weed			O	O
<i>Desmarestia ligulata</i>	Desmarest's flattened weed		O		O
<i>Arthrocladia vilosa</i>	Fuzzy branched weed		R		R
<i>Rhodophyta</i>	red algae		O-C		O-C
<i>Rhodophyta ind crust</i>	red encrusting algae		O-F		O-F
<i>rhodophyta</i>	'red fluff'		O-F		O-F
<i>Corallinaceae crusts</i>	pink encrusting algae		R-C		R-C
<i>Corallina officianalis</i>	Common coral weed		R-F		R-F
<i>Gracilaria gracilis</i>	Slender wartweed		R-C		R-C
<i>Chondria dasyphylla</i>	Diamond cartilage weed		R-F		R-F
<i>Halurus flosculosus</i>	Mrs Griffith's little flower		R		R
<i>Halurus equisetifolius</i>	Sea Horsetail		R-F		R-F
<i>Naccaria wiggii</i>	a red algae		O		O
<i>Chondrus crispus</i>	Irish moss		O-C		O-C
<i>Ceramium echionitum</i>	a pincer weed		O		O
<i>Ceramium sp</i>	a pincer weed		R-O	F	R-F
<i>Polysiphonia fucoides</i>	Black siphon weed		C		C
<i>Polysiphonia nigra</i>	Twisted siphon weed		O-F	F	O-F
<i>Polysiphonia stricta</i>	Pitcher siphon weed		O-F		O-F
<i>Polysiphonia sp</i>	a Siphon weed		R-F	O	R-F

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<i>Delessaria sanguinea</i>	Sea beech		R-O		R-O
<i>Cryptopleura ramosa</i>	Fine-veined crinkle weed		O-F		O-F
<i>Rhodophyllis divaricata</i>	Leafy rose weed		O		O
<i>Grateloupia filicina</i>	Grateloup's fern weed		R-O		R-O
<i>Plocamium sp</i>	Comb weed		F-A		F-A
<i>Plumaria plumosa</i>	Soft feather weed		R	O	R-O
<i>Hypoglossum hypoglossoides</i>	Under tongue weed		R-F		R-F
<i>Scinaia furcellata</i>	Scina's weed		O-F		O-F
<i>Pterothamnion plumula</i>	Bushy feather weed			O	O
<i>Rhodymenia holmesii</i>	Holme's rose weed		O-C		O-C
<i>Rhodymenia ardissoni</i>	Spikey rose weed		O		O
<i>Heterosiphonia plumosa</i>	Siphoned feather weed		R-C		R-C
<i>Calliblepharis ciliata</i>	Eyelash weed		R-C		R-C
<i>Rhodothamnion floridula</i>	Sandbinder		F		F
<i>Vertebrata byssoides</i>	Brongniart's thread weed		O-C		O-C
<i>Osmundea sp</i>	a fern weed		R-F		R-F
<i>Gastroclonium reflexum</i>	Reflexed grape weed		R-C		R-C
<i>Porphyra sp</i>	Lava	O	O-F		O-F
<i>Halarachnion ligulatum</i>	Sea spider weed		R-C		R-C
<i>Polyides rotunda</i>	Discoid fork weed		R-F		R-F
<i>Furcellaria lumbricalis</i>	Clawed forkweed		O-F		O-F
<i>Ahnfeltia plicata</i>	Black scour weed		O-F		O-F
<i>Mastocarpus stellatus</i>	Grape pip weed		O		O
<i>Drachiella heterocarpa</i>	Callused drachiella		R-O		R-O
Others	Other phyla				
<i>Pedicellina sp</i>	entoprocts		O		O
<i>Pycnogonidae</i>	a white sea spider			R	R
<i>Pycnogonidae</i>	a red sea spider		R-O		R-O
<i>Phoronis hippocreppia</i>	Horseshoe worm		R-F		R-F
<i>Halyphysema tumanowiczii</i>	a foraminiferan		F-C		F-C
<i>Pleurobrachia pileus</i>	Sea gooseberry			R	R
<i>Salicornia europaea</i>	Samphire			F	F
Total		17	334	59	356

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Dawn Watson and Rob Spray Seasearch East 2019

Intertidal survey during Observer course



Dawn Watson and Rob Spray Seasearch East 2019

Shoal of Bib, *Trisopterus luscus* with mixed sponge turf off Sea Palling

