

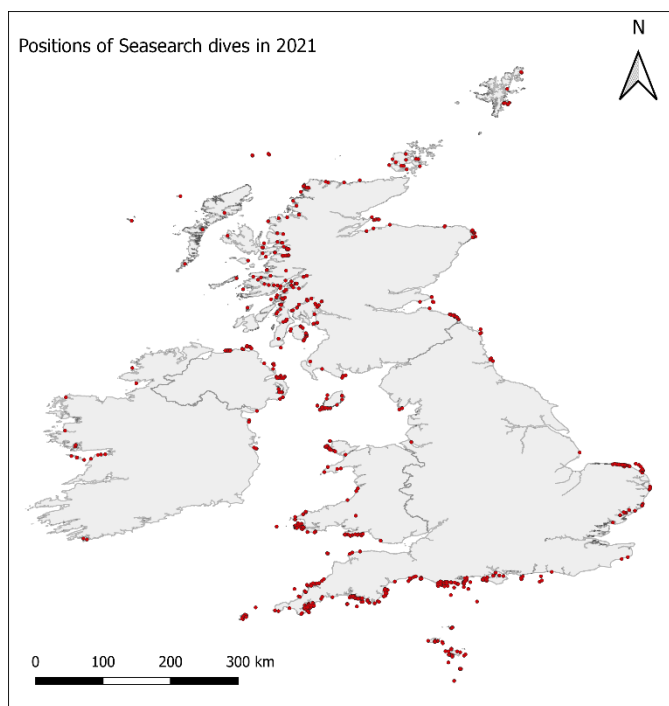
ANNUAL REPORT 2021



This report summarises Seasearch activities throughout Britain, Ireland and the neighbouring Crown Dependencies of the Channel Islands and the Isle of Man in 2021. It includes a summary of the main surveys undertaken (pages 2-14), reports produced and a summary of the data collected. This includes records of Priority habitats and species, locally important features and nationally scarce and rare species (pages 15-17) and habitats (pages 18-22). It also includes a summary of the training courses run for volunteer divers (page 23-24) and information on how Seasearch is organised and the data is managed and made available (page 25).

All of the reports referred to may be downloaded from the Seasearch website (www.seasearch.org.uk) and the species data may be accessed through the National Biodiversity Network (NBN) Atlas website at nbnatlas.org, where Seasearch now provide the second-largest marine dataset (and more records than the professional Marine Nature Conservation Review of the late 1980s and early 1990s).

Seasearch Surveys 2021



The following pages summarise the main surveys undertaken in 2021. After a very restricted and unusual year in 2020, activities made a tentative return towards “normality”. The map (left) shows the distribution of Seasearch surveys carried out in 2021 and can be interrogated on the interactive map at www.seasearch.org.uk/where

A new resource on the Seasearch website is an interactive map indicating the density of data collected in each 1km square - helping to plan visits to un- or under-recorded areas. See <https://www.seasearch.org.uk/data> and scroll down to “Deciding where to go?” - please do try it out and send feedback.

In some cases, Annual Reports (denoted © in the sub-heading in the sections below) can be downloaded from the Seasearch website. These reports are available for countries/regions as well as for specific projects with which Seasearch was involved.

Financial support in 2021 at a national level was given by the partners on the right in addition to the MCS.



Seasearch is coordinated and delivered locally in England by Wildlife Trust and MCS coordinators, in Scotland, Wales, Northern Ireland, the Channel Islands and the Isle of Man by MCS coordinators and in the Republic of Ireland by individuals.

SCOTLAND ®:

The year 2021 in Scotland was similar in many respects to 2020 in that diving activities were curtailed to a high degree by the restrictions imposed for the Coronavirus pandemic. However, although two Seasearch dive trips in April/May that had been postponed from 2020 were further postponed to 2022 or 2023 (Skye and Kinlochbervie), several Seasearch trips did take place later in 2021 - surveys were organised around Arran (June/July), other sites in the wider Clyde area (July) and Eyemouth (September). In addition, many diving events organised by individuals and groups around Scotland yielded records for which we are very grateful.

It was particularly pleasing to see records coming in from all corners of Scottish waters, from the usual favourite accessible sites on the east and west coasts to more far-flung locations, including the Solway Firth, the inner and outer Hebrides, Orkney, Shetland, the spectacular north Scottish coast, and the magnificent North Rona and westernmost rocky islets and pinnacles.

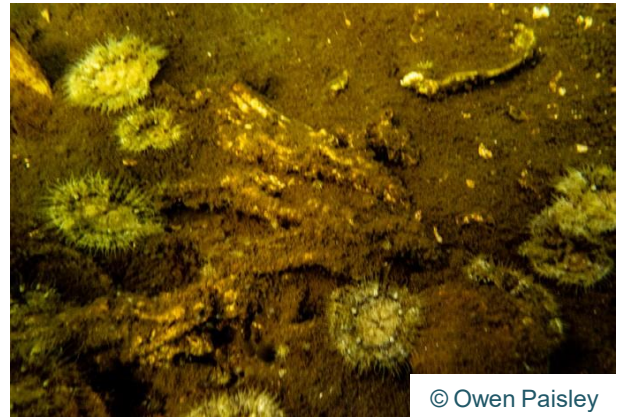


Native Oyster Ark project:

Small groups undertook Seasearch diving in West Loch Tarbert and Campbeltown Loch through the year, where valuable information on native oyster distribution was collected.



Highlights included the mapping of a 1 km-long eel grass bed in West Loch Tarbert by a team of Seasearch snorkellers. A less happy discovery was more evidence of past serpulid reefs in the Loch.



Elsewhere, two large native oyster beds were also surveyed by another team of snorkellers.



IRELAND

Northern Ireland ®:

With the ability to run boat diving again, and so much to catch up on, the programme for 2021 in Northern Ireland was a busy one! The momentum from 2020 continued and there were no issues filling places on boats, online talks and Observer training. Some dates and locations had to change from the original plans but generally the weather was kind and only one boat day was postponed to 2022.

Courses, including specialist ones focusing on nudibranchs and seaweeds, continued to be delivered online. Another highlight of 2021 was the postponed sea squirt “safari” (funded by a Sea Changers grant) which took place at the beginning of June (see separate report). The safari comprised an introductory online talk then two days of boat diving around the Skerries off Portrush.

“Volunteer of the Year” (with 37 forms submitted) Libby Keatley made a number of interesting sightings over the year, including common squid (in shallow water during the day – possibly inshore to spawn) and a planktonic cephalopod larva (images below).



© Libby Keatley



© Libby Keatley

ISLE OF MAN:

2021 was the first year Manx Wildlife Trust took over co-ordinating this programme, with Tony Glen stepping down at the end of 2020. A huge thanks goes to him for all his hard work over the many years of co-ordinating and ensuring the Island remains part of this great project. This year we managed to organise an Observer Course at the start of the season, even with covid restrictions (where would we be without online platforms?). We trained 13 divers and snorkelers and managed to submit 54 forms. Not our best record but a strong start and something to build on in 2022.



We organised a few shore and boat dives through the year and through funding from Sea-Changers we managed to dive on a new site for seagrass in Bulgham Bay on the east coast. Local divers had reported it a few years back but we finally managed to visit the site in the summer and confirm it was still there. We are pleased to say it’s a healthy site with plenty of diversity and abundance. We are now lobbying for its protection. We also dived another existing site in Laxey, one of the Marine Nature Reserves, but sadly we couldn’t say it was in such great condition. We still have some funding from Sea-Changers and now additional funding from Micro-gaming for a seagrass transplantation trial for 2022, so watch this space.

Further excitement this season has been the identification of two new species of nudibranch, *Goniodoris castanea* and *Calma glaucooides*.



© Lara Howe

Goniodoris castanea (above) was captured on the wreck of the Afton in Little Ness Marine Nature Reserve on the east coast and *Calma glaucooides* (below) was recorded in Port Erin Bay, another marine nature reserve on the west coast. Hopefully we might find some more new species in 2022.



© Andy Pegge

However, the highlight of the year, with the support of Angus from the central team, we managed to upload all our Seasearch records onto our Manx recording database, making them more accessible. A big thanks to Seasearch Data Officer Angus Jackson for his support on this.

WALES

The priority habitat of “fragile sponge and anthozoan communities” is currently under assessment in Wales and provided a focus for survey efforts in 2021 (weather permitting as ever!) More gaps were filled by volunteers undertaking independent surveys in areas lacking in commercial dive charter boats, or by snorkelling, which is very heartening.

South & West Wales ®:

2021 provided a much more “normal” year in south and west Wales, with a record number of forms received from fourteen days of organised survey dives in Pembrokeshire, an extra couple of days around Strumble Head courtesy of Cardigan Sub Aqua Club, and a fabulous effort around the Gower peninsula encompassing independent shore surveys as well as snorkels and dives. Historical data from the Gower dated back to 1995 so it was long overdue a re-visit. Independent surveys were also carried out further north along the Ceredigion coast by valiant volunteers.



© Ross Bullimore

Pink seafans were also recorded, reaching their northern limit in North Pembrokeshire (image above).



© Jo Prosser

Crawfish sightings continued too (above) and a record of the nationally-rare sponge *Suberites massa* on Mumbles Pier (below) was the first in Wales since the 1970s.



© Marie Jones

North Wales ®:

Despite ongoing covid-related difficulties in North Wales, a successful year was recorded with eight separate organised events including a good mixture of boat- and shore-surveys (the latter with both divers and snorkellers). Forms were received from independent surveys too.



© Dawn Thomas

The Wales-wide focus on fragile sponge habitats also yielded some interesting records from around Anglesey. The weather gods cooperated in 2021 and four exposed sites were surveyed: the Skerries (north-west Anglesey) in July, the area around South Stack (north-west Holy Isle) on at the start of

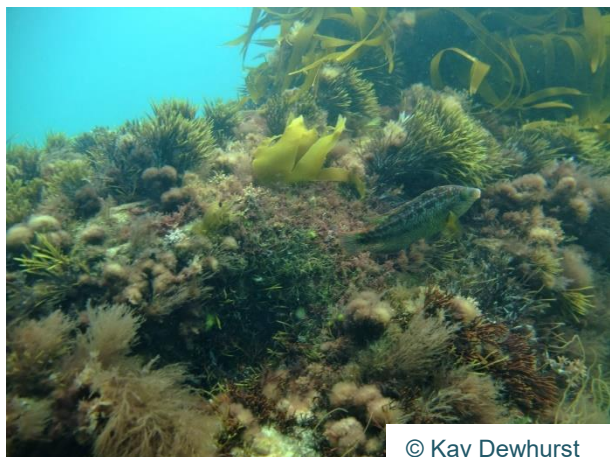
September and North Stack and Namarch Bay (north-west and north Holy Isle) in mid-October.

Axinellid sponges (below) more usually found further south and west were recorded, and other first or unusual sightings for North Wales included stalked jellyfish, lesser weeverfish and the imperial and strawberry anemones.



© Matthew Boa

Snorkel surveys of the kelp in the sublittoral fringe were another accessible target, in conjunction with the North Wales Wildlife Trust. We have much less data from the sublittoral fringe (or from dives deeper than 25-30m) so snorkel surveys prove an excellent way to fill this gap, and to investigate sites that would be impossible with full dive gear.



© Kay Dewhurst

Less welcome but arguably unavoidable, records of non-native species continue to be received, including the first dive record of the slipper limpet (*Crepidula fornicata*) at the SW corner of Anglesey opposite Caernarfon.

ENGLAND

LIFE EU ReMEDIES project ®:



LIFE Recreation ReMEDIES (LIFE18 NAT/UK/000039)
Reducing and Mitigating Erosion and Disturbance Impacts affecting the Seabed
www.gov.uk/government/publications/life-recreation-remedies-project

The EU-funded LIFE Recreation ReMEDIES partnership project led by Natural England is focused on five Special Areas of Conservation (SAC) along the south and south-east coast of England: Isles of Scilly SAC, Fal & Helford SAC, Plymouth Sound & Estuaries SAC, Solent Maritime SAC and Essex Estuaries SAC. The project is focused upon seagrass beds and maerl (a slow-growing coralline alga) - reducing recreational pressures, restoring/protecting and raising awareness of these sensitive habitats. Restoration of seagrass has taken place in Plymouth Sound and in the Solent, while in some places traditional block and chain moorings have been replaced by “advanced mooring systems” to reduce scouring in seagrass beds. Seasearch have been involved in carrying out exploratory dives and snorkels to establish the location, extent and associated biodiversity of these habitats.

Isles of Scilly SAC:



© Angus Jackson

Seasearch Data Officer Angus Jackson was fortunate to join the long-running (since 1996) Project Seagrass expedition to the Scillies in August as a last-minute replacement surveyor. Given the previous experience of running surveys over there, the team are by now pretty slick at shipping over all the equipment (including a RIB) on the Scillonian. Despite windy weather at the start of the expedition, having the boat made it relatively straightforward to complete surveys at five sites: surveys at Broad Ledges (Tresco), Old Grimsby Harbour (Tresco), West Broad Ledges, Higher Town Bay (St Martin's) and Little Arthur (Eastern Isles).

© Angus Jackson



© Chris Webb



Fal & Helford SAC:

Cornwall Seasearch carried out 8 dives in this area last summer, surveying maerl as well as seagrass beds (the Fal Estuary has unarguably the densest maerl aggregations in England). Surveys out of Porthkerris in June targeted sites in and south of the Helford River, while the September surveys were confined to the Fal estuary by strong SE winds. Nonetheless they checked out sites on the edges of known seagrass and maerl beds to establish condition and record any impacts (such as anchor chains in the image below, near Grebe in the Helford).

© Shannon Moran



Solent Maritime SAC:

Searching for slack(ish) water in the Solent on spring tides is always a challenge but we managed the happy confluence of good weather, slack water and interesting sites on three occasions in 2021: just east of Yarmouth (NW IOW) at the end of June, the heavily-used Osborne Bay (NE IOW) in July and a fabulous gentle drift in Thorness Bay (NNW IOW) at the start of September.



© Charlotte Bolton

Plymouth Sound & Estuaries SAC:

Dives in the north of Cawsand Bay (western/Cornwall side of the Sound) and Leekbed Bay (eastern/Devon side) established good cover and condition of seagrass in known locations with plenty of interesting associated marine life (e.g. small fish, heart urchins, peacock worms and cuttlefish eggs, below) including a non-native filamentous red alga, *Antithamnionella turnifolia*.



© Lin Baldock

The Seasearch surveys were timed to complement the Natural England statutory monitoring dives; the former recorded details about the substrate and

associated biodiversity while the latter focuses on condition (density, measuring shoot length etc.).



Visit www.saveourseabed.org for more information about the project and to read our survey/expedition blogs.

Darwin Tree of Life (DToL) project

Seasearch are the “public engagement partner” of the Marine Biological Association (MBA) in this ambitious project which aims “to sequence the genomes of all 70,000 species of eukaryotic organisms in Britain and Ireland”. This means that the expertise of our volunteers in Devon and Dorset in recognising marine life underwater is being employed in collecting various species to be investigated using genetic techniques.



© Mike Markey

Involvement in Phase 1 of the “Searching the Seas” project is limited by proximity to the lab researchers at the MBA in Plymouth so collected specimens can be delivered as soon as possible. We are already planning Phase 2 of the project (identifying “tricky” species or species aggregates for which genetic investigation might give us a definitive ID, and expanding the involvement outside the south-west) as well as continuing to work through the list of species for underwater collection. It should be reiterated that sampling in this way is very much NOT the norm for Seasearch volunteers.

An update on the sponge sequencing from John Bishop at the MBA stated “The NHM didn’t get far with barcoding the sponges collected by Dorset volunteers last September and so Rowena Stern

(molecular person at the MBA, normally working on material from the Continuous Plankton Recorder) is having a go in-house, using alternative protocols. Yesterday she reported briefly on trials on six of the species.

Good-quality DNA was extracted, and Rowena carried out PCR to amplify regions of 28S rDNA marker and the standard COI barcoding region from the Sponge Barcoding Project website. PCR was successful (*i.e.* DNA was produced which could potentially be sequenced) for 28S for two (possibly three) species, but not for COI for any species - not particularly good news. Earlier, Joanna (DToL staff at the MBA) did have encouraging preliminary results with a very laborious protocol involving a cloning step, and it may be necessary to bite the bullet and pursue that.” Involvement with the DToL project will continue over the summer season in 2022.



Visit www.darwintreeoflife.org to find out more information about the project, or read this article: https://portlandpress.com/biochemist/article/doi/10.1042/bio_2022_106/231079/Sequencing-our-seas

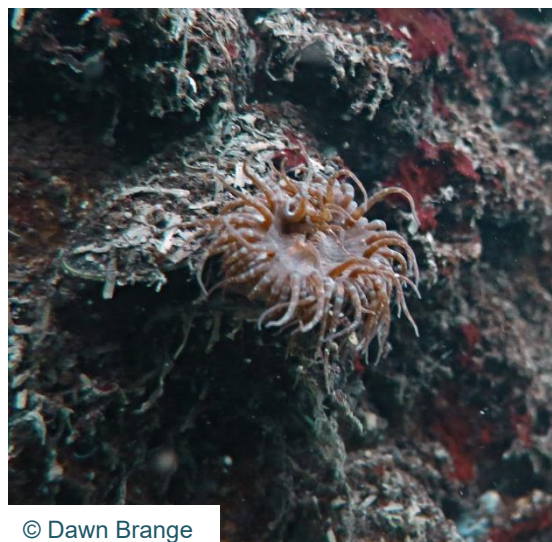
Crawfish/spiny lobster recording:

The Seasearch paper/pdf forms for recording crawfish have now been replaced by an online webpage hosted by iRecord. This collects all the same information and allows photos to be uploaded and associated with sightings. You don't even have to create an iRecord account before using the service at <https://irecord.org.uk/crawfish>

All the Seasearch crawfish records were subjected to a robust statistical analysis to quantify the reported “population increase” that had been recorded in the south-west since *ca.* 2015. This has now been published online in the Journal of the Marine Biological Association of the UK (Open Access so everyone can read it): “Bayesian occupancy modelling of benthic Crustacea and the recovery of the European spiny lobster, *Palinurus elephas*” <https://www.doi.org/10.1017/S002531542200008X>

North West England ®:

Aside from the now-usual activity of diving in the Dukes Dock complex in central Liverpool, Seasearch North-West England had an excellent year in this challenging region. With the help of two local dive clubs (Lunesdale and Furness) the environs of Roa Island and around Walney Island were surveyed on a number of occasions. Close to Barrow-in-Furness – hardly known as a diving hotspot – Roa Island is one of the few shore dive sites in the north-west. Testing conditions including strong tides and poor viz (as a result of dredging for the port at Barrow) didn't deter the intrepid volunteers who brought back valuable data from this little-surveyed area. Plans for 2022 include further visits to the Walney Channel to revisit some of the sites previously surveyed by Natural England. Aside from the mixed seaweeds and sponges on the tide-swept cobbles, exciting finds included a *Dendronotus* sp. nudibranch and a European lobster (*Homarus gammarus*).



© Dawn Brange

The dominant species recorded in the Dock continues to be the edible/blue mussel *Mytilus edulis*, which contributes to the water quality. Unfortunately the build-up of litter in the Dock, whilst providing an attachment substrate for sessile life, is probably now reaching levels that demand a clean-up.

North-East England:

Seasearch North East activities during 2021 were unfortunately still hindered by Covid-19 restrictions. No trips were organised as a result, however some local divers returned to the water and were active during the year. Once allowing for divers to refresh their skills, support was provided through social media and socially distance gatherings (non-diving) to brush up on us skills, and forms.

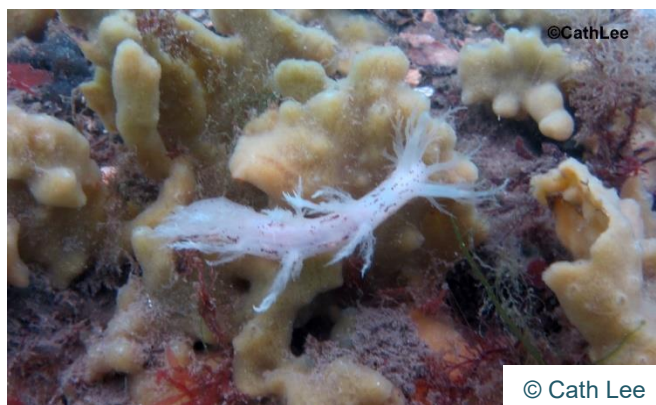
A small number of forms were received from long-standing volunteers from well-known local dive sites.

During 2021, connections were remade with funding organisations such as the Yorkshire Wildlife Trust as well as new academic and citizen science projects looking at teaming up with Seasearch divers to record life in photogrammetry on wrecks.

In November 2021, the first return to face-to-face teaching in the NE was held as an Observer course at the Cullercoats marine lab, where it was a joy to get back to training despite the diving element not being possible due to weather.

East Anglia ®:

After the roaring success of 2020 when Seasearch East recorded their highest total of submitted forms ever, 2021 has been a return to more 'normal' form numbers and survey events, but we have also made a start on encouraging our volunteers to try new sites and new methods of recording. Intertidal and snorkel surveys in Suffolk and Essex are now



© Cath Lee



© David Pearce

A new species emerged from the ongoing dock monitoring dives – *Anthopleura ballii*, the red-speckled anemone (below), for which the nearest record is on the Isle of Man!

making up a larger part of the year's events and we hope to continue this trend into 2022.

Many of the new species recorded this year were identified by a very keen volunteer (Elizabeth Beston) using microscopy on seaweed and water samples brought back from surveys and confirming her results by sharing the resultant photos in online expert ID groups.

Lincolnshire and The Wash:

An intertidal record from Ingoldmells outfall, recorded by Michael Southwood on a beach walk, represented the only data received for Lincolnshire in 2021. Unusually, there were no records for stranded fish over the winter months. There were no forms received from West Norfolk this year.

East Anglia - Norfolk:

A large proportion of North Norfolk regularly surveyed by Seasearch East lies within the Cromer Shoal Chalk Beds MCZ, but there are many other fascinating sites also surveyed by volunteers (who often have to be prepared to walk a long way!) For instance, Salthouse offers something for everyone, including reefs of clay, chalk, wood, carstone and compressed peat, as well as scattered wreckage and huge amounts of fine mobile sand which constantly covers and reveals the other features. A relatively new site, "The Iron Road", will be explored further in 2022; although the 650m walk from the parking to the sea is a little off-putting, it's not nearly as off-putting as the 900m walk at West Bank, which didn't get a single survey in 2021. Unfortunately Cley was the site showing the greatest human impact, with large numbers of lost pots, rope, anchors and angling tackle found on all dives here.



© Rob Spray

Sheringham, within the MCZ, has the most rugged chalk seen off Norfolk, with gullies and outcrops up to 3m high topped with mixed algae and covered in a turf of sponges, squirts, hydroids and bryozoans. The area saw a 64% increase in submitted forms

compared to 2020. The increase is mainly due to the rise in popularity of the snorkel trail amongst the non-diving volunteers, showing that Seasearch is accessible to all to discover and record the local marine life.

East Runton is home to a diverse selection of algae due to the freshwater springs which provide a range of temperatures and salinities unique to the coast. The two invasive non-native seaweeds *Grateloupia subpectinaria* and *G. turuturu* (image below) were both frequent in abundance by the end of the season and seemed much more resistant to storm damage than other species.



© Dawn Watson

Cromer sites had the sad distinction of very evident pot strike damage to the chalk reef as well as lots of dumped fishing waste (common whelk shells). On a happier note the rarely seen Hairy hermit crab, *Pagurus cuanensis*, was also recorded here, as were queen scallops (*Aequipecten opercularis*, image below) on some drift dives off Sea Palling.



© Rick Southwood

East Anglia – Suffolk:

Suffolk is a challenging place for subtidal records, with generally very turbid water and poor viz. Undeterred, intertidal and angling records as well as visits to temporary shingle lagoons (with *Ostreopsis* sp. dinoflagellate structures (below)) and tidal rivers (with very large populations of the mollusc *Haminoea navicula* – its distinctive egg mass shown in the bottom image) have yielded some very interesting observations.



© Dawn Watson

© Dawn Watson



Intertidal *Zostera noltei* seagrass beds on the north shore of the River Orwell in Essex have been investigated and mapped – this site is not part of the EU LIFE ReMEDIES project as it falls outside the Essex Estuaries SAC but is nonetheless interesting (and again, accessible survey activity for non-divers).

East Anglia – Essex:

Aside from the Point Clear seagrass hunt described above in the ReMEDIES section, a full day of surveying took place on the south shore of the River Stour at Wrabness. Further investigations are planned to see if there is any subtidal seagrass here (also outside the Essex Estuaries SAC). Cryptically-shaped sponges were recorded, with the odd shapes posing a bit of an identification challenge!

© Dawn Watson



Cornwall ®:

Much of the activity in Cornwall took place with the support of the EU LIFE ReMEDIES project described above, but there was plenty of other surveying carried out too, resulting in a record number of forms submitted. Volunteer of the year was a snorkeller, Mary Ledlie, who submitted 27 forms – fabulous work! Another volunteer, Mark Card, also stepped up and took the lead on herding independent surveyors into groups to check out new and unsurveyed spots.

Interesting sightings included mass spider crab (*Maja brachydactyla*) aggregations in late summer (they come inshore to moult and breed), more sightings of the small fishes *Gobius gastevensi* (Stevens' goby, for which south Cornwall appears to be a hotspot, they've clearly "got their eyes in" to spotting these) and *Parablennius pilicornis* (ringneck or variable blenny, also spreading east through Dorset), and curled octopus *Eledone cirrhosa*.



Steven's goby, Helford — Matt Slater



Variable blenny — Shannon Moran



Spider crab aggregation — Matt Slater

Devon ®:

Fine weather meant that only two of the planned thirteen days of surveys were lost to weather last

year, and a magnificent total of 168 forms were received from both coasts of England's third-largest county, along with independent records from the island of Lundy. Thanks to the efforts of Maggs Ashton and Ilfracombe & North Devon Sub Aqua Club, two amazing new sites were surveyed on this less-visited and challenging coast (think swell, BIG tides, turbidity...!)



© Tamsyn Mann

A new record for Devon was the hairy-clawed hermit crab, *Pagurus cuanensis* recorded by Tamsyn Mann in the Torbay MCZ.

Crawfish sightings continued to hold up in numbers, with both juveniles and adult-sized reports received. Ongoing recruitment appears to be genuine and is hopefully a sign that management of the species might be working.

© Kirsty Andrews



Lyme Bay – Devon & Dorset:

Known reefs on “the Devon side” (Tesco's Reef 3, Outer Charton 2, Eastern Heads 2 and Beer Ridge 3) were further explored in terms of their spatial extent, while independent surveys off Budleigh Salterton's inshore reefs proved happy hunting for nudi-lovers.

The same multibeam bathymetry maps were fully utilised for dive planning on the eastern/Dorset side of Lyme Bay too – searching out potentially similar habitats for esoteric sponge communities. A separate Porcupine Marine Natural History Society Roger Bamber grant supported an independent

“Plethora of Porifera” project which complemented the DTOL sampling.



© Richard Yorke

Finally, the priceless local knowledge of now-retired local skipper John Walker revealed an amazing new site packed full of the nationally-rare sunset cup coral, *Leptopsammia pruvoti*.



© Richard Yorke

Dorset ®:

A defining view from the Dorset coastline over the last couple of years has been a bay full of anchored-up and un-employed cruise ships. Concerned local residents have wondered about the effects of the extended and prolonged anchoring on the seabed; Dorset Wildlife Trust commissioned some side-scan surveys (<https://www.dorsetwildlifetrust.org.uk/sites/default/files/2021-06/ShipsReport2021.pdf>) to quantify these effects and Dorset Seasearch volunteers went down to check it out visually. Despite the thick plankton bloom, it was possible not only to see very clearly the impact of the anchors and chains on the seabed, but also to find a new (to the ID project, <http://undulateray.uk>) individual in the gloom of northern Weymouth Bay (also hiding from the weather?)



© Charlotte Bolton

Interesting small fish records are regularly appearing in the Dorset dataset – raised awareness and “better” cameras as well as changing conditions are probably all playing a part. In 2021 these records included several variable blennies, *Parablennius pilicornis* (including evidence of breeding), Couch’s goby *Gobius couchi* outside of Portland Harbour, Steven’s goby, *Gobius gastevensi* east of Portland for the first time and the almost-invisible Guillet’s goby, *Lebetus guileti* which adds brilliant camouflage to its small size.

The amazingly dense maerl beds in the Fal Estuary have been mentioned above, but sparser live maerl, often as a mobile “vener” over the predominant seabed substrate, is badly-described by existing biotopes. A commissioned project and report for Natural England examined the Seasearch maerl records to establish a better way to classify and record them. Sparse maerl veneers are quite extensive in Dorset – as shown below:



© Charlotte Bolton

Local volunteer Nick Owen has also been busy characterising local veneer habitats and has produced some nice videos to illustrate the concept.

See <https://www.youtube.com/watch?v=QFZ2zRchFVc> e.g.

force there (see <https://www.sussex-ifca.gov.uk/nearshore-trawling-byelaw>) which came into force in March 2021.

Hampshire, the Solent and Isle of Wight ®:

Aside from the seagrass-focused ReMEDIES surveys described above, one of the major aims in 2021 was to improve seaweed recording in this region (with the help of a small grant from the Peter Brough Fund via Hampshire and the IOW Wildlife Trust). Many of the seaweeds found around the Isle of Wight are quite common and easy to recognise but others are rare or tricky to identify accurately. These focused surveys added 103 taxa (not all identified to species) to the regional dataset, almost doubling the previous total (125 taxa). Of these 103 taxa, 23 had not been recorded previously in the region. A photographic archive has been created to accompany the grant report, which will provide an enduring resource for the local volunteers to consult.



Many new faces joined the Hampshire surveys last year, which was a welcome influx of new talent and volunteer effort. The Solent can be a challenging place to dive and may be perceived as not being terribly charismatic, so their enthusiasm is inspiring.

Sussex:

As with most regions, 2021 in Sussex was somewhat of a recovery year from last year's lockdown with many diver operations reducing numbers on boats and other precautionary measures put in place. It's great that Sussex Seasearch managed to get some diving in – thanks to all that participated!

A total of twelve forms were received for Sussex, all off the West Sussex coast. These forms represented a total of 193 distinct taxa in 476 records. Most sites were shallow (<20m) with the deepest being Dan's Reef at 25m. Kelp remains an important focus in Sussex with the nearshore trawling ban coming into

Kent:

Due to the lack of a regional coordinator in Kent, no summary report was received for 2021.

Two forms were received from the fascinating 4-acre Grade II-listed tidal pool at Walpole near Margate on the north coast.



(Image from Historic England, used without permission; <https://historicengland.org.uk/listing/the-list/list-entry/1421296>)

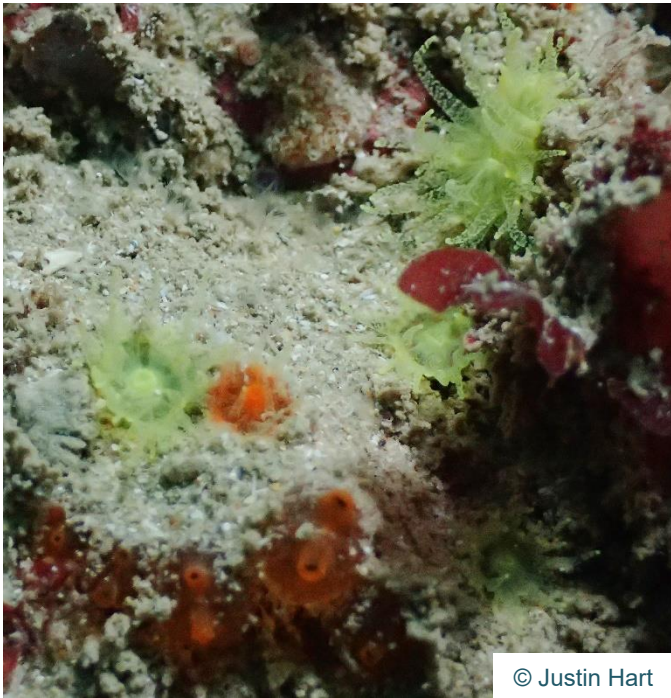
Volunteers are being directed to the neighbouring Seasearch community in Sussex to find dive buddies, survey opportunities etc. It is incredibly difficult to support and mentor volunteers starting out on their recording journey when there is no local coordinator – we remain hopeful of improving the networking in the south-east.

CHANNEL ISLANDS

Independent dives in Alderney and Guernsey:

As in previous years, we relied on the valiant efforts of one local volunteer in Alderney who was keen to explore the coast there – access to which is restricted by cliffs around much of the island, and then there are the tides... Interesting sightings,

backed up by photos, included the unusual green morph of scarlet and gold cup corals (*Balanophyllia regia*) first noticed on the 2016 liveaboard expedition to Guernsey and Alderney.



© Justin Hart

More seafans were also measured and recorded using the specific form (download from <https://www.seasearch.org.uk/record>).

Special mention to Mary Cordall in Guernsey who took on a mission to photograph and record seafans around the island – previous observations had noted that the condition of seafans around Guernsey was generally poor but more evidence was needed.

Species recorded in 2021

A total of 45,585 taxon records (covering 1423 distinct taxa, not all identified to species and containing some non-taxonomic recording aggregates) were made during 2021. N.B. Many forms were received too late to be included in the main tranche of data entry to Marine Recorder so these numbers are a lower bound on the 2021 statistics (both taxonomic and biotope records).

The following table provides a summary of the species recorded and identifies both the most commonly recorded species and those of special interest.

Priority (formerly Biodiversity Action Plan) species and habitats continue to be a major focus for our surveys and are highlighted in the table as are occurrences of nationally scarce and rare species as defined by the JNCC. The JNCC list has not been revised for some years and the records also include some nationally scarce and rare fishes which are not in the JNCC list and records of other southerly species which have only been recently recorded in our biogeographical area. The list also identifies non-native species, based on the Marine Biological Association guide¹.

Phyla/class and commonly-recorded species (> 100 records)	Priority (P) & Non-native (NN) species
BACTERIA (CYANO/PROTEO) (16 records, 2 taxa)	
ENTOPROCTA (11 records, 1 taxon)	
FORAMINIFERA (52 records, 3 taxa)	
PORIFERA , Sponges (3719 records, 93 taxa) <i>Cliona celata</i> (333 records), <i>Dysidea fragilis</i> (266), <i>Amphilectus fucorum</i> (259), <i>Hemimycale columella</i> (220), <i>Pachymatisma johnstonia</i> (217), <i>Halichondria panicea</i> (155), <i>Sycon ciliatum</i> (146), <i>Axinella dissimilis</i> (134), <i>Tethya citrina</i> (126), <i>Raspailia ramosa</i> (112)	
CNIDARIA , Jellyfish, hydroids, siphonophores, anemones and corals (6081 records, 152 taxa)	
Scyphozoa - jellyfish (231 records, 7 taxa)	
Staurozoa – stalked jellyfish (42 records, 6 taxa)	<i>Calvadosia campanulata</i> (P, 39 records) <i>Calvadosia cruxmelitensis</i> (P, 2 records) <i>Craterolophus convolvulus</i> (4 records)
Hydrozoa - hydroids (2128 records, 75 taxa)	
<i>Nemertesia antennina</i> (387 records), <i>Nemertesia ramosa</i> (152), Hydrozoa (151), <i>Obelia geniculata</i> (150), <i>Tubularia indivisa</i> (122), <i>Halecium halecinum</i> (105)	
Anthozoa - anemones and corals (3680 records, 64 taxa)	
<i>Alcyonium digitatum</i> (549 records), <i>Caryophyllia smithii</i> (445), <i>Urticina felina</i> (308), <i>Anemonia viridis</i> (270), <i>Corynactis viridis</i> (207), <i>Eunicella verrucosa</i> (198), <i>Metridium dianthus</i> (188), <i>Cerianthus lloydii</i> (181), <i>Cylista (was Sagartia) elegans</i> (172), <i>Actinothoe sphyrodeta</i> (154), <i>Actinia equina</i> (136)	<i>Amphianthus dohrnii</i> (P, 6 records) <i>Aracnanthus sarsi</i> (P, 1 record) <i>Eunicella verrucosa</i> (P, 198 records) <i>Funiculina quadrangularis</i> (P, 16 records) <i>Leptopsammia pruvoti</i> (P, 3 records) <i>Pachycerianthus multiplicatus</i> (P, 16 records) <i>Swiftia pallida</i> (P, 2 records)
CTENOPHORA , Comb Jellies (88 records, 7 taxa)	
PHORONIDA , Horseshoe worms (57 records, 4 taxa)	
PLATYHELMINTHES , Flat worms (96 records, 6 taxa)	
NEMERTEA , Ribbon Worms (54 records, 6 taxa)	
ANNELIDA , Segmented worms (2421 records, 73 taxa)	
<i>Spirobranchus</i> (501 records), <i>Lanice conchilega</i> (273), <i>Sabella pavonina</i> (234), <i>Bispira volutacornis</i> (222), <i>Serpula vermicularis</i> (108), <i>Arenicola</i> (107)	<i>Sabellaria spinulosa</i> (Priority habitat when reef-forming, 33 records; most <u>not</u> reef-forming)

¹ <https://www.mba.ac.uk/sites/default/files/downloads/ID%20NNS%20English.pdf> (in English);
<https://www.mba.ac.uk/sites/default/files/downloads/ID%20NNS%20Cymraeg.pdf> (in Welsh)

Phyla/class and commonly-recorded species (> 100 records)	Priority (P) & Non-native (NN) species
	<i>Serpula vermicularis</i> (Priority habitat when reef-forming, 108 records; most <u>not</u> reef-forming)
BRACHIOPODA , Brachiopods (12 records, 4 taxa)	
ARTHROPODA , Barnacles, amphipods, isopods, crabs, lobsters and prawns (5206 records, 131 taxa)	
<i>Necora puber</i> (548 records), <i>Cancer pagurus</i> (510), <i>Cirripedia</i> (393), <i>Pagurus bernhardus</i> (378), <i>Maja brachydactyla</i> (342), <i>Homarus gammurus</i> (335), <i>Carcinus maenas</i> (280), <i>Inachus</i> sp. (206), <i>Macropodia</i> sp. (177), <i>Munida rugosa</i> (163), <i>Palaemon serratus</i> (150), <i>Liocarcinus depurator</i> (149), <i>Palinurus elephas</i> (106)	<i>Palinurus elephas</i> (P, 106 records) <i>Periclimenes sagittifer</i> (southerly) – 8 records
MOLLUSCA , shells, sea slugs, bivalves, chitons and cephalopods (4790 records, 246 taxa)	
Bivalvia (904 records, 54 taxa) <i>Pecten maximus</i> (216 records), <i>Aequipecten opercularis</i> (155)	<i>Arctica islandica</i> (P in Wales; 2 records from IOM and South Devon) <i>Atrina fragilis</i> (P, 3 records) <i>Limaria hians</i> (Priority habitat, 6 records) <i>Modiolus modiolus</i> (Priority habitat, 78 records) <i>Ostrea edulis</i> (P, 43 records) <i>Magellana gigas</i> (NN, 19 records)
Cephalopoda (128 records, 10 taxa) <i>Sepia officinalis</i> (46 records), <i>Eledone cirrhosa</i> (29), <i>Sepioloidea atlantica</i> (24)	
Gastropoda (3650 records, 175 taxa) <i>Calliostoma zizyphinum</i> (363 records), <i>Steromphala cineraria</i> (260), <i>Buccinum undatum</i> (184), <i>Nucella lapillus</i> (118), <i>Tritia reticulata</i> (111)	<i>Crepidula fornicata</i> (NN, 97 records) <i>Haliotis tuberculata</i> (southerly species - 2 records)
Polyplacophora - chitons (107 records, 6 taxa) Polyplacophora indet. (69 records), <i>Tonicella marmorea</i> (20), <i>Lepidochitona cinerea</i> (13)	
BRYOZOA , sea mats and sea mosses (2534 records, 70 taxa)	
<i>Electra pilosa</i> (285 records), <i>Membranipora membranacea</i> (215), <i>Pentapora foliacea</i> (193), <i>Alcyonidium diaphanum</i> (191), <i>Flustra foliacea</i> (178), <i>Crisularia plumosa</i> (146), <i>Crisia</i> sp. (126), <i>Cellaria</i> sp. (119)	<i>Tricellaria inopinata</i> (NN, 2 records) <i>Watersipora subatra</i> (NN, 8 records)
ECHINODERMATA , starfish, sea urchins and sea cucumbers (3474 records, 59 taxa)	
<i>Asterias rubens</i> (623 records), <i>Echinus esculentus</i> (550), <i>Marthasterias glacialis</i> (434), <i>Henricia</i> sp. (337), <i>Antedon bifida</i> (164), <i>Crossaster papposus</i> (162), <i>Ophiothrix fragilis</i> (147), <i>Psammechinus miliaris</i> (141), <i>Holothuria forskali</i> (125)	
CHORDATA - ASCIDIACEA , sea squirts and salps (3323 records, 79 taxa)	
<i>Clavelina lepadiformis</i> (328 records), <i>Botryllus schlosseri</i> (258), <i>Ascidia mentula</i> (199), <i>Ascidia aspersa</i> (196), <i>Morchellium argus</i> (162), <i>Aplidium punctum</i> (148), <i>Ciona intestinalis</i> (146), <i>Didemnum maculosum</i> (132), <i>Corella parallelogramma</i> (124), <i>Stolonica socialis</i> (114), <i>Diplosoma spongiforme</i> (109)	<i>Asterocarpa humilis</i> (NN, 2 records) <i>Botrylloides diegensis</i> (NN, 4 records) <i>Botrylloides violaceus</i> (NN, 1 record) <i>Corella eumyota</i> (NN, 9 records) <i>Perophora japonica</i> (NN, 33 records) <i>Styela clava</i> (NN, 82 records)
CHORDATA - ACTINOPTERI & ELASMOBRANCHII bony and cartilaginous fishes (4428 records, 141 taxa)	

Phyla/class and commonly-recorded species (> 100 records)	Priority (P) & Non-native (NN) species
Actinopteri (4194 records, 126 taxa) <i>Labrus bergylta</i> (366 records), <i>Ctenolabrus rupestris</i> (288), <i>Pollachius pollachius</i> (245), <i>Labrus mixtus</i> (202), <i>Pomatoschistus</i> sp. (201), <i>Symphodus melops</i> (178), <i>Parablennius gattorugine</i> (175), <i>Taurulus bubalis</i> (175), <i>Trisopterus luscus</i> (162), <i>Pomatoschistus flavescens</i> (160), <i>Thorogobius ephippiatus</i> (149), <i>Callionymus</i> sp. (132), <i>Pomatoschistus pictus</i> (128), <i>Centrolabrus exoletus</i> (105), <i>Pholis gunnellus</i> (103)	<i>Anguilla anguilla</i> (P, 4 records) <i>Gadus morhua</i> (P, 40 records) <i>Lophius piscatorius</i> (P, 11 records) <i>Molva molva</i> (P, 16 records) <i>Pleuronectes platessa</i> (P, 36 records) <i>Scomber scombrus</i> (P, 2 records) Southerly (generally) species: <i>Tripterygion delaisi</i> (14 records) <i>Parablennius pilicornis</i> (15 records – spreading eastwards)
Elasmobranchii (234 records, 15 taxa) <i>Scyliorhinus canicula</i> (155 records)	<i>Dipturus batis</i> (P, 2 records) <i>Galeorhinus galeus</i> (P, 1 record) <i>Raja undulata</i> (P, 5 records) <i>Squalus acanthias</i> (P, 1 record) <i>Torpedo marmorata</i> (southerly species - 2 records)
MAMMALIA , mammals (24 records of seals and cetaceans, 5 taxa)	<i>Phoca vitulina</i> (P, 1 record)
ALGAE , seaweeds (5960 records, 284 taxa)	
Rhodophycota , Red seaweeds (4028 records, 188 taxa) Encrusting algae indet. (543 records), Rhodophyta (425), Corallinaceae (241), <i>Delessaria sanguinea</i> (208), <i>Calliblepharis ciliata</i> (195), <i>Plocamium</i> spp. (170), <i>Chondrus crispus</i> (168), <i>Dilsea carnosa</i> (149), <i>Heterosiphonia plumosa</i> (143), <i>Corallina officinalis</i> (139), <i>Cryptopleura ramosa</i> (114)	<i>Antithamnionella ternifolia</i> (NN, 6 records) <i>Asparagopsis armata</i> (NN, 67 records) <i>Bonnemaisonia hamifera</i> (NN, 27 records) <i>Dasysiphonia japonica</i> (NN, 7 records) <i>Grateloupia subpectinata</i> (NN, 7 records) <i>Grateloupia turuturu</i> (NN, 40 records) <i>Solieria chordalis</i> (NN, 16 records) Maerl (Priority habitat, 52 records, most not identified to species) <i>Lithothamnion corallioides</i> (P, 5 records) <i>Phymatolithon calcareum</i> (P, 4 records)
Ochrophyta , Brown seaweeds (2798 records, 84 taxa) <i>Laminaria hyperborea</i> (370 records), <i>Dictyota dichotoma</i> (257), <i>Saccharina latissima</i> (241), <i>Fucus serratus</i> (210), <i>Sargassum muticum</i> (126), <i>Laminaria digitata</i> (125), <i>Chorda filum</i> (123), <i>Saccorhiza polyschides</i> (120), <i>Fucus vesiculosus</i> (112), <i>Dictyopteris polypodioides</i> (103)	<i>Padina pavonica</i> (P, 1 record) <i>Colpomenia peregrina</i> (NN, 32 records) <i>Sargassum muticum</i> (NN, 126 records) <i>Undaria pinnatifada</i> (NN, 18 records)
Chlorophyta , Green seaweeds (689 records, 34 taxa) <i>Ulva</i> spp. (326 records)	
TRACHEOPHYTA , vascular plants (100 records, 4 taxa)	<i>Zostera marina</i> (Priority habitat, 96 records) <i>Zostera noltei</i> (Priority habitat, 3 records)
ASCOMYCOTA , lichens (3 records, 3 taxa)	

TOTAL NO. OF TAXONOMIC RECORDS = 45,585

Habitats and Biotopes

Seasearch records habitats and animal and plant communities in two ways.

On an Observation Form the field recorder identifies one or more Seabed Cover Types (SCT) for the whole of their record from a list of nine options. For the Survey Forms the data is separated into a number of different Samples and each sample is given a Biotope Code using the MNCR 15.03 suite devised by the Joint Nature Conservation Committee². This process of 'biotoping' is usually carried out by a post survey assessor rather than the recorder themselves as it requires specialist knowledge of the biotope system. A brief introduction to the Marine Habitat Classification is now included in the higher-level Surveyor course to provide context and background to that more detailed recording.

During 2021 3555 SCTs and Biotopes were identified, of which 48.7% (1732) were MNCR Biotopes & 51.3% (1823) SCTs. N.B. Many forms were received too late to be included in the main tranche of data entry to Marine Recorder so these numbers are a lower bound on the 2021 statistics (both taxonomic and biotope records).

MNCR 15.03 Biotopes

The 1732 biotopes assigned were divided by main habitat as follows:

- Littoral rock 78 (4.50%)
- Littoral sediment 36 (2.08%)
- Infralittoral rock 527 (30.43%)
- Circalittoral rock 555 (32.04%)
- Sublittoral sediment 536 (30.95%)

In almost all cases more detailed biotopes were assigned within these broad categories. These are based on variations in the type of physical habitat, and different communities of plants and animals.

Some habitats have been assessed as priority habitats for conservation in the UK³. Whilst these are not necessarily identified in the same way elsewhere, all Seasearch records have been included below. Priority habitat records were as follows:

Blue mussel beds on sediment

LS.LBR.LMus/ LS.LBR.LMus.Myt.Sa/ LS.LBR.LMus.Myt.Mu/ LS.LSa.St.MytFab: two records from West Loch Tarbert

LS.LBR.LMus.Myt: *Mytilus edulis* beds on littoral sediments: no records in 2021

LS.LBR.LMus.Myt.Mx: *Mytilus edulis* beds on littoral mixed substrata: no records in 2021

SS.SBR.SMus.MytSS: *Mytilus edulis* beds on sublittoral sediment: two records from Lochs Long & Goil

Seabed Cover Types

The 1823 SCTs recorded were divided as follows:

- Kelp forest and kelp park 320 (17.55%)
- Mixed seaweeds 451 (24.74%)
- Encrusting pink algae 51 (2.8%)
- Short animal turf on rock/wreckage 440 (24.14%)
- Tall animal turf on rock/wreckage 299 (16.4%)
- Animal beds (e.g. mussels, brittlestars) 27 (1.48%)
- Sediment with life apparent 215 (11.79%)
- Barren sediment 20 (1.1%)

This data provides a broad indication of the habitats and communities present at the site. In some cases it is apparent that the level of detail on the record is sufficient to assign a MNCR Biotope to an Observation Form.

² JNCC (2015) The Marine Habitat Classification for Britain and Ireland Version 15.03 [Online]. [Accessed 2022-04-12 and various other dates]. Available from: <https://mhc.jncc.gov.uk/>

³ See <https://jncc.gov.uk/our-work/uk-bap-priority-habitats/> and links therein

Coastal Saltmarsh

LS.LMp.Sm: no records in 2021

Cold-water Coral Reefs

SS.SBR.Crl.Lop: no records in 2021

Estuarine Rocky Habitats

LR.LLR.FVS/ LR.LLR.FVS.PeIVS/ LR.LLR.FVS.FspiVS/ LR.LLR.FVS.FvesVS/ LR.LLR.FVS.FCer/
IR.LIR.KVS.LsacPhyVS/ LR.FLR.Eph.EntPor/ LR.FLR.CvOv.SpR.Den/ LR.FLR.Rkp.G/ LR.FLR.Lic.Ver.Ver/
LR.FLR.Lic.YG: five records from Isle of Man, Suffolk, Loch Carron, Loch Creran and Loch Fyne

IR.LIR.KVS.Cod: *Codium* spp. with red seaweeds and sparse *Laminaria saccharina* on shallow, heavily-silted, very sheltered infralittoral rock: no records in 2021

IR.LIR.KVS.LsacPsaVS: *Laminaria saccharina* and *Psammechinus miliaris* on variable salinity grazed infralittoral rock: one record from Loch Creran

LR.LLR.FVS.AscVS: *Ascophyllum nodosum* and *Fucus vesiculosus* on variable salinity mid eulittoral rock: one record from Suffolk

LR.LLR.FVS.Ascmac: *Ascophyllum nodosum* ecad *mackaii* beds on extremely sheltered mid eulittoral mixed substrata: no records in 2021

LR.FLR.Eph.Ent: *Enteromorpha* spp. on freshwater-influenced and/or unstable upper eulittoral rock: one record in Suffolk

File Shell (aka Flame Shell) Beds

SS.SMX.IMX.Lim: *Limaria hians* beds in tide-swept sublittoral muddy mixed sediment: five records in Arran and Loch Carron

Fragile sponge and Anthozoan Communities on Rocky Habitats

CR.HCR.DpSp.PhaAxi/ CR.HCR.XFa.ByErSp.DysAct/ CR.HCR.XFa.ByErSp.Sag/ CR.HCR.XFa.SwiLgAs/
CR.MCR.EcCr.CarSwi/ CR.MCR.EcCr.CarSwi.Aglo: four records in Pembrokeshire, Devon, North Rona and Loch Sunart

CR.HCR.XFa.ByErSp.Eun: *Eunicella verrucosa* and *Pentapora foliacea* on wave-exposed circalittoral rock: 19 records from Cornwall, Devon and Dorset

CR.MCR.EcCr.CarSwi.LgAs: *Caryophyllia smithii*, *Swiftia pallida* and large solitary ascidians on exposed or moderately exposed circalittoral rock: one record from Loch Sunart

Horse Mussel Beds

SS.SBR.SMus.ModT: *Modiolus modiolus* beds with hydroids and red seaweeds on tide-swept circalittoral mixed substrata: one record from Loch Creran

SS.SBR.SMus.ModHAs: *Modiolus modiolus* beds with fine hydroids and large solitary ascidians on very sheltered circalittoral mixed substrata: ten records from Loch Creran, Loch Leven, Long Long, Loch Goil and Holy Loch.

SS.SBR.SMus.ModCvar: *Modiolus modiolus* beds with *Chlamys varia*, sponges, hydroids and bryozoans on slightly tide-swept very sheltered circalittoral mixed substrata: no records in 2021

SS.SBR.SMus.ModMx: no records in 2021

Intertidal chalk

LR.HLR.FR.Osm/ LR.MLR.BF.Fser.Pid/ LR.FLR.CvOv.ChrHap/ IR.MIR.KR.Ldig.Pid/ LR.FLR.Lic.Bli/
LR.FLR.Lic.UloUro: one record from Dorset

Intertidal Mudflats

LS.LSa.MuSa: six records from Norfolk, Suffolk and Hampshire

LS.LMu: Littoral mud: three records from Suffolk and the Clyde

Intertidal Under-boulder Communities

LR.MLR.BF.Fser.Bo: no records in 2021

IR.MIR.KR.Ldig.Bo: *Laminaria digitata* and under-boulder fauna on sublittoral fringe boulders: no records in 2021

Maerl beds (N.B. we generally do not record 'maerl' to species level)

SS.SMp.Mrl: Maerl beds: 29 records from Jersey, Cornwall, Dorset, Rathlin Island and West Scotland

SS.SMp.Mrl.Lgla: *Lithothamnion glaciale* maerl beds in tide-swept variable salinity infralittoral gravel: 2 records from Loch Sween

SS.SMp.Pcal/ SS.SMp.Pcal.R: no records in 2021

Mud Habitats in Deep Water

SS.SMu.CFiMu: Circalittoral fine mud: 35 records from Dorset, Essex, Liverpool Docks and West Scotland

SS.SMu.CFiMu.SpNmeg: Seapens and burrowing megafauna in circalittoral fine mud: 9 records from West Scotland

SS.SMu.CFiMu.SpNmeg.Fun: Seapens, including *Funiculina quadrangularis*, and burrowing megafauna in undisturbed circalittoral fine mud: 15 records from West Scotland

SS.SMu.CSaMu: Circalittoral sandy mud: 16 records from West Scotland

SS.SMu.OMu/ SS.SMu.CFiMu.BlyrAchi/ SS.SMu.OMu.ForThy/ SS.SMu.OMu.StyPse/
SS.SMu.CFiMu.MegMax: no records in 2021

Peat and Clay Exposures with Piddocks

LR.HLR.FR.RPid/ LR.MLR.MusF.MytPid: no records in 2021

The following two biotopes are also included in the 'subtidal chalk' priority habitat:

CR.MCR.SfR: Soft rock communities; 28 records from Norfolk, Sussex, Hampshire and Dorset

CR.MCR.SfR.Pid: Piddocks with a sparse associated fauna in sublittoral very soft chalk or clay; three records from Dorset, Hampshire and Norfolk

Sabellaria alveolata Reefs

LS.LBR.Sab/ SS.SBR.PoR.SalvMx: one record from Cardigan Bay

Sabellaria spinulosa reefs

SS.SBR.PoR.SspiMx: *Sabellaria spinulosa* on stable circalittoral mixed sediment: four records from Norfolk

Also:

CR.MCR.CSab.Sspi/ CR.MCR.CSab.Sspi.As: two records from Hampshire

Saline Lagoons

IR.LIR.Lag: Submerged fucoids, green or red seaweeds (low salinity infralittoral rock): 39 records in West Scotland and Cornwall

SS.SSa.SSaLS/ SS.SMu.SMuLS/ SS.SMx.SMxLS / SS.SMp.Ang: No records in 2021

Seagrass Beds (intertidal)

LS.LMp.LSgr/ LS.LMp.LSgr.Znol: five records from Hampshire, Rathlin Island and Suffolk

Seagrass Beds (subtidal)

SS.SMp.SSgr / SS.SMp.SSgr.Rup: one record from Dorset

SS.SMp.SSgr.Zmar: *Zostera marina/angustifolia* beds on lower shore or infralittoral clean or muddy sand: 69 records from Channel Isles, Dorset, Devon, Cornwall, Anglesey, Isle of Man, West Scotland and the north and west coasts of Ireland.

Serpulid Reefs

SS.SBR.PoR.Ser: *Serpula vermicularis* reefs on very sheltered circalittoral muddy sand: no records in 2021

Sheltered Muddy Gravels (intertidal mixed sediment)

LS.LMx: Littoral mixed sediment: one record from Hampshire

LS.LMx.GvMx/ LS.LMx.Mx/ LS.LMx.Mx.CirCer: no records in 2021

Sheltered Muddy Gravels (subtidal mixed sediment)

SS.SMx.IMx: Infralittoral mixed sediment: 31 records in West Scotland, NE Scotland, Anglesey, Pembrokeshire, Dorset, Sussex, Essex and Cornwall

SS.SMx.IMx.CreAsAn: *Crepidula fornicata* with ascidians and anemones on infralittoral coarse mixed sediment: five records in Dorset and Hampshire

SS.SMx.IMx.SpavSpAn/ SS.SMx.IMx.VsenAsquAps: one record from Menai Strait

Subtidal Chalk

IR.MIR.KR.HiaSw: one record from Dorset

CR.MCR.SfR: Soft rock communities; 28 records from Norfolk, Sussex, Hampshire and Dorset

CR.MCR.SfR.Pid: Piddocks with a sparse associated fauna in sublittoral very soft chalk or clay; three records from Dorset, Hampshire and Norfolk

CR.MCR.SfR.Pol: *Polydora* sp. tubes on moderately exposed sublittoral soft rock: 18 records from Norfolk

CR.MCR.SfR.Hia: *Hiatella*-bored vertical sublittoral limestone rock: two records from Dorset and Norfolk

Subtidal Sands and Gravels

This habitat has a broad definition and many biotopes are included. The following are all broad scale habitats and in many cases there are more detailed biotopes in our records.

SS.SCS.SCSVS/ SS.SCS.OCS: no records in 2021

SS.SCS.CCS: Circalittoral coarse sediment: 57 records

SS.SCS.ICS: Infralittoral coarse sediment: 43 records

SS.SSa.IFiSa: 33 records

Subtidal Sands and Gravels (cont'd.)

SS.SSa.CFiSa: Circalittoral fine sand: 3 records
SS.SSa.IMuSa: Infralittoral muddy sand: 36 records
SS.SSa.CMuSa: Circalittoral muddy sand: 10 records
SS.SSa.SSaVS/ SS.SSa.OSa: one record

Tide-swept Channels

LR.HLR.FT/ LR.HLR.FT.FserTX: three records from the Gower
IR.MIR.KR.LhypT.Pk/ IR.MIR.KR.LhypTX/ IR.MIR.KR.LhypTX.Pk/ IR.MIR.KR.LhypVt/ IR.MIR.KT.XKT: three records from Cornwall and St. Abbs
IR.MIR.KR.LhypT: *Laminaria hyperborea* on tide-swept, infralittoral rock: 8 records from Dorset, Isle of Man, Cornwall and Belfast Lough
IR.MIR.KR.LhypT.Ft: *Laminaria hyperborea* forest, foliose red seaweeds and a diverse fauna on tide-swept upper infralittoral rock: one record from Cornwall
IR.MIR.KR.LhypTX.Ft: *Laminaria hyperborea* forest and foliose red seaweeds on tide-swept upper infralittoral mixed substrata: two records from St. Abbs
IR.MIR.KT: Kelp and seaweed communities in tide-swept sheltered conditions: one records from Loch Creran
IR.MIR.KT.LsacT: *Laminaria saccharina* with foliose red seaweeds and ascidians on sheltered tide-swept infralittoral rock: no records in 2021
IR.MIR.KT.XKTX: Mixed kelp and red seaweeds on infralittoral boulders, cobbles and gravel in tidal rapids: no records in 2021
CR.HCR.FaT.CTub/ CR.HCR.FaT.CTub.CuSp/ SS.SMp.KSwSS.LsacR.CbPb: six records from Cumbria, Pembrokeshire, North Devon and Dorset
CR.HCR.FaT: Very tide-swept faunal communities: 7 records from Pembrokeshire, North Devon and Dorset
CR.MCR.CFaVS: 5 records from Cumbria, Cornwall and Essex

Seasearch Training in 2021

The Seasearch training programme provides courses and survey skills at three levels, Observer, Surveyor and Specialist.

The **Observer** level training consists of a one-day (or equivalent) course for volunteers without previous survey experience. This covers an introduction to Seasearch, identifying marine habitats and species, and a series of practical skills from position fixing to recording from filmed surveys. The aim is to equip participants to complete the Seasearch Observation Form. Dives are arranged where participants can undertake surveys with a tutor present to help with form completion and identifications. The Observer qualification involves participation in the course and completion of 5 Observation Forms to a satisfactory standard.

There were 22 Observer courses held in 2021 in England (12), Scotland (3), Wales (3), Ireland (all) (2), Channel Islands (1), and Isle of Man (1). Over 450 divers took part in the Observer courses, the vast majority (>90%) of whom were new to Seasearch.

The **Surveyor** level training is aimed at volunteers with some existing experience of marine recording, whether as a Seasearch Observer or elsewhere, and aims to equip them to successfully complete the Seasearch Survey Form. It involves a weekend (or equivalent) course, completion of 6 satisfactory survey forms and an ID test. No Surveyor courses were held in 2021 but the course materials were updated in time for courses to be held in spring of 2022.

One Seasearch **Specialist** course, aimed at either teaching new survey skills or improving knowledge and identification of marine life, took place in 2021. The much-postponed (due to covid) “Polychaetes for Divers and Snorkellers” course, created and delivered by Dr Teresa Darbyshire from the National Museum of Wales in Cardiff, took place in Dorset at the end of September. The course has been developed from a much shorter workshop originally developed for the Porcupine Marine Natural History Society, and addresses a group not always accurately recorded. We are hopeful of running more instances of this course in the future, and possibly creating a new field guide – watch this space!

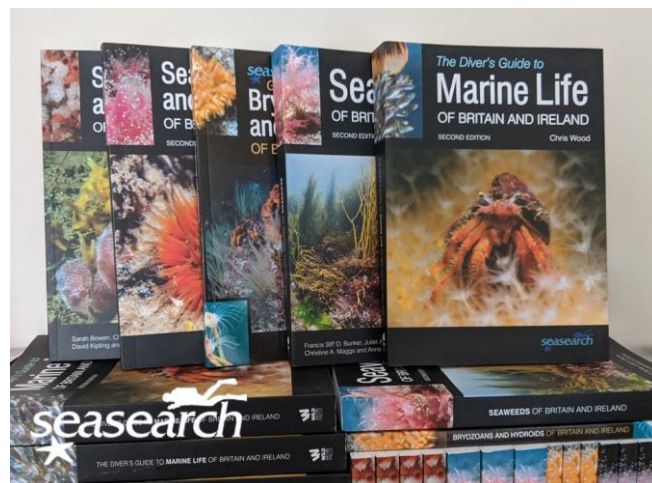
Seasearch Observer and Surveyor training courses are delivered by our team of tutors, all of whom are experienced Seasearch recorders and active divers. Two new tutors have been signed off and three more are very close to gaining accreditation having become adept at using online methods to deliver training over the last two years.

Seasearch qualifications are awarded to those completing the Seasearch Observer or Surveyor programmes. In 2021 thirty-nine volunteers achieved the Observer qualification and one the advanced Surveyor qualification. Although these figures are lower than usual it's still a good reflection of the enthusiasm of our volunteers in another sub-optimal year.

The qualification process not only acts as a reward to participants but is also an official recognition of the skills available within the Seasearch community of volunteer divers and thus the validity of their observations.

Seasearch Identification Guides and survey materials

As a part of our aim to improve the identification skills of volunteer divers we produce a range of illustrated field identification guides. We now have five titles in the series.



The updated second edition of the general Marine Life Guide is popular as an introductory guide and is now bundled as part of the course pack on Observer Courses. We have four more specialised Guides covering Sea Anemones and Corals, Sea Squirts and Sponges, Bryozoans & Hydroids and Seaweeds.

The online shop now also stocks (at a discount price) additional titles to help Seasearch volunteers with their ID and recording efforts. These include “Exploring Britain’s Hidden World” by Keith Hiscock which is the ideal set text for the Surveyor course with its comprehensive coverage of habitats and biotopes.

In addition to the guides, Seasearch also produces writing slates in two sizes and recycled wooden pencils to aid the recording of information underwater, cotton caps and knitted beanies, plus cotton bags to keep all your books together. These are available at Seasearch courses and events, through regional co-ordinators and can also be

purchased online via the Seasearch shop (www.seasearch.org.uk/shop).



Sustainable clothing items (T-shirts and hoodies) are available separately from the Seasearch teemill shop (mcsshop.org.uk/seasearch)



Seasearch Logo T-shirt



Seasearch Logo Top



Dive Into Conservation T-shirt



Dive Into Conservation Top



Dive Into Conservation Men's Hoodie



Dive Into Conservation Women's Hoodie

Website

The Seasearch website was updated to a much more modern version in autumn 2021 – Phase 1 comprised a migration of the static material. We have expansive plans to provide much more functionality on the site during 2022.

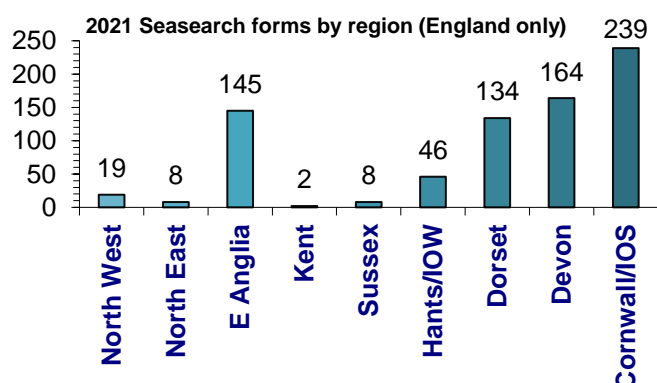
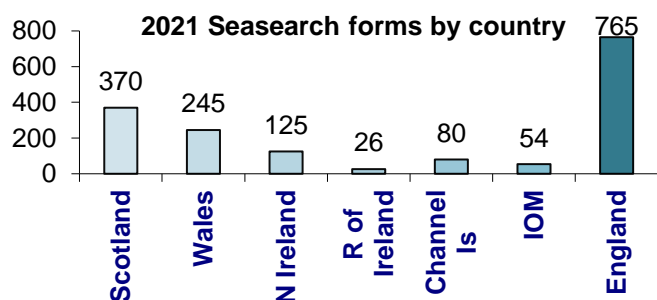
Social media channels

You can follow Seasearch on Twitter (@_Seasearch and @seasearchscotland are the main accounts) and we now have a YouTube channel which is slowly filling up with material (short films, talks and training videos). Aside from the main *Seasearch* and *Seasearch Identifications* Facebook groups, there are a host of regional and course-related groups all building the community.

Seasearch Data

A total of 1665 forms were received in 2021 (representing 105% of the 2019 total, and the highest total since 2013!). These comprised 987 observation (59%) and 583 survey (35%) forms with the remainder being split 60:36 between crawfish and seafan forms. Cornwall recorded their highest total of forms ever (239; this represents 31% of the England forms), while in Northern Ireland the total was the highest since 2012.

The graphs below show the origin of each form.



Snorkel surveys represented over 9% of the total, and intertidal surveys were also popular, being 5.5% of the total. The majority of forms (85%) continue to come from traditional diving surveys.

The 2021 dataset overall comprises 97 surveys with 1230 survey events (either single dives or a combination of a group of dives), and contains 45,585 taxon records and 3555 biotope/habitat records.

All of the data is made available on the National Biodiversity Network Atlas, where Seasearch is the second-largest provider of marine data (after the Joint Nature Conservation Committee) with a total of 832,805 taxon records (not all to species level).

We've now surpassed the original Marine Nature Conservation Review of the late 1980s and early 1990s (593,311 records).

The Seasearch datasets are all published under the Creative Commons Attribution 4.0 licence (CC-

BY) which means that anyone can download and use the information. There is a separate dataset for each country and each of these has a unique Digital Object Identifier (DOI) number so it can be referenced just like a scientific paper. Additional data on pink sea fans and crawfish is entered into separate databases.

Some species are deemed 'sensitive' and the precise location of each record is blurred to a 10km square. A special request with appropriate justification is required to access these records. Each country where Seasearch operates maintains its own list of sensitive species which are not always the same!

Data validation and management

On receipt of a Seasearch form, summary information is recorded and the position mapped, checking the location against the MHWS line to guard against 'dry dives' on the land. This also acts as the first stage in the validation process for the data which is carried out by the local co-ordinator, national co-ordinator or a Seasearch tutor.

All Observation and Survey Form data is entered into the Marine Recorder database by a variety of experienced individuals and organisations. They are responsible for the second stage of verification of the data and for the assignment of MNCR biotopes. The data is retained locally and also passed on and merged with all the other data to produce a single Seasearch dataset for the year. At this stage the third validation check is carried out by the National Seasearch Co-ordinator and the Data Officer.

Data entry is funded by the Marine Conservation Society with support for Scotland and Wales through NatureScot and Natural Resources Wales.

In addition to the annual update the data is managed on an ongoing basis and amendments, updates and corrections are made to earlier data as required. Any errors in the Seasearch dataset should be notified to the email address below.

This quality assurance (QA) process is explained in greater detail and published on the Seasearch website, as is our privacy policy which covers data collection for biological recording.

Seasearch Co-ordination and Promotion

The core activities are delivered by the National Co-ordinator, supported by the Data Officer and the Administrator, with a team of Local Co-ordinators throughout Britain, Ireland and the Crown Dependencies. During 2021 the team was as follows:

National Co-ordinator	Charlotte Bolton MCS
Data Officer	Angus Jackson MCS
Administrator	ML Anderson MCS
Scotland	Iain Dixon/Paul Kay/Karen Boswarva MCS
West Scotland	Owen Paisley/Karen Boswarva MCS
Northern Ireland	Sally Stewart-Moore MCS
Republic of Ireland	Tony & Rory O'Callaghan
Isle of Man	Lara Howe Manx WT
North Wales	Holly Date MCS
South & West Wales	Kate Lock MCS
North East England	Natalie Hirst MCS
North West England	Wendy Northway MCS
East Anglia	Dawn Watson MCS
Kent	<i>Post unfilled</i>
Sussex	Sarah Ward Sussex WT
Hants/Isle of Wight	Lin Baldock MCS
Dorset	Lin Baldock Dorset WT
Devon	Chris Webb MCS
Cornwall	Matt Slater Cornwall WT
Alderney	Mel Broadhurst-Allen MCS/Alderney WT
Guernsey	<i>Post unfilled</i>
Jersey	Kevin McIlwee MCS

Local Co-ordinators are responsible for Seasearch activities within their own areas. This includes promotion to local dive clubs and other groups, communication with local volunteers and arranging training courses and surveys.

Very grateful thanks to EVERYONE (co-ordinators, tutors and especially all the volunteers who sent in forms) for their efforts during 2021. Without your contributions Seasearch would not continue to be so successful.

This report has been produced by Seasearch on behalf of the Marine Conservation Society, Overross House, Ross Park, Ross-on-Wye HR9 7US.

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Text by Charlotte Bolton with contributions from the regional co-ordinators. Original report design by Chris Wood.

Images by Kirsty Andrews, Lin Baldock, Matthew Boa, Charlotte Bolton, Dawn Brange, Ross Bullimore, Kay Dewhurst, Iain Dixon, Justin Hart, Lara Howe, Angus Jackson, Francis Jeffcock, Marie Jones, Libby Keatley, Cath Lee, Tamsyn Mann, Mike Markey, Shannon Moran, Owen Paisley, David Pearce, Andrew Pegge, Jo Prosser, Matt Slater, Rick Southwood, Rob Spray, Dawn Thomas, Dawn Watson, Chris Webb and Richard Yorke. The photographers retain all rights over their submitted image(s).