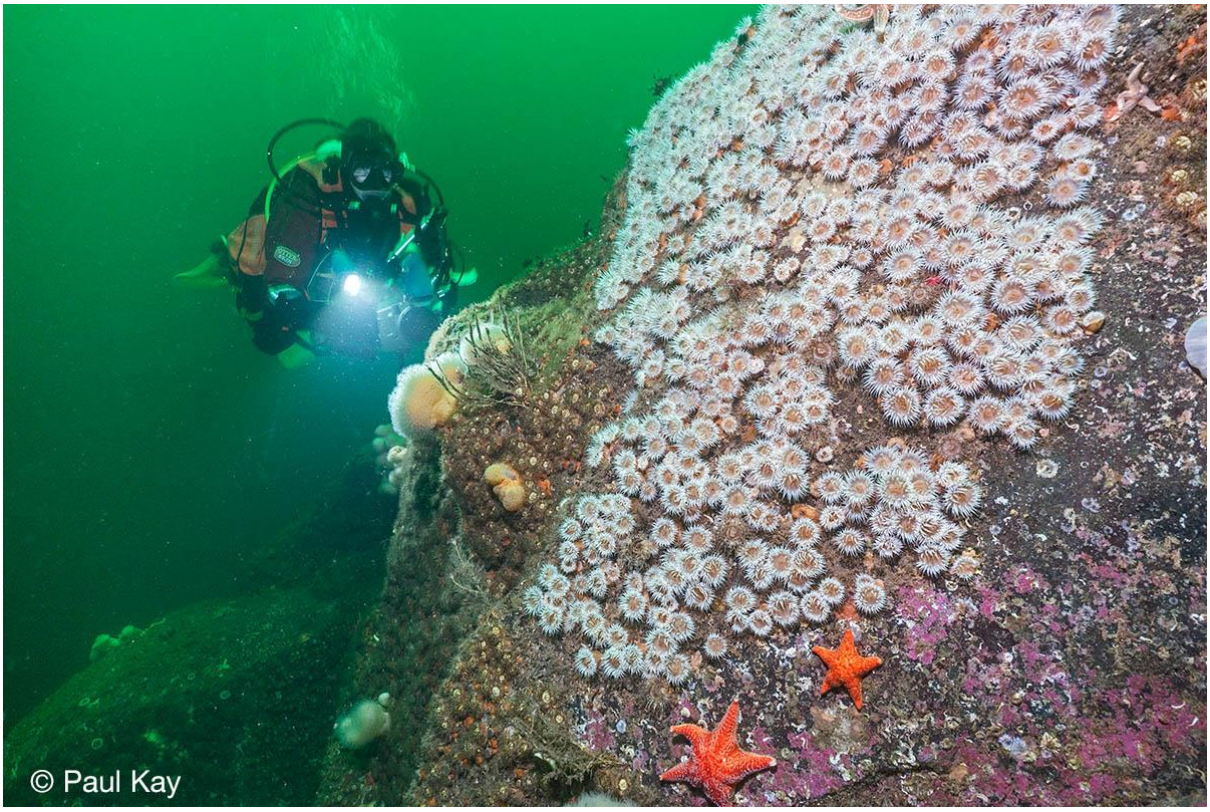
2020 Scotland Report



Author: Iain Dixon

Seasearch is funded and supported in Scotland by:

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Nestends and Greenend gully by Eyemouth (Iain Dixon)

Introduction

The year 2020 is memorable in several respects. Firstly due to the arrival with a bang of the worldwide Coronavirus pandemic that has had such an effect on our lives and activities. Secondly, more prosaically, changes took place in coordinatorship of Seasearch in Scotland. Although Seasearch took the decision early on not to organise any diving trips in 2020, and to cancel or postpone certain events that had already been in the calendar, many stalwarts still managed to get diving on a socially distanced basis and to spend a rewarding few moments filling in the occasional Seasearch Observer or Surveyor form.

Natalie Hirst had been the Seasearch coordinator for Scotland since 2016, but early in 2020 she moved a little way south to England to lead Seasearch North East. With a bit of clever persuasion on Natalie's part, Seasearch Scotland has since been jointly coordinated by underwater photographer Paul Kay and marine biologist Iain Dixon. Due to the limitations on activities at various times as a result of the pandemic, the handover took slightly longer and with less fanfare perhaps than usual but is now complete. The long-serving Owen Paisley continues to oversee Seasearch activities on the west coast, but in 2020 was joined by Karen Boswarva who, in addition to being a massively keen marine biologist, has particular skills and facility with social media.

Paul Kay

Karen Boswarva

Iain Dixon

Owen Paisley

Diving activities

Several dive trips organised by Seasearch were planned initially for the spring and summer of 2020. These included trips to Wester Ross, Loch Fyne, Skye and Kinlochbervie. However, the decision was made to stop all Seasearch-organised diving activities through 2020, and the latter two trips were postponed to 2021.

Seasearch divers acting on their own initiative prior to the start of lockdown in March had already started a trickle of completed form submissions in early 2020. After restrictions were eased slightly in July, divers were keen to get back in the water despite the lack of organised dive trips and this steady trickle was continued. By the end of the year 202 forms had been submitted, the locations of which are shown in Figure 1. The total comprised 124 Observer forms, and 78 Surveyor forms - an impressive figure given the constraints we were all operating under.

Some 179 of the records came from within the boundaries of one or other of the various types of marine protected area (MPA). The MPA with the most Seasearch records in 2020 was the Berwickshire and North Northumberland Coast Special Area of Conservation (SAC). On the west coast the most recorded MPA was the Inner Hebrides and the Minches candidate SAC, followed by the Loch Sunart to the Sound of Jura nature conservation MPA and the Loch Creran nature conservation MPA/SAC.

Overall, the Scotland 2020 dataset comprised 6,242 taxonomic records (not all identified to species) and 430 biotope records, classified into 109 habitats, biotopes or sub-biotopes. Points of interest

are noted below. The Priority Marine Feature (PMF) records (species and habitats/biotopes) are listed in Appendices 1 and 2 respectively, along with an indication of the general location and abundance where appropriate.

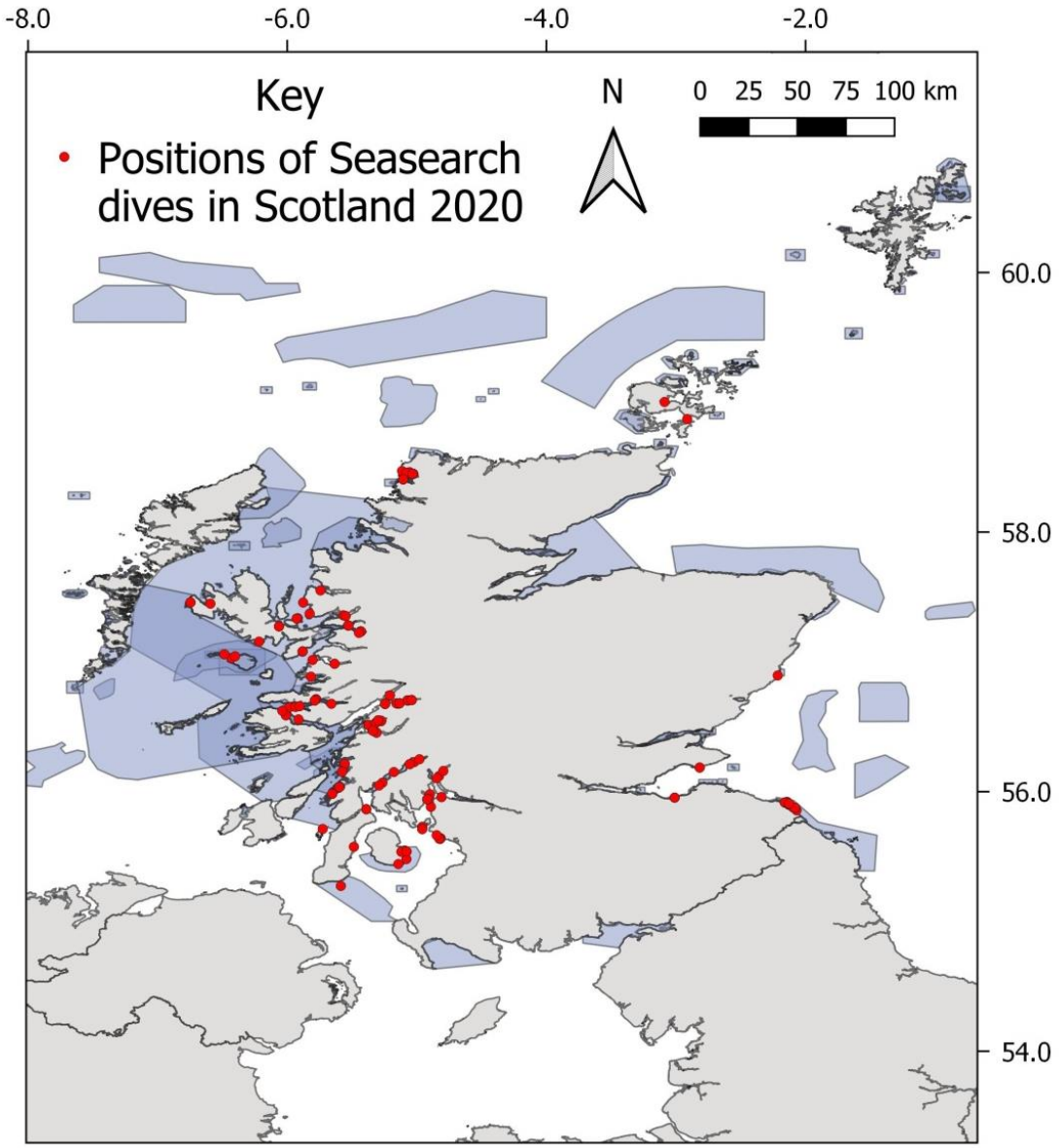


Figure 1 Seasearch survey locations in relation to designated MPAs around Scotland 2020

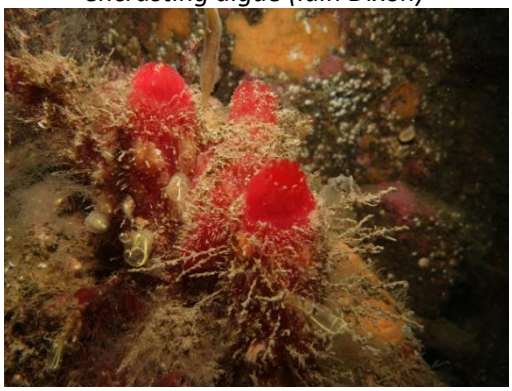
Species:

The most frequently recorded taxa were the various kelp species, the common starfish *Asterias rubens*, encrusting pink calcareous algae, the common sea urchin *Echinus esculentus* and the tubeworm *Spirobranchus* sp. All of the benthic species most abundantly characteristic of Scottish coastal waters were also well represented, including dead men's fingers *Alcyonium digitatum*, sea loch anemones *Protanthea simplex*, solitary sea squirts (especially *Ascidia mentula*, *A. virginea*, *Ascidiella aspersa* and *Ciona intestinalis*) and feather stars (mainly *Antedon* spp.).

Kelp Laminaria hyperborea *and dead men's fingers* Alcyonium digitatum *(Iain Dixon)*

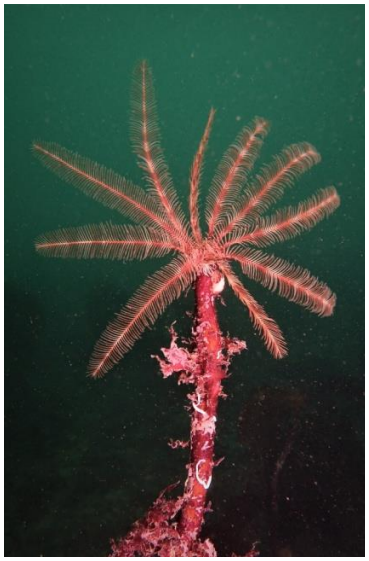
Plumose anemones Metridium dianthus, *common sea urchin* Echinus elegans *and pink encrusting algae (Iain Dixon)*

Tubeworm Protula tubulifera *(David Kipling)*

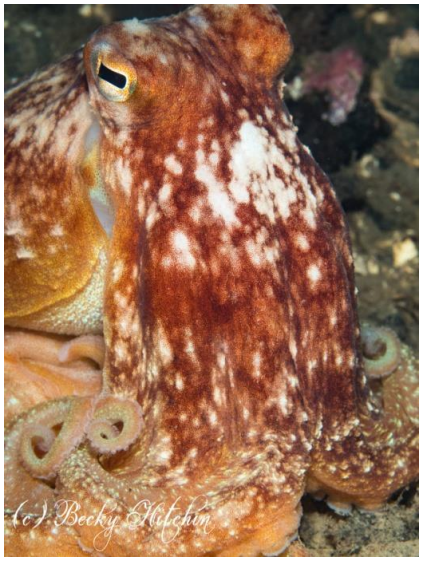


Sea squirt medley with Ascidia mentula *and* Clavelina lepadiformis *(Iain Dixon)*

Sea scorpion Taurulus bubalis *(Iain Dixon)*



Seastar Antedon bifida *(Chris Rickard)*



Curled octopus Eledone cirrhosa *(Becky Hitchin)*

Bobtail squid Rossia macrosoma *(David Kipling)*

Crawfish Palinurus elephas *taking a stance amongst dead men's fingers (Ally Moore)*

Many other species also well known from Scottish waters but typically recorded in lesser numbers were also present, such as the northern sea fan *Swiftia pallida*, the curled octopus *Eledone cirrhosa*, bobtail squid *Rossia macrosoma*, crawfish *Palinurus elephas* and flame shells *Limaria hians* for example. On the rarer side of things, there was a first Scottish record of the nudibranch *Doris ocelligera* in July and a further record of the amazing looking *Knoutsodonta pictoni*. Species that are probably under-recorded in Scotland's waters include the easily overlooked brachiopods such as *Novocrania anomala*.

Native oyster Ostrea edulis *(Karen Boswarva)*

Dorid nudibranch Doris ocelligera*; first record for Scotland (Katherine Knight)*

Onchidorid nudibranch Knoutsodonta pictoni *(Karen Boswarva)*

Brachipod Novocrania anomala *(Becky Hitchin)*

Seasearch divers diving in Inner Sound, Skye, documented the occurrence of high numbers of the eggs of *Dipturus intermedius* (flapper skate) on several occasions through the year, indicating that this species makes use of the seabed here as a spawning area. *D. intermedius* is a critically endangered species and, due to its rarity, almost nothing is known of its ecology including breeding

habits and locations. The Red Rocks and Longay urgent MPA was announced by Scottish Ministers in March 2021 in order to protect this site from marine activities pending further investigative work and data gathering.

Egg case of flapper skate Dipturus intermedius*, alongside a* Munida rugosa *for scale (Iain Dixon)*

Videographer recording flapper skate egg cases (Iain Dixon)

A project has been started in Loch Alsh in partnership with Project Baseline UK to monitor aspects of a population of the fireworks anemone *Pachycerianthus multiplicatus*. This aims to find out more about this priority marine feature within the burrowed mud habitats of the Lochs Duich, Long and Alsh MPA.

Seasearch has also been focussing in on the native oyster *Ostrea edulis*, looking out for this historically overfished and depleted species in some of the localities where it was once common.

Fireworks anemone Pachycerianthus multiplicatus *with sabellids alongside (Christine Howson)*

Native oyster Ostrea edulis *(Eric Holden and Katherine Knight)*

Habitats/biotopes:

The biotopes most represented in forms submitted were those dominated by kelp or a mix of kelp and seaweeds or red seaweeds in low or moderate energy infralittoral environments.

Community recreational divers/citizen scientists on Arran discovered an extensive flame shell bed in the South Arran Marine Protected Area last year. As only the second known remaining flame shell bed in the Clyde marine region, this is a significant and exciting discovery not just for Arran but for biodiversity interests throughout the whole of Scotland. This newly discovered flame shell bed adds to the habitats and species for which the MPA was originally designated in 2016.

Limaria hians *in the South Arran marine protected area (Paul Kay)*

Seasearch data has confirmed and added to knowledge of the continued presence of seagrass beds off Arran's coast also, where snorkellers have been working to map these vitally important habitats over the last year in Lamlash Bay, in the South Arran MPA no take zone.

*Seagrass (*Zostera marina*) beds and lobster* Homarus gammarus*, Arran (Paul Kay)*

Events

The Seasearch co-ordinators annual meeting in London took place in January 2020.

In July an online talk on fish identification was given by newly recruited Scottish co-ordinator Paul Kay. This attracted 23 people, mainly from Scotland but with a scattering from further afield, and a programme of marine-related online talks is being developed for 2021.

Paul also gave a talk in December entitled 'What have Protected Areas Ever Done for Us'? This was a short interesting history of the start of marine protected areas and where we currently are with these.

Iain attended a consultation meeting held in March by the Berwickshire Marine Reserve on the development of new codes of conduct for various activities carried out within the reserve. The codes of conduct, covering diving, snorkelling, kayaking for example, and now available on the Berwickshire Marine Reserve website.

A specialist sponge identification course had been organised to take place at St Abbs in September 2020. This was prevented from going ahead at the time, but has been rescheduled to September 2021.

Courses

Only two face to face courses were held in Scotland during 2020, prior to the COVID pandemic taking hold; one Observer course held at the University of Edinburgh on February 8th, and a Surveyor course in Eyemouth over two days on March 14th-15th. The latter was the first Surveyor course held in Scotland for several years and saw West of Scotland co-ordinator Owen Paisley becoming qualified as a Surveyor course tutor. These two courses were attended by 19 trainee Seasearchers.

Three further Observer courses using the traditional face to face format had also been planned to take place over May to August at Ullapool, Eyemouth and Tayvallich, but were cancelled because of the COVID-19 pandemic.

However, a success story has been the development of an online version of the Observer course, held using the zoom platform. This was first trialled in July by Owen Paisley, assisted by Karen Boswarva. Rather than subjecting candidates and tutors to a whole day staring at a computer screen, the course was broken down to five evening sessions of 60-80 minutes each run over approximately seven days. This format has proved to be workable and successful, and a total of six online courses have now been held, attended by a total of 62 candidates. By the end of 2020, 59 people had completed Seasearch training, almost double the number who had attended training in 2019.

Owen Paisley has borne the brunt of course teaching and organisational duties through 2020, but Karen, Iain and Paul, together with Glasgow-based Seasearcher Sarah Bowen, have been observing and assisting with a view to becoming qualified Observer course tutors and organisers.

Acknowledgements

Seasearch would like to thank all volunteers, tutors and coordinators who have contributed to the 2020 dataset, training and events. In particular, Paul and I thank Natalie for her time as coordinator since 2016 and wish her all the best in northeast England. Along with Karen, we also thank Owen for helping ease the three of us newbies into our Scottish roles. We would also like to thank all skippers and crews of the many charter vessels working around the Scottish coast who have managed to take divers out safely and happily under the unusual pandemic conditions prevalent in 2020.

We gratefully acknowledge the permission granted by several Seasearcher photographers to reproduce the images shown in this report.

Edible crab Cancer pagurus*, brittle stars* Ophiocomina nigra *and seven-armed starfish* Luidia ciliaris (Paul Kay)

Appendix 1 – PMF species records

There were a total of 69 records of PMF species in Scotland submitted during 2020, as tabulated below.

PMF Name	Species Name	Number of records in 2020	General Location of each record and abundance (SACFOR scale)
Tall seapens	*Funiculina quadrangularis*	6	Loch Leven (SW20/047 R, SC20/037 R, SC20/037 F) Loch Duich (SC20/002 C, SC20/038 C, SW20/108 O)
Cod	*Gadus morhua*	10	St Abbs (SW20/055 R) Loch Leven (SW20/075 R, SW20/080 R, SW20/083 O) Sleat, Skye (SW20/046 R) Loch Creran (SW20/054 R, SW20/074 O) Loch Inchard (SC20/017 R, SC20/012 R) Lamlash Bay, Arran (SW20/092 R)
Anglerfish	*Lophius piscatorius*	2	Eyemouth and St Abbs (NE20/004 R, SW20/055 R)
Whiting	*Merlangius merlangus*	1	Arran (SW20/092 R)
Native oyster	*Ostrea edulis*	11	Loch Creran (SW20/111 O, SW20/097 R, SW20/070 R, SW20/054 R, SW20/074 R) Loch Craignish (SW20/115 F) Loch Sunart (SW20/017 R) Loch Shuna (SW20/059 C, SW20/116 R) Arisaig (SW20/037 C) Skye (SW20/058 F)
Fireworks anemone	*Pachycerianthus multiplicatus*	15	Loch Long (SW20/030 R, SW20/033 O) Loch Fyne (SC20/023 R, SC20/019 O, SW20/009 O) Loch Leven (SW20/047 R, SC20/037 R) Loch Duich (SC20/002 O, SC20/038 R, SW20/108 O) Loch Creran (SW20/084 R, SW20/074 R) Loch Alsh (SW20/069 F, SC20/001 O, SW20/109 R)
European spiny lobster	*Palinurus elephas*	2	Loch Pooltiel, Skye (SW20/110 R) Loch Inchard (SC20/012 R)
Harbour seal	*Phoca vitulina*	2	Orkney (SC20/010 R) Skye (SW20/045 R)
Maerl	*Phymatolithon calcareum*	2	NW Rhum (SC20/015 A, SC20/015 C)

PMF Name	Species Name	Number of records in 2020	General Location of each record and abundance (SACFOR scale)
Ocean quahog	*Arctica islandica*	3	Loch Leven (SW20/063 R) Loch Creran (SW20/076 R) Loch Carron (SW20/040 R)
Saithe	*Pollachius virens*	2	Loch Creran (SW20/123 R) St Abbs (NT20/062 F)
White cluster anemone	*Parazoanthus anguicomus*	2	Sound of Mull (SW20/088 F, SW20/087 O)
Sand goby	*Pomatoschistus minutus*	5	Loch Linnhe (SW20/026 O) Sound of Mull (SW20/089 O) Loch Creran (SW20/076 F, SW20/076 O, SW20/114 F)
Common skate (eggs)	*Dipturus intermedius*. (eggs)	6	Inner Sound, Skye (SC20/014 C, SC20/014 R, SW20/124 O, SW20/125 F, SC20/046 C, SC20/047 C)

Appendix 2 – PMF biotope records

There were a total of 123 records from 33 PMF biotopes in Scotland submitted from dives conducted in 2020, as tabulated below.

PMF name	Biotope Code	Biotope description	Number of records in 2020	General location of each record
	IR.LIR.KVS.LsacPsaVS	*Laminaria saccharina* and *Psammechinus miliaris* on variable salinity grazed infralittoral rock	2	Loch Sunart (SW20/100) Loch Creran (SW20/070)
Low or variable salinity habitats	IR.LIR.Lag	Submerged fucoids, green or red seaweeds (low salinity infralittoral rock)	11	Loch Sunart (SW20/039) Loch Creran (SW20/114, SW20/113, SW20/054, SW20/012, SW20/045) Lochs Linnhe and Leven (SW20/083) Loch Fyne (SW20/004, SC20/026, SC20/022) Loch Sween (SC20/027)
	IR.LIR.Lag.AscSpAs	*Ascophyllum nodosum* with epiphytic sponges and ascidians on variable salinity infralittoral rock	1	Loch Shuna (SW20/059)
	IR.LIR.Lag.FChoG	Mixed fucoids, *Chorda filum* and green seaweeds on reduced salinity infralittoral rock	8	Loch Sunart (SW20/099, SW20/100) Loch Fyne (SW20/056, SW20/009) Skye (SW20/045) Loch Creran (SW20/006) Loch Toridon (SW20/040) Loch Shuna (SW20/102)
	IR.MIR.KR.Lhyp	*Laminaria hyperborea* and foliose red seaweeds on moderately exposed infralittoral rock	1	Loch Nevis (SW20/041)
	IR.MIR.KR.Lhyp.Ft	*Laminaria hyperborea* forest and foliose red seaweeds on moderately exposed upper infralittoral rock	6	Loch Pooltiel (SW20/110) Eyemouth (SC20/004) Arran (SW20/104) St Abbs (SW20/055, SW20/035) Eyemouth (SC20/005)
	IR.MIR.KR.Lhyp.GzFt	Grazed *Laminaria hyperborea* forest with coralline crusts on upper infralittoral rock	3	Loch Shuna (SW20/060) Eyemouth (SW20/042, SC20/003)

PMF name	Biotope Code	Biotope description	Number of records in 2020	General location of each record
	IR.MIR.KR.Lhyp.GzPk	Grazed *Laminaria hyperborea* park with coralline crusts on lower infralittoral rock	12	St Abbs (NT20/062, NT20/007, SC20/020, NE20/005) Loch Sunart (SW20/087) Eyemouth (NT20/011, SC20/018, NE20/014, NE20/007, NE20/004) Loch Carron (SC20/028) Skye (SW20/120)
	IR.MIR.KR.Lhyp.Pk	*Laminaria hyperborea* park and foliose red seaweeds on moderately exposed lower infralittoral rock	4	Eyemouth (SW20/061) Sanda Island (SW20/038) Loch Inchard (SW20/081) Kinlochbervie (SW20/077)
	IR.MIR.KR.LhypT.Ft	*Laminaria hyperborea* forest, foliose red seaweeds and a diverse fauna on tide-swept upper infralittoral rock	1	St Abbs (SW20/052)
	IR.MIR.KR.LhypTX.Ft	*Laminaria hyperborea* forest and foliose red seaweeds on tide-swept upper infralittoral mixed substrata	1	Loch Creran (SW20/011)
Tide-swept algal communities	IR.MIR.KT	Kelp and seaweed communities in tide-swept sheltered conditions	3	Loch Sween (SW120, SW/103, SW/121)
	IR.MIR.KT.LsacT	*Laminaria saccharina* with foliose red seaweeds and ascidians on sheltered tide-swept infralittoral rock	1	Little Cumbrae (SC20/034)
	IR.MIR.KT.XKTX	Mixed kelp and red seaweeds on infralittoral boulders, cobbles and gravel in tidal rapids	1	Loch Creran (SW20/012)
Sea loch egg wrack beds	LR.LLR.FVS.Ascmac	*Ascophyllum nodosum* ecad *mackaii* beds on extremely sheltered mid eulittoral mixed substrata	1	Loch Sunart (SW20/017)
Serpulid aggregations	SS.SBR.PoR.Ser	*Serpula vermicularis* reefs on very sheltered circalittoral muddy sand	3	Loch Creran (SW20/113, SW20/101, SW20/005)
Horse mussel beds	SS.SBR.SMus.ModCvar	*Modiolus modiolus* beds with *Chlamys varia*, sponges, hydroids and bryozoans on slightly tide-swept	1	Loch Creran (SW20/084)

PMF name	Biotope Code	Biotope description	Number of records in 2020	General location of each record
		very sheltered circalittoral mixed substrata		
Horse mussel beds	SS.SBR.SMus.ModHAs	*Modiolus modiolus* beds with fine hydroids and large solitary ascidians on very sheltered circalittoral mixed substrata	2	Loch Creran (SW20/111, SW20/070)
Horse mussel beds	SS.SBR.SMus.ModT	*Modiolus modiolus* beds with hydroids and red seaweeds on tide-swept circalittoral mixed substrata	1	Loch Creran (SW20/097)
Blue mussel beds	SS.SBR.SMus.MytSS	*Mytilus edulis* beds on sublittoral sediment	1	Loch Creran (SW20/045)
Kelp and seaweed communities on sublittoral sediment	SS.SMp.KSwSS	Kelp and seaweed communities on sublittoral sediment	7	Loch Carron (SC20/040) Loch Long (NT20/018) Small Isles (SC20/015) Arran (SW20/098, SW20/096, SW20/091) Arisaig (SW20/037)
	SS.SMp.KSwSS.LsacCho	*Laminaria saccharina* and *Chorda filum* on sheltered upper infralittoral muddy sediment	13	Loch Creran (SW20/007, SW20/005) Loch Shuna (SW20/116, SW20/105, SW20/102) Gigha (SW20/016) Loch Sunart (SW20/039, SW20/017) Loch Sween (SW20/103, SW20/094) Skye (SW20/045, SW20/058) Arran (SW20/092)
	SS.SMp.KSwSS.LsacR	*Laminaria saccharina* and red seaweeds on infralittoral sediments	1	Loch Leven (SW20/063)
	SS.SMp.KSwSS.LsacR.Mu	*Laminaria saccharina* with red and brown seaweeds on lower infralittoral muddy mixed sediment	2	Loch Creran (SW20/111) Loch Craignish (SW20/115)
	SS.SMp.KSwSS.LsacR.Sa	*Laminaria saccharina* and filamentous red algae on infralittoral sand	1	Skye (SW20/003)
Maerl beds	SS.SMp.Mrl	Maerl beds	4	Loch Sween (SW20/122, SW20/121) Loch Alsh (SW20/119, SW20/003)

PMF name	Biotope Code	Biotope description	Number of records in 2020	General location of each record
	SS.SMp.Mrl.Lgla	*Lithothamnion glaciale* maerl beds in tide-swept variable salinity infralittoral gravel	2	Loch Sween (SW20/103, SW20/094)
	SS.SMp.Mrl.Pcal	*Phymatolithon calcareum* maerl beds in infralittoral clean gravel or coarse sand	1	Rhum (SC20/015)
	SS.SMp.Mrl.Pcal.R	*Phymatolithon calcareum* maerl beds with red seaweeds in shallow infralittoral clean gravel or coarse sand	1	Rhum (SC20/015)
Seagrass beds	SS.SMp.SSgr.Zmar	*Zostera marina/angustifolia* beds on lower shore or infralittoral clean or muddy sand	9	Loch Nevis (SW20/041) Kintyre (SW20/013) Loch Craignish (SW20/117) Arran (SW20/093, SW20/098, SW20/096, SW20/092, SW20/091) Holm of Grimbister, Orkney (SC20/010)
Burrowed mud	SS.SMu.CFiMu.SpnMeg	Seapens and burrowing megafauna in circalittoral fine mud	11	Dunoon, Clyde (SC20/030) Loch Long (SW20/030) Canna, Small Isles (SC20/008) Loch Duich (SC20/038) Loch Fyne (SC20/019) Loch Creran (SW20/101) Lochs Linnhe and Leven (SC20/041, SW20/064) Loch Alsh (SC20/001, SW20/109, SW20/069)
Flame shell beds	SS.SMx.IMx.Lim	*Limaria hians* beds in tide-swept sublittoral muddy mixed sediment	4	Loch Duich (SC20/002) Loch Sunart (SW20/085) Loch Linnhe (SC20/042) Applecross (SW20/119)
Native oysters	SS.SMx.IMx.Ost	*Ostrea edulis* beds on shallow sublittoral muddy mixed sediment	3	Loch Shuna (SW20/059) Skye (SW20/058) Arisaig (SW20/037)