



## Seasearch Scotland 2015 Summary Report

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## Background to Seasearch in Scotland

Seasearch is a project for volunteer sports divers who have an interest in what they're seeing underwater, want to learn more and want to help protect the marine environment around the coasts of Britain and Ireland. The main aim is to map the various types of habitats found in the near-shore zone around the whole of Britain and Ireland. In addition volunteers record the species they see in each area, establishing the richest sites for marine life, the sites where there are problems and hence, the sites which need protection. The Marine Conservation Society (MCS) coordinates Seasearch across the British Isles ([www.seasearch.org.uk](http://www.seasearch.org.uk)).

Scottish Natural Heritage (SNH) provided funding for two Seasearch coordinators in Scotland during 2015: Georgia Conolly (GC) coordinated Seasearch on a national level and Owen Paisley (OP) coordinated activities in Argyll and the west of Scotland. Joanne Porter (JP) coordinated Seasearch in Orkney on an independent basis. MCS colleagues Calum Duncan (CD) and Matt Barnes (MB) supported the project by providing advice, additional resources and promotion through MCS outreach activities.

## Events

### Courses

Four Observer courses were held during 2015 in Edinburgh, Aberdeen, Gourock and Broadford with 30 participants. The following day after each course two training dives were held at a nearby location for participants to practice their skills with a tutor on hand. In total eight training dives were held with 29 participants (Table 1). One Specialist nudibranch course was independently organised by members of Guildford SAC on 8<sup>th</sup> August, with diving on 9<sup>th</sup> August in St Abbs. The course tutor was Scotland's nudibranch expert, Jim Anderson, and there were 12 participants on each day.



Figure 1 Gourock Observer course



Figure 2 Getting to grips with Admiralty charts (Edinburgh Observer course)

Table 1 Location of Observer courses, training dives, tutor, and number of days, dives, divers and participants. GC = Georgia Conolly, MB = Matt Barnes, JA = Jim Anderson, OP = Owen Paisley.

Date	Course & location of training dives	Tutor	Days	Dives	Divers	Participants
13 <sup>th</sup> Jun	Observer course - Edinburgh	GC & MB	1			9
14 <sup>th</sup> Jun	Loch Fyne training dives	GC & MB	1	2	5	
8 <sup>th</sup> Aug	Observer course - Aberdeen	GC	1			6
8 <sup>th</sup> Aug	Nudibranch course – St Abbs	JA	1			12
9 <sup>th</sup> Aug	Cove training dives	GC	1	2	7	
9 <sup>th</sup> Aug	St Abbs nudibranch dives	JA	1	2	12	
19 <sup>th</sup> Sept	Observer course - Gourrock	OP	1			11
20 <sup>th</sup> Sept	Clyde training dives	OP	1	2	9	
24 <sup>th</sup> Oct	Observer course - Broadford	GC	1			4
25 <sup>th</sup> Oct	Loch Duich training dives	GC & OP	1	2	8	
			<b>10</b>	<b>10</b>	<b>41</b>	<b>42</b>



## Diving and expeditions

Forty three dives took place over 31 days during 2015 (Table 2). Some dives were conducted to search for Priority Marine Features (PMFs) species such as horse mussels (*Modiolus modiolus*), fireworks anemones, the *Arachnanthus sarsi* anemone, native oysters and Celtic feather stars. Other dives took place to hunt for and survey PMF habitats including flame shell reefs, maerl beds, horse mussel beds and burrowed mud. A number of 'gap filling' dives were conducted in places for which there were no or relatively few existing Seasearch records. Many of the dives that took place were in recently designated MPAs. A total of 150 volunteer divers took part in surveys, which equates to 198 'diver days'; the number of days volunteers gave to Seasearch.

### *Modiolus modiolus* surveys

As horse mussels are a PMF for Scotland, Owen Paisley (Argyll Co-ordinator) looked at the NBN gateway and identified a number of west coast sites which had historical records of *Modiolus modiolus*, mainly from the 1970s and 1980s with some more recent and a few much older. During 2015 divers revisited 12 sites, 2 in Loch Creran, 1 in Loch Leven, 2 in Loch Goil, 6 in Loch Fyne and 1 off Greenock. Horse mussels were relocated in 8 sites and none were found in 4 sites. Of the seven sites where horse mussels were present large healthy beds were found in Loch Goil, Loch Creran and off Greenock. At the Greenock site horse mussels were particularly abundant. No horse mussels were found in 4 sites off Loch Fyne and at the other two only scattered horse mussels were seen. One surprising result was scattered horse mussels and native oysters found in shallow water in Tarbert Harbour Loch Fyne. In total the mussel surveys took up 42 diver days with 8 individuals involved.

### Seasearch organised trips

Targeted dive trips organised by Seasearch included South Skye, Arran, Moray Firth, Crinan, Loch Sunart and Scapa Flow, Orkney.



Figure 3 Wreck of the Tabarka with diver Penny Martin enjoying the great visibility (Photo Matt Doggett)

## Crinan

A sighting of the rare, sediment dwelling, anemone *Arachnanthus sarsi* was made near Ardnoe Point at the mouth of Loch Crinan in May, by Lonn Landis, diving independently. This is a priority species and is thought to have been badly affected by prawn trawling in its sediment habits. There are no other recent Seasearch records from the Sound of Jura. We organised a Seasearch survey in August with the aim of identifying if there were more of this rare species or other interesting anemones in the same area. Four sites were dived, two at Ardnoe Point and two on the eastern side of the Sound of Jura at Sailean Mhor, and Carsaig Island.

Priority species Northern Sea Fan, *Swiftia pallida*, was recorded at all four sites. At Ardnoe Point Slender Sea Pens, *Virgularia mirabilis* were abundant at one of the sites and White Cluster Anemones, *Parazoanthus anguicomus* were also recorded. *Arachnanthus sarsi* was not seen on this occasion but in exactly the same location as the previous record we instead found a single Fireworks Anemone, *Pachycerianthus multiplicatus*. This priority species is much more common in the inner sea lochs and this was the first Seasearch record from the Sound of Jura. Photographs were taken of both specimens and it is clear that they are different species despite occurring in the same area. Another nationally scarce nudibranch, *Okenia elegans*, was seen by a number of the divers.



Figure 4 A sighting of the rare, sediment dwelling, anemone *Arachnanthus sarsi*, near Ardnoe Point at the mouth of Loch Crinan (photo Lonn Landis)



Figure 5 A single fireworks anemone recorded at the same site *Pachycerianthus multiplicatus* (photo Chris Wood)



Figure 6 The nudibranch, *Okenia elegans* (photo Chris Wood)

### Orkney

In October 2015 a Seasearch live aboard trip was organised with a focus on surveying priority marine habitats including *Limaria hians* beds and maerl areas. The trip resulted in increased records of species associated with these habitats and better knowledge about the extent of these habitats through some repeat dives on sites at the Hurdles (maerl) and at Lyness (*Limaria*). The trip was joined by seaslug expert Jim Anderson with 42 species recorded for Scapa Flow during the week of surveys; some of these were new records for the area (*Lomanotus*). For more details, check out



<http://www.nudibranch.org/Scottish%20Nudibranchs/index.html>.



Figure 7 Moray Firth dive trip



Figure 8 Loch Sunart dive expedition



**Table 2 Location of Seasearch co-ordinated dives or expeditions, tutor, and number of days, dives, divers and diver\*days. OP = Owen Paisley, GC = Georgia Conolly, CW = Chris Wood, JP = Joanne Porter.**

Date	Dive / expedition	Tutor	Days	Dives	Divers	Diver*days
8 <sup>th</sup> Feb	Scotnish (Loch Sween) dive	OP	1	1	4	4
21 <sup>st</sup> Feb	Loch Shira dive	OP	1	1	4	4
8 <sup>th</sup> Mar	Horse mussel dive, Loch Creran	OP	1	1	6	6
14 <sup>th</sup> Mar	Fireworks anemones dive, Loch Shira	OP	1	1	4	4
16 <sup>th</sup> Mar	Campbeltown Loch dive	OP	1	1	3	3
21 <sup>st</sup> Mar	Loch Goil dive	OP	1	1	4	4
28 <sup>th</sup> Mar	Ardcastle (Loch Fyne) dive	OP	1	1	4	4
25 <sup>th</sup> Apr	Quarry (Loch Fyne) dive	OP	1	1	5	5
10 <sup>th</sup> May	Tarbert (Loch Fyne) dive	OP	1	1	6	6
16 <sup>th</sup> May	Campbeltown Loch dive	OP	1	1	5	5
4 <sup>th</sup> Jun	Loch Shira dive	OP	1	1	4	4
28 <sup>th</sup> Jun	Moray Firth expedition	GC	1	2	11	11
29 <sup>th</sup> Jun	Moray Firth expedition	GC	1	2	7	7
12 <sup>th</sup> Jul	Muasdale, Kintyre dive	OP	1	1	2	2
21 <sup>st</sup> Jul	Loch Creran dive	OP	1	1	4	4
8 <sup>th</sup> Aug	Sound of Jura anemone dives	CW	1	2	8	8
9 <sup>th</sup> Aug	Sound of Jura anemone dives	CW	1	2	8	8
28 <sup>th</sup> Aug	Horse mussel dive, East Loch Tarbert	OP	1	1	2	2
21 <sup>st</sup> Sept	Loch Creran dive	OP	1	1	2	2
26 <sup>th</sup> Sept	Loch Sunart dives	GC	1	2	12	12
27 <sup>th</sup> Sept	Loch Sunart dives	GC	1	2	12	12
27 <sup>th</sup> Sept	East Loch Tarbert dive	OP	1	1	2	2
13 <sup>th</sup> Oct	Loch Shira dive	OP	1	1	4	4
19-23 <sup>rd</sup> Oct	Scapa flow expedition	JP & GC	5	10	12	60
24 <sup>th</sup> Oct	South Skye expedition	OP	1	2	10	10
1 <sup>st</sup> Nov	Loch Melfort dive	OP	1	1	3	3
22 <sup>nd</sup> Nov	Ardcastle (Loch Fyne) dive	OP	1	1	2	2
			<b>31</b>	<b>43</b>	<b>150</b>	<b>198</b>

### Non-diving events

Talks about the project and its achievements were delivered at a number of events (Table 3) by Seasearch Coordinators and MCS colleagues. CD entered Seasearch Scotland in the Marine category for the RSPB's Nature of Scotland awards and Seasearch was shortlisted for the prize, along with three other marine conservation projects. CD and GC attended the event on behalf of the project and although Seasearch did not win, the event was a great showcase of Seasearch Scotland's achievements over the years. CD also wrote six MCS articles for Scottish Diver magazine and JP, OP and GC contributed articles about Seasearch activities.



Figure 9 Hosts Iolo Williams and Euan McIlwraith introduce Seasearch to the audience at the Nature of Scotland Award ceremony

Table 3 Non-diving events at which Seasearch Scotland was represented. OP = Owen Paisley, GC = Georgia Conolly, CD = Calum Duncan, MB = Matt Barnes.

Date	Event	Tutor	Participants
7 <sup>th</sup> March	Talk at Dunbar Science Festival	CD	12
23 <sup>rd</sup> March	Talk at Dundee SAC club night	GC	10
16 <sup>th</sup> April	Talk at Scottish Biodiversity Information conference	GC	60
13 <sup>th</sup> June	Boat trip with Andrew Raven Trust members	OP	14
14 <sup>th</sup> June	Talk at Andrew Raven Trust meeting	OP	39
31 <sup>st</sup> Oct	Talk at Highland Rotary Club conference	CD	150
21 <sup>st</sup> Nov	Talk and stand at Scottish Dive conference	MB & GC	150
25 <sup>th</sup> Nov	Nature of Scotland Awards prize giving evening	CD & GC	400
			<b>835</b>

## Data

In total 336 forms were logged into Marine Recorder for 2015 from Scotland. This was a record 5 year high for data forms received in Scotland. Forms were received from 44 different observers and surveyors as well as various buddy pairings of the same.

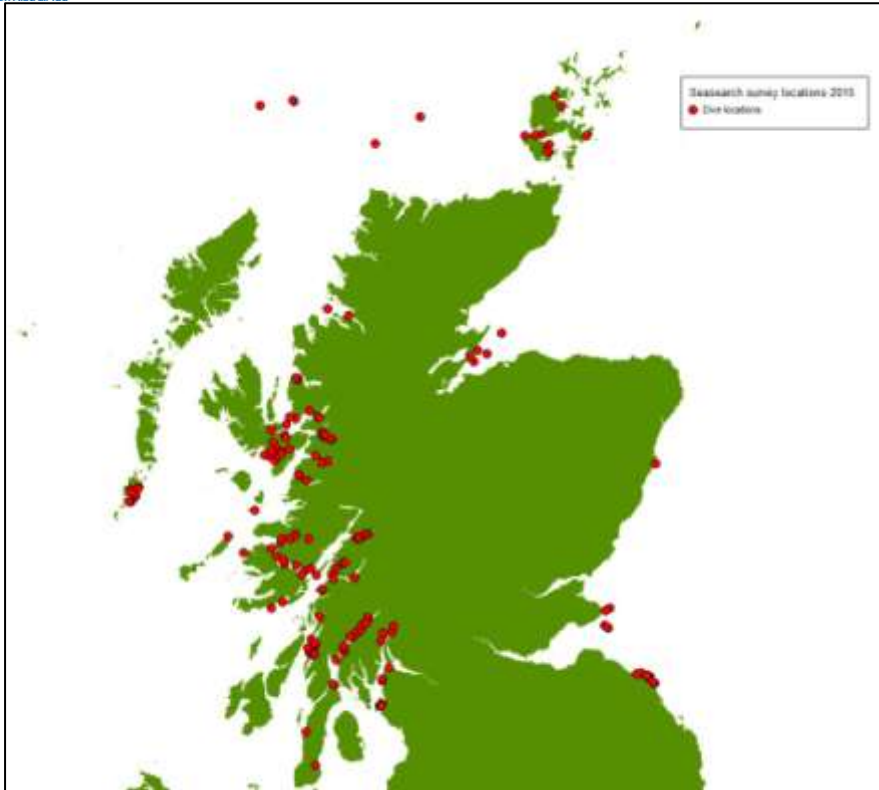


Figure 10 Survey and observation form records around Scotland during 2015



## PMFs and other interesting records

PMFs are species and habitats which are considered to be marine nature conservation priorities in Scottish waters<sup>1</sup>. The PMFs and other interesting sightings recorded by Seasearch in Scotland are set out in Table 4.

Table 4 PMF species (and characterising species for priority habitats) recorded throughout Scotland during 2015

<i>PMF (species name)</i>	<i>Common name</i>	<i>No. of records</i>	<i>Abundances recorded</i>	<i>Area(s)</i>
<i>Serpula vermicularis</i>	A tubeworm	17	S-R	Loch Fyne, Loch Leven, Loch Sunart, Loch Hourn, Skye, Loch Goil & Loch Long, Kerrera Sound & Oban, Loch Creran, Loch Duich
<i>Palinurus elephas</i>	European spiny lobster	1	R	Orkney
<i>Clupea harengus</i>	Atlantic herring	3	R-F	Skye, Sound of Jura
<i>Gadus morhua</i>	Cod	19	O-R	Loch Fyne, Hebrides, Orkney, Loch Duich, Cromarty & Moray Firth, Loch Nevis, Firth of Clyde, Sound of Jura, Loch Sween, Loch Creran, Eyemouth & St Abbs
<i>Pollachius virens</i>	Saithe	14	F-R	Orkney, Sule Stack, Loch Carron, Loch Torridon, Skye, Eyemouth & St Abbs, Loch Fyne
<i>Molva molva</i>	Ling	3	R	Orkney, Eyemouth & St Abbs
<i>Ammodytes</i>	Sandeel	5	C-R	Hebrides, Skye, Cromarty & Moray Firth
<i>Pomatoschistus minutus</i>	Sand goby	6	F-R	Orkney, Loch Hourn, Skye, Loch Linnhe
<i>Swiftia pallida</i>	Northern seafan	16	A-R	Small Isles, Loch Sunart, Mull and Sound of Mull, Sound of Jura
<i>Pachycerianthus multiplicatus</i>	Fireworks anemone	15	C-R	Loch Fyne, Loch Leven, Loch Duich, Loch Sunart, Loch Hourn, Sound of Jura, Loch Etive, Loch Goil & Long Long
<i>Funiculina quadrangularis</i>	Tall sea pen	8	F-R	Loch Leven, Loch Duich, Loch Sunart, Kerrera

<sup>1</sup> <http://www.snh.gov.uk/protecting-scotlands-nature/priority-marine-features/>

<i>PMF (species name)</i>	<i>Common name</i>	<i>No. of records</i>	<i>Abundances recorded</i>	<i>Area(s)</i>
<i>Parazoanthus anguicomus</i>	White cluster anemone	6	O-R	Sound & Oban
<i>Leptometra celtica</i>	Northern feather star	13	A-R	Orkney, Mull & Sound of Mull, Sound of Jura
<i>Brissopsis lyrifera</i>	Spiny mudlark	1	R	Mull & Sound of Mull, Loch Sunart, Loch Carron, Loch Duich, Loch Nevis, Sound of Jura, Loch Linnhe
<i>Amphiura chiajei</i>	A brittlestar	2	F-R	Loch Fyne
<i>Limaria hians</i>	Flame shell	13	S-O	Loch Hourn, Sound of Jura
<i>Modiolus modiolus</i>	Horse mussel	47	C-R	Loch Fyne, Orkney, Loch Duich, Loch Sunart, Loch Carron, Skye, Loch Creran
<i>Ostrea edulis</i>	European oyster	4	O-R	Loch Fyne, Orkney, Loch Leven, Loch Duich, Loch Sunart, Loch Carron, Cromarty & Moray
<i>Arctica islandica</i>	Ocean quahog	5	O-R	Firth, Skye, Firth of Clyde, Loch Goil & Loch Long, Loch Linnhe, Loch Creran
<i>Maerl indet.</i>	Maerl	8	S-R	Skye, Loch Fyne, Loch Creran
<i>Zostera (Zostera) marina</i>	Seagrass	3	A-O	Loch Duich, Loch Sunart
				Orkney, Loch Leven, Loch Carron, Skye
				Orkney, Skye

In total 113 different biotopes were identified from observation and survey forms around Scotland during 2015. Of these, 21 were PMF biotopes, listed in table 5 below.

Table 5 Priority Marine Feature biotopes identified by Seasearch, 2015

Biotope (occurrences)	Area	Biotope Description
CR.HCR.XFa.SwiLgAs (2)	Loch Sunart, Sound of Jura	Mixed turf of hydroids and large ascidians with <i>Swiftia pallida</i> and <i>Caryophyllia smithii</i> on weakly tide-swept circalittoral rock
CR.MCR.EcCr.CarSwi (1)	Sound of Jura	<i>Caryophyllia smithii</i> and <i>Swiftia pallida</i> on circalittoral rock
CR.MCR.EcCr.CarSwi.Aglo (2)	Mull and Sound of Mull, Small Isles	<i>Caryophyllia smithii</i> , <i>Swiftia pallida</i> and <i>Alcyonium glomeratum</i> on wave-sheltered circalittoral rock
CR.MCR.EcCr.CarSwi.LgAs (2)	Sound of Jura, Mull and Sound of Mull	<i>Caryophyllia smithii</i> , <i>Swiftia pallida</i> and large solitary ascidians on exposed or moderately exposed circalittoral rock
IR.HIR.KFaR.LhypFa (1)	Hebrides	<i>Laminaria hyperborea</i> forest with a faunal cushion (sponges and polyclinids) and foliose red seaweeds on very exposed upper infralittoral rock
IR.LIR.IFaVS (1)	Loch Sunart	Faunal communities on variable or reduced salinity infralittoral rock
IR.LIR.KVS (1)	Loch Sunart	Kelp in variable or reduced salinity
IR.LIR.KVS.Cod (1)	Loch Sween	<i>Codium</i> spp. with red seaweeds and sparse <i>Laminaria saccharina</i> on shallow, heavily-silted, very sheltered infralittoral rock
IR.LIR.KVS.Lsac.PsaVS (2)	Loch Creran, Loch Duich	<i>Laminaria saccharina</i> and <i>Psammechinus miliaris</i> on variable salinity grazed infralittoral rock
IR.LIR.Lag (2)	Loch Duich, Loch Sween	Submerged fucoids, green or red seaweeds (low salinity infralittoral rock)
IR.MIR.KR.Lhyp (1)	Summer Isles	<i>Laminaria hyperborea</i> and foliose red seaweeds on moderately exposed infralittoral rock



Biotope (occurrences)	Area	Biotope Description
IR.MIR.KR.Lhyp.Ft (5)	Skye, Loch Torridon, West Kintyre, Eyemouth and St Abbs, Orkney	<i>Laminaria hyperborea</i> forest and foliose red seaweeds on moderately exposed upper infralittoral rock
IR.MIR.KR.Lhyp.GzFt (2)	Sound of Jura, Eyemouth and St Abbs	Grazed <i>Laminaria hyperborea</i> forest with coralline crusts on upper infralittoral rock
IR.MIR.KR.Lhyp.GzPk (3)	Loch Linnhe, Eyemouth and St Abbs, Skye	Grazed <i>Laminaria hyperborea</i> park with coralline crusts on lower infralittoral rock
IR.MIR.KR.Lhyp.Pk (5)	Mull and Sound of Mull, Firth of Forth, Orkney, Eyemouth and St Abbs, Sound of Jura	<i>Laminaria hyperborea</i> park and foliose red seaweeds on moderately exposed lower infralittoral rock
IR.MIR.KR.LhypT (2)	Loch Etive, Orkney	<i>Laminaria hyperborea</i> on tide-swept, infralittoral rock
LR.LLR.FVS.Ascmac (1)	Loch Fyne	<i>Ascophyllum nodosum</i> ecad <i>mackaii</i> beds on extremely sheltered mid eulittoral mixed substrata
SS.SBR.PoR.Ser (1)	Loch Creran	<i>Serpula vermicularis</i> reefs on very sheltered circalittoral muddy sand
SS.SBR.SMus.ModCvar (1)	Cromarty and Moray Firth	<i>Modiolus modiolus</i> beds with <i>Chlamys varia</i> , sponges, hydroids and bryozoans on slightly tide-swept very sheltered circalittoral mixed substrata
SS.SBR.SMus.ModHAs (5)	Loch Sunart, Loch Goil and Long, Skye, Loch Creran, Loch Duich	<i>Modiolus modiolus</i> beds with fine hydroids and large solitary ascidians on very sheltered circalittoral mixed substrata
SS.SBR.SMus.ModT (1)	Loch Fyne	<i>Modiolus modiolus</i> beds with hydroids and red seaweeds on tide-swept circalittoral mixed substrata
SS.SBR.SMus.MytSS (1)	Firth of Clyde	<i>Mytilus edulis</i> beds on sublittoral sediment

Biotope (occurrences)	Area	Biotope Description
SS.SCS.CCS.Nmix (1)	Loch Goil and Long	<i>Neopentadactyla mixta</i> in circalittoral shell gravel or coarse sand
SS.SMp.KSwSS (6)	Loch Fyne, Orkney, Skye, Firth of Clyde, Loch Leven, Eyemouth and St Abbs	Kelp and seaweed communities on sublittoral sediment
SS.SMp.KSwSS.LsacCho (12)	Loch Fyne, Loch Torridon, Loch Leven, Kerrera Sound and Oban, Loch Sween, Loch Nevis, Loch Hourn, Loch Duich, Orkney, Loch Linnhe, Firth of Clyde, Loch Creran	<i>Laminaria saccharina</i> and <i>Chorda filum</i> on sheltered upper infralittoral muddy sediment
SS.SMp.KSwSS.LsacMxVS (3)	Loch Fyne, Firth of Clyde, Loch Duich	<i>Laminaria saccharina</i> with <i>Psammechinus miliaris</i> and/or <i>Modiolus modiolus</i> on variable salinity infralittoral mixed sediment
SS.SMp.KSwSS.LsacR.Mu (1)	Loch Fyne	<i>Laminaria saccharina</i> with red and brown seaweeds on lower infralittoral muddy mixed sediment
SS.SMp.KSwSS.Tra (1)	Loch Hourn	Mats of <i>Trilliella</i> on infralittoral muddy gravel
SS.SMp.Mrl (4)	Orkney, Loch Carron, Skye, Loch Nevis	Maerl beds
SS.SMp.Mrl.Lgla (1)	Loch Sween	<i>Lithothamnion glaciale</i> maerl beds in tide-swept variable salinity infralittoral gravel
SS.SMp.Mrl.Pcal (1)	Orkney	<i>Phymatolithon calcareum</i> maerl beds in infralittoral clean gravel or coarse sand

Biotope (occurrences)	Area	Biotope Description
SS.SMp.Mrl.Pcal.Nmix (1)	Hebrides	<i>Phymatolithon calcareum</i> maerl beds with <i>Neopentadactyla mixta</i> and other echinoderms in deeper infralittoral clean gravel or coarse sand
SS.SMp.SSgr.Zmar (2)	Skye, Orkney	<i>Zostera marina/angustifolia</i> beds on lower shore or infralittoral clean or muddy sand
SS.SMu.CFiMu.SpnMeg (3)	Loch Goil and Long, Loch Fyne, Loch Linnhe	Seapens and burrowing megafauna in circalittoral fine mud
SS.SMu.CFiMu.SpnMeg.Fun (6)	Loch Duich, Loch Sunart, Loch Hourn, Kerrera Sound and Oban, Loch Etive, Loch Leven	Seapens, including <i>Funiculina quadrangularis</i> , and burrowing megafauna in undisturbed circalittoral fine mud
SS.SMx.IMx.Lim (7)	Orkney, Loch Duich, Loch Sunart, Loch Fyne, Skye, Loch Creran, Loch Carron	<i>Limaria hians</i> beds in tide-swept sublittoral muddy mixed sediment
SS.SMx.IMx.Ost (1)	Skye	<i>Ostrea edulis</i> beds on shallow sublittoral muddy mixed sediment



Examples of some of the PMF species and biotopes recorded can be seen in Figure 11 below.

Figure 11 PMF species and biotopes recorded during 2015 (photos courtesy of Matt Doggett)



**Rich maerl bed at the Hurdles, Orkney**



**Ling shelters in a crevice at Nipple Rock**

## Acknowledgements

Special thanks to Georgia Conolly, Scotland Coordinator during 2015-2016, Owen Paisley the coordinator for West and Argyll, and all those involved in organising Seasearch dives of their own, providing accommodation, compressors and generally flying the Seasearch flag across Scotland.

## Photo credits

Photos courtesy of Georgia Conolly, Matt Doggett, Lonn Landis, Owen Paisley and Chris Wood (as indicated).