

ENGAGING THE FISHING INDUSTRY IN MARINE ENVIRONMENTAL SURVEY & MONITORING

FUNDED BY THE EUROPEAN MARITIME AND FISHERIES FUND

Four surveys of the seabed have been completed this year using a drop-down video camera (DDV) to document marine life in the Inner Sound (Skye) and Wester Ross, Orkney, Shetland, and around Islay and Jura. These surveys build on work completed in 2017 and 2018, which aim to survey seabed habitats in and around Marine Protected Areas (MPAs) in Scottish waters. Video footage was gathered from 779 stations across the four areas surveyed during 2019, and many locations were surveyed for the first time. The data collected during these four surveys will be used to assess the condition of seabed habitats and to develop an 'inventory' of where marine life occurs. All drop-down video surveys are now complete as part of this EMFF project, and the video footage will be analysed throughout 2019 and 2020.



2019 DROP-DOWN VIDEO SURVEY HIGHLIGHTS:



LOCH ALSH, INNER SOUND AND WESTER ROSS (11 - 20TH MARCH):

- 151 sites surveyed;
- Herring spawn recorded on the seabed in Wester Ross;
- New video records obtained of flame shell beds, maerl beds and horse mussel beds.

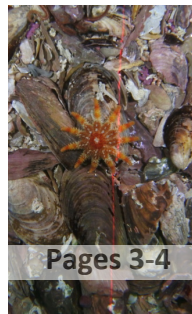
Page 2



ORKNEY ISLES (8TH – 17TH MAY):

- 228 sites surveyed;
- Rich maerl beds and rocky reefs recorded, as well as abundant horse mussel beds in Scapa Flow and possible flame shell bed habitat;
- Pod of 3-4 killer whales sighted.

Pages 2-3



SHETLAND (23RD MAY – 1ST JUNE):

- 175 sites surveyed;
- Healthy maerl beds and horse mussel beds observed for the first time in areas with no prior records of their existence;
- Sites with historic or poor records of PMFs visited to improve habitat maps.

Pages 3-4



SOUND OF JURA (21ST – 30TH JUNE):

- 225 sites surveyed;
- Northern sea fans, football squirts and sponges found on silty bedrock and boulders to the east and west of the Sound and to the west of northern Jura;
- Burrowed mud with volcano worms seen in Loch Sween MPA and abundant seapens in the mud of Loch Craignish.

Page 4

Much of the 2019 survey work focused on looking for and monitoring **Priority Marine Features (PMFs)**, which are habitats and species of conservation importance in Scotland's seas. The results from the DDV surveys will improve our knowledge on where PMFs are found, and will contribute towards the PMF review. You can read more about the PMF review here: <https://www2.gov.scot/Topics/marine/marine-environment/mpanetwork/PMF>



THIS PROJECT IS A COLLABORATION BETWEEN MARINE SCOTLAND, SCOTTISH NATURAL HERITAGE (SNH), THE FISHING INDUSTRY, SEASCOPE FISHERIES RESEARCH LTD AND CRANGON LTD.

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LOCH ALSH, INNER SOUND AND WESTER ROSS (11 - 20 MARCH)

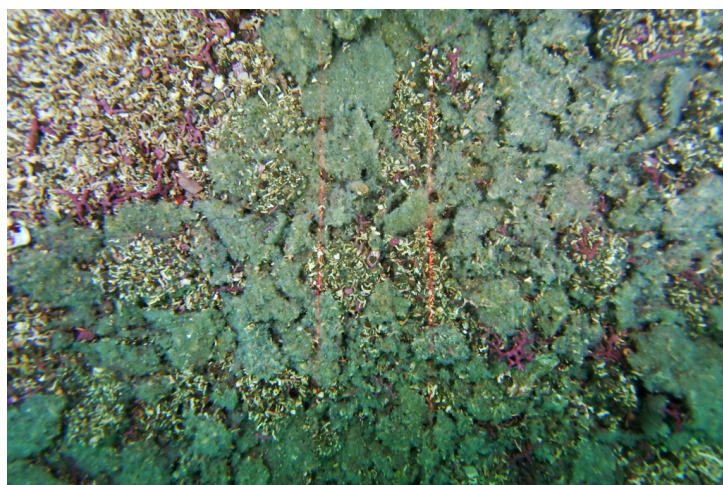
SURVEY FOCUS: To confirm the presence and condition of PMFs such as maerl beds, horse mussel beds and flame shell beds within the Inner Sound and Loch Alsh, and explore seabed habitats in an area where herring were reported to spawn in Wester Ross.

This first survey of 2019 took place in challenging weather conditions, but was timed to hopefully overlap with herring spawning activity in Wester Ross. In total 151 sites were surveyed over 10 days, covering a diverse range of habitats from flame shell beds and horse mussels to burrowed mud. Flame shell beds were filmed in a number of new locations within the Inner Sound, which confirmed observations submitted to SNH by scallop divers. The strong south westerly winds during much of the survey forced the team to survey the most sheltered leeward locations (along the eastern border of Skye).

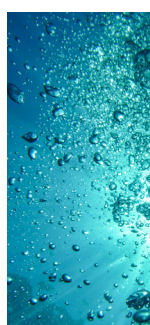
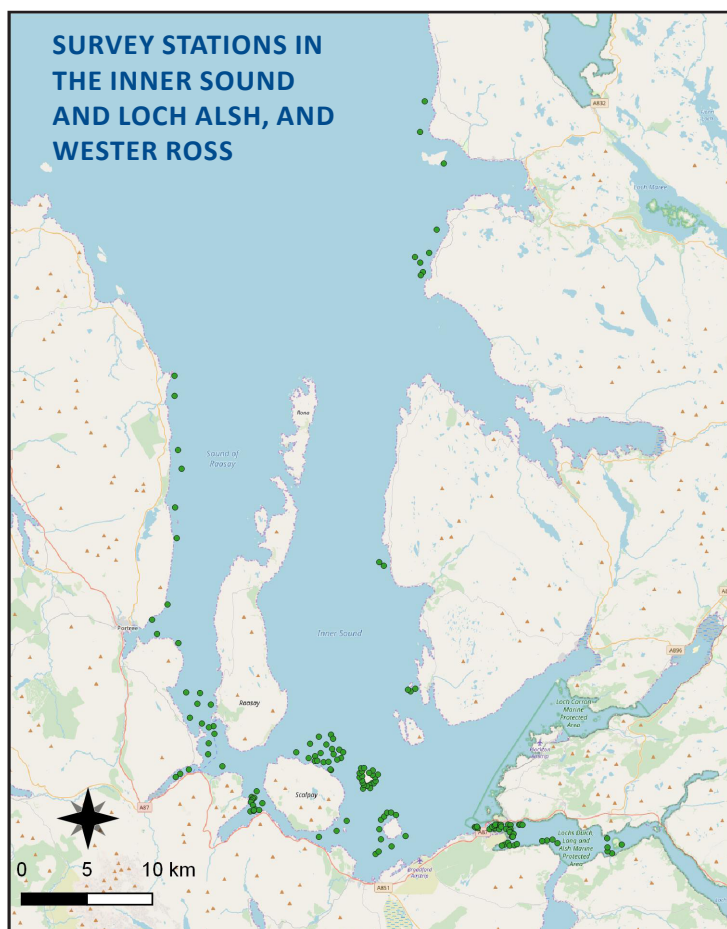
During a brief break in the weather the survey vessel was able to travel up to Wester Ross, and the highlight of the trip was recording herring spawn that had settled onto a maerl bed in a thick jelly-like mat (just north of Loch Torridon). This was the same location where herring were filmed spawning on the recent Blue Planet UK series (see <https://www.bbc.co.uk/programmes/p074qrg7>).



(Above) Snapshot of drop-down video footage from the Inner Sound, showing colourful brittle stars on a flame shell bed. The red lines are laser beams used to calculate the size of the features recorded.



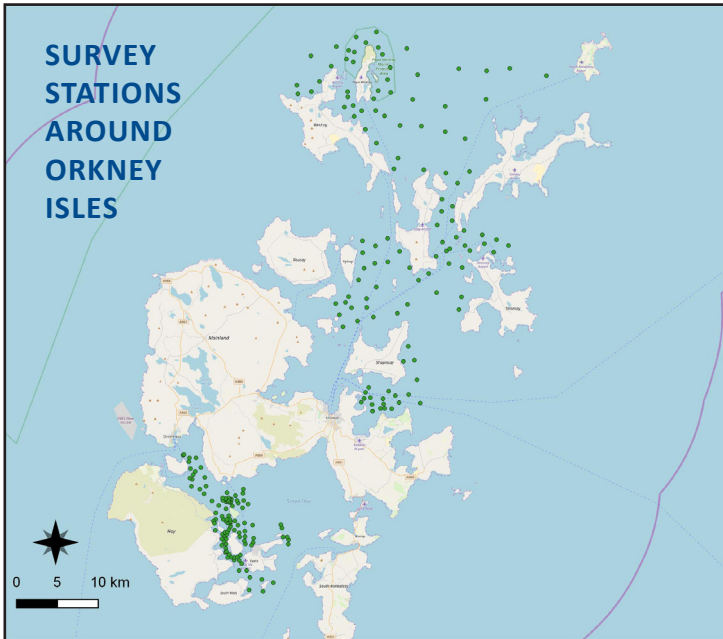
(Above) Mat of herring spawn on maerl, Wester Ross.



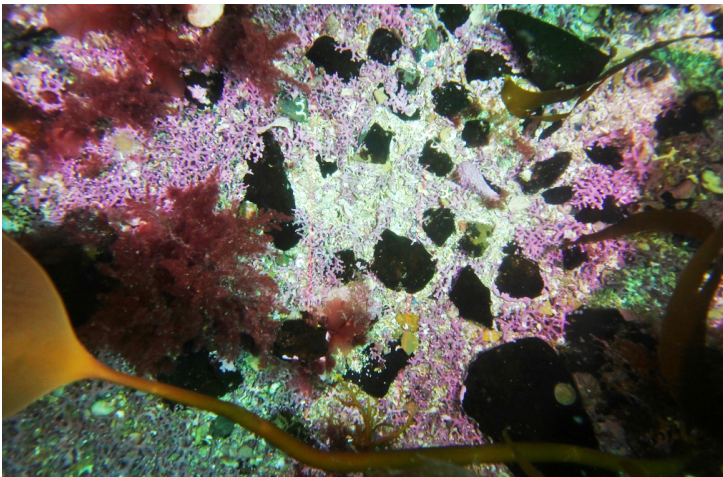
ORKNEY (08 - 17 MAY)

SURVEY FOCUS: To improve our understanding of the distribution and condition of PMFs such as maerl beds, horse mussel beds, flame shell beds, fan mussels, and other seabed habitats in nearshore Orkney waters. The video footage will be used to refine the habitat maps for the area, building on work from previous years.

In contrast to the Inner Sound survey, the weather in Orkney was excellent, and this allowed the team to survey a variety of locations around the islands including the North Sound and to the north and west of Papa Westray. A total of 228 stations were surveyed over a ten-day period, targeting areas that had not been surveyed before and areas where there was a high chance of seeing PMFs. Video footage and photographs of the seabed were also gathered within Papa Westray MPA as part of ongoing monitoring. In addition, the team aimed to record the most northerly known flame shell beds (*Limaria hians*) in the UK by surveying West Scapa Flow.



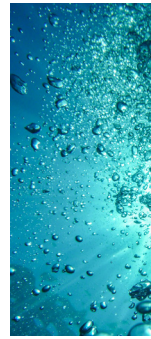
Rich maerl beds and rocky reefs were recorded in Orkney waters, as well as abundant horse mussel beds in Scapa Flow and possible flame shell bed habitat that will require follow-up work by divers. The survey team were also lucky enough to see a pod of killer whales (also known as Orca) in Scapa Flow, just before the official 'Orca Watch Week' started.



(Above) A maerl bed - pink maerl twiglets with cobbles and seaweeds, Orkney.



(Above) Drop-down video camera being deployed.

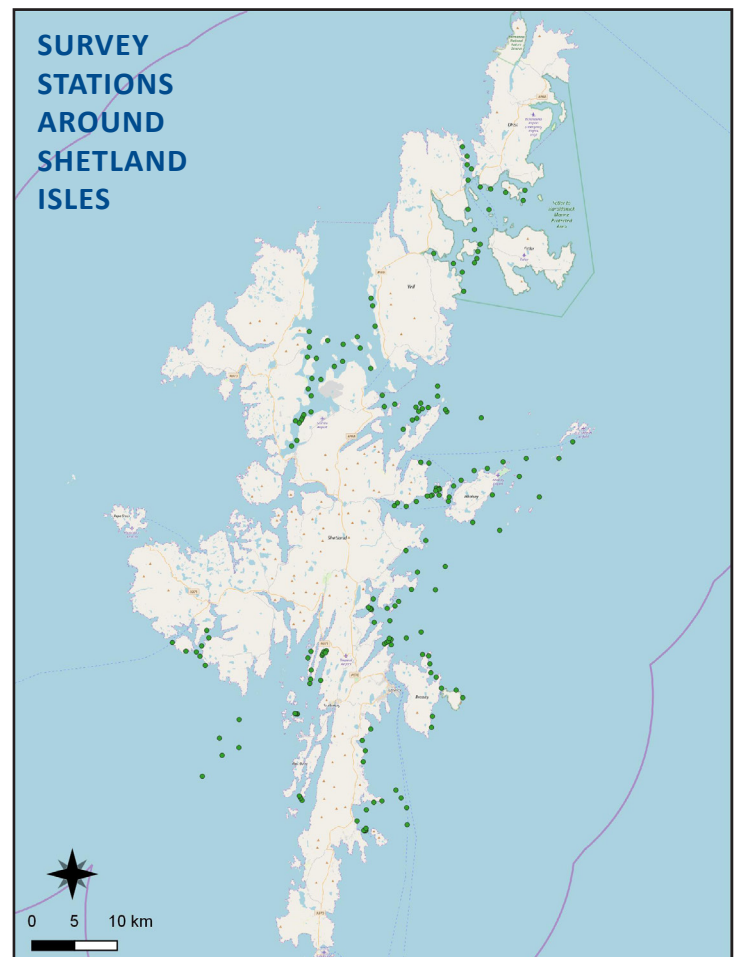


SHETLAND (23 MAY - 01 JUNE)

SURVEY FOCUS: To gather footage in areas with historic or uncertain records of PMFs, and record marine habitats in areas that have not been surveyed before. Habitats of interest include maerl beds, horse mussel beds and fan mussels in and adjacent to MPAs around the Shetland Isles.

A total of 175 stations were surveyed in and around the Shetland Isles, from Yell in the north down to Mousa in the south as well as sites off the south west coast. Several rich maerl beds were recorded (including one that was also surveyed a few years ago off Mousa). New footage of maerl beds and horse mussel beds was also gathered in areas where there was no prior record of their existence, which has added to our knowledge of the distribution and extent of these PMFs.

Much of the sampling around Shetland focussed on habitats in nearshore areas (generally seabed shallower than 50 m), however some deeper sites were also visited to explore the distribution of PMFs (to a maximum depth of 150 m). The North Atlantic Fisheries College (NAFC) also provided local knowledge in the survey design, which helped prioritise sampling areas.





(Above): Orange dead men's fingers, pink encrusting algae and brittlestars on tide-swept bedrock.

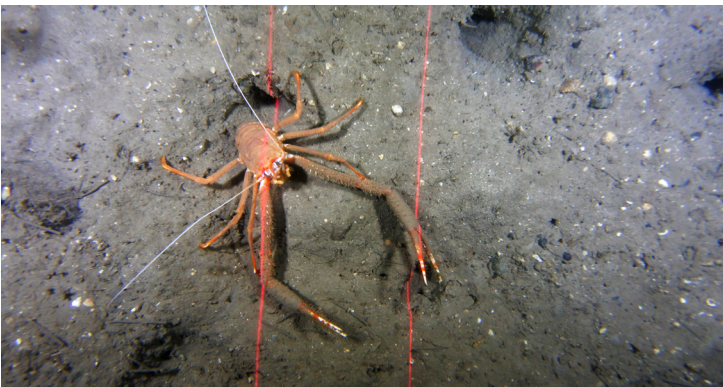


SOUND OF JURA AND ISLAY (21 - 30 JUNE)

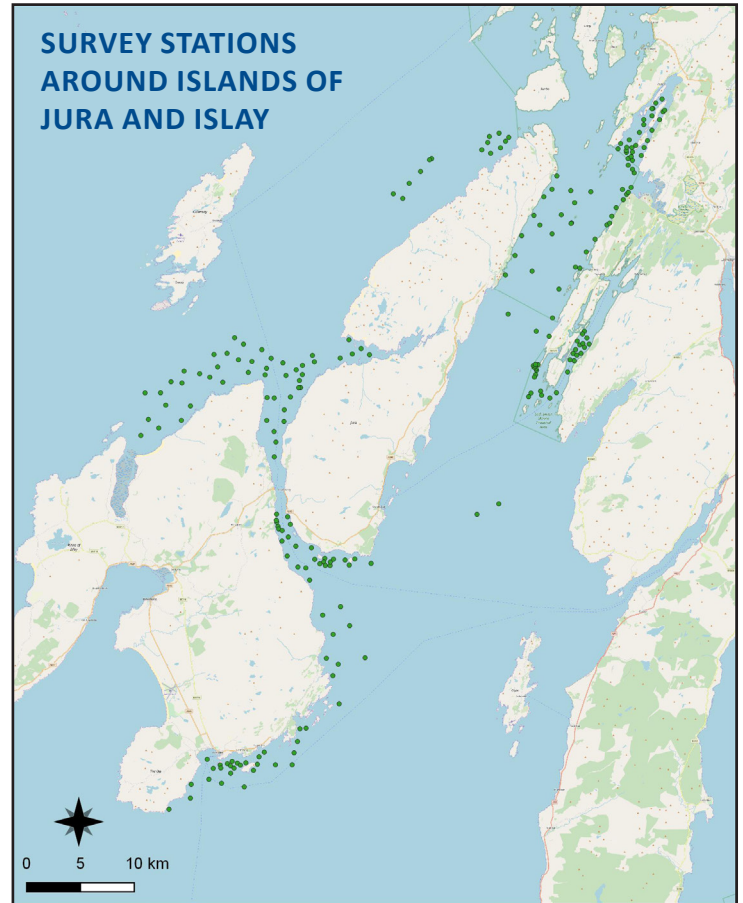
SURVEY FOCUS: To gather video footage of the seabed in and around areas where there are already records of PMFs such as horse mussel beds, maerl beds and northern sea fan and sponge communities, and establish how much of the seabed is currently covered by these habitats. Areas where these habitats are predicted to occur were also surveyed.

A total of 225 sites were sampled around the islands of Jura and Islay, including the very tidal Sound of Islay, Sound of Jura, and just west of the Corryvreckan whirlpools off the northern tip of Jura. In addition, the survey team gathered video footage in Loch Sween MPA to monitor the condition of its protected features including burrowed mud, which supports the volcano worm. Some seabed surveys were also carried out in areas that are important scallop fishing grounds.

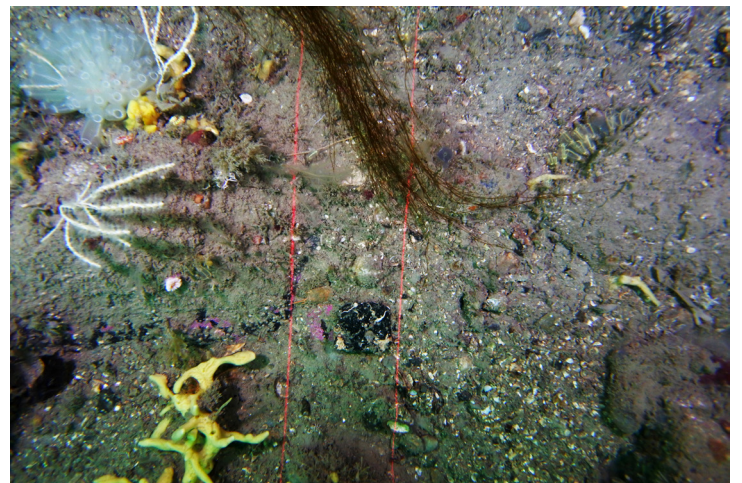
The weather was fantastic with flat calm seas; however, the main challenge was keeping the drop-down camera steady just above the seabed in the strong tides around the islands. The trip included an exciting passage through the Corryvreckan, which is a narrow strait between the islands of Jura and Scarba famous for strong tidal currents.



(Above): 'Squat lobster' on burrowed mud habitat, Jura and Islay survey.



Highlights of the survey include finding Northern sea fans, football squirts and sponges on silty bedrock/boulders on the east and west of the Sound and to the west of northern Jura; recording burrowed mud with volcano worms in Loch Sween, and; an abundance of seapens in the mud in Loch Craignish. Pilot whales were also spotted off north west Jura, and porpoises were seen in the Sound of Jura.



(Above): Northern sea fans with a 'football' sea squirt and yellow sponges on silty bedrock.

CONCLUDING REMARKS: The footage gathered during the four surveys documents a diverse and rich range of marine life within many areas. The detailed analysis of the videos will get underway shortly and the results will be published in spring 2020. The conclusions of the analyses will inform future discussions around improving the protection given to PMFs outside the MPA network.