Inchmarnock Island

Survey Note

09/10 June 2007

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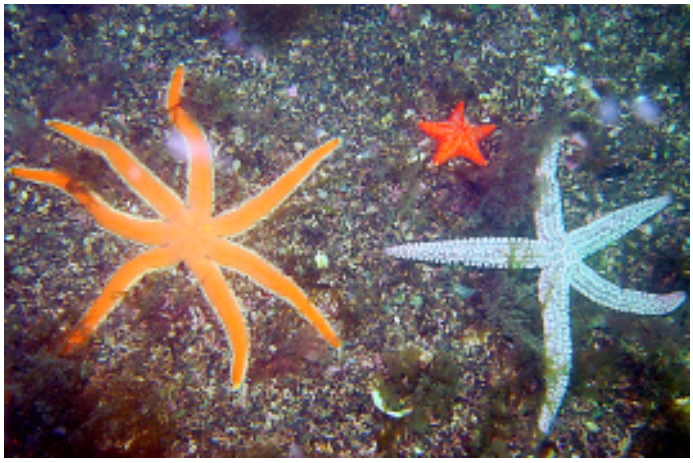
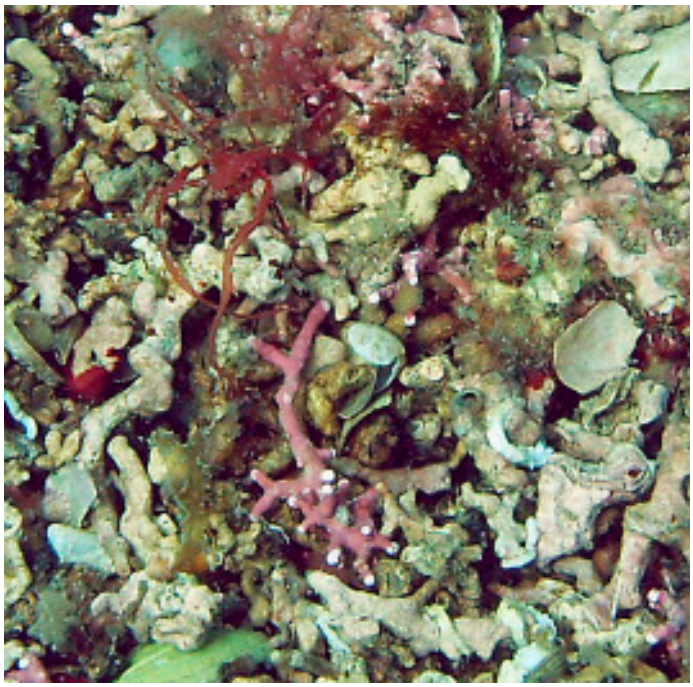
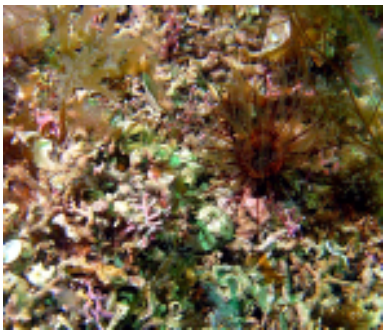




The Inchmarnock Maerl Bed

Live maerl nodule



Burrowing anemone amongst live and dead maerl

Juvenile cushion star on maerl gravel

Seven armed starfish lurking beneath the maerl

Inchmarnock Island lies about 1 mile off the west coast of the Isle of Bute. Following information provided by Malcolm Goodchild of the diveboat "Little Blue", a Seasearch survey in 2006 recorded a maerl bed to the west of Tra na H-uil, a small tidal island just to the west of Inchmarnock. Maerl is a type of red seaweed which lays down a hard calcareous skeleton forming nodules, up to 10cm across, on the seabed. Alive it is a beautiful deep pink colour but when the seaweed dies it leaves behind a bleached white skeleton looking remarkably like coral. A healthy maerl bed should have a thin layer of pink living maerl overlaying deep deposits of broken up dead calcareous skeletons or maerl gravel. This gravel forms an important habitat in its own right providing refuge for many species of burrowing animal. Maerl beds are typically found in areas of moderate water flow such as straits and sounds as well as in more open areas where wave action removes fine sediments without breaking up the fragile maerl twiglets.

There are three main species of red algae capable of forming maerl beds in UK waters, *Phymatolithon calcareum*, *Lithothamnion glaciale* and *L.corralloides*. These are difficult to differentiate in the field and generally recorded as "maerl". Maerl beds are an important habitat for a wide variety of animals and plants. Some live amongst the live maerl, attached to the branches while others burrow in the coarse gravel of dead maerl beneath the top living layer. Individual maerl nodules are fragile and easily damaged by actions such as anchoring and dredging. As well as physically breaking up the maerl, activities such as scallop dredging will also bury the live twiglets in the underlying maerl gravel leading to eventual death due to a lack of light. Maerl beds are also vulnerable to reduced light levels and increased sedimentation.

In June 2007, a Seasearch survey team took the opportunity provided by a spell of good weather to revisit the area around Tra na H-uil and also to visit Shearwater Rock at the south end of Inchamrnock Sound.

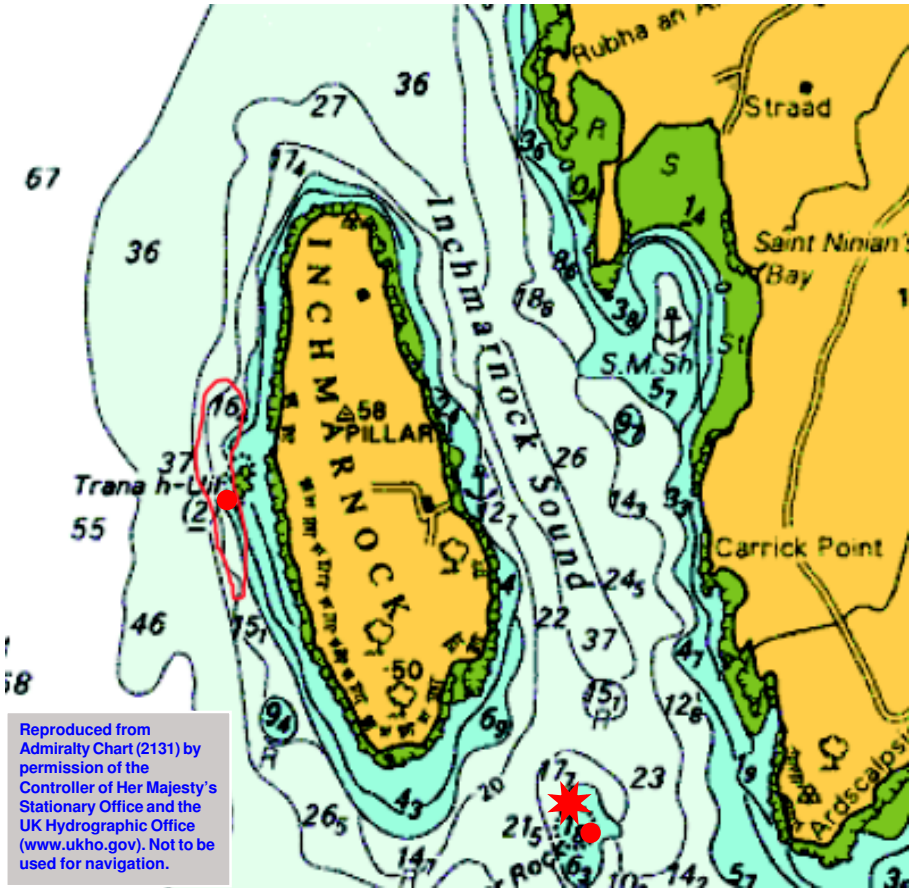
Site 1: Tra na H-uil

55° 47.468 **N** 005° 10.319 **W**

Four dives in all were carried out at this site. The position above was obtained from the boat GPS and the divers descended the anchor line to the seabed at 6 metres. They found an extensive maerl bed which started at around 4 metres bsl and continued down to around 14 metres. The morning dives explored the area to the west and north of the anchored boat while the afternoon dives investigate to the south. In both directions the maerl bed continued beyond the furthermost extent of the survey, with no end in sight. At the very least the bed extends for 200 metres north and south of the recorded position.

Location of Dive Sites

Inchmarnock lies a short distance off the western coast of Bute



Area outlined in red to the west of Inchmarnock is the approximate extent of the maerl bed surveyed. The bed continued to both the north and south of this area.

✸ Approximate position of flame shell reef ● Dive boat position

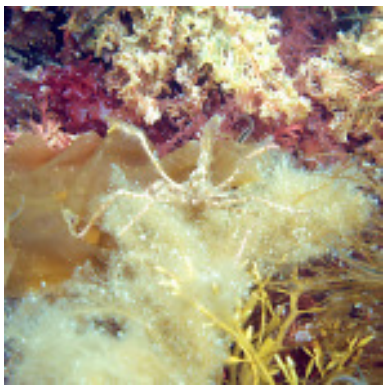
The majority of the maerl was dead but quite large areas had as much as 5% live maerl. Most of the live fragments were small, less than 5 cm in length and could be found buried in the dead maerl as well as on the surface. The dead maerl continued to a considerable depth, over 30 cm in places suggesting that the maerl bed has been off Inchmarnock for a considerable time. Despite the lack of live maerl, the bed was rich in marine life, especially juvenile crabs, shrimps, borrowing anemones and starfish.

Live maerl, being an algae, is vulnerable to reduced light levels. Garroch Head lies just over 6 miles to the south east of Inchmarnock. For many years this was a dumping site for Glasgow's sewage and this may well have had an impact on the Inchmarnock maerl bed with reduced light levels leading to increased mortality. There is still live maerl at Inchmarnock and given time it is possible that the bed will recover but as maerl grows at around 1mm a year this will take many decades. Trial excavations revealed fragments of live maerl buried several cm deep in the maerl gravel. It is possible that these fragments are buried by storm activity but it is also possible that repeated scallop dredging is the cause.

Site 2: Shearwater Rock

55° 46.36 **N** 005° 08.32 **W**

Two live flame shells coaxed out of their nest
C.Duncan MCS



A well camouflaged spider crab at Shearwater Rock

Two of several pipefish recorded over the weekend

Shearwater Rock lies at the south end of Inchmarnock Sound and comes to within 1.8 metres of the surface at low water. At this site, the divers discovered a peculiar bottom topography of areas of rock interspersed with shallow crater like depressions with near vertical walls. As neighbouring Inchmarnock was used for commando training during the 1940's and is heavily cratered in places these shallow craters may not be natural in origin!

The rock was covered in kelp forest and abundant brittle stars, *Ophiocomina nigra.* Dead man's fingers were also present on some of the crater walls and to the north of the site colonies rose like mini-skyscrapers up from flat bedrock covered in brittle stars. Towards the north, the rocky areas were interspersed with patches of sand/maerl gravel. In one area some empty *Limaria hians* or flame shells were seen lying on the seabed. Closer investigation revealed that the seabed had a "spongy" feel and a little digging revealed live flame shells. Like scallops flame shells have two shells but unlike scallops they have a fringe of bright orange tentacles which cannot be drawn back into the shell. Flame shells can also swim like scallops but they usually live within "nests" of shell fragments, dead maerl and gravel bound together by byssus threads. When abundant these nests can form a living reef, home to a whole host of other creatures. In the Clyde sea area *Limaria hians* was widespread and common prior to the 1970's. However, recent work has shown a marked decline over the last 30 years with scallop dredging being the main suspect for that decline. The area of live shells found was in a basin surrounded by protective rock and just beyond the rock the seabed was covered in dead maerl gravel with the characteristic ridged appearance of dredged seabed.

Limaria hians has recently been put forward for inclusion in the UK Biodiversity Action plan but further survey work needs to be undertaken to investigate the size of the population still present at Shearwater Rock.

Pipefish and Basking Sharks

This survey coincided with a national dive in organised by the MCS. One of the aims of the dive in was to collect records of snake pipefish, *Entelurus aequorius*. In 2006, an unusual number of pipefish sightings were reported to the MCS and the 2007 survey was intended to obtain a snapshot of pipefish distribution around the UK. Over the weekend snake pipefish were seen at Inchmarnock and Shearwater Rock as well as near Campbeltown and opposite Tarbert, Loch Fyne.

In contrast to the small and well camouflaged pipefish a basking shark, *Cetorhinus maximus*, was also recorded at Shearwater Rock. A large individual was observed swimming north up Inchmarnock Sound before diving at the approach of a large power boat.

Conclusion

The maerl bed around Inchmarnock may well be one of the largest surviving in the Clyde while the flame shell reef is one of the few surviving examples known of this once common habitat. The two days diving around Inchmarnock only covered a small area and future survey work should focus on determining the extent of the seabed covered by these two rare biotopes.

Species List for Site 1: Tra na H-uil and Site 2: Shearwater Rock, June 2007

	Site 1	Site 2		Site 1	Site 2
Green Algae			Crabs & lobsters		
Ulva sp	O	O	Pagurus bernhardus	O	O
			Necora puber	O	O
Brown Algae			Cancer pagurus	O	O
Laminaria hyperborea		C	Macropodia sp	R	R
Laminaria saccharina	O	C	Liocarcinus depurator	O	O
Chorda filum	O	O	Carcinus maenas	O	
Halidrys siliquosa		F			
Desmarestia sp ?		F	Gastropods & bivalves		
Dictyota dichotoma	O		Bivalve siphons	F	
			Bivalve siphons 2	O	
Red Algae			Pecten maximus	R	
Delesseria sanguinea	O	F	Limaria hians		P
Maerl Lithothamnium sp?	F		Trivia sp	R	
encrusting red	O	O	Gibbula cineraria		R
Odonthalia dentata	O	O			
Phycodrys rubens		O	Nudibranchs		
Drachiella spectabilis		R	Polycera quadrilineata		R
Hydroids	O				
Membranipora membranacea			Bryozoans		
			Brown encrusting bryozoan		P
Anemones and corals					
Cerianthus lloydii	F		Starfish & brittlestars		
Sagartiogeton sp	R		Porania pulvillus	F	*
Soft Corals			Asterias rubens	R	R
Alcyonium digitatum		O	Marthasterias glacialis	F	C
			Crossaster papposus	O	O
Jellyfish			Henricia sp	O	F
Cyanea lamarkii	R		Luidia ciliaris	O	C
Cyanea capillata	R	R	Ophiocomina nigra		A
			Echinus esculentus	O	O
Worms					
Eunoe nodosa ?	R		Fish		
Myxicola sp	R		Entelurus aequorius		R
Pomatoceros sp	R	O	Cetorhinus maximus		R
Chaetopterus variopedatus	O		Pholis gunnellus		R

This seasearch survey was organised by Owen Paisley.

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Text by Owen Paisley. Photographs by John Rees, Owen and Kirsti Paisley.

Marine Conservation Society

Seasearch is a volunteer underwater survey project run by MCS which encourages recreational divers to contribute towards the conservation of the marine environment. Financial support for the project during 2007 has been given by:

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