

# Shamrock Pinnacle Report 2009 — 2011

A Survey Report from the Nationally  
Important Marine Features Project



In partnership with



explore / engage / enjoy

Research and Development Series 11/04  
A report commissioned by the Northern Ireland Environment Agency

# Shamrock Pinnacle

## 2009 — 2011

A Survey Report from the Nationally  
Important Marine Features Project

**Authors** — Claire Goodwin, Hugh Edwards, Joe Breen & Bernard Picton

**Contractor** — National Museums Northern Ireland

**NIEA contract number** — CON 2/1 (260)

**This report should be cited as follows** —

Goodwin, C., Edwards H., Breen, J. and Picton, B. (2011) Shamrock Pinnacle - A Survey Report from the Nationally Important Marine Features Project 2009-2011. Northern Ireland Environment Agency Research and Development Series No. 11/04

**For further information on this report please contact** —

Joe Breen  
Northern Ireland Environment Agency,  
Conservation Science,  
Klondyke Building,  
Gasworks Business Park,  
Lower Ormeau Rd,  
Belfast,  
BT7 2JA

The opinions expressed in this report do not necessarily reflect the current opinion or policy of the Northern Ireland Environment Agency.

## Introduction

Shamrock Pinnacle is one of a series of submerged pinnacles lying between Scotland and Northern Ireland. It is approximately 5 nautical miles north-west of Rathlin Island (Figure 1-2). The minimum depth of the pinnacle is 15m below chart datum (BCD) with the majority being deeper than 30m. The north side of the pinnacle is a sheer wall which drops to over 140m, the south and east faces slopes more gradually to around 75m before a similarly sheer wall (Figures 3-6). The pinnacle is situated in the full flow of the North Channel tidal stream, experiencing up to 3 knots of tidal current on spring tides.

The pinnacle was surveyed in June 2009, five sites were surveyed on seven survey dives. The survey was part of the National Museums Northern Ireland/Northern Ireland Environment Agency 'Nationally Important Marine Features' project. The pinnacle had been selected for survey as it was suspected that Northern Ireland Priority species, known previously only from Rathlin in Northern Ireland, might occur there. Recreational divers have recovered brass shell casing from the site which suggests a naval battle took place in this area (Joe Breen pers. comm.). However, we are not aware of any shipwrecks or other archaeological features in the immediate area. The pinnacle had been dived on two occasions during the Northern Ireland Sublittoral Survey Project in August 1984 (Erwin et al. 1986). However, since this project the recent JIBS (Joint Irish Bathymetric Survey) project has mapped the North Channel, including the pinnacle, using multibeam sonar and consequently the form of the pinnacle and the topography is far better known, enabling more targeted sampling. The JIBS data greatly assisted the survey team in understanding the habitat complexity of the site and targeting sampling to suitable areas. The sites it was possible to survey can now be transposed onto the multibeam images of the area, enabling groundtruthing of this data and interpolation into broad scale habitat maps.

## Methodology

Divers were experienced field biologists with good knowledge of *in situ* identification. Surveyors were Claire Goodwin, Bernard Picton (National Museums Northern Ireland), Hugh Edwards (Northern Ireland Environment Agency) and Lin Baldock and Jennifer Jones (contractors).

Sites were selected by examining multibeam images of the pinnacle (JIBS). As far as possible sites were spaced across the pinnacle, although safety constraints limited the depths that could be surveyed to <50m. The areas were surveyed by SCUBA diving. Approximately 30 minutes was spent recording on each dive. Slack water on neap tides was around half an hour before and half an hour after high-water (HW) and low-water (LW) Dover (Table 1). Tides were neaps, with a range of 2.0m at Belfast on 3/6/09. This is a difficult site to survey because of the strong tidal currents, including downcurrents. Future surveys would require caution and should be conducted on neap tides.

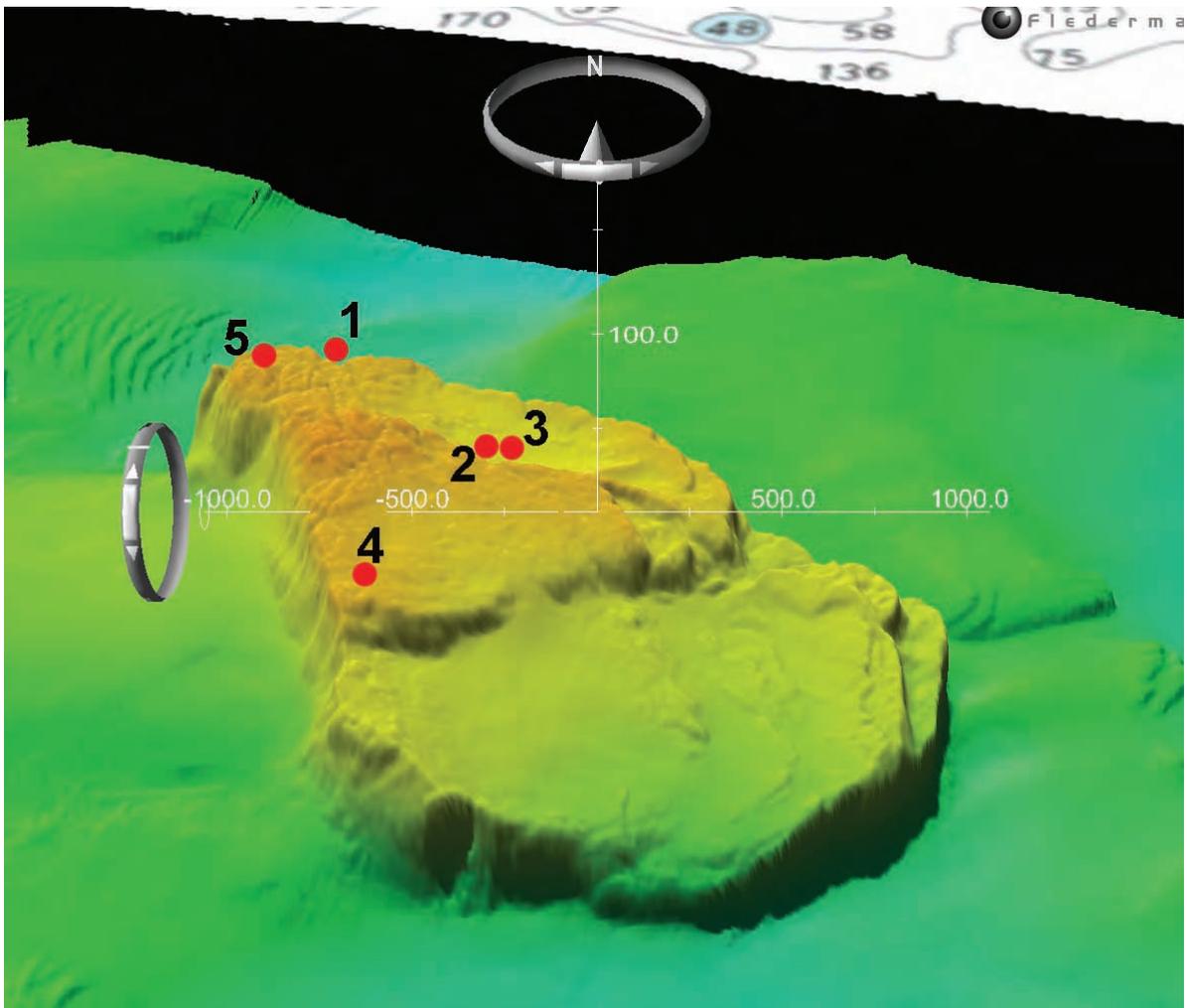
Conspicuous flora and fauna was noted and specimens collected where *in situ* identification was not possible. Marine Nature Conservation Review (MNCR) phase 2 sublittoral habitat forms were completed to give a record of species and habitats at each site and on most dives photos or video was taken. Recording was consistent with MNCR guidelines, with species abundances recorded using the SACFOR scale (see Hiscock (1996) for detailed methods). A pair of divers was deployed on all dives. Specimens are held in the Ulster Museum collections.

Data from the surveys was entered onto Marine Recorder by Julia Nunn of the Centre for Environmental Data and Recording (CEDaR). An additional database of all photos and specimens was compiled on Microsoft Access (the Sublittoral Survey Northern Ireland database). This information is searchable by species and dive number. Copies of this are held by National Museums Northern Ireland and the Northern Ireland Environment Agency. Biotopes were allocated according to JNCC guidelines full biotope descriptions are available from (Connor et al. 2004), available from <http://www.jncc.gov.uk/MarineHabitatClassification>. Data collected will be made publicly available via the National Biodiversity Network (<http://www.nbn.org.uk/>).

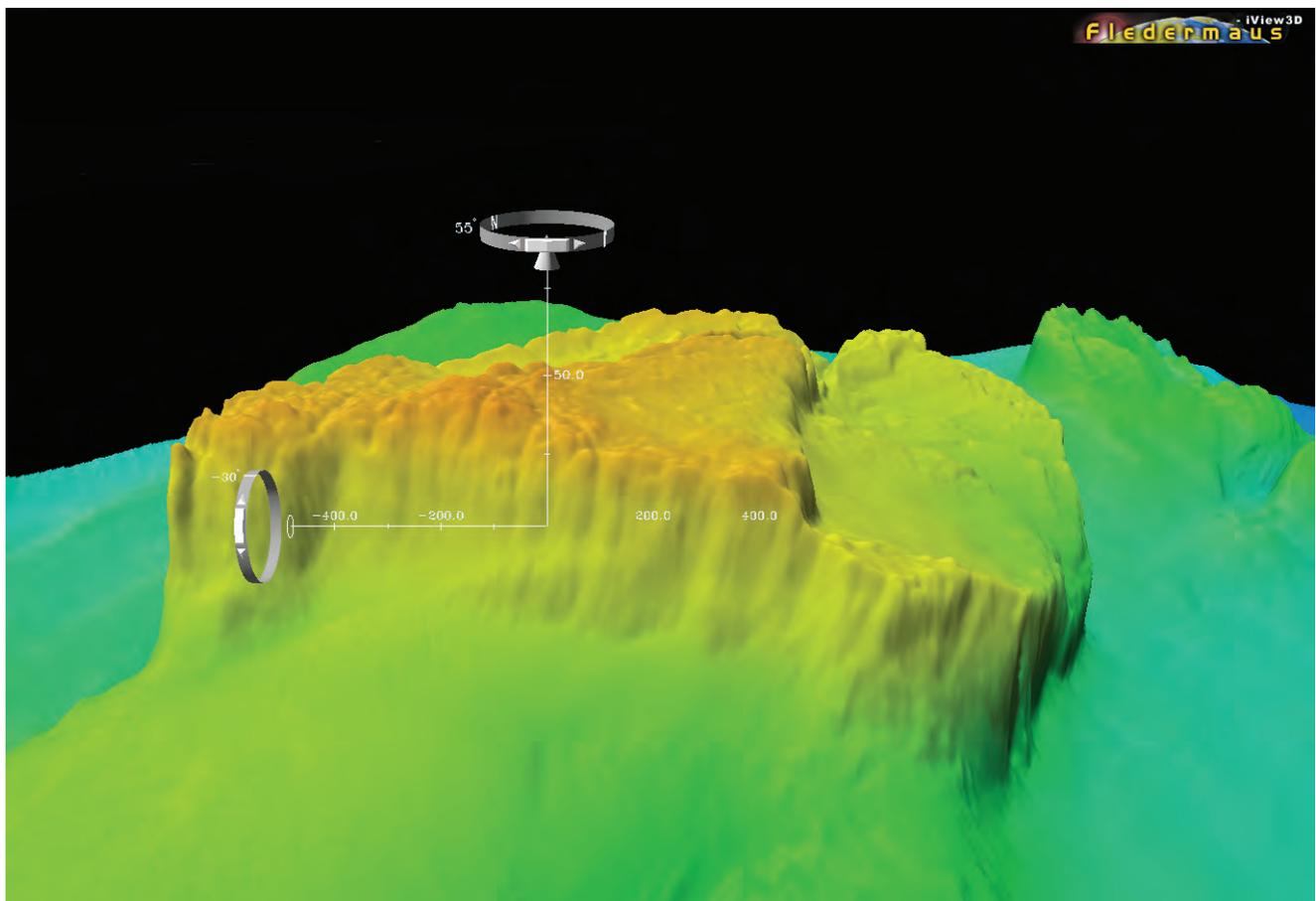
**Table 1 - Survey Dives**

<b>Date</b>	<b>Tides (Dover)</b>	<b>Dive time (BST)</b>	<b>Comments</b>
1/6/9	LW 1334	1315-1345	Slack
2/6/9	LW 1444	1406-1444	Slight current to NE through dive
3/6/9	HW 0858	0820-0907	Slack for whole dive
3/6/9	LW 1550	1520-1602	Slight downcurrent, beginning to flood steadily by the end of the dive
4/6/9	HW 0951	0920-1003	No current reported

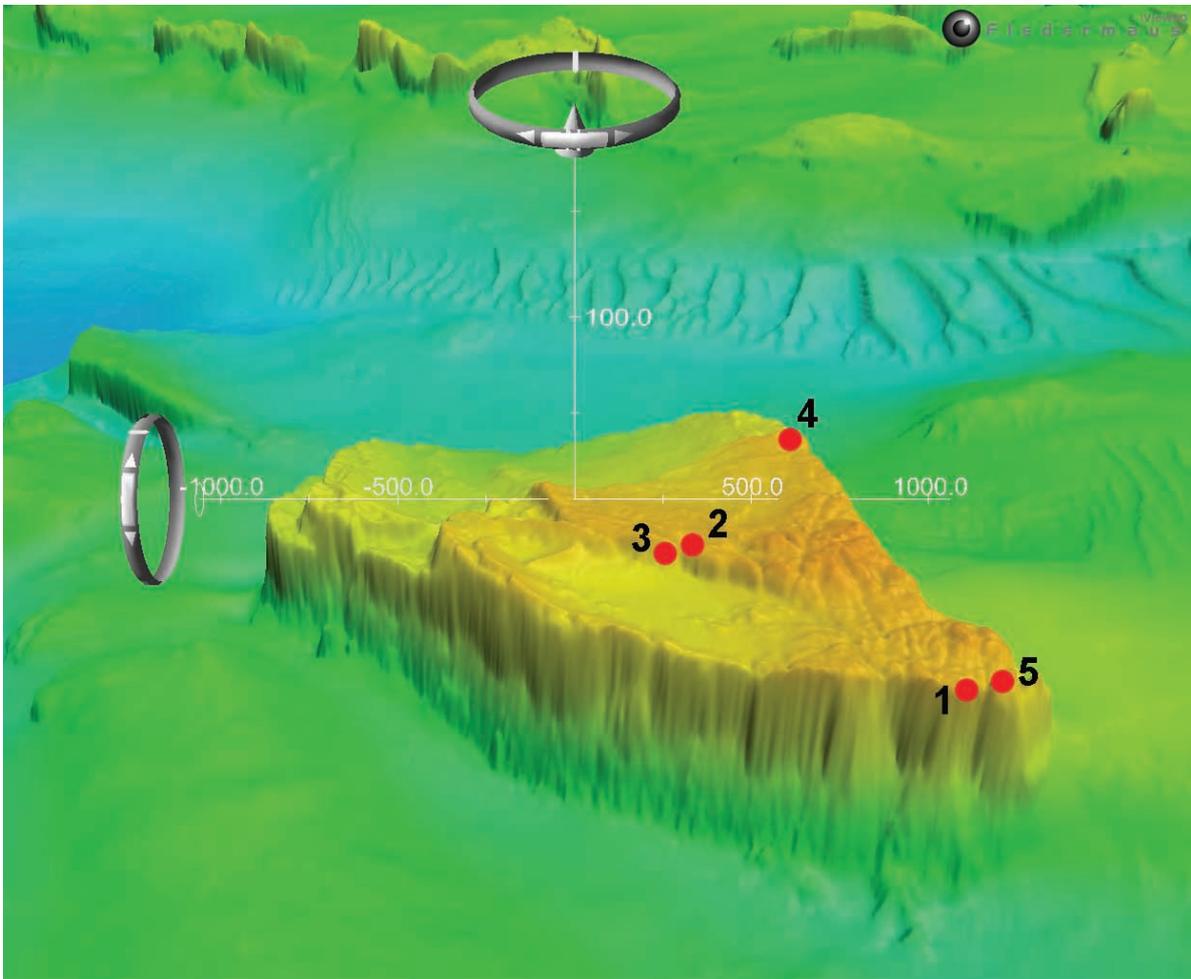




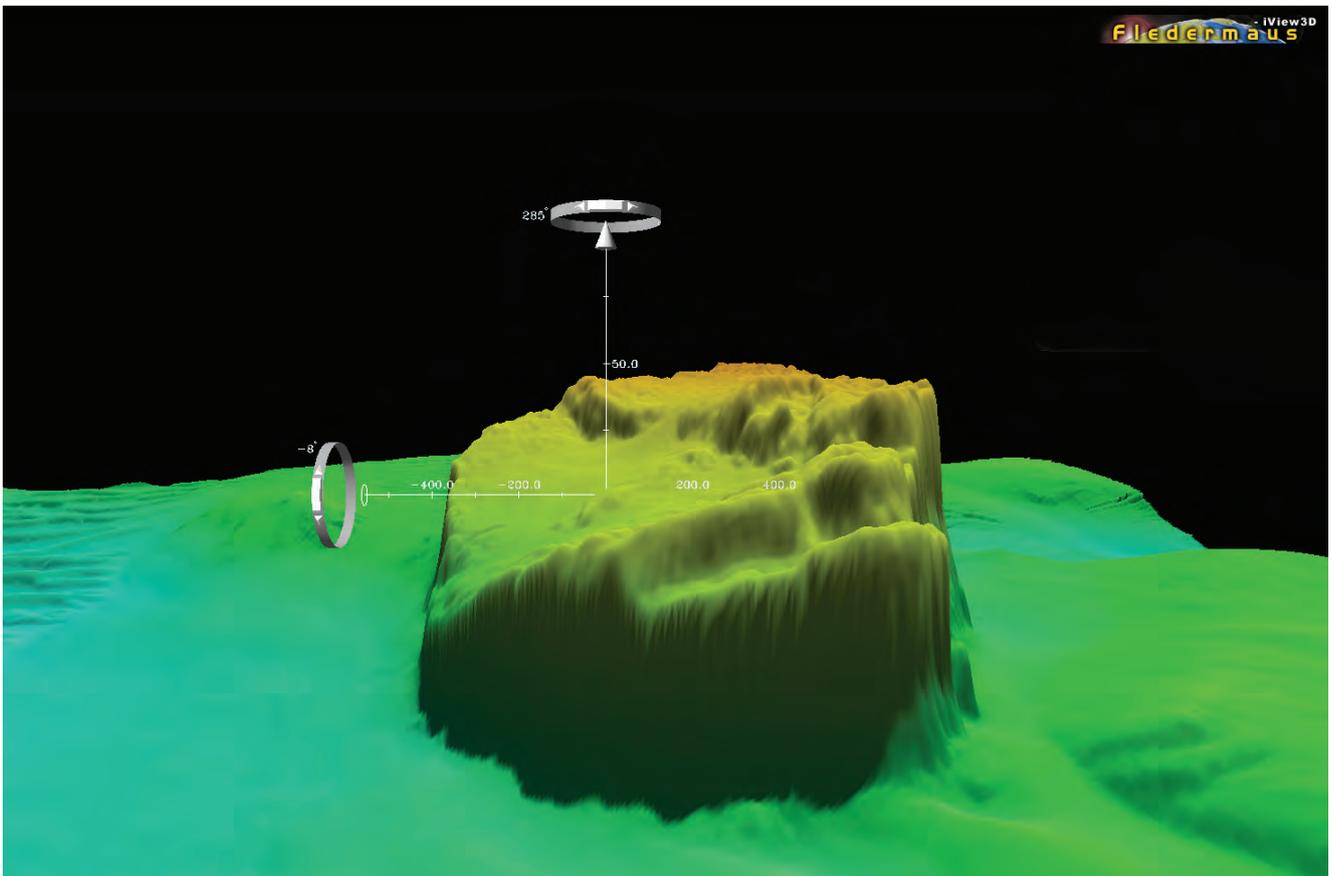
**Figure 3.** Shamrock Pinnacle, south side. Red dots show approximate position of survey sites.



**Figure 4.** Shamrock Pinnacle - west side.



**Figure 5.** Shamrock Pinnacle, north side. Red dots show approximate position of survey sites.



**Figure 6.** Shamrock Pinnacle, east side.

## Sites Surveyed

In total five different sites were surveyed on seven survey dives (Table 1, Figure 3, Figure 5).

**Site 1** NW corner Shamrock Pinnacle, 55° 21.203'N, 006° 24.062'W, Surveyed 1<sup>st</sup> June 2009. Surveyors Claire Goodwin, Jennifer Jones. Depth 27.3-32.3m BCD. Figure 7.

Steep, overhanging, bedrock cliff with top levelling out at 28m. Surface of bedrock even and unpitted with few fissures and no crevices. Effects of siltation and scour not visible. Cliff descends into 100m+; most of survey spent at 32m. Cliff covered with *Tubularia indivisa* and *Alcyonium digitatum*. One isolated vertical stack covered with *Metridium senile*. Characterising species: *Tubularia indivisa* (A), *Alcyonium digitatum* (A), *Pachymatisma johnstonia* (C), *Delesseria sanguinea* (C), *Corynactis viridis* (F), *Caryophyllia smithii* (F).

JNCC Biotope: CR.HCR.FaT.CTub.Adig – *Alcyonium digitatum* with dense *Tubularia indivisa* and anemones on strongly tideswept circalittoral rock.



**Figure 7a - Site 1.** Above: Stack with *Metridium senile* and wall of main Shamrock pinnacle with *Tubularia indivisa* and *Alcyonium digitatum*.



**Figure 7b - Site 1.** Above and below: Wall of main Shamrock Pinnacle with *Tubularia indivisa* and *Alcyonium digitatum* and sponges.



**Site 2** 55° 20.916'N, 06° 23.599'W. Surveyed 2<sup>nd</sup> June 2009: Composite of dives 090602/03 & 090602/04. Surveyors Bernard Picton, Claire Goodwin, Jennifer Jones, Lin Baldock. Depth 27.4-32.4m BCD. Figure 8.

Bedrock with gully ~2m deep. Bottom of gully with clean sand and gravel. *Alcyonium digitatum* visually dominant on vertical faces. *Flustra foliacea*, *Securiflustra securifrons* with hydroids and sponges and an understory of *Corynactis viridis* on the upward facing surfaces. In contrast to other sites on the pinnacle *Tubularia indivisa* was only occasional.

Characterising species: *Alcyonium digitatum* (C), *Actinothoe sphyrodeta* (C), *Flustra foliacea* (c), *Corynactis viridis* (C), *Abietinaria abietina* (C), *Iophon nigricans* (F), *Caryophyllia smithii* (F), *Securiflustra securifrons* (F), Coralline algae (F), *Nemertesia antennina*, *N. ramosa*, *Plumularia setacea* (F),

*JNCC Biotope*: CR.HCR.XFa – Mixed faunal turf communities. It was not possible to get this to biotope level. The combination of dense *Alcyonium digitatum* and *Flustra foliacea* with dense *Tubularia indivisa* lacking does not seem to be represented. The majority of high energy *Flustra foliacea* dominated biotopes are characterised by the presence of colonial ascidians, not present here.



**Figure 8 - Site 2.** Above: Upper faces of bedrock, dominated by *Alcyonium digitatum* and *Flustra foliacea*. Below: Vertical faces with *Alcyonium digitatum* dominant.



**Site 3** 55° 20.941'N, 006° 23.546'W. Surveyed 3<sup>rd</sup> June 2009. Composite of dives 090603/01 & 090603/02. Surveyors Bernard Picton, Claire Goodwin, Jennifer Jones, Lin Baldock. Depth 27.1-42.1m BCD. Figure 9.

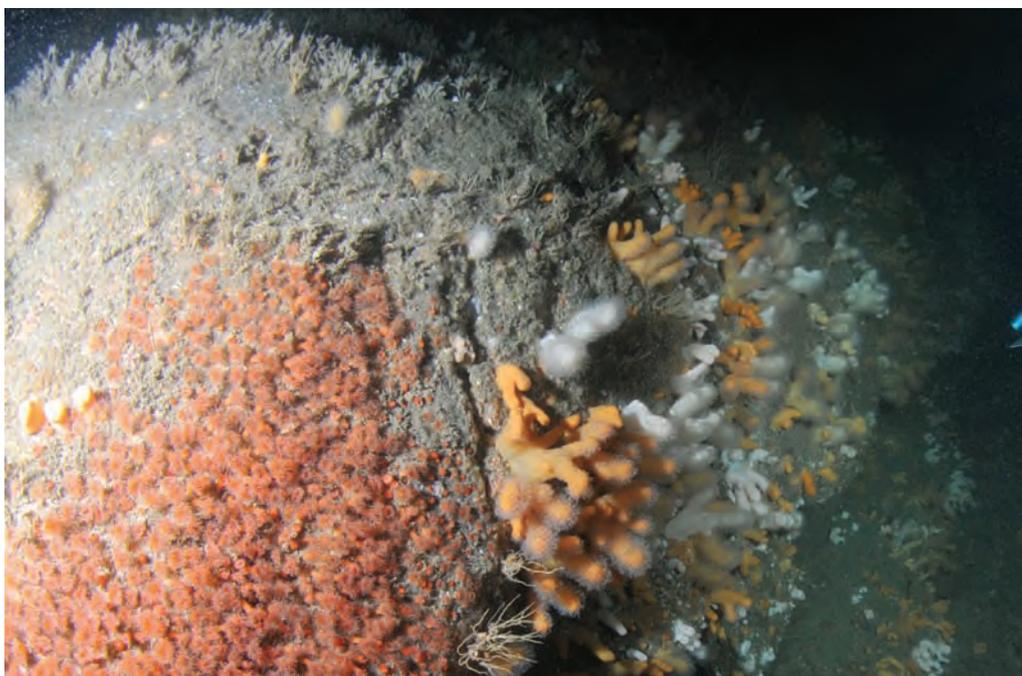
Vertical bedrock dominated by *Alcyonium digitatum* and *Corynactis viridis* with long fissures and crevices running down the rock face. *A. digitatum* patchy occurring in clumps, much less abundant than on other sites on Shamrock Pinnacle. Horizontal surfaces dominated by *Flustra foliacea* with scattered hydroids (especially *Tubularia indivisa*), sponges and *Corynactis viridis* beneath. Rippled coarse, well-worked sand at 43m.

Characterising species: *Alcyonium digitatum* (C), *Corynactis viridis* (C), *Flustra foliacea* (C), *Iophonopsis nigricans* (F), *Tubularia indivisa* (F), *Dendronotus frondosus* (F), *Crisiidae* (F), *Securiflustra securifrons* (F).

JNCC Biotope: Vertical faces: CR.HCR.FaT.CTub.Adig – *Alcyonium digitatum* with dense *Tubularia indivisa* and anemones on strongly tideswept circalittoral rock. Upper rock faces with *Flustra foliacea*: CR.HCR.XFa, no matching biotope. See comments for site 2.



**Figure 9 - Site 3.** Above: Vertical faces with fissures. Below: Overhanging rock face with large patch of *Corynactis viridis* (bottom left).



**Site 4.** 55° 20.641' N, 006° 23.878' W. Surveyed 3<sup>rd</sup> June 2009. Composite of dives 090603/03 and 04. Surveyors Bernard Picton, Lin Baldock, Jennifer Jones, Hugh Edwards. Depth 29.1-34.1m BCD. Figure 10.

Bedrock dropping in a series of undulating gullies from 31m. Dominated by *Tubularia indivisa* and *Alcyonium digitatum* with a turf of hydroids bryozoans and *Corynactis viridis* beneath. Bedrock gullies with small boulders at their base present down the slope. 30-35m BSL. Dominant species *Corynactis viridis* (S), *Tubularia indivisa* (S), *Alcyonium digitatum* (C).

JNCC Biotope: CR.HCR.FaT.CTub.Adig – *Alcyonium digitatum* with dense *Tubularia indivisa* and anemones on strongly tideswept circalittoral rock.



**Figure 10 - Site 4.** Above: Gully with small boulders at base. Below: *Corynactis viridis* (centre) and *Dendronotus frondosus* (top centre).

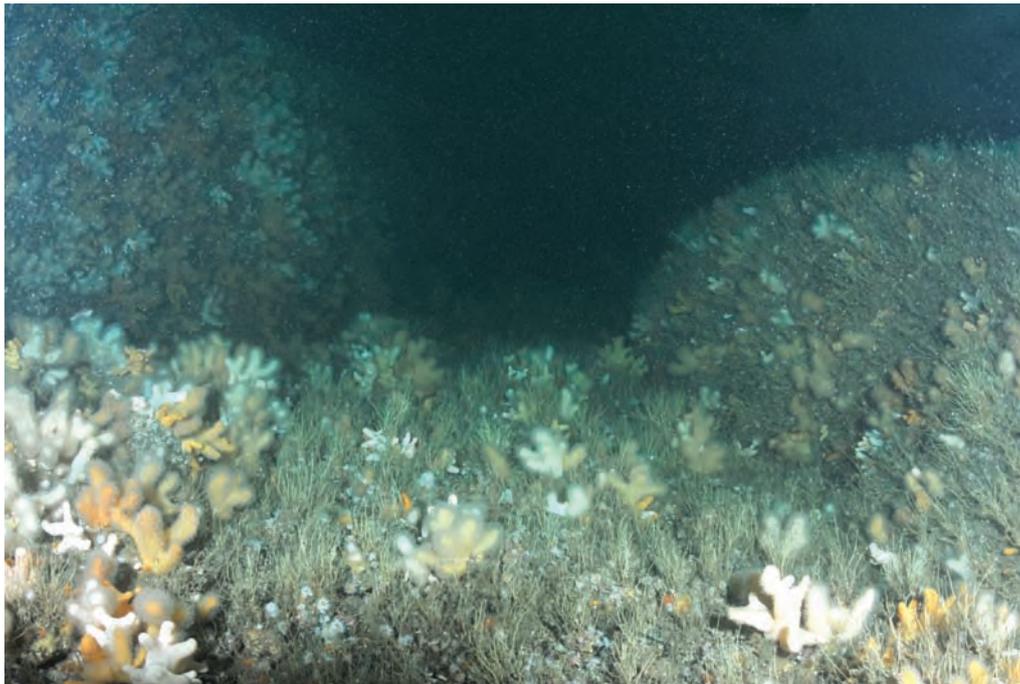


**Site 5.** 55° 21.164'N, 006° 24.236'W. Surveyed 4<sup>th</sup> June 2009, Composite of 2 dives: 090604/01 & 090604/02. Surveyors Claire Goodwin, Jennifer Jones, Lin Baldock, Bernard Picton. Depth 27.3-34.8m BCD. Figure 11.

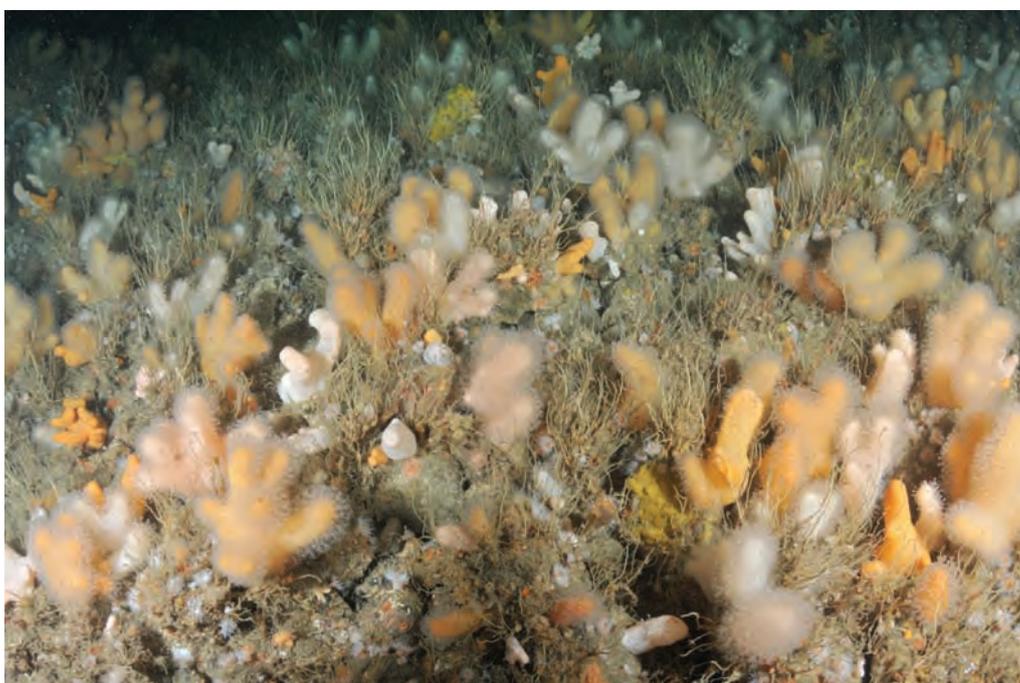
Site at NW corner of Shamrock Pinnacle. Bedrock reef from, 28.3-34.8m BCD surveyed, but sloped into deeper water. Reef formed series of hillocks and gullies - mainly horizontal faces but some vertical. Some bedrock, cobbles and pebbles in bottom of gully. Main cover *Tubularia indivisa* and *Alcyonium digitatum*; upright faces with many *Sagartia elegans* and *Actinothoe sphyrodeta*.

Characterising species: *Tubularia indivisa* (A), *Alcyonium digitatum* (A), *Sagartia elegans*, *Actinothoe sphyrodeta*, *Calliostoma ziziphinum*, *Caryophyllia smithii* (F).

JNCC Biotope: CR.HCR.FaT.CTub.Adig – *Alcyonium digitatum* with dense *Tubularia indivisa* and anemones on strongly tideswept circalittoral rock.



**Figure 11 - Site 5.** Above: Gully with vertical bedrock sides and boulders at its base. Below: *Alcyonium digitatum* and *Tubularia indivisa* on small boulders and cobbles in base of gully.



## Species Recorded

Listed below are all species recorded from the survey dives on Shamrock pinnacle. The pinnacle is dominated by the soft coral *Alcyonium digitatum* the hydroid and *Tubularia indivisa* and hence not very species rich. No Northern Ireland Priority Species were present and the only Northern Ireland Species of Conservation Concern recorded were *Parazoanthus anguicomus* and the colonial ascidian *Synoicum incrustatum* (in bold in the list). The low number of algae is due to the fact that all but the very top of the pinnacle lies in the circalittoral zone.

### Porifera

*Axinella infundibuliformis*, *Cliona celata*, *Dysidea fragilis*, *Haliclona oculata*, *Haliclona urceolus*, *Haliclona viscosa*, *Hymedesmia jecusculum*, *Hymedesmia paupertas*, *Iophon nigricans*, *Leucosolenia* sp, *Myxilla fimbriata*, *Myxilla incrustans*, *Pachymatisma johnstonia*, *Polymastia* sp., *Polymastia boletiformis*, *Raspailia hispida*, *Raspailia ramosa*, *Scycon ciliatum*, *Sphaerotylus* sp., *Stelligera rigida*, *Stelligera stuposa*, *Stryphnus ponderosus*

### Cnidaria

*Abietinaria abietina*, *Actinothoe sphyrodeta*, *Aglaophenia tubulifera*, *Alcyonium digitatum*, *Caryophyllia smithii*, *Corynactis viridis*, *Diphasia rosacea*, *Eudendrium annulatum*, *Halecium halecinum*, *Hormathia coronata*, *Kirchenpaueria* sp. , *Kirchenpaueria pinnata*, *Metridium senile*, *Nemertesia antennina*, *Nemertesia ramosa*

### *Parazoanthus anguicomus*

*Plumularia setacea*, *Sagartia elegans*, *Sertularella gayi*, *Sertularella polyzonias*, *Sertularia argentea*, *Tubularia indivisa*

### Bryozoa

*Caberea ellisii*, *Cellaria* sp., *Crisia* sp., *Flustra foliacea*, *Securiflustra securifrons*, *Turbicellepora avicularis*

### Mollusca

*Buccinum undatum*, *Calliostoma zizyphinum*, *Catriona gymnota*, *Coryphella lineata*, *Dendronotus frondosus*, *Doto pinnatifida*, *Facelina auriculata*, *Facelina bostoniensis*, *Flabellina pedata*, *Goniodoris nodosa*, *Hinia incrassata*, *Janolus cristatus*, *Jorunna* sp., *Limacia clavigera*, *Onchidoris bilamellata*, *Polycera faeroensis*, *Trivia arctica*, *Trivia monacha*

### Crustacea

*Balanus balanus*, *Cancer pagurus*, *Galathea* sp. , *Hyas coarctatus*, *Macropodia*, *Necora puber*, *Paguridae* sp., *Pagurus bernhardus*

### Echinodermata

*Asterias rubens*, *Crossaster papposus*, *Echinus esculentus*, *Henricia* sp., *Henricia oculata*, *Marthasterias glacialis*

### Fish

*Chirolophis ascanii*, *Ctenolabrus rupestris*, *Labrus mixtus*, *Pholis gunnellus*, *Taurulus bubalis*

### Ascidians

*Ascidia mentula*, *Ascidia virginea*, *Botryllus schlosseri*, *Lissoclinum perforatum*, *Polycarpa pomaria*, *Polyclinum aurantium*, ***Synoicum incrustatum***

### Algae

Coralline crusts indet., *Delesseria sanguinea*, *Hypoglossum hypoglossoides*, *Phyllophora crispa*, *Plocamium cartilagineum*

## Conclusions

The strong tidal streams that the pinnacle is subjected to prevent its colonisation by all but the most hardy fauna. It is dominated by *Tubularia indivisa* and *Alcyonium digitatum* communities (predominantly the JNCC biotope CR.HCR.FaT.CTub.Adig). No Northern Ireland Priority species are present and only two NI species of Conservation Concern: the colonial ascidian *Synoicum incrustatum* and the cluster anemone *Parazoanthus anguicomus*, both of which are quite widespread on the Northern Ireland coast. As a reef it is classified as an Annex I habitat under the European Species and Habitats Directive, however, there are many other areas of reef in the area whose fauna and flora make them more worthy of protection. There is some lobster potting on the site but otherwise there seem to be few anthropogenic impacts. Therefore, whilst Shamrock pinnacle is topographically stunning it does not merit European protection as an SAC. Due to lower habitat diversity and the lack of any refuge from the strong currents present it lacks the range of biotopes present on the neighbouring Rathlin Island. However, it may merit future protection as a Marine Conservation Zone under the proposed Northern Ireland Marine Bill. Current activities on the site are not believed to impact the species and habitats present. However, future developments such as energy schemes could have an impact and would have to be mitigated accordingly.

## Acknowledgements

This project is a partnership between Northern Ireland Environment Agency and National Museums Northern Ireland. We are grateful to the support of these organisations for this work. The project was funded by the NIEA Natural Heritage Directorate research and development series through a CEDaR (Centre for Environmental Data and Recording) initiative. This CEDaR initiative brings together resourced and the expertise of scientists from National Museum Northern Ireland's Department of Natural Sciences and the NIEA conservation science team. We are greatly indebted to the programme for the support of this and other similar initiatives. We would like to specially thank Damian McFerran and Julia Nunn (CEDaR) and Mark Wright (NIEA) for their assistance with this project. This report would not have been possible without the data collected by the Joint Irish Bathymetric Survey project, funded under the INTERREG IIIA programme, more information on this project and the project data is available from <http://www.marine.ie/home/services/surveys/seabed/JIBS.htm>. Thanks to Stephanie Bennett (NIEA) for editorial assistance.

## References

- Connor, D.W., Allen, J.H., Golding, N., Howell, K.L., Lieberknecht, L., Northern, K., Reker, J.B. (2004). *The Marine Habitat Classification for Britain and Ireland Version 04.05*. JNCC, Peterborough. ISBN 1 861 07561 8 (internet version) [www.jncc.gov.uk/MarineHabitatClassification](http://www.jncc.gov.uk/MarineHabitatClassification).
- Erwin, D.G., Picton, B.E., Connor, D.W., Howson, C.M., Gilleece, P. & Bogue, M.J., (1986). *The Northern Ireland Sublittoral Survey*. Ulster Museum, Belfast.
- Hiscock, K. ed. (1996). *Marine Nature Conservation Review: rationale and methods*. JNCC, Peterborough. (Coasts and seas of the United Kingdom. MNCR series).





Our aim is to protect, conserve and promote the natural environment and built heritage for the benefit of present and future generations.

Northern Ireland Environment Agency  
Klondyke Building  
Cromac Avenue  
Gasworks Business Park  
Belfast BT7 2JA  
T. 0845 302 0008

[www.ni-environment.gov.uk](http://www.ni-environment.gov.uk)



ISSN — 1367-1979 (Print)  
ISSN — 1751-7796 (Online)