

# THE LUNDY MARINE FESTIVAL 2022



## AN APPRAISAL

ROBERT IRVING

CO-ORDINATOR,  
LUNDY MARINE FESTIVAL 2022



## Front cover photographs



The nudibranch *Discodoris rosi*, found by Sarah Bowen and David Kipling off Battery Point during the Marine Bioblitz. This beautiful sea slug, about 2 cm long, has only been recorded from a few locations in south Cornwall in recent years, so this first record for Lundy extends its range significantly northwards.

[Photo: David Kipling]



Marine biologists (and members of the Porcupine Marine Natural History Society) Paul Brazier and Anne Bunker discuss seaweed identification in the St Helen's Centre. The Marine Bioblitz recorded a total of ~160 different seaweed species.

[Photo: Robert Irving]



Lundy residents Sue and Rob Waterfield take time out to try Virtual Reality headsets on loan from the charity Plastic Free North Devon. They were able to dive with the seals at Lundy yet remain completely dry! This proved to be a particularly popular activity for visitors to the St Helen's Centre.

[Photo: Robert Irving]



Tim Clements, with buddy Andy Boyles, undertaking a photogrammetry study of the protected wreck of the *Iona II*. Over 1500 overlapping images allowed for a digital 3-D image to be produced, helping with the future interpretation of this wreck.

[Photo: Jon Slayer]

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## Summary

This report sets out the planning, organisation and running of the Lundy Marine Festival held during two months in the summer of 2022, together with the results from the various projects and activities which took place as part of the Festival. It aims to serve a number of purposes, which are:

- (1) to explain why a Marine Festival was held at Lundy in 2022;
- (2) to set out the various steps taken in organising and delivering the Marine Festival;
- (3) to provide a summary of the activities and projects which were undertaken during the Festival, together with the results of the projects, particularly for the benefit of those organisations kind enough to sponsor the event;
- (4) to provide a written record of the event as one of the legacy items of the Festival, which may then assist in organising and running any repeat of such an event in the future.

The report goes through the process of how the Festival was put together; which individuals and organisations helped to do what; what projects, activities and educational materials were put in place; how it was advertised; the approaches made to sponsors and to other organisations asking for assistance of one sort or another; how the most was made of recording useful scientific data using the volunteer efforts of citizen scientists; and what worked and what didn't.



## Main sponsors of the Marine Festival



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## Supporting organisations



### Report Author

Robert Irving acted as Co-ordinator of the Lundy Marine Festival 2022. He has been involved with the Lundy Marine Protected Area since 1983 when he was appointed by the Nature Conservancy Council to help 'smooth the way' for the designation of the statutory Marine Nature Reserve in 1986. He became secretary of the Lundy Marine Consultation Group in 1990 (now known as the Lundy MPA Advisory Group), secretary of the Lundy Management Forum in 2016, and has been on the committee of the Lundy Field Society since 1988 as their MPA representative. He has contributed to and led fieldwork carried out within the MPA since 1983, and has organised numerous volunteer diving groups to carry out citizen science projects within the MPA.

Robert runs his own marine environmental consultancy, Sea-Scope, based in west Somerset.



## Foreword

The importance of protecting Lundy’s rich marine life was brought to the attention of statutory nature conservation and fisheries authorities in the lead-up to the preparation of the ‘Policy for the management of the shore and seabed around Lundy’ completed in 1972. Subsequent activities to document that marine life and to establish monitoring programmes occupied much of the 1970s and 1980s but many studies ‘fell-back’ after the 1980s. The Lundy Marine Festival has provided an opportunity to re-vitalize activities that would inform understanding of the character of Lundy marine life and the historic importance of the many wrecks around the island. For the public, the Marine Festival provided a platform to be informed about the richness and diversity of Lundy’s marine life and its history. Fifty years on! – am I really that old?

Dr Keith Hiscock MBE

Chair, Lundy MPA Advisory Group  
Vice President, Lundy Field Society



The initial idea of holding a Marine Festival at Lundy was originally planned for the summer of 2020. In the end, the decision for its postponement was taken out of our hands! With the whole country shutting down due to the Covid pandemic, no visitors were allowed to visit Lundy for 12 months. But that only heightened the desire for people to experience the island again in 2022, which fitted well with rescheduling the Festival.

We were delighted to be able to assist with the logistics for the Festival. As a diver and conservationist myself, I’m well aware that what lies beneath the waves around the island is out of sight for most people. The Festival presented an opportunity to show non-divers the island’s underwater habitats and also the chance to explain why they’re special, and why 50 years ago the area was designated as the country’s first marine nature reserve.

This report is a testament to the many people who volunteered their time to be part of the Festival – congratulations to all involved!

Derek Green

Lundy General Manager, Landmark Trust







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## 1. INTRODUCTION

This reports sets out what the Lundy Marine Festival, held during the summer of 2022, was all about. It was the first time such a Festival had been held on the island and the intention is that this report will help explain what was done, why it was done, how it was done and what outcomes ensued, with the ultimate aim of assisting anyone in future who may be tempted to run such a venture again.

### 1.1 What and where is Lundy?

If you are not familiar with Lundy, it's a small, flat-topped island (3 miles/5 km long and just over half a mile/1 km wide) in the outer Bristol Channel, surrounded by 100 m high cliffs. Its orientation is approximately north-south and it thus forms a solid breakwater to the tidal movement of water in and out of the Bristol Channel. As such, it has always presented a danger to shipping, and more than 200 vessels over the past 500 years have come to grief as a consequence. Its rugged west coast is peppered with granite stacks, caves and huge boulders, being exposed to the prevailing west/south-westerly winds and waves. The east coast by comparison is relatively sheltered, with vegetated slopes extending closer to sea level.



The island of Lundy, viewed from the south.

The island lies approximately 11 miles/19 km off the nearest point of north Devon (Hartland Point). The main routes of access to the island are by ferry. The MS *Oldenburg* sails from the ports of Bideford or Ilfracombe usually three times a week during the summer. She can carry up to 250 passengers as well as cargo and supplies, with crossings lasting about two hours. Over the winter, while the ferry undergoes maintenance in dry dock, a helicopter service operates from Hartland on the north Devon mainland, with a crossing time of just 8 minutes!

Lundy has been owned by the National Trust since 1969 and has been managed on their behalf by the Landmark Trust for the same length of time. The island has 23 properties available as holiday lets, capable of housing between 1–14 people, and camping is available too. The island is popular with birdwatchers, climbers, divers, naturalists, writers, photographers, walkers and those just seeking some quiet time, well away from the hustle and bustle of life on the mainland. Since 1946, members of the Lundy Field Society have enhanced the knowledge of the island's wildlife, its history and its archaeology, both above and below the waves.

The island is 1,100 acres/445 ha in area, with 345 ha of that (excluding the area around the Village and the farm), being designated a Site of Special Scientific Interest (SSSI), notified in 1987 and extending to mean low water mark. The SSSI interest lies primarily in the island's unusual vegetated habitats (particularly of lowland heath and of maritime cliff and slope), its internationally important seabird colonies (particularly of Manx shearwater), and the population of the island's endemic Lundy cabbage and its associated flea beetle and weevil. There are also 45 scheduled monuments on the island whose upkeep is overseen by Historic England and the National Trust. The whole of the island is recognised as



a Heritage Coast and it also lies within the North Devon UNESCO Biosphere Reserve. At the beginning of 2023, the island regained its status as a Bird Observatory from the Bird Observatories Council.

The island is surrounded by a Marine Protected Area (MPA), a term which encompasses the designations of Marine Nature Reserve (MNR), Marine Conservation Zone (MCZ), Special Area of Conservation (SAC) and the intertidal part of a Site of Special Scientific Interest (SSSI). These designations came about due to the wide diversity of marine habitats which occur within a relatively small area and to the high proportion of marine species of nature conservation importance associated with those habitats.

## 1.2 What makes Lundy's marine life special?

In 1993, English Nature (now Natural England) described the island and its surrounding waters as “the jewel in the crown” of their marine nature conservation policy. The reasons for this accreditation are several, the five main ones being:

- i. The island's position in the outer Bristol Channel, approximately 11 miles/19 km from the mainland. Its situation means it is influenced by both coastal waters (though avoiding the worst of coastal pollution events) and by the oceanic water mass of the Gulf Stream.
- ii. The island has a north-south orientation, which means it acts as a breakwater to a huge volume of water passing up and down the Bristol Channel twice a day. As a consequence, strong tidal races, particularly during periods of spring tides, are created around its north and south ends. (Remember that the Bristol Channel has the second largest tidal range in the world).
- iii. The west coast is exposed to the full force of Atlantic gales, while the east coast is relatively sheltered, allowing suspended sediment to settle out and to form a variety of muddy habitats.
- iv. The range of habitats includes extensive rocky areas (with reefs extending over a kilometre from the shore), steep drop-offs and canyons, all of which provide impressive underwater scenery. The variety of habitats and their associated communities on Lundy's reefs is outstanding and includes, for example, over 315 species of seaweeds – one of the highest concentrations in the country for such a small area.
- v. The island's position in the south-west of the British Isles, influenced by warmer waters to the south and west, has allowed many species close to the northern edge of their ranges, to colonise habitats. Consequently, there are many rare and scarce species present within the MPA.

The MPA's Marine Management Plan underwent its most recent update in 2017. Within it are listed those habitats regarded as being of particular importance, as identified by the SAC citation. These are: intertidal and subtidal reefs; sandbanks which are slightly covered by seawater all the time; and submerged or partially submerged sea caves. In addition, the grey seal *Halichoerus grypus* was also listed as a species requiring special protection.

Additionally, the pink sea fan *Eunicella verrucosa* is protected under national legislation. There are also a diverse collection of species regarded as being either nationally rare or nationally scarce, set out in the latest version of the MPA's Marine Management Plan.

The table overleaf lists these features of particular importance.

Table listing features of particular importance within the Lundy MPA.

Legally protected features at Lundy	Sub-feature	Listed under the
Intertidal reefs	Rocky shore communities	SAC & SSSI
	Under-boulder communities	Habitat of Principal Importance
Subtidal reefs	Kelp forest communities	SAC
	Vertical & overhanging deep rock communities	SAC
	Deep bedrock and stable boulder communities	SAC
	Fragile sponge & anthozoan communities	Habitat of Principal Importance
Subtidal sediments	Muddy gravel off the east coast	SAC
Intertidal & subtidal caves		SAC
Atlantic grey seal <i>Halichoerus grypus</i>		SAC
Pink sea fan <i>Eunicella verrucosa</i>		Wildlife & Countryside Act 1981



Intertidal reefs, Devil's Kitchen.  
[Photo: Keith Hiscock]



Muddy gravel sediment off the east coast.  
[Photo: Keith Hiscock]



Reef slope dominated by red sea fingers, Knoll Pins. [Photo: Keith Hiscock]



Pink sea fan *Eunicella verrucosa*.  
[Photo: Paul Naylor]



Sunset cup coral *Leptopsammia pruvoti*. [Photo: Paul Kay]



Grey seal *Halichoerus grypus*.  
[Photo: Keith Hiscock]

### 1.3 A brief history of Lundy's Marine Protected Area

The year 2022 marked the 50<sup>th</sup> anniversary of the Marine Protected Area at Lundy. It started out in 1972 as a voluntary marine nature reserve as a time when there was a growing sea-swell of opinion that, although what was on the seabed was out of sight for most people, it shouldn't be out of mind.

After many years of pressure from concerned individuals, marine conservationists and eminent marine biologists, the government of the day introduced provisions for the establishment of statutory Marine Nature Reserves (MNRs) into the Wildlife and Countryside Act 1981. Such MNRs were to come with legally-backed powers of protection. However, there were also severe restrictions accompanying the



legislation, one of which required the Nature Conservancy Council to obtain the backing of all involved parties to support the case for an MNR, which was a tough ask when Sea Fisheries Committees were involved. Consequently, Lundy was the only statutory MNR ever to become established in England.

The table below sets out how the island and its surrounding waters have remained at the forefront of marine conservation in Britain for the past 50 years.

Date	Accolade
1972	The year when a Management Policy for Britain's first voluntary marine nature reserve is published in the <i>Annual Report of the Lundy Field Society</i> (vol. 23, pp 39-45).
1986	Lundy becomes Britain's first statutory Marine Nature Reserve.
1990	Designation as Protected Wrecks of the <i>Iona II</i> (sank in 1864) and the Gull Rock site (artefacts dating from the 16 <sup>th</sup> century).
2003	A 3.3 km <sup>2</sup> area off the island's east coast becomes the country's first statutory No Take Zone. This means all forms of fishing are excluded from this area.
2005	The waters around the island are formally recognised as a European Special Area of Conservation (SAC), having been first proposed in 1996.
2010	Lundy becomes Britain's first Marine Conservation Zone. This designation supersedes that of Marine Nature Reserve.
2015	In light of all of the above designations, many of which cover the same area, the term Marine Protected Area is adopted as an appropriate all-enveloping term.
2019	The wreck of HMS <i>Montagu</i> (sank 1906) is designated as a Scheduled Monument, the first wholly subtidal wreck to be given this designation in the country.
2022	In celebration of the MPA's first 50 years, a two-month long Marine Festival is held on and around the island.

### 1.3.1 Management of the Lundy MPA.

When the voluntary marine nature reserve was first established in 1972, it relied solely on the goodwill and cooperation of users of the island's waters (primarily fishermen and divers) to ensure appropriate respect was given to the fragile habitats and species present on the seabed. A voluntary ban was imposed on the collection by divers of sea fans and sea urchins as souvenirs; and a 'gentleman's agreement' was reached with commercial fishermen not to use mobile demersal gear (such as scallop dredges) on the muddy gravel off the east coast.

As moves towards converting the voluntary marine nature reserve into a statutory one (following the introduction of legal powers to do so in the Wildlife and Countryside Act 1981), a meeting of all interested parties was held in October 1985, organised by the Nature Conservancy Council. At the meeting it was agreed that a formal group should be set up to assist with the management of the waters around Lundy and so the Lundy Marine Consultation Group came into being. This has since evolved into the Lundy MPA Advisory Group. The Advisory Group now meets twice a year in Bideford or Ilfracombe, and is open to all users of Lundy's waters such as fishers, local dive clubs, charter boat skippers, marine archaeologists and marine biologists, as well as the island's Warden and General Manager.

The book by Keith Hiscock and Robert Irving, published in 2012 and entitled *Protecting Lundy's marine life: 40 years of science and conservation*, sets out further information about the early years of the MPA; and the latest issue of the *Lundy Marine Management Plan* (Lundy Management Forum, 2017) provides further detail of the management of the MPA.



### 1.3.2 Key organisations and people associated with the Lundy MPA

A number of key organisations are represented on the Lundy MPA Advisory Group. In 2022, these included:

Lundy Company (represented by Derek Green [General Manager] and Rosie Ellis [Warden])

Natural England (Sophie Hare)

Devon and Severn Inshore Fisheries Conservation Authority (Lauren Parkhouse)

Historic England (Terry Newman)

Lundy Field Society (Robert Irving)

Marine Biological Association (Keith Hiscock, current Chair)

Local charter boats (various skippers and crew members)

Ilfracombe and N. Devon Sub-Aqua Club (Shaun Galliver, Maggs Ashton, Mandy Gartshore)

Appledore Sub-Aqua Club (Mike Deaton)

Local commercial fishing interests (Geoff Huelin & John Balls)

## 1.4 Why have a Marine Festival?

The idea to hold a Marine Festival at Lundy emerged from an original suggestion, raised at a meeting of the MPA's Advisory Group in May 2017 by the then island Warden Dean Jones, of holding a Marine Bioblitz on Lundy. The suggestion was greeted with interest and a little confusion – most present had not heard of a 'bioblitz' before! Bioblitzes are when naturalists (both professional and amateur) are encouraged to descend upon a chosen venue in order to record as many species as possible from a given area and within a given timespan (normally 24 or 48 hours – so weekends are often chosen).

With the proposed venue being an offshore island, there were clearly going to be a few logistical problems to sort out. Could anything useful be achieved on just a day visit, when visitors get between 4-6 hours on the island, albeit coinciding with low water? If the recording period was to be extended, how could participants be accommodated overnight? Rental properties on Lundy tend to be booked months if not years in advance, and not everyone would be happy with camping and all the associated equipment that might entail.

After a while of thinking things through, it was agreed that, if the bioblitz was held over at least two successive spring tide periods (i.e. five weeks) to allow for the possibility of poor weather causing the first spring tide period to be blown or washed out, then other marine-related activities could be planned for the intervening period. These might involve diving projects (covering both marine life *and* marine archaeological recording), other projects on the shore and from the clifftops, and maybe various activities and talks.

Robert Irving put himself forward as being prepared to take on the planning and running of such a venture and Derek Green came up with the idea of calling it a Festival. A 7-person organising committee was put together, with a first meeting taking place on 18<sup>th</sup> July 2019 and a second on 5<sup>th</sup> November 2019. Dates for a Festival were soon agreed: 23<sup>rd</sup> June – 19<sup>th</sup> September 2020, so actually a 3-month timespan. Planning then went ahead at speed, with projects being designed and described, contacts with various organisations being established and initial approaches for funding being made.



And then, come 23<sup>rd</sup> March 2020, the whole nation went into lockdown, thanks to the Covid-19 pandemic sweeping the country.

In some ways, the timing of this lockdown came just at the right time. It was fortunate that not more arrangements had been committed to. Advertising the Festival was about to go into full swing, with the launch of the dedicated website due to happen at the end of March 2020. Everything was put on hold though no-one knew for how long.

Following various false starts, outdoor activities and mixing of individuals was permitted from mid-April 2021, with indoor restrictions being relaxed in mid-May 2021. As restrictions eased, in June 2021 it was decided by the core organisers (Derek Green, Rosie Ellis and Robert Irving) that a second attempt would be made to hold the Festival during the summer of 2022. This, it was soon realised, would actually be a more appropriate year to hold a Marine Festival as it would coincide with the 50<sup>th</sup> anniversary of the MPA.

#### 1.4.1 The aims of the Festival

It was decided the Marine Festival should have some aims, in order to give the whole concept some worthwhile ambitions and structure. Five aims were settled upon – these were:

- (1) to highlight the existence of the island’s Marine Protected Area (MPA);**
- (2) to celebrate its 50<sup>th</sup> anniversary (the longest existing MPA in the country);**
- (3) to undertake a number of projects which will assist in the on-going management of the MPA;**
- (4) to leave a worthwhile legacy behind once the Festival is over; and**
- (5) to promote the cause (by raising awareness) of marine conservation in general.**

These aims would be met by creating various opportunities for visitors to the island to ‘get involved’ with the MPA in some way or other. A wide range of participatory citizen-science projects would be designed for all ages and for all abilities. In addition, there would be various activities for people to take part in, and there would be displays, competitions and educational games, all relating to the MPA to keep folks interested, informed and entertained.

The Festival would act as an ‘umbrella’ for these various projects and activities, all of which would have a connection to the sea and to the Marine Protected Area in particular. At the Festival’s core would be the Marine Bioblitz – an opportunity to discover as many different species as possible occurring on the island’s shores and under water.

The citizen-science projects would be for non-divers and divers alike. They would be designed for those who have little marine biological knowledge (and hasn’t done this sort of thing before) as well as seasoned campaigners who already have experience of events like this. Besides having a bit of participatory fun, the data being generated will help towards future management of the MPA.

It was recognised that divers wishing to participate would need to have the necessary diving qualifications and their own third party insurance (possibly through their membership of a diving club).

## 1.5 When to have the Marine Festival?

It was realised that having the Festival over a period of three months might be a little too long for it to maintain its momentum. A shorter time period of two months was therefore decided upon, from Thursday 14<sup>th</sup> July until Sunday 11<sup>th</sup> September 2022 (although the end date was later changed to Saturday, 10<sup>th</sup> September).

Within this two-month window there would be four good-to-excellent spring tide periods (with tide heights dropping to 1 m or lower above Chart Datum) and with low water in the middle of the day, soon after the *Oldenburg* would reach the island; and three good-to-excellent neap tide periods when currents around the island would be at their weakest – ideal for diving projects. It would also coincide with the school summer holidays and thus be open to a greater number of families than might otherwise have been possible if the Festival was held outside holiday time.

The intertidal bioblitz would feature on the first six days of the Festival (Thursday, 14<sup>th</sup> – Tuesday, 19<sup>th</sup> July), with a three day window right at the end of the Festival (10<sup>th</sup>-13<sup>th</sup> September) as fall-back days for the intertidal bioblitz should bad weather rule out the first window.



Bob Foster-Smith very kindly gave of his time and his artistic skills to create this illustration of a delightful sunset cup coral birthday cake, in celebration of the MPA's 50<sup>th</sup> anniversary.



## 2. PRE-EVENT

### 2.1 What to do first?

Having agreed dates for the start and end of the Festival, the next task was to build a framework based on priority events and begin to fill in the gaps in between with other events of one sort or another. Before organisations could be encouraged to commit to dates for their participation, it was important to know what the tidal cycle would be in terms of the dates and times of good spring tides (important for intertidal projects) and of good neap tides (important for diving projects, as this is when tidal currents are at their weakest).

Then it was a matter of deciding what projects and activities might be possible and allocating a priority for each - based on how useful any data they might generate might be; how long might they take to complete; how impactful they might be; what resources would be required to undertake them; etc.

### 2.2 Tides, boats and bookings

In order to keep on top of the growing multitude of things that were starting to happen, any project manager worth their salt will have a trusty Gantt chart (or charts) at their side (or rather on their laptop). For the purposes of organising a Festival, not only was this invaluable for including everyday information on dates, days, tides and when groups were committed to coming over to the island, it also provided the means of having a historical record of who had been contacted when and what had been agreed. I have since found out that this type of chart is named after one Henry Gantt, an American mechanical engineer and management consultant, who designed it around the years 1910-1915.

A number of planning meetings were held with the island's General Manager, Derek Green, to discuss what might be possible for the Lundy Company to help with their support of the Festival. Very generously, (*Oldenburg* ticket reductions; camping fee reductions; diving air cost reductions)

#### 2.2.1 Booking Boats

Popular dive boats will often get booked by diving groups a year or so in advance, such can be the demand for a well equipped, fast and seaworthy vessel, especially where the skippers are friendly and knowledgeable.

It was fortunate that the Ilfracombe-based company *Lundy Diving*, operated by Andrew Benguey and his son Ben, were willing to provide their two dive boats for Festival diving. Andrew has been involved with the Lundy MPA Advisory Group for 20 years or so, and also helps out with getting supplies to the island when called upon. Unfortunately, by the time we got around to making firm bookings for the boats, many of the



The two vessels operated by *Lundy Diving*. Ben Benguey's boat *Barbara B* was utilised most for diving, potting and BRUVS drops; Andrew Benguey's boat *Obsession II* was used for a few of the diving days and for the round-the-island trips. Each boat was/is licensed to take up to 12 divers/passengers.



weekends during July and August had already been taken. Weekends are when most divers go diving, although some clubs will also arrange dives at sites local to them on a mid-week summer evening.

A total of 21 boat days were reserved with Lundy Diving in November 2021, although this number was later reduced to 18 soon after the Festival started. In addition, Lundy Diving kindly agreed to a 15% Festival reduction on their normal charter fee.

*Barbara B* was also chartered for the potting study (see section 3.4.1) and for the BRUVS fish recording study (section 3.4.2).

### 2.2.2 Designing Citizen Science projects

One of the key aspects of the Festival was to get people involved in some kind of practical way in generating data that would then feed into the management of the MPA. Consequently, the Co-ordinator set about sorting out how best this could be done. Citizen science projects, as they have become known, are where members of the public volunteer their time, abilities and skills to produce useful data (and other possible outcomes) for a fraction of the cost compared with fully trained scientists completing the same tasks.

Projects were to be for non-divers and divers alike, some based on projects which had been successfully undertaken in the past and others developing new ideas. A list of these various projects is set out in section 3.3 (p. 35), with their results set out in section 4 (p. 52).

For the divers participating in these projects and, most importantly, obtaining useful data, it was considered fair that there should be some means of saying thank you. This was done by offering free air fills at the island (a new diving compressor was installed just before the Festival got underway).

### 2.2.3 Designing publicity materials

It was considered important for the Festival to look as professional as possible in the way it was advertised and run. There's nothing worse than poor-looking advertising materials responsible for turning away potential 'customers'.

One of the first tasks was to design a logo for the Festival which could then be used on various flyers, posters, the website and, in due course, on the flags and bunting. We tried out a crab as the featured species in the centre of a circular design, but eventually decided a leaping dolphin might be more attractive. A second logo was then produced to advertise the 50<sup>th</sup> anniversary of the MPA and the two were often presented together (as with the 'official' letterhead for the Marine Festival, used as a header on the pages of this report).

Before the website was launched in mid-March 2022, it was realised some form of printed material was also required to help advertise the Festival. Further details about what was decided upon appear in section 2.5.2 (p. 18).

### 2.2.4 Designing a Website and compiling a Festival Calendar

It was appreciated very early on in the life of the Festival that a website helping to publicise the whole event was going to be essential. A website could provide all of the up-to-date information about what was being planned and how people could get involved; could host blogs, photos and videos of activities; and act as a distribution point for recording forms and a collection point for the results of projects once the Festival had got underway.

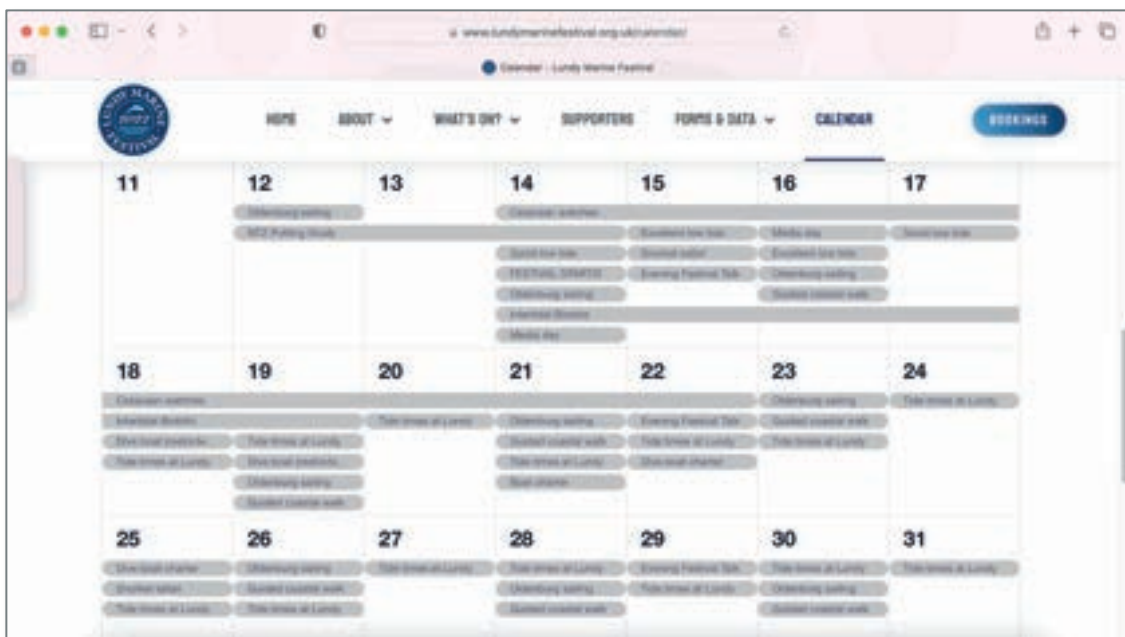


The home page of the website featured a series of colourful images which changed every 5 seconds.

We were delighted that Toucan Creative, based in mid-Devon, were happy to take on this challenge. Their task was not just to ensure the mechanics of the website worked as intended but to make it look attractive and appealing. The Festival Co-ordinator was responsible for all of the content – text and images.

We should like to acknowledge all those who allowed their cartoons and photographs to be used on the website:

*Cartoons:* Bob Foster-Smith; *Photographs:* Maggs Ashton, Dan Bolt, Siân Cann, Mike Deaton, Simon Dell, Jonathan Evans, John Hepburn, Keith Hiscock, Rohan Holt, Robert Irving, Dean Jones, Paul Kay, Mark Lavington, Rick Morris, Paul Naylor, Daniel Taylor and Sanne Roberts.



The website's interactive Calendar allowed visitors to see what was happening when. This page shows the first three weeks of the Festival in July 2022. Clicking on an entry would open a new page providing more details of that particular event.



One of the most important aspects of the site was its Calendar. Here could be found information about tide times, *Oldenburg* sailing times from Ilfracombe and Bideford, special events such as the Bioblitz and the Protected Wreck Days, Friday evening talks by guest speakers and when dive boats were available.

After its launch on 16<sup>th</sup> March 2022, the following comments about the website were soon received:

*"Good to see that the festival will be going ahead this time round! Website looks really good as well. Nigel Thomas* (the Lundy marine nature reserve's first Warden in 1978. Now retired and living in the south of France).

*"Great looking website."* - **Peta Knott**, Education Manager, Nautical Archaeology Society.

*"An excellent website, covers all the questions that I would have."* **Paul Brazier**, a professional marine biologist who came over to the island as part of the Porcupine MNH Society bioblitz team.

*"We really enjoyed learning about the Marine Festival and were greatly impressed with the quality of the promotional material you have prepared for it – the website is excellent."* - **Tim Davis**, graphic designer, bird enthusiast & member of the Lundy Field Society.

*"Great that your website is now live, it looks fantastic."* **Kesella Scott-Somme**, Darwin Tree of Life project, Marine Biological Association.

*"Love the website – particularly the options for how divers and non-divers can get involved – really fun drawings."* **Sam Fanshawe**, UK Projects Manager, Blue Marine Foundation.

*"Great website. Easy to find one's way about, with all the links working smoothly and logically. And lots of information there too!"* **Jim Parry**, SW Region Head Archaeologist, National Trust.

### 2.2.5 Seeking permissions

Some of the projects being proposed as part of the Festival would entail collecting marine species (typically for identification purposes) which, being a Marine Protected Area and a No Take Zone, would require special permission. In the first place, discussions were held with the island's Warden, Rosie Ellis, to obtain her approval for what was being proposed. Then it was a matter of applying for the necessary permissions from various statutory authorities.

For what we had in mind, there were three statutory bodies which needed to be approached for such permissions: Natural England, the Devon and Severn Inshore Fisheries and Conservation Authority and the Marine Management Organisation. For the proposed Protected Wreck Days which involved participants diving on a Protected Wreck, notification of intention was given to Historic England but specific permission was not required (although the names of all divers had to be submitted to Historic England).

Fortunately, all of these organisations are represented on the Lundy Management Forum, the body which helps advise in the running of the island by the Lundy Company/Landmark Trust. Consequently, the Festival Co-ordinator (who acts as the Secretary to the Forum) was aware at the outset which individuals within each organisation should be approached for advice regarding the application process.

#### **Natural England**

Natural England are responsible for the Site of Special Scientific Interest (SSSI) on Lundy, which extends to Mean Low Water Mark (Ordinary Spring Tides). The organisation is also responsible for undertaking monitoring of the Special Area of Conservation (SAC), which extends from Mean High Water Mark (Ordinary Spring Tides) to the seaward extent of the MPA, on behalf of the Joint Nature Conservation Committee (JNCC).



In order for specimens to be collected from the intertidal zone during the Bioblitz (in particular), consent to do so was required from Natural England. The application for this was made by the island's Warden (Rosie Ellis) on 22<sup>nd</sup> May 2022 with consent from Natural England being granted on 29<sup>th</sup> June 2022.

### Devon & Severn Inshore Fisheries and Conservation Authority (D&S IFCA)

D&S IFCA are responsible, amongst their many other duties, for fisheries activities within the Lundy MPA and, in particular, the oversight of the No Take Zone. Special permission is required from the D&S IFCA to undertake any scientific collecting activity within the No Take Zone (NTZ). So authorisation was required to undertake the following, under the auspices of the Marine Festival:

- Use of traps within the NTZ by the Darwin Tree of Life team during the Marine Bioblitz;
- Collection (and return) of scallops by divers from within the NTZ;
- Collection (and return) of lobster and crabs by traps within the NTZ as part of a potting study.

Separate applications ('Exemption Request Forms') were submitted for all three of these studies by the Festival Co-ordinator towards the end of 2021. In due course (after about four weeks), authorisation was granted for each activity on 6<sup>th</sup> December 2021.

### Marine Management Organisation

The Marine Management Organisation (MMO) is responsible for marine licensing in English waters. The specific activity undertaken during the Festival for which a MMO licence might have been required was "the removal of any substance or object" from the seabed. However, following discussions with the MMO representative on the Lundy Management Forum, who was made aware of the sole intention to collect marine life specimens, the Festival Co-ordinator was informed that no MMO licence would be required.

#### 2.2.6 Team Roles: who would do what?

Having had a 'taster' of planning the Festival first time around prior to 2020, the need for an organising committee was less important prior to the 2022 event, having got the basics in place already. The table below sets out who made up the team behind the Festival.

Name		Role
Robert Irving		Overall co-ordination; seeking sponsorship; planning projects etc.
Derek Green	Lundy Company	Off-island assistance and logistics
Lyndsey Green	Lundy Company	Banking and bookings
Rosie Ellis	Conservation Team	In charge of Festival matters on-island
Rob Waterfield	Island Manager	On-island assistance and logistics
Sue Waterfield	Shop Manager	Sales of Festival merchandise
Daisy Eagleton-Laing	Conservation Team	On-island volunteer Marine Festival Warden
Tara McEvoy-Wilding	Conservation Team	On-island volunteer Marine Festival Warden
Andrew Benguey	Lundy Diving	Charter boat logistics
Ben Benguey	Lundy Diving	Skipper, charter boat <i>Barbara B</i>
Lundy Ambassadors		Leading coast walks; general help with visitors



## 2.3 Finances

One of the first jobs which the Co-ordinator undertook was to assess how much money might be required to run a Festival lasting two months. A budget was drawn up which is summarised in the table below.

Table showing an approximate (initial) budget for the Marine Festival.

Category		Fully costed outgoings	In kind/reduction	Expected cost	Expected income
Planning	Co-ordinator's expenses	£20,000	£10,000	£10,000	
Staff time	Warden	£1,000	£1,000	£0	
	General Manager	£800	£800	£0	
	Festival Wardens	£1,000	£1,000	£0	
Reduced <i>Oldenburg</i> fares:	Day return fare	£14,000	£8,000	£6,000	£6,000
Reduced <i>Oldenburg</i> fares:	Stayers' return fare	£7,000	£3,000	£4,000	£4,000
	Use of Warden's RIB	£3,000	£2,500	£0	
Accommodation	Purchase of camping tents	£1,500	£1,500	£0	
	Purchase of camp beds	£500	£500	£0	
Field & Lab. equipment		£1,500	£1,400	£0	
Display items	Shipping costs	£500	£500	£0	
Publicity	Website	£1,500	£0	£1,500	
	Leaflets	£250	£0	£250	
	Poster	£150	£0	£150	
Diving boat hire		£20,000	£3,000	£17,000	14,000
Diving air		£3,000	£1,700	£1,300	
Experts' time (in kind)	(Leading groups)	£21,000	£21,000	£0	
Merchandise		£8,000	£1,500	£6,500	£5,000
Incidentals		£1,300	£0	£1,300	
		£108,000		(A) £48,000	£29,000
		Expected income from £10 Festival fees			£8,000
					(B) £37,000
		Minimum required to raise from 'general use' grants:			(A - B) £11,000

Once the outgoings had been approximated, it was then a matter of thinking where the income might come from. There was a difference between 'general use' income (i.e. grants to assist with the running of the Festival) and 'dedicated' income (i.e. grants for specific projects). The former was likely to come in the form of donations, and the latter as targeted grants which would require detailed applications to be made.

What also soon became apparent was the very generous offer of in-kind staff time and of materials allocated to the Festival by the Lundy Company (thanks to Derek Green). The Lundy Company also kindly offered to act as the Festival's bankers.



### 2.3.1 Applying for donations and grants

Having assessed the costs which were likely to be involved with running a two-month long Festival, one of the first tasks for the Co-ordinator was to seek backing for the Festival. The first ports of call for approaches were to those organisations represented on the island's Management Forum. Sums in excess of £2,000 would mean the organisation would be featured as a 'sponsor' of the Festival, Those unable to make a financial contribution but were willing to help out in some other way were listed as 'supporting organisations'.

#### 2.3.1.1 Donations

All of the organisations represented on the island's Management Forum were approached for a financial contribution towards the costs of running the Festival. Two of these, the **National Trust** (N. Devon) and the **Lundy Field Society**, agreed to become sponsors.

Other bids were made to a number of organisations and charities involved with nature conservation work and of marine nature conservation in particular. Sadly, these were unsuccessful.

There were also donations from participants in the form of a 'Festival fee', set at £10 per person. This amount was included within the discounted ticket price which passengers on the *Oldenburg* would pay, as well as being included in the discounted cost paid by divers booking on a Festival dive boat.

#### 2.3.1.2 Grants

The first commitment of funds (in fact, before the end of 2019) came from Natural England (with thanks to Mel Parker, who had been involved with the MPA Advisory Group between 2012 and 2021), with funding aimed at helping to organise and run the Marine Bioblitz (£4,500).

**Natural England** also committed funds to the production of five display panels describing the first 50 years of the MPA; and the re-printing of the Marine Wildlife Guides (3x separate titles), first published in 2011.

**Historic England** awarded a grant to the Festival to run four Protected Wreck Days; to undertake photogrammetry surveys of the *Iona II* and Gull Rock shipwrecks; and to cover the cost of writing and printing a new leaflet about the wreck of HMS *Montagu*.

The **Blue Marine Foundation** agreed to fund studies investigating the effectiveness of the No Take Zone (potting) and for the recording of fish life using BRUVS (Baited Remote Underwater Video Systems).

In addition, the **Blue Marine Foundation** also agreed to fund the making of a film about the effectiveness of the No Take Zone using a group of local film-makers (North Devon Moving Image).

The **North Devon Biosphere** kindly made a donation to the running of the Splash In! photographic competition.

### 2.3.2 Negotiating discounts and freebies

Costs were kept as low as possible, with discounts and freebies being requested wherever possible.

We were also delighted to have a selection of prizes donated to winners of the Splash In! photographic competition (see also section 3.4.7, p. 47).

## 2.4 Assistance

The Festival relied heavily on the goodwill and generosity of friends, colleagues and volunteers in all sorts of ways. The Festival organisers hope that the list in the Acknowledgements section (before the Appendices) captures most of these people, but it's likely a few would have slipped through the net inadvertently. Our apologies!

### 2.4.1 The loan of items and displays

We were delighted to have had the free loan of a number of items and displays for the duration of the Festival. These are listed below:

- The loan of the Virtual Reality headsets from Plastic Free North Devon (special thanks to Claire Moody) – see also section 3.2.8.4
- The loan of the British Marine Life composite poster from Dr Paul Naylor - see also section 3.2.8.1
- The display of baskets made from recovered waste fishing nets (by Lundy staff member Jane Sharkey) – see also section 3.2.8.7
- The loan of two aquarium tanks (thanks to Ilfracombe Aquarium ) – see also section 3.2.7

We had also hoped to have had another visit of the grey seal skeleton (fondly known as '*Septimus*'), which belongs to the Seal Research Trust (formerly the Cornwall Seal Group Research Trust), for some part of the Festival. This is a magnificent, 2 m long skeleton comes with its own team of human interpreters, more than happy to explain the story behind this seal. Sadly, owing to the arrangement being 'lost in translation' somewhere down the road, *Septimus* was unable to make it over to the island. We hope he'll be able to get back to the island soon.

### 2.4.2 Camping tents

As accommodation is extremely hard to come by on Lundy (unless you are sufficiently well organised to book it 18 months in advance), the only alternative for overnight stays is to camp. Many of those likely to be wanting to come over to the island during the Festival for more than just a day trip were likely to be getting on a bit, so we attempted to make the camping experience a little less arduous.

To help with this, the Lundy Company decided to purchase six new family-sized tents, at a special discounted price, together with 12 camp beds and mattresses. Despite their size and capacity, a limit of two people per tent was set, so this elevated the experience of Lundy camping to Lundy glamping! The tents proved invaluable during the first week of the Festival in particular, and then again for the two-night stays of visiting speakers throughout the whole of the Festival.



One of the Festival tents pitched in the Camping Field behind the island's Shop.

### 2.4.3 The appointment of two volunteer Festival Wardens

Early on during the planning process, it was realised that the Warden would be needing some on-island assistance to help with running all of the Festival activities that were being planned. It would be a volunteer post encompassing the whole of the Festival (2<sup>nd</sup> July – 13<sup>th</sup> September), with all accommodation and food costs covered by the Lundy Company. Rosie Ellis drew up a job description

which was advertised in December 2021, with applications due by 5<sup>th</sup> February 2022. Interviews were held virtually on 17<sup>th</sup> February 2022. The job description stated: *“Essential skills: Rocky shore survey experience or similar and a good knowledge of UK marine species; important to be outgoing and easy to approach. Desirable: familiarity with scuba diving equipment.”*

Two applicants came out head and shoulders above the rest and as the interviewing panel couldn't split them, both Daisy Eagleton-Laing and Tara McEvoy-Wilding were offered the roles of Marine Festival Wardens. Both were in their second year of a marine biology degree at Exeter University.

Their role would be to be the main point of contact for those staying on the island for matters relating to the Festival; help out with general information about the Festival for daytrippers; help out with rockpool rambles, snorkel safaris and dives; and fill diving cylinders for divers staying on the island (a brand new compressor was installed in the Beach Building on the island at the end of June 2022, just before the start of the Festival). Their weekly blogs about the Festival are included as Appendix 9.



Tara McEvoy-Wilding (L) and Daisy Eagleton-Laing (R)

## 2.5 Publicity

Once the dates and the main activities of the Festival has been agreed, it was appreciated that we needed to tell as many people as would listen that the Festival was happening.

### 2.5.1 Written articles and magazines

- LFS – 2022 *Bulletin* (Feb. 2022) & 2023 *Bulletin* (Feb. 2023) (Lundy Field Society membership)
- *Scuba* magazine (British Sub-Aqua Club membership) – as shown on the right.
- PADI on-line Blog (Professional Association of Diving Instructors)
- SAA on-line Newsletter (Sub-Aqua Association)
- *Marine Conservation* magazine (MCS membership)
- *Marine Biologist* magazine (MBA members)
- Porcupine MNHS *Bulletins* (Porcupine Marine Natural History Society)

We were also delighted to find out that the on-line US *Time* magazine had picked up on our publicity and made mention of the Marine Festival in a piece written about Devon being one of the top 50 places in the world to visit!



Article published in *Scuba* magazine, July 2022.

### 2.5.2 Posters and promotional leaflets

These had to be informative, attractive to the eye and enticing. Their purpose was to provide readers with the dates of the Festival; explain what it was all about; explain what people could do as part of the Festival; and how to make a booking (directing them to the Festival's website).

Special thanks to Bettina Newman and Mark Wescott at BMDL [bmdl.uk] and to Simon Moses at Pharaoh Print and Design [pharaohprintanddesign.com] for help with the design & printing of these.



The poster above was printed at A2 size and distributed to various organisations which the Co-ordinator thought would be interested in supporting the Festival. The leaflet below promoting the Festival was printed A4 and folded into thirds.



### 2.5.3 Social media

A *Lundy Marine Festival Facebook* page was set up to help disseminate information about the Festival. There were also occasional Instagram posts sent out by the two Marine Festival Wardens. On reflection, we could have pushed the social media side of things a bit more.

### 2.5.4 Liaison with supporting organisations

#### 2.5.4.1 *Porcupine<sup>1</sup> Marine Natural History Society*

The Festival Co-ordinator knew that to make the Marine Bioblitz a success, he was going to need to persuade members of the PMNHS to help out. Being a member of said Society helped and he was aware of the knowledge and enthusiasm which many of the Society's members put in to carrying out fieldwork.

Fortunately, they agreed to make Lundy the chosen destination for their annual Field Meeting in 2022 and to lead on the Bioblitz side of the Festival. It proved quite complicated to organise but we were delighted that 20 members signed up to participate.

#### 2.5.4.2 *Darwin Tree of Life project*

Contact was established with the DTOL team (based at the Natural History Museum, London, and at the Marine Biological Association, Plymouth) prior to the 2020 Festival attempt. They could see the Festival, and the Bioblitz in particular, as a means by which they could collect some of the more elusive marine invertebrate specimens for their DNA cataloguing.

By timing their visit to coincide with that of the PMNHS group (and also those of the Marine Biological Association, North Devon Coastwise and the Lundy Field Society), the Bioblitz aspect of the Festival was covered very adequately.

#### 2.5.4.3 *Nautical Archaeology Society*

The suggestion of holding a number of Protected Wreck Days during the Festival was discussed early on during the planning of the Festival and an approach was made to the Nautical Archaeology Society to help run them. In 2014, their Education Manager, Peta Knott, had prepared a series of interpretive materials about one of Lundy's Protected Wrecks, the *Iona II*, when she worked for Wessex Archaeology. Up until the summer of 2022, the NAS had only run their Protected Wreck Days on a



This advert appeared in the Spring 2022 edition of the PMNHS *Bulletin*. It indicates how complex a task organising the field visit was, with multiple options available to participants!

<sup>1</sup> The name 'Porcupine' fronting this Society comes from HMS *Porcupine*, a small hydrographic survey vessel which, in 1869, undertook a survey of the seabed to the west of Ireland and was the first to recover living marine life from below 600 m (a depth beyond which it was proposed no life could exist), thereby opening up the science of studying the ocean depths.

selection of shipwrecks in the English Channel, so running the diving course at Lundy would be novel. Peta (and the NAS) kindly took on the task of taking the bookings and running the four day-courses.

#### 2.5.4.4 Vobster Quay Dive Centre

Vobster is one of the busiest dive centres in the country and it was great to have them enthused about the Festival. Based in east Somerset, the Centre has access to a flooded quarry where many divers will go to test out new gear or to attend specialist courses.

The Manager of the Centre, Tim Clements, is a technical diving instructor, a keen scientific diver and an underwater photographer. Fortunately, he was more than happy to help out with the photogrammetry project which involved producing 3-D images of the *Iona II* and the Gull Rock protected wreck sites.

#### 2.5.4.5 Lundy Field Society

The Lundy Field Society has been in existence for a little over 75 years and amongst its membership there is a huge wealth of knowledge about Lundy's natural history, archaeology, history, geology and, of course, its marine biology. The Festival Co-ordinator has served on the Committee of the Society since 1988 and had kept them abreast of all developments concerning the Festival. The Society kindly made a generous donation towards 'general use' Festival funds.

#### 2.5.4.6 Lundy Ambassadors

The Lundy Ambassadors are a group of Lundy enthusiasts who are happy to volunteer their knowledge of Lundy to whoever chooses to listen. During the summer, one or two of them will make the day trip over to the island and help out the Conservation Team by leading guided walks.

Many such walks were undertaken during the Festival, often around the south end on Ilfracombe sailing days (when visitors have only 4 hours on the island), though taking in a bit more of the island on Bideford sailing days (when visitors have 6 hours on the island).

They dutifully swotted up on their knowledge of the MPA, the No Take Zone and of Lundy's marine life especially for the Festival. It was great to have their support.



If you want to find out about something obscure - ask a Lundy Ambassador!

### 2.5.5 Talks

A number of talks were given by the Festival Co-ordinator during the spring of 2022 in order to explain what was being proposed and to whip up some enthusiasm for the event. These included talks to: the Lundy Field Society (March 2022); Ilfracombe & N. Devon Sub-Aqua Club (March 2022); the Lundy MPA Advisory Group (April 2022) and the Lundy Management Forum (April 2022).

### 2.5.6 Use of the island's Church and of the Beach Building

The use of these two buildings was essential for the smooth running of the Festival, one at shore level and one on top of the island, acting as inside areas for various activities to take place.

#### 2.5.6.1 *The Church*

The building of the Church of St Helen's on Lundy was completed in 1885. It was the life-long ambition of Rev. Hudson Grosett Heaven, owner of the island from 1883 until 1916. It stands rather incongruously at the southern end of the island, bearing more resemblance to a suburban church than one to be found on a windswept island. The Church is owned by the Church Commissioners and, along with the lighthouses marking the north and south ends of the island (owned by Trinity House), these properties are separate from the rest of the island owned by the National Trust. Interestingly, it wasn't until 1<sup>st</sup> December 2013 that the parish of Lundy was formerly created.



Lundy's Church can be seen clearly from the mainland on fairweather days.

In order to restore the fabric of the building, a major fundraising bid was launched in 2015 by the Church authorities and the Landmark Trust to bring the church building back into full use again. An application was made for Heritage Lottery funding to the tune of just under £1 million, with the need to raise the remainder (half as much again) by other means.

The renovation work was completed by the spring of 2018 and a re-dedication service was held on 30th June 2018 led by the Bishop of Exeter. Approximately two thirds of the pews have been removed, providing an open space available for interpretation panels in the body of the newly named St Helen's Centre. The Vestry had also been converted into accommodation for two people.

This really was an excellent space for the Festival to have use of during the summer months. By 2022 the building had access to the internet and there was also a good mobile phone signal available. We were very grateful that the vicar of St Helens, Rev. Jane Skinner (who comes over to the island for a service once a month), and the Parochial Church Council for agreeing to allow the Festival participants the use of the Church building.

#### 2.5.6.2 *The Beach Building*

The Beach Building, located at the foot of the jetty, was opened in 2010 and is apparent to all passengers disembarking from the *Oldenburg*. Its walls are lined with interpretive panels about the island and about the Marine Protected Area in particular, with a superb mural taking pride of place at the far end of the building.

For most of the Festival, the Beach Building had a circular table placed at its centre with a number of leaflets and printed guides laid out on it. There was also a chalk board to tell visitors what was happening on that day to do with the Festival. Once the two aquarium tanks arrived on the island, these were set up at the far end of the building, stocked with various creatures found on the surrounding shores.



The underwater mural and flying seabirds inside the Beach Building [photo: Robert Irving]

### 2.5.7 Banners, flags and bunting

The MS *Oldenburg* was considered to be a great way to publicise the Festival and Capt. Jason Mugford kindly agreed to have two 2 m x 0.5 m banners attached to the railings on the ship's upper deck. In addition, there were Marine Festival leaflets freely available from the information desk on the lower deck.

Flags and bunting, featuring the two Festival logos, were printed by Red Dragon Flagmakers Ltd. of Swansea. 48 m of bunting were ordered, cut into 6 separate lengths; plus 3x 23" x 45" flags; and 6x 14" x 27" flags, of strong knit polyester. The total cost of these items (including delivery) came to £680, which accounted for a fair proportion of the Festival's budget!



Two advertising banners were installed on the railings of the *Oldenburg*'s upper deck to help promote the Festival [photo: Keith Hiscock]



Festival flag and bunting on the gates at the entrance to the Church [photo: Robert Irving]



The two designs used for the bunting pennants.

### 2.5.8 Organising a Media Day (Day 1)

We were keen to make the most of local interest in the Marine Festival and decided early on in the planning process to hold a Media Day on the first day of the Festival. Various media organisations were contacted thanks to the Landmark Trust's media team. A programme for the day can be found in Appendix 4.

## 2.6 A legacy?

It was important that the impact of the Festival, whatever the overall shape or form it was to take, did not come to an abrupt halt on its last day (which turned out to be Saturday, 10<sup>th</sup> September rather than the planned Sunday, 11<sup>th</sup> September). Right from the outset, the Co-ordinator realised that something longer lasting was required, something that would provide those who had participated in the Festival with a tangible memory of what had taken place, something that would say to others: "This is what we did, why we did it and what it meant to do it."

The first perhaps predictable means of doing this was to be in the form of a report – which you are now reading. It was to be something which set out how the Festival came about, its planning and execution, and the outcome of the citizen science and research projects that were to be at its core.

The second idea, and one which didn't happen in the end, was to make a film about the Festival. The proposal was to capture the activities, the participation, the fun and the overall conservation message. However, finding a sponsor to fund such a venture, which had no clear purpose other than to say "this is what we did and we had fun whilst doing it", proved difficult, quite understandably. An approach was made to the Devon Environment Foundation but they reiterated the above, so no formal application to them was made.

In the end, the idea of making a film remained but the subject matter was altered (see below).

### 2.6.1 A film about the MPA's No Take Zone

The No Take Zone off Lundy's east coast was designated in 2003 by the Devon Sea Fisheries Committee. This was quite something at the time – a fisheries authority banning fishing from an area for a reason that was not for the protection of stock. The byelaw that was introduced excluded any form of fishing or other 'extractive activity' being undertaken in order to protect the sessile marine species growing there known to be of particular nature conservation interest (such as sea fans, cup corals and burrowing anemones).

Together with English Nature, who had been supportive of the designation, a long-term (4-year) monitoring programme was put in place which would hopefully show how beneficial such an exclusion area might be to fishing interests as well as to conservation interests. The monitoring programme, which ran from 2004-2007, showed no change to species of nature conservation interest but had a dramatic effect on the populations of lobsters and crabs. Five times as many legally-landable lobsters were caught inside the NTZ as opposed to outside it after just two years of monitoring. The number of edible crabs being caught inside the NTZ had also increased by a factor of 2.5.

Since the conclusion of this original monitoring project, no further studies had been undertaken to see how effective the NTZ remained. It was thought the Festival could provide the opportunity to assess the effectiveness of the NTZ once again. Fortunately, the Blue Marine Foundation agreed to fund the project, as they could also use the film to promote their goal of seeing many more No Take Zones being established elsewhere around the country.

The Festival Co-ordinator was put in touch with Gareth Alvarez and Rob Whitney of North Devon Moving Image by Claire Moody of Plastic Free North Devon, who had worked with them before. North Devon Moving Image is set up as "a community film-making organisation working with local people to create, collect and share short films which enlighten, inspire and entertain" ([www.ndmi.org.uk](http://www.ndmi.org.uk)). Both Gareth and Rob teach at Ilfracombe Academy and were keen to involve students at the Academy to help make the film. Consequently, a group of five students came over during the first week of the Festival as their "work experience" week to help with filming sequences for the film.

### 2.6.2 The opportunity for the NTZ to feature in a TV documentary about nature recovery in the UK

Silverback Films, who have contributed to numerous TV nature documentaries, made use of the Marine Festival and the potting project in particular to film pot fishing in action from the *Barbara B* during August, demonstrating the effectiveness of No Take Zones. The clips should feature in a film being made about nature recovery in the UK. It should feature in the final part of the BBC series '*Wild Isles*' (co-produced by the RSPB, WWF-UK and the Open University) which is due to be shown on BBC1 from 12<sup>th</sup> March 2023.



Silverback Films director and cameraman filming on board *Barbara B* in August 2022.



### 3. THE EVENT ITSELF

After all of this preparation, the Festival itself eventually got underway. Whilst the first week of the Festival was dominated by the Marine Bioblitz, other groups and individuals came and went during the whole two months. Fortunately, we were blessed with calm, sunny weather for almost the entire duration of the Festival.

This section of the report describes what was on offer under the over-arching ‘umbrella’ of the Festival, at various times and for various groups and individuals.



The Landing Bay at low water. The good weather which lasted for much of the Festival was a godsend and was appreciated by those exploring above water, with the clear visibility under water being appreciated by divers and snorkellers [photo: Robert Irving].

#### 3.1 The Festival kicks off

As explained in section 2.5.8 (p. 22) above, the first day of the Festival had been earmarked to be a Media Day. We welcomed various members of the press, of regional TV and representatives of sponsors over to the island for the opportunity to see for themselves what Lundy was all about and why we were celebrating its Marine Protected Area with a Festival.

Following disembarkation from the *Oldenburg* onto the jetty at Lundy, Derek Green, Lundy General Manager, welcomed all to the island as they gathered at the Beach Building at the foot of the jetty. After Derek’s opening remarks, Robert Irving, Festival Co-ordinator, gave the following address:



*“Welcome everyone to Lundy. It's a little island in the middle of a lot of sea, but as we hope you'll begin to find out today, it's got an awful lot to offer. Much of the island is a Site of Scientific Interest, it has interesting geology, archaeology and of course, its own endemic species of plant, the Lundy cabbage, and a couple of beetles found on the cabbage. Its seabird populations are now of a size to warrant international recognition having made a dramatic recovery thanks to the eradication of rats from the island begun in 2002; and its nearshore waters have long been recognised for their diverse range of nearshore habitats and their outstanding marine life.*

*And that's why you have come here today. We're keen for you to understand why we're holding a Marine Festival this year and it's primarily to celebrate the first 50 years of the island's Marine Protected Area. As I hope you now know, a voluntary marine nature reserve was established here in 1972, thanks to the efforts of a handful of conservation-minded sports divers, the Devon Trust for Nature Conservation and the Lundy Field Society, with the support of both the island's new owners, the National Trust, and the new managers, the Landmark Trust.*

*This was a major breakthrough for the new natural science of marine conservation in this country. Marine Reserves had begun to pop up in various places around the world, but in the UK we were still wondering what they were all about and why we needed any. Fortunately, the foresight of these few pioneers got things underway. One of those who was instrumental in getting the voluntary reserve established was a young student who had just embarked on a PhD at the School of Ocean Sciences in Menai Bridge, in North Wales. He had been enthused by what he had seen under water using scuba diving equipment and, being an Ilfracombe lad, had wanted to see what was present under water around that little island on the horizon, Lundy Island. On his very first dive there... here... in August 1969, he came across a bright yellow anemone-like creature which, he was pretty sure had never been recorded in British waters before. However, it took him a year to find out what it was, bearing in mind that there were not the identification guides available which we have today. It turned out to be a cup coral *Leptopsammia pruvoti*, more commonly found in the Mediterranean. That student made a career out of his interest in marine biology, becoming one of our foremost marine biologists in the UK and I'm delighted to say he's with us today. Please give a warm round of applause for Dr Keith Hiscock! Keith's has remained an integral part of the management of the Lundy Marine Protected Area pretty much ever since.*

*So let me tell you what we have planned over the next two months. Today, a project called a Marine Bioblitz starts. This is where as many marine animals and plants as possible are catalogued. It's something that can be done by professionals and amateurs alike - so whilst the professionals may recognise a particular species straightaway, the amateurs can take a photo of it on their smartphones, upload it to the internet (which you'll need to do in the Church here, as that's the only place on the island to have wi-fi) through an app called iNaturalist and have it identified by others who are likely to know what it is. To help with this project, as well as some others, I'd like to welcome members of the Porcupine Marine Natural History Society, members of North Devon Coastwise and the marine team from the Darwin Tree of Life project, who are based both at the Natural History Museum in London and at the Marine Biological Association in Plymouth.*

*We have already started the Festival's diving programme of various investigative projects, the results of which will become incorporated into the overall management of the MPA.*

*But back to today... I hope you will have seen the programme for today. Timings are now all a little bit different owing to the slightly later start, so please bear that in mind.*

*The marine biologists coming off the boat today will be setting up their microscopes and sorting trays in the island's Church, which also doubles as an Education Centre.*

*And please take time to visit the Shop in the Village and to buy a postcard and a Lundy stamp. Make sure you post it before you depart – the only postbox is painted blue and is on the side of the Marisco Tavern/General Office building. It'll then get a cancellation stamp on it which has been specially designed for the Marine Festival. And if you don't have any friend to send a postcard to, address it to yourself!*



*Finally, and I apologise for rabbiting on rather, I'd like to thank the main sponsors of the Marine Festival – the National Trust and the Landmark Trust; the Lundy Company; Natural England; Historic England; and the Lundy Field Society. We are also very grateful to the Blue Marine Foundation for sponsoring two projects associated with the No Take Zone – one investigating the effectiveness of the Zone and the second producing a short film about the No Take Zone.*

*Now, there's just time to introduce the island's Warden to you all, Rosie Ellis, and our two, specially appointed volunteer Marine Festival Wardens, Daisy Eagleton-Laing and Tara McEvoy-Wilding. Thank you and I hope you enjoy your time on this special island."*

Robert's welcoming address was followed by a few words from Keith Hiscock, specifically aimed at those from the Porcupine Marine Natural History Society, about Lundy's shores and marine life highlights, before the group of marine biologists headed onto the Devil's Kitchen shore to make the most of the low tide. Their microscopes, sorting trays and ID guides were all taken up to the Church via tractor-trailer while they were on the shore, and the group spent the rest of the day converting the St Helen's Centre into a pop-up marine laboratory.

## 3.2 Activities

Numerous activities took place during the Festival, a selection of which are described in more detail on the following pages.

### 3.2.1 The Marine Bioblitz

Holding a Marine Bioblitz at Lundy was the brainchild of former Warden Dean Jones. He had been involved with bioblitzes when working at a museum in Scotland. So what exactly is a bioblitz? Essentially, it's a fun way for professionals and amateurs to record as many species as possible from a given area within a given time. Most bioblitzes are land-based, perhaps concentrating on a woodland or a meadow. Coastal bioblitzes concentrate on a particular shore and its supralittoral fringe, often being undertaken over the period of a single day or over the two days of a weekend.

Holding one at Lundy was going to cause a few headaches: if it was held on a single day, then visiting participants would only get 4-6 hours to take part; if held over a weekend then visitors would have to stay on until the next ship was due, so it would probably last for three days. And what would happen if poor weather led to sailings being cancelled? It was all a bit too unpredictable.

The way round this was to make sure the bioblitz happened over a number of days which coincided with particularly good spring tides (when the lower shore is exposed for the longest time). It could even happen over two spring tide periods, with an intervening neap tide period being used by divers to do their recording when tidal currents were at their weakest. This solution meant there were intervening periods when other marine-related activities could take place, and so the idea of a Festival lasting for several weeks was born.

The Marine Bioblitz was to form the core of the Festival. Mel Parker at Natural England was an early supporter of the Festival and managed to ear-mark £4.5k towards the costs of running the Bioblitz prior to the first attempt of holding it in 2020. Her colleague Trudy Russell had hands-on experience of assisting with bioblitzes and provided valuable expertise too. Others who were willing to get involved at an early stage were Jack Sewell and Dan Lear at the Marine Biological Association in Plymouth. The data manager at the MBA, Summer Grundy, was also supportive and was keen to use a modified version of the iNaturalist app in order to assist with the photo-recording of species using mobile



phones (see section 3.3.1 on p. 37). And then there was Keith Hiscock, officially retired but still very active and with useful connections at the MBA.

So the first run of the Festival never happened due to an unprecedented nationwide lockdown following the rapid spread of the Covid 19 pandemic. The brakes suddenly had to be put on, suspending plans which were being put in place with Jon Moore and Cat Joniver of the Porcupine Marine Natural History Society (who had volunteered to lead their Society's field visit to the island) and also with the Darwin Tree of Life project through Natural England's Katie Clark and the Natural History Museum's Dr Lauren Hughes. Fortunately, all of these parties were keen to try again come 2022.

The Marine Bioblitz was to include three main areas of interest: recording from intertidal areas; recording from subtidal areas (by means of diving); and collecting specimens for the Darwin Tree of Life project (see below).

#### 3.2.1.1 Intertidal recording

The main emphasis of the Marine Bioblitz was to be right at the start of the Festival when there were particularly good spring tides (@13:04 with a height of 1.01 m above chart datum (ACD) on the 14<sup>th</sup>; @13:54 and 0.90 m ACD on the 15<sup>th</sup>; @14:43 and 0.93 m ACD on the 16<sup>th</sup>; and @15:29 and 1.08 m ACD on the 17<sup>th</sup>).

#### 3.2.1.2 Subtidal recording

Most recording of species in the subtidal was to take place during the last couple of days of the Porcupine MNHS visit on 18<sup>th</sup> and 19<sup>th</sup> July, when the charter boat *Obsession II* was booked.

#### 3.2.1.3 DTOL specimen acquisition & processing

The Darwin Tree of Life Project (DTOL) is led by the Sanger Institute and aims to collect, identify, DNA barcode and Whole Genome Sequence all 66,000+ eukaryotic species within Britain and Ireland, making the data freely accessible to all. Among many benefits to research, genome sequencing can help better understand species and their resilience to pressures such as climate change, making DTOL an important project for future conservation. The Natural History Museum (NHM) leads on the collection of animals, except for marine species which is led by the Marine Biological Association (MBA).

This was to be a one-off trip for DTOL to Lundy and due to the importance of the project to science and the opportunistic nature of the sampling, they sought permission to collect from all areas including the no-take zone, involving intertidal collection by hand and subtidal collection by SCUBA diving and snorkelling.

Intertidal collecting will be focussed on, but not be limited to, the following groups:

- Nemertean
- Sipunculans
- Nematodes
- Peracarid crustaceans

Subtidal collecting will be focussed on, but not limited to:

- Nudibranchs
- Tunicates
- Cnidarians
- Peracarid crustaceans

Specimens of each species will first be collected and identified by experts. After taking photographs, tissue samples will be taken from identified specimens, some of which will then be preserved in ethanol for DNA barcoding. This allows identifications to be verified before tissue samples are sent to the Sanger Institute for sequencing or, if the organism has an existing DNA barcode, being added to DNA databases. The rest of the tissue samples will be snap-frozen at temperatures from  $-80^{\circ}\text{C}$  to  $-196^{\circ}\text{C}$  for whole genome sequencing.

Snap freezing and storing tissue at these temperatures is very effective at preserving DNA. On Lundy, special containers, pre-cooled using liquid nitrogen, will be used to snap-freeze tissue samples at  $-196^{\circ}\text{C}$ . These containers contain no liquid nitrogen themselves but maintain this temperature for up to ten days, making them safe for transport and ideal for field-trips like this. Any remaining tissue or duplicate specimens will be preserved in ethanol and taken back to NHM to be stored as voucher specimens for further research on identification verification.

The results of the Darwin Tree of Life project are to be found in section 4.4.2 (p. 62).

### 3.2.2 Coastal walks

Coastal walks have featured as part of what the Conservation Team can offer visitors to Lundy for many years now. On Ilfracombe sailing days, the walks are usually shorter, encompassing a circular route starting at the Beach Building, up to the top of the island, along the south coast and up the west coast to the Old Light, and then back to the Village. On Bideford sailing days, the route is longer, taking in the west coast as far north as Jenny's Cove, across the middle of the island and back to the Village via the Quarries and the east side path.

We were happy to promote these exploring opportunity and included mention of them on the website's calendar. The popularity of the walks, especially to Lundy newcomers, means that they are now held on every sailing day, often being led by a Lundy Ambassador.

### 3.2.3 Rockpool rambles

As with the coastal walks, the rockpool rambles have been popular with staying visitors during the summer months in particular. They are usually led by the Warden, although during the Festival one or both of the Marine Festival Wardens were able to assist her. The rambles tend to be held on days when there is not an *Oldenburg* sailing (which tend to be when other matters keep the Warden busy!). Again, they were advertised on the Festival's website calendar.



Exploring the shore on a rockpool ramble with the Warden [photo: Rosie Ellis]

### 3.2.4 Snorkel safaris

The Beach Building not only provides a garage for overwintering the Warden's RIB, it also houses an air compressor for divers and changing facilities for both divers and snorkellers. A range of wetsuits, booties, fins, masks and snorkels are all there for all participants in a snorkel safari to choose the ones best for them. This equipment was all new for 2022, following a replacement of the original kit supplied in 2010 by the Worldwide Fund for Nature (WWF).



Board outside the Tavern advertising a Snorkel Safari.

Snorkel safaris are a great way for staying visitors to be introduced to the marine life found in shallow waters and it's one of the Warden's favourite activities to supervise.

### 3.2.5 Round-the-island trips

With good weather and calm seas prevailing for much of the summer, Derek Green came up with the idea of offering those staying on the island the opportunity to view the island from offshore, all the way around its coastline. Andrew Bengey's boat *Obsession II* was used for these trips and they proved very popular.

### 3.2.6 Weekly presentations by invited experts

As part of the Festival's original purpose of informing a wider audience about the island's MPA and about marine conservation in general, a series of talks was put together which took place on a weekly basis throughout the Festival. Each talk took place in the St Helen's Centre on the island, on a Friday evening starting at 8:00 pm. There was an impressive list of speakers, all experts in their own fields, who agreed to talk on a wide variety of subjects.

We had planned to live-stream the talks to the internet, so that those not able to attend in person could also enjoy the talks on-line and at a time of their own choosing. However, this proved a little too difficult to arrange. Where possible, talks were uploaded to the Festival website, but recording of the later talks in the programme encountered various mishaps which prevented their uploading.



Advertising board for the first weekly talk placed outside the Tavern.

Week 1	Dr Keith Hiscock (Associate Fellow, Marine Biological Association, ret'd)
Week 2	Claire Wallerstein (Environmental Film Maker)
Week 3	Dr Paul Naylor (Marine Environmental Scientist, ret'd)
Week 4	Michael Pitts (Film cameraman)
Week 5	Rob Wells (Volunteer, Cornwall Seal Research Group Trust)
Week 6	Peta Knott (Education Manager, Nautical Archaeology Society)
Week 7	Dr Jean-Luc Solandt (Principal Specialist, MPAs, Marine Conservation Society)
Week 8	Greg Brown (Fisheries Analyst, OceanMind)
Week 9	Robert Irving (Co-ordinator, Lundy Marine Festival 2022)

Further details about the full programme of talks, the subject matter and the speakers, is given in Appendix 9.

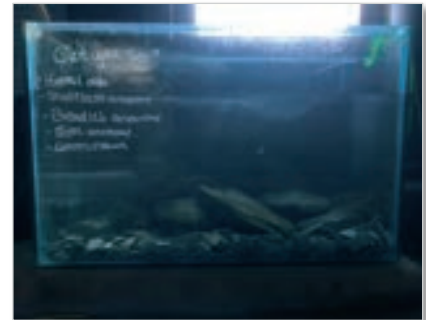


The first Friday evening talk of the Festival was given by Dr Keith Hiscock on 15<sup>th</sup> July, to an audience of over 40 in the St Helen's Centre [photo: Jon Moore]

### 3.2.7 Aquarium tanks

Thanks to the generosity of the Ilfracombe Aquarium (in particular Lawrence Raybone & Steve Corcoran), the Festival was lent two glass aquarium tanks (and their accompanying filtration units) which were shipped over to the island at the end of the Festival's second week. Each tank was 80 cm x 40 cm x 40 cm, capable of holding 128 l of sea water.

Soon after arriving, one of the filtration units decided to stop working, so just the one tank was used in the end. It was stocked with anemones, prawns and hermit crabs.



The placement of the tank at the back of the Beach Building and in front of a window meant it was quite difficult to see some of the creatures it contained.

### 3.2.8 The St Helen's Centre as a Festival 'hub'

The St Helen's Centre formed an excellent focal point for all things to do with the Marine Festival, as indicated below. The building is now dry (it has its own air-source heat pump), has a reliable G4 mobile phone signal and, upon a donation towards the upkeep of the Church itself, provides the only wi-fi signal on the island available for visitors to use.

#### 3.2.8.1 For displays

Besides the five display panels about the MPA (whose production was funded by Natural England), we were fortunate to be lent a large display panel by Paul Naylor entitled *British Marine Life*. This 3 m by 2 m composite image, which came with its own curved stand and lighting system, featured 96 marine species, at least 90 of which are found around Lundy. The colourful display was positioned so that it was the first thing one saw upon entering the church and it made a brilliant impression!



Paul Naylor's magnificent composite photo poster made a fantastic centrepiece in the St Helen's Centre. Over 90 British species are featured – how many can you spot?

### 3.2.8.2 As a 'pop-up' marine laboratory



It was wonderful to see the recently refurbished Church (also now known as the St Helen's Centre) being used as a centre for learning and discovery.



Professional marine biologists (this being Teresa Darbyshire) were happy to share their knowledge with those keen to improve their marine identification skills.



The transformation from Church to marine lab didn't take long. The island had a large number of white tables and stacking chairs (both available for the occasional wedding held on the island) which were readily available.



Visitors were welcomed to peer down microscopes at weird and wonderful creatures, with experts on hand to explain what was being viewed.

### 3.2.8.3 For information

The St Helen's Centre made an excellent base to have as an information point for the Festival. It was particularly the spoken word which was the best way to convey messages, particularly as both of the Marine Festival Wardens tried to make sure they were in the Centre at certain times of the day. This was in part to oversee visitors using the Virtual Reality headsets (see below).

### 3.2.8.4 For experiences (using Virtual Reality headsets)

The Virtual Reality headsets the Festival was lent from Plastic Free North Devon proved very popular with visitors to the St Helen's Centre. For many, it was the first time they had worn such headgear. The short films that can be shown on the headsets allow for a 360° appreciation of whatever situation you're in. Just turn your head around 180° and you're able to see what's behind you.

We had use of a film which had been shot at Lundy, including a sequence of diving with seals under water. People's reactions were great to witness!



The Virtual Reality headsets provided a full, immersive experience of a dive with seals at Lundy, without getting wet at all!

### 3.2.8.5 For talks/presentations

The Friday evening talks took place in the St Helen's Centre, just requiring a little rearranging of chairs. The first talk by Keith Hiscock had the largest audience (well, the island was full of marine life enthusiasts at the time!) and so we made use of the pews as well as the chairs and faced the altar. For all subsequent talks, we made use of the large screen TV set (instead of a projector) to show the Powerpoint presentations and arranged the chairs in a semicircle closer to the entry/exit point.

### 3.2.8.6 For educational games (by Daisy & Tara)

Our two Festival Wardens came up with a great game of matching the description to the object. Several marine-related lifeforms (such as a shell or a cuttlebone) were set out on a table and the game was to match an obtuse description (something about the object) written on a card with each of the objects.

The hope had originally been to produce some more sophisticated games on a marine theme using touch-screens, but sadly these didn't come to fruition in time for the Festival (see also section 6.4).

### 3.2.8.7 As an art gallery

A circular table set out with chairs, sheets of paper and a variety of felt-tip pens was positioned in one corner of the Centre to allow for the free expression of artistic skills. The suggestion was: "Draw a picture of your favourite marine creature". The results were stuck up on the cupboard doors.



The St Helen's Centre artwall. For something that started out as a means of children being able to display their art works, by the end of the Festival the 'gallery' covered the whole width of the cupboards at the northern end of the nave. Exhibitors were asked to write their name and age on their picture – I think the oldest we had was 47! [Photo: Zach Wait]

One of the Lundy staff, Jane Sharkey, besides her duties in the Tavern, also makes baskets out of discarded fishing ropes washed up on the strandline. A selection of her wares were on display in the Centre during the Festival, highlighting the problem of plastic pollution in our seas and how to recycle such waste into functional artworks.



A selection of Jane Sharkey's baskets [photo: Robert Irving]

### 3.3 Citizen Science Projects

One of the main challenges facing the Festival from the outset was how to get people involved and allow them to do something worthwhile? We were keen to involve visitors to the island in some way or other, but how best to do this? Many of them were likely to be first time visitors and an even higher proportion would be people who had little concept of what creatures and plants could be found on the shore or under water. The website was to prove vital for introducing the concept of participation across.

To make it possible to obtain useful data, volunteers need to know what is expected of them, to be clear about the task they have chosen to participate in and how to go about it. Data have to be recorded in a standardised way and participants need to understand how those data should be submitted and what their purpose is.

It was hoped visitors to the island would visit the Festival website before embarking on the *Oldenburg* on their journey over to the island. The website included a ‘fun’ means of getting would-be participants to self-assess themselves with regard to their abilities in recognising and recording marine species. The self-assigning process went as follows.

Firstly, you needed to decide if you were a Diver or a Non-Diver. For those who classed themselves as Non-Divers, they were asked to assign themselves to one of the following categories:



Beginner



Intermediate



Confident



Experienced



Data Geek

For those who classed themselves as ‘divers’<sup>2</sup>, they were asked to assign themselves to one of the following categories:



Newcomer



Observer



Surveyor



Experienced



Wreck Enthusiast

Clicking on the image of choice (and thanks once again go to Bob Foster-Smith for the delightful vignettes) would show which projects would be available to someone of that level of competency. Note that in the tables below, persons self-assigning to the more experienced categories could also take part in the projects from the lesser experienced categories.

<sup>2</sup> ‘Divers’ had to be appropriately qualified to be able to participate in any underwater recording activity - see Appendix 1 for the required minimum diving qualifications.

Projects for NON-DIVERS (by competence level)

Increasing ability ↓	Category	Definition	Appropriate Projects (see sections 3.2.2 to 3.2.4)
	Beginner	<i>"I don't know much about marine life but I'm keen to help in some way"</i>	Checking water clarity using a Secchi disc; Collecting litter from remote shores (with access from sea or land); Sampling plankton from surface waters; Grey seals: numbers, locations and ID photos; Cliff-top spotting of megafauna
	Intermediate	<i>"I am able to recognise a few species and am keen to improve my ID skills"</i>	Monitoring of rockpool communities; Intertidal bioblitz: recording all seaweeds and animals on the shore
	Confident	<i>I am reasonably confident about identifying marine life but may need help with some species"</i>	Distribution of rocky shore communities Identification of rockpool communities
	Experienced	<i>I am a reasonably experienced marine biologist and am confident with my ID skills"</i>	Help with identifying specimens
	Data Geek	<i>I'm not very good at identifying things but I'm happy to enter data onto spreadsheets"</i>	Data input into a computer

Projects for DIVERS (by competence level)

Increasing ability ↓	Category	Definition	Appropriate Projects (see section 3.2.5)
	Newcomer	<i>"I am relatively new to diving (in this country) and my ID skills are limited"</i>	Collecting kelp holdfasts; Collecting kelp stipes; Spiny lobsters: abundance and distribution; Subtidal bioblitz
	Observer	<i>"I am at Seasearch Observer level and am keen to learn more"</i>	Mantis shrimps: abundance and distribution; Viewpoint photography of <i>Iona II</i> protected wreck; Photographic recording of named shipwrecks; Scallops: abundance and size; Deepest depths of types of algae; Pink sea fans: number, size and overall health
	Surveyor	<i>"I am at Seasearch Surveyor level and mostly know what I am looking at"</i>	Sunset cup corals: counts of individuals; Sunset cup corals: searches for new locations; Searches for subtidal caves; Assessing populations of near-shore fishes; Measuring the density of charismatic species; Ratio of kelp species: <i>Laminaria hyperborea</i> and <i>Laminaria ochroleuca</i>
	Experienced	<i>"I am an experienced marine surveyor and am confident with my ID skills"</i>	All above projects
Wreck enthusiast	<i>"I am particularly interested in diving on some of the island's wreck sites"</i>	Viewpoint photography of <i>Iona II</i> protected wreck; Photographic recording of named shipwrecks.	

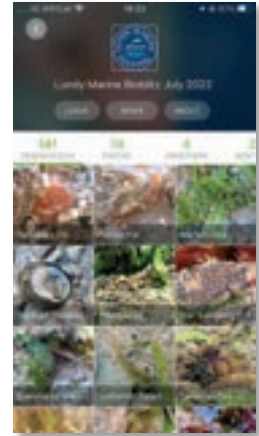
### 3.3.1 The use of the iNaturalist app

Trying to get people who knew very little about the life found on the seashore involved in the Bioblitz was always going to be a challenge. Thanks to Summer Grundy, the Marine Biological Association's Data Manager, they were able to make use of an app on their phones to take photographs of what they saw and have it identified by others... out there in the ether.

Once a photo is uploaded via the app (which people were able to do back at the St Helen's Centre), it is then seen by a myriad of experts who, if they think they know what the photograph is showing, will respond with their identification of it.

Summer kindly designed a bespoke title screen for the Festival which, as can be seen in the image on the right, showed the Festival logo.

Full instructions for what to do appear on the opening pages on the app (and are also shown in Appendix 6 of this report).



The opening screen on the mobile iNaturalist app.

### 3.3.2 Projects from the cliff-tops

#### 3.3.2.1 Recording of cetacea and other megafauna

Chris and Sharron Blackmore, regional co-ordinators for the Sea Watch Foundation, led on the cliff-top recording of species of megafauna. Possible expected species to be encountered were common dolphins, bottle-nosed dolphins, harbour porpoises, basking sharks and sunfishes.

Chris and Sharron have been coming over to Lundy and recording cetaceans on behalf of the Sea Watch Foundation since the early 2000s. They were happy to be part of the Festival and welcomed anyone willing to spend an hour or two with binoculars poised.

They set up a viewing position at Castle Parade, an area of flat ground just to the south-east of the Castle, which affords a view up the east coast, around the SE point and along the south coast to the SW point.

See section 4.3 (p. 58) for the results of these cetacean watches.



Looking out for cetaceans at Castle Parade [photo: Robert Irving]

#### 3.3.2.2 Seal photography for ID project

The patterning on the coat of a grey seal (its pelage), particularly around its head and neck, is unique to each individual seal and can therefore be used to identify individuals. A project to photograph adult grey seals for this purpose was started in 1995 at Lundy and has since been adopted as a means of helping to monitor the population at Lundy.

Photographs are regularly taken by the Warden and members of the Conservation Team, so appropriate submissions from this project will contribute to their work. Photographs are shared with the Cornwall Seal Group Research Trust, who have been able to track the wanderings of a number of individuals around the south-west peninsula, as well as further afield, utilising this method of identification.



Grey seal *Halichoerus grypus* [photo: Rick Morris]

### 3.3.3 Projects on the shore

It was hoped to obtain data from two other intertidal projects not listed below (though they were described on the Festival website). These included: the monitoring of rockpool communities; and the distribution of rocky shore communities. Both projects required input from experienced marine

biologists and, though there were several on hand during the first week of the Festival when the Bioblitz had the highest priority, there was no time to tackle these other two projects.

Those projects that were undertaken are listed below:

### 3.3.3.1 Intertidal bioblitz

As explained more fully elsewhere in this report (section 3.2.1, p. 25), the aim of the intertidal Bioblitz was to record as many species as possible from Lundy's shores. Various groups were asked to assist with this: the Porcupine Marine Natural History Society, North Devon Coastwise, Marine Biological Association, Lundy Field Society and, of course, individual visitors.

The recording of species was done using notebooks or on writing slates, with data later transferred onto collective lists or spreadsheets back at the St Helen's Centre. Additional information (such as zone on shore, habitat, abundance etc.) was also requested.

The results of the Bioblitz recording are given in section 4.4 (p. 59).



Searching for life on the rocks [photo: Keith Hiscock]

### 3.3.3.2 Searches for non-native species

'Non-native' species used to be known as 'alien' species, but that smacked too much of science fiction. The term encompasses species which one would not expect to find in the British Isles because they are native to another region on the planet.

All shores and shallow waters around our coasts have started to become colonised to these species and Lundy is no exception. They may arrive as adults by means of a 'carrier vessel' of some sort (the hull of a yacht or within the ballast water of a cargo vessel); or as larval forms drifting in the plankton. The hope is that they do not settle and proliferate to such an extent that they have a deleterious effect on native species. An example of a non-native seaweed species at Lundy is wireweed *Sargassum muticum* which first appeared in 1999. The red-ripple bryozoan has only turned up in the past couple of years. The results of these searches are given in section 4.5.1 (p. 64).



Red-ripple bryozoan *Watersipora subatra* [photo: Keith Hiscock]

### 3.3.3.3 Recording anemones within a small cave at Rat Island

The cave is situated on the NW side of Rat Island and is a longish, narrow, overhanging cave. A monitoring site for anemones in the cave was established in 1984 and stainless steel screws inserted to mark the ends of a transect line. The screws were re-located and the line tied in 2022. A camera set-up that mimicked the old Nikonos close-up supplementary lens with framer was used to take sequential images along the line. The quadrats were very slightly smaller than in 1983-1991 and there were 24 quadrat images rather than the 22 in 1991.

The results of this project are given in section 4.5.2 (p. 64)



Intertidal cave at Rat Island [photo: Keith Hiscock]

### 3.3.3.4 Monitoring the cover of *Bifurcaria bifurcata* in a rockpool

The brown tuning-fork weed *Bifurcaria bifurcata* is a brown seaweed that is distributed around SW England, SW and N Wales and the W coast of Ireland. It dominates a shallow rockpool close to Mermaid's Pool to the SW of the South Light. The extent of its cover was first assessed in 1984. Variations in the degree of cover may be influenced by metrological conditions, possibly linked to climate change.

The results of this project are given in section 4.5.3 (p. 65).



The shallow rockpool close to Mermaid's Pool [photo: Jon Moore]

## 3.3.4 Projects on the sea

### 3.3.4.1 Plankton sampling & water clarity measurements

The intention of this project was to collect plankton samples once or twice a week throughout the Festival, with the chance of looking at the caught organisms later under a microscope in the St Helen's Centre. On the same boat trip, recorders would assess the sea surface visibility by lowering a secchi disc into the water and measuring at which depth it disappeared from view.

[Sadly, these projects were not attempted due to logistical problems.]



Rat Island gully [photo: Robert Irving]

### 3.3.4.2 Collecting litter from remote shores

Occasional plastic items, typically items related to fishing activities such as buoys, nets and fish boxes, are washed up and become stuck in inaccessible parts of Lundy's coastline. The intention of this project was to collect these items (if possible) and convey them to a collection point close to the Beach Building where they would eventually be taken off the island for recycling. The project would rely on flat calm seas to allow access to these sites from the sea.

[Sadly, this project was not attempted due to logistical problems.]



Litter on the Landing beach after a visit of the MV *Balmoral* [photo: Keith Hiscock]

## 3.3.5 Projects under the sea

### 3.3.5.1 Algal Depths

The aim of this project was to provide an indication of the overall water clarity (or turbidity) of the waters around the island. Water clarity is one of the physical attributes of the Special Area of Conservation which is measured as part of the SAC's condition assessment. As we all know, water clarity can vary considerably from season to season, day to day or even from hour to hour. It can alter as a result of stormy weather, or as a result of an inflow of 'murky' water, or from run-off from land after a heavy rainfall event. Over long periods of time however (meaning years or even tens of years), the fluctuations should even out with an overall trend becoming apparent.

Divers are asked to note the depths of the deepest algae they come across, particularly when descending into deeper water (or ascending from deeper water into shallower) following a drop-off or a steeply sloping rocky seabed. The particular types of algae we are interested in are: (1) **the deepest individual kelp plant** (*Laminaria* spp.) - this will define the deepest extent of the "kelp park"; (2) **the deepest individual 'bushy' (or foliose) brown alga**; and (3) **the deepest individual red alga** - this defines the shallowest extent of the lower circalittoral zone, where marine life is restricted to animal species only. (See results on p. 65).



The depth of the small red seaweed to the left of the gauge is shown as being 29.1 m below sea level [photo: Keith Hiscock]

### 3.3.5.2 Charismatic species assessment

The aim of this project is to assess the numbers (& hence densities, if areas can be quantified) of (1) the sea urchin *Echinus esculentus*, (2) the potato crisps bryozoan *Pentapora foliacea*, and (3) branching sponges belonging to the family Axinellidae.

The sea urchin *Echinus esculentus* is an omnivorous grazer, feeding on algae, hydroid-bryozoan turf, barnacles and other encrusting invertebrates. Its numbers at Lundy appear to be kept in check by its predators - likely to be grey seals and large fishes. This balance is important: should their number significantly increase, the amount of kelp (one of their main food plants) is likely to decrease, which could have a negative impact on a number of important biotopes. This study will be the first of its kind at Lundy and will provide a useful baseline.

The potato crisps bryozoan *Pentapora foliacea* is a very delicate though fast-growing species which grows as distinct rose-like orangey-brown mounds in the rocky sublittoral. It is one species whose numbers would be impacted should the level of potting within the MNR rise significantly.

Lundy has a rich sponge fauna, with over 35 species recorded from within the MPA (Hiscock *et al.* 1983). Many of the erect forms are known to be slow growing, long lived and liable to breakage from physical disturbance. Most axinellid species are yellowish in colour and several are branched. One of Lundy's most characteristic is *Axinella dissimilis*.

A team of two diver-pairs will be required to attempt any counts of these species, having the ability to lay out a large (10 m x 10 m), rope quadrat.

[Sadly, this project was not attempted due to insufficient interest.]



Potato crisps bryozoan *Pentapora foliacea* [photo: Paul Kay]



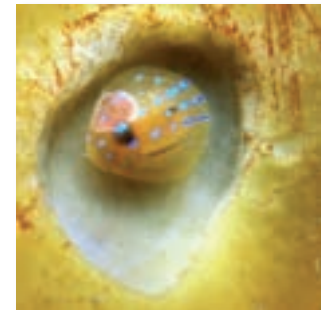
*Axinella dissimilis* sponge. [Photo: Dan Bolt]

### 3.3.5.3 Kelp holdfasts and stipes

The aim of this project is to assess the fauna associated with the holdfasts of the kelp *Laminaria hyperborea* (from both exposed west coast and sheltered east coast sites) and to compare these records with those collected in the early 1950s by Prof. L.A. Harvey. A similar exercise will determine the diversity of epiphytic algae attached to the stipes.

Just one pair of divers is required for this project. Equipment needed includes 3 large polythene bags, cable ties and a flexible-bladed knife (such as a breadknife). The slippery blade of the kelp should be pushed into one of the bags and then cut off and the bag closed with a cable tie. The same technique should then be used to sample the stipe (with its attached algae); and finally the holdfast should be sliced off the rock surface and bagged in a similar way.

[Sadly, this project was not attempted due to insufficient interest.]



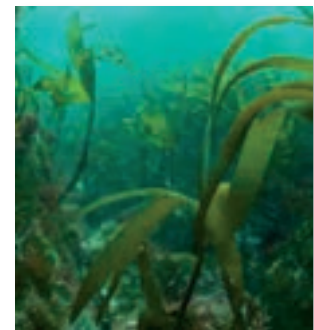
Blue-rayed limpet, chomping its way through the blade of a kelp plant.

### 3.3.5.4 Kelp species comparison

In 2004, as part of the first SAC monitoring programme to take place, a comparison was made between the abundance of *Laminaria hyperborea* kelp plants (a northern species) and *Laminaria ochroleuca* kelp plants (a southern species). The former supports a variety of other seaweed species as epiphytes, but the latter does not. Since then, *L. ochroleuca* appears to be increasing in abundance, perhaps a sign of gradually warming seas.

This projects requires a pair of divers to count the number of individuals of these two types of kelp *in situ*, at two shallow sites off Rat Island and in Gannets' Bay. A 1 m<sup>2</sup> 3-sided quadrat will be used for this purpose.

[Sadly, this project was not attempted due to insufficient interest.]



Kelp *Laminaria hyperborea* [photo: Keith Hiscock]

### 3.3.5.5 Sunset cup coral searches

Lundy is one of the few places in south-west England where the rare sunset cup coral can be seen. It is a species whose distribution is centred in the western Mediterranean, with Lundy marking the northernmost extent of its range. Whilst the main populations of these eye-catching cup corals have been found at the Knoll Pins, there have been smaller numbers found in the past at other sites (including Gannets' Rock Pinnacle, Brazen Ward and Anchor Pinnacle).

This project encouraged divers to search new areas for any evidence of sunset cup corals. The corals are known to occur within the 15 – 40 m (BCD) depth band and are most likely to occur off the island's NE coast.

Note that the populations at the Knoll Pins are being re-photographed this summer as part of a long-term monitoring project (see section 4.6.2 on p. 66).



Sunset cup coral *Leptopsammia pruvoti* at the Knoll Pins [photo: Steve Barnard]

### 3.3.5.6 Mantis shrimp searches

The aim of this project is to confirm the continuing presence of the mantis shrimp *Rissoides desmaresti* within the MPA. This imposing shrimp was first recorded at Lundy when grab samples were taken off the east coast in 2012. It is a burrowing species about 10cm long which lives in an elongated U-shaped burrow (two openings, one wider than the other) in sandy, gravelly mud, from the lower shore down to 50 m depth. As many as 1 burrow/m<sup>2</sup> may be found in dense populations. Mantis shrimps have only been found in a few locations in south and west Britain where suitable soft sediment habitats are present.

No special diving skills are required. However, an underwater camera, to photograph burrow entrances/exits and possibly the mantis shrimps within them, would be a bonus. Should any such burrows be recorded, accurate GPS positions of the dive site should be obtained from the dive boat skipper.

[Sadly, this project was not attempted due to insufficient interest.]



Mantis shrimp *Rissoides desmaresti* [photo: Rohan Holt]

### 3.3.5.7 Nearshore recording of fishes

Very little recording of nearshore fishes has taken place within the MPA. 67 species have been recorded from the "Lundy area", but this area has never been defined – it certainly extends way beyond the MPA. We are hoping to get divers to record the variety of fish species within the MPA by filming them using GoPro cameras.

[Sadly, this project was not attempted due to insufficient interest. However, a similar project was carried out using BRUVS (Baited Remote Underwater Video System), further details of which can be found in section 3.4.2 (p. 43) and section 4.8 (p. 69)].



Leopard-spotted goby *Thorogobius ephippiatus* [photo: Paul Kay]

### 3.3.5.8 Condition of pink sea fans

Pink sea fans only occur in the SW of the British Isles and they are protected under national legislation. Whilst those which are found off the S. Devon coast, those at Lundy have suffered from poor health over the past 20+ years. It is not known why this should be.

Divers are being asked to measure the heights and widths of any pink sea fans they encounter, and to assess the condition they are in by awarding them a score between 1 & 5. It will also be important to photograph individual sea fans. Results of this project are included in section 4.6.3 (p. 66).



Pink sea fan *Eunicella verrucosa* [photo: Mike Deaton]

### 3.3.5.9 Red band fish project

When red band fish were first found off the east coast of Lundy in the early 1970s, their population was estimated to number about 14,000. The fish had not been studied by fish biologists before, so finding them in relatively shallow water was a bonus. They live in vertical burrows excavated in muddy gravel. However, when they were searched for again in the mid-1980s, not one could be found!

They have since returned but in very small numbers. We'd like to find out how many are now here. [Sadly, this project was not attempted due to insufficient interest].



Red band fish *Cepola macrophthalmia*  
[photo: Robert Irving]

### 3.3.5.10 Measuring the abundance and density of scallops

The plan here is to compare the abundance, density and size of king scallops *Pecten maximus* from sites both inside and outside of the No Take Zone, as part of a project looking at the effectiveness of the NTZ. Whilst being a straightforward aim, the task itself requires understanding, good diving control and the ability to use various pieces of equipment under water. Full training will be given on the dive boat before entering the water, so participants will know what they are being expected to do.

[Sadly, this project was only attempted by a few divers, an insufficient number to produce meaningful results – see 4.6.4 (p. 66)].



Divers undertaking a scallop survey  
[illustration: Robert Irving]

### 3.3.5.11 Shipwreck monitoring project

Lundy has a fair number of ships that have come to grief around the island, standing as it does in the middle of the outer Bristol Channel. Local divers are familiar with many of these shipwrecks and regularly dive on their favourites.

We are keen to start a photographic monitoring project of all of Lundy's identifiable wrecks so that, over time, their condition can be monitored as they gradually decay.

[Sadly, this project was not attempted due to insufficient interest].



Diver inspecting a shipwreck [photo:  
Mike Deaton]

### 3.3.5.12 Spiny lobster searches

The spiny lobster *Palinurus elephas* was, surprisingly, the only species at Lundy to have been identified as a 'feature' of the Marine Conservation Zone (MCZ) when it was designated in 2010. The number of spiny lobsters throughout the south-west were worryingly low during the 1980s and 1990s, but they now seem to be making a comeback.

We'd like to know how they are now doing at Lundy.

[Sadly, this project was not attempted due to insufficient interest].



Spiny lobster *Palinurus elephas* [photo:  
Maggs Ashton]

### 3.3.5.13 Searches for subtidal caves

There are known to be very few subtidal caves at Lundy, even though there are over 40 intertidal ones known from all around the coastline. Some of the known subtidal ones are found in deep water (30+ m depth) around the north-east coast.

The location of any caves which have not been recorded before would be of use, particularly with accurate depth and GPS positions.



Shallow cave [photo: Keith Hiscock]



### 3.4 Sponsored Projects

A number of projects were sponsored by organisations with a particular interest in the Lundy MPA.

#### 3.4.1 Assessing the effectiveness of the No Take Zone (Blue Marine Foundation)

Lundy's No Take Zone was established in 2003 by the Devon Sea Fisheries Committee (which following the Marine and Coastal Access Act 2009) became the Devon and Severn Inshore Fisheries and Conservation Authority (IFCA). It was the first such No Take Zone (NTZ) to be established in the country, albeit only covering 3.3 km<sup>2</sup> of sea bed and the water above. Due to its novelty, English Nature (which in 2006 became Natural England) were keen to see what would be the effects on the marine life it contained.

A comprehensive, four year (2004-2007) monitoring programme was devised and set in place which not only obtained data on the condition of species within the NTZ but made comparative studies of sampled areas elsewhere (4 areas around Lundy outside the NTZ; one area off the N. Devon coast and one area off the Pembrokeshire coast) which acted as reference or control areas. The monitoring programme looked at populations of commercially important species (common lobster *Homarus gammarus*, edible crab *Cancer pagurus*, spiny spider crab *Maia brachydactylus*, velvet swimming crab *Necora puber* and great scallop *Pecten maximus*) and 16 species of nature conservation importance (including pink sea fan *Eunicella verrucosa*, erect sponges, potato crisps bryozoan *Pentapora foliacea*, soft corals and certain anemones).

It was the species which were actively fished for using pots which were of greatest interest however as, if these species were shown to multiply in such an area with the possibility of spill-over effects, it would add to the argument of establishing similar exclusion areas elsewhere in the country.

As part of the Festival, it was decided to repeat the monitoring of the commercially important crustaceans (albeit on a smaller scale) to see what might have changed in the intervening 15 years since the cessation of the original monitoring programme. Sponsorship of the project was kindly provided by the Blue Marine Foundation. 50 brand new pots were purchased and a potting boat was booked to complete four separate two-day visits to the island to set the pots both inside and outside the NTZ. It so happened that the Biosphere Reserve had asked the University of Plymouth to undertake an identical study, so we were happy to provide them with use of our pots and of our potting boat. Their study took place between mid-May and early June and the Festival study took place between late June and late August. It was agreed between the two parties that the same methodology would be adopted and that the data acquired would be shared.

The results of the Festival potting study are given in section 4.7 (p. 67) and the summary of the subsequent report submitted to the Blue Marine Foundation in Appendix 10.

#### 3.4.2 Recording fish life within the MPA (Blue Marine Foundation)

Very little study has been done of the fish life within the MPA. The Co-ordinator knew of a list of the fish fauna from the "Lundy area" which had been published in the *Annual Report of the Lundy Field Society* in 1977. Whilst this list of species included those from within the then voluntary marine nature reserve boundary, it also included those caught some distance away of the island, often brought to the surface in commercial trawls or by sea anglers.

This project was based on recording nearshore fishes using BRUVS (Baited Remote Underwater Video Systems). BRUVS consist of a robust frame with video cameras able to record whatever comes to inspect the bait which is held within a mesh container. Such a frame is lowered to the seabed and left

for a set period of time (usually 60 minutes). The recorded video is then analysed later. The results of this study are included on section 4.8 (p. 69) and the summary of the subsequent report submitted to the Blue Marine Foundation in Appendix 11.

It had been hoped to obtain records of nearshore fish species around the island using volunteer divers (see section 3.3.5.7, p. 41) but sadly there were no volunteers to undertake this project.

### 3.4.3 Hosting Protected Wreck Days (Historic England)

Within Lundy's Marine Protected Area there is not only a wide diversity of marine life but there are quite a few shipwrecks too. Three of these in particular have been recognised as being of national importance, with two of them (*SS Iona II* and the Gull Rock site) being designated as Protected Wreck sites in 1990 and the remaining one (*HMS Montagu*) being designated a Scheduled Monument in 2019. All three of these sites are overseen by Historic England (HE). A licence is required to dive on a Protected Wreck but it is not required to dive on a Scheduled Monument.

The Nautical Archaeology Society run a number of Protected Wreck Days on certain wrecks off the south coast of England and their Education Manager, Peta Knott, agreed to organise four such days during the Festival. The plan was for participants on each of the four days to dive on the *Iona II* (which lies at about 22 m depth off the island's east coast) and *HMS Montagu* (which lies in 12-15 m depth just north of the SW Point). Each day would also include a lecture on the history of each of the ships and the layout of each wreck on the seabed. If divers possessed underwater cameras, they were encouraged to take viewpoint photos from identified positions on the *Iona II*.

The outcomes of these Protected Wreck Days are set out in section 4.2 (p. 57) and a summary of the subsequent report to Historic England in Appendix 11.



The divers who took part in the Protected Wreck Days were either already members of the NAS or paid for a year's membership in their participation fee.



Information about the *Iona II* protected wreck was reprinted and a new leaflet about the wreck of *HMS Montagu* produced.

### 3.4.4 Producing 3-D digital models of two Protected Wreck Sites (Historic England)

As well as the covering the cost of running the Protected Wreck Days, the grant from Historic England also covered the costs associated with undertaking a photogrammetry survey of the *Iona II* wreck and also of the artefacts scattered on the seabed at the Gull Rock site.

Photogrammetry is a technique whereby a large number of overlapping photographs are taken of an object from positions all around that object, above and below it. The object might be relatively small

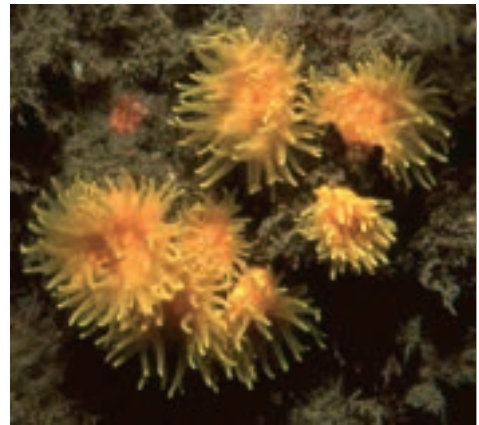
(as is the case for the Gull Rock site where the object in question was a canon) or it might be quite large (which was the case for the whole of the *Iona II* wreck which is 72 m from bow to stern). We were fortunate that Tim Clements from the Vobster Quay Dive Centre (a very experienced technical diver and underwater photographer) had volunteered to do these tasks and that his colleague Simon Brown (one of the country's leading technical photographers) was willing to process the resulting images and to produce a digital 3-D model of each as an end product.

The results of their studies are set out in section 4.1 (on p. 55) and a summary of the subsequent report that was submitted to Historic England in Appendix 11.

#### 3.4.5 Re-photographing the populations of sunset cup corals at the Knoll Pins (Natural England)

The eye-catching sunset cup coral *Leptopsammia pruvoti* is only found at a handful of sites around the coast of SW England. These sites represent the northern outposts of its distribution, which is centred in the western Mediterranean, with the small populations which occur at Lundy being at the northernmost extreme of its range. It was first discovered at Lundy by Keith Hiscock in 1969 who then spent a year trying to find out what species it was!

The populations at Lundy have been re-photographed since the mid-1980s as part of a long-term monitoring study. In 2022, Natural England commissioned Robert Irving and Keith Hiscock to assess the current status of the populations at the Knoll Pins. See section 4.9 (p. 70) and Appendix 13 for the results of this study.



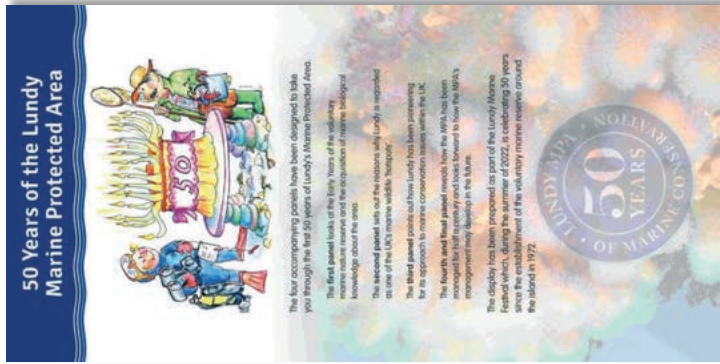
A cluster of sunset cup corals, photographed on the Knoll Pins in 1997 [photo: Paul Kay]

#### 3.4.6 Producing 5 display panels about the first 50 years of the Lundy MPA (Natural England)

The story of the first 50 years of Lundy's Marine Nature Reserve (as it was originally termed) needed to be told in a way that was concise and comprehensible, particularly to those who may not know what a crustacean is, or being able to distinguish a crab from a squat lobster. The display panels are presented overleaf.



The five new interpretation panels, especially commissioned for the Festival, explain why Lundy's marine life needed protecting in the first place and how it has continues to be at the forefront of marine conservation initiatives in the UK.



Each 'roller banner' panel is 1 m wide by 2 m high. The text and photographs (by various photographers) were provided by Robert Irving. The design of each panel was by BMLD (S. Devon), with printing by XL Displays (Peterborough). Each banner could be rolled out from its protective canister and supported by a simple backing frame. This design allowed them to be easily moved from place to place. Funding of these display panels came from Natural England.

### 3.4.7 The 2022 Splash In! photographic competition

An underwater photographic competition was first held at Lundy in the late 1990s. It was open to anyone who could get to the island on a specified Saturday during the summer. Soon after, it was re-titled the Splash In! competition and sponsorship was obtained. This effectively provided the prizes which were entrants competed for. The competition has been held most years since it started, usually over a weekend in July or August, although the competition had not been held since 2019 due to the pandemic and the country's subsequent lockdown. The island's Warden, Rosie Ellis, kindly organised the 2022 Splash In! competition.



In the past, judging has been by the entrants themselves. Everyone gathered in the Tavern, images were projected onto a screen within each category and all had the opportunity to vote for their favourite images. In 2022, the competition lasted for the whole duration of the Festival, with entries being submitted on-line. Judging was then undertaken by two anonymous judges.

This year there were four 'open' categories and one category ('Lundy Blues') restricted to Lundy staff only. The winners of each category (set out below) were announced on the final day of the Marine Festival, Saturday 10<sup>th</sup> September 2022 and were featured on the Festival website thereafter.

**The overall winner** (as well as the winner of the 'Mega to macro' category) was Nick Blake's photo *Surface dive* (below).

#### Category: Mega to macro



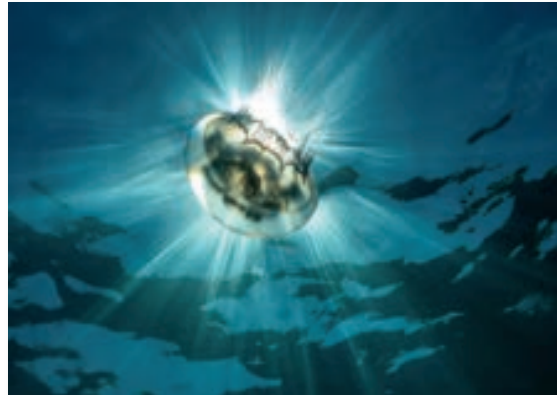
Winner: **Nick Blake** "Surface dive"

Category: Stars and special guests



Joint Winner: **Maggs Ashton**. “Spiny”

Category: Stars and special guests



Joint Winner: **Rob White** “Starburst jelly”

Category: Underwater communities



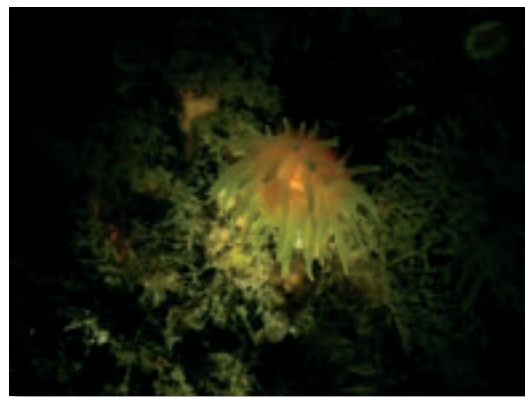
Winner: **Keith Hiscock**. “Jetty life”

Category: Abstract



Winner: **Martyn Guess**. “Compass jellyfish”

Category: Lundy Blues



Winner: **Tara McEvoy-Wilding** “Sunset cup coral”

Thanks to the two anonymous, though appropriately qualified, judges who waded through a large number of entries to come up with the winners in each category. The judges pointed out that the standard of the competition was very high, making their job of deciding which image should win each category particularly difficult. The winners of each category won one of the prizes donated by the competition sponsors and may well be seeing their photos in a forthcoming edition of Lundy’s beautiful annual calendar. Congratulations to the winners and many thanks to all who entered.

### 3.5 Momentoes

#### 3.5.1 Festival Warden's Blogs

Daisy Eagleton-Laing and Tara McEvoy-Wilding, our two volunteer Festival Wardens, were invited to write a weekly blog throughout the Festival, which was then published on the Festival website. Their blogs are included as Appendix 9 at the end of this report. These blogs managed to provide regular visitors to the website an indication of what was happening on the island (relating to the Marine Festival) on a weekly basis.

#### 3.5.2 Items on sale in the Shop

A number of items were produced specifically for sale in the island's Shop on behalf of the Festival. Sadly, not all items were on the shelves at the start of the Festival. Those which were there from Day 1 included: the *Guide to Lundy's Marine Wildlife* and the *Species Identification Guides*; copies of the book *Protecting Lundy's Marine Life*; and the marine life jigsaw postcards.

Special thanks to Steve Ottley, Andrew Bristow and Mark Commins at Brightsea Print Group.



Marine Festival items on sale in the Shop.



The five jigsaw postcards.

Profits were minimal on the sale of these items, with all income going towards covering the cost of their production. The Shop itself also took no selling commission. Particular thanks go to Sue Waterfield, Shop Manager, for overseeing the sale of these items.

*A Guide to Lundy's Marine Wildlife* – by Nicola Saunders and Sophie Wheatley, re-issue of a guide originally published in 2012.

*Lundy Underwater Species Identification Guide* – originally published in 2012

*Lundy Rockpool & Snorkelling Species Identification Guide* – originally published in 2012

*Protecting Lundy's marine life: 40 years of science and conservation*, by Keith Hiscock and Robert Irving, published in 2012.

*Iona II Dive Trail Introductory Booklet* – by Peta Knott, originally published in 2015

*Jigsaw Postcards* – five photos, cut into 24-piece jigsaws and sent through the post inside envelopes.

*What am I? A Marine Species ID Card Game* – a 52-card game with quiz questions on one side asking about the species shown as a photo on the other side.

## Lundy Marine Festival merchandise



### **A Guide to Lundy's Marine Wildlife**

A beautiful 55 page full colour booklet introducing the Lundy Marine Protected Area and its underwater life. Includes 10 dive site descriptions, a Zoning Scheme map & a tide-stream chart.

*A Guide to Lundy's Marine Wildlife*.....£6.00



### **Lundy Rockpool & Snorkelling Species ID Guide**

Packed with clear images of marine species you'd find on the shore and in the shallows, with notes to help identify them. Great for beginners. Ring-bound & splashproof.

*Lundy Rockpool & Snorkelling Species ID Guide*.....£4.00



### **Lundy Underwater Species ID Guide**

Features 126 images of both common and rare marine species you may encounter within the Marine Protected Area. A must for those starting out on marine species ID! Ring-bound & splashproof.

*Lundy Underwater Species ID Guide*.....£4.00



All three of the above Guides can be purchased together in a specially-designed boxed set, suitable to sit on a bookshelf – at 10% off the price if each Guide was purchased separately!

*Boxed set of 3 Lundy Marine Life Guides*.....£12.50



### **Jigsaw Postcards**

A unique way of sending a message! Each jigsaw comes with its own envelope and instructions: write your postcard, break it up, pop the pieces in the enclosed envelope and send it off!

5 images to choose from: pink sea fan; grey seal; sunset cup corals; cuckoo wrasse; red sea fingers. (16.5 cm x 12.0 cm)

Individual jigsaw postcards.....£4.00

Set of all five images.....£17.50



### **Iona II Dive Trail booklet**

A comprehensive, fully illustrated, 50 page ringbound guide to Lundy's most famous Protected Wreck – the *Iona II* paddlesteamer. Sunk off Lundy in 1864, she was on her way across the Atlantic to be used as a Confederate blockade runner. A must for shipwreck enthusiasts!

*Iona II* Dive Trail booklet.....£12.50



### **What Am I? card game**

A unique game, especially designed by a marine biologist. Consists of a pack of 52 photo-cards which together make for a fun quiz game about marine species, many of which are found in waters all around the British coast. Learn something new whilst playing a competitive game. Suitable for ages from 10+.

*What Am I? card game*.....£15.00/pack

### 3.5.3 Other items

#### 3.5.3.1 Letterbox stamps

If you are not familiar with 'letterboxing', it's a great way to explore an area that may be unfamiliar to you. It's really a form of treasure hunting and is suitable for adventurers of all ages. On Lundy, you need to start by purchasing a Letterbox Pack from the island's shop. This includes information about the game and also, most importantly, the clues which will help you find the 'stamps' within each cache. Caches are typically associated with places or items of interest and are scattered all over the island. [For further details about this activity, see the book *Lundy Letterboxes* by Alan Rowland, copies of which are available in the island's Shop].



Two new letterboxing stamps were produced for the Marine Festival, featuring the two Festival logos and tucked away in a secret location down by the shore.



The two, specially commissioned, letterbox stamps, an ink pad, test notebook and explanatory text, all kept safe within their box.



The cancellation stamp specially made for the Marine Festival, issued on the opening day of the Festival.

#### 3.5.3.2 Franking cancellation stamp

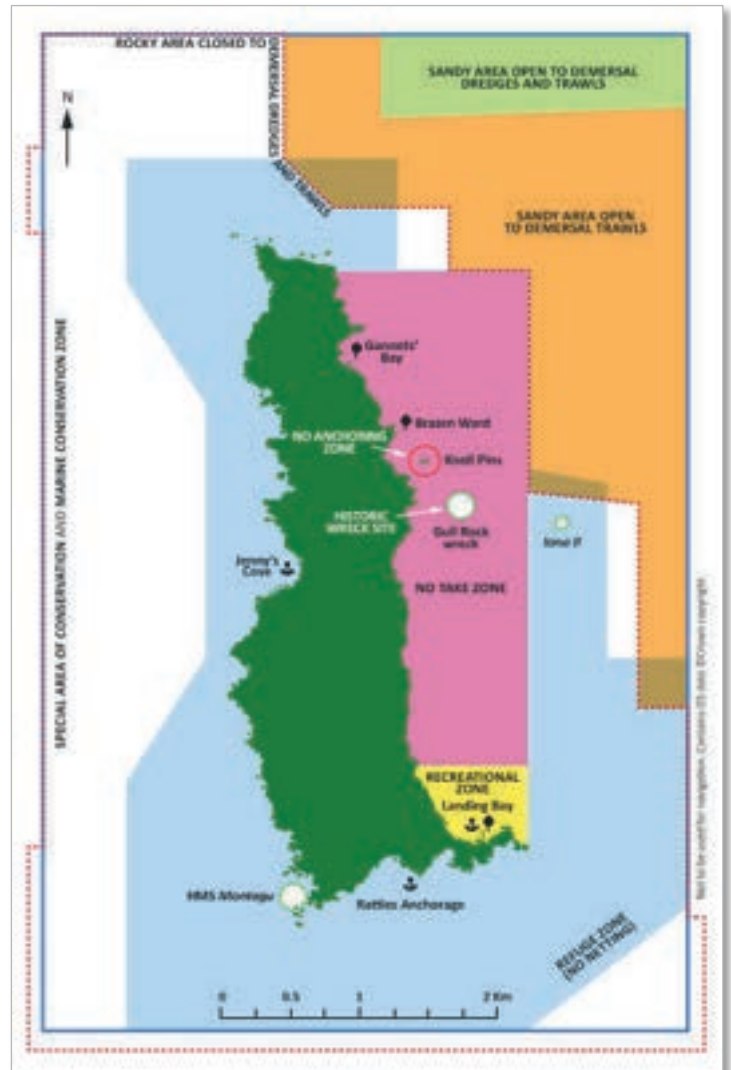
Lundy postage stamps were introduced in 1929 to cover the cost of getting mail from the island to the mainland. Letters and post cards posted on the island are 'cancelled' before leaving the island. A cancellation stamp was especially made for the Marine Festival and issued on the opening day of the Festival. The postage stamps shown here are one pair (of three) taken from a set issued in 2021 to mark the 75<sup>th</sup> anniversary of the Lundy Field Society.

### 3.5.3.3 A board game: 50 years of managing Lundy's MPA

This was devised by the Festival Co-ordinator as a means of informing those who play the game about the management of the MPA over the 50 years of its existence. A single boxed edition of the game, complete with instructions on how to play, was produced and left in the Tavern alongside other board games for anyone to play.

The board game could be described as a cross between Snakes and Ladders and Monopoly. For each turn, a player will move their piece around the squares marking the perimeter of the board. The squares are marked with one of the following five categories: Marine Nature Conservation, Marine Archaeology, Fisheries, MPA Management and 'Unforeseen Disaster'. A card is then read out relating to the category the player has just landed on, with the instruction of either moving forward or moving back to the next 'neutral square'.

The central section of the board displayed a map of the MPA, marked out with various zones according to the latest issue (2019) of the Zoning Scheme – see map.



The most recent edition of the MPA's Zoning Scheme published in 2019 and used as a centrepiece for the Managing Lundy's MPA board game.



The game being played in the Tavern during the Marine Bioblitz [photo: Sarah Bowen]

MPA Management	Marine Nature Conservation	Fisheries	Marine Archaeology	Unforeseen Disaster!	Neutral square

Above: the categories marking squares around the perimeter of the board. Below: five sample cards and, bottom right, the start/end corner of the actual board game.

**Fisheries**

2022 - Celebrating 50 years of the

Lundy Marine Protected Area

At the very start of the voluntary marine nature reserve in 1973, a "gentlemen's agreement" is reached between the conservationists and the Devon Sea Fisheries Committee that a triangular area between the Knoll Pins and Surf Point is 'off-limits' to any fishing gear towed over the seabed. In 2003, this area becomes a key area of the No Take Zone.

**Move forward to next neutral square.**

1973

**MPA Management**

2022 - Celebrating 50 years of the

Lundy Marine Protected Area

Following concerns raised at an MPA Advisory Group meeting that boats' anchors are damaging the seabed, Natural England fund the purchase of a novel design of a flexible ('Seaflex') mooring from Scandinavia. This lacks a heavy chain which scours the seabed, replacing it with an 'elastic' riser to which a buoy is attached.

**Move forward to next neutral square.**

2005

**Marine Nature Conservation**

2022 - Celebrating 50 years of the

Lundy Marine Protected Area

From 1984 until 1986, not one red band fish is seen in the area where they were once prolific, in the muddy gravel off the island's east coast. Where have they all gone? A small group of six burrows is then found in 1987, with at least two live fishes sighted. However, further surveys confirm there are far fewer than in the 1970s, when the population was estimated at 14,000 individuals!

**Move back to previous neutral square.**

1987

**Marine Archaeology**

2022 - Celebrating 50 years of the

Lundy Marine Protected Area

The Department of Transport designates the wreck of the *Iona II* (which sank in 1864, approximately 1 mile off Tibbett's Point) and the 'wreckage' off Gull Rock (dating from the 16th century and known as the 'Cannon site') as Protected Wrecks. Whilst supposedly conferring greater protection to these sites, the disclosure of their exact positions leads to the Gull Rock site being looted almost immediately!

**Move back to previous neutral square.**

1990

**Unforeseen Disaster!**

2022 - Celebrating 50 years of the

Lundy Marine Protected Area

A rather bizarre, potentially disastrous event took place during the middle of March 2003. The shoreline along the east side of the island became strewn with thousands of packs of Pampers Wet Wipes, which had been swept overboard from a passing cargo ship. Fortunately, this coincided with a National Trust working party staying on the island, who set to and cleared them all up!

**Stay put!**

2003





## 4. SCIENTIFIC RESULTS & OUTCOMES

### 4.1 Photogrammetry studies of Protected Wreck sites

Photogrammetry dives on the *Iona II* and the Gull Rock site were undertaken on 8<sup>th</sup> & 9<sup>th</sup> June and 7<sup>th</sup> July 2022, by Tim Clements (photographer), Greg Parker (buddy), Andy Boyes (buddy) and Rob Pound (buddy). The following descriptions have been submitted by Tim Clements.

#### 4.1.1 *Iona II* shipwreck

*Iona II* was dived three times over this two day period to obtain photographic data enabling the construction of a photogrammetric 3D model of the wreck. Zones surveyed were:

8<sup>th</sup> June: Dive 1: Forward boilers and transverse engine. 25m 25min and 24m 63min. [TC + GP].

8<sup>th</sup> June: Dive 2: Aft boilers, aft funnel, coal heap and outline of stern including stern post. 28m 63min. [TC + GP].

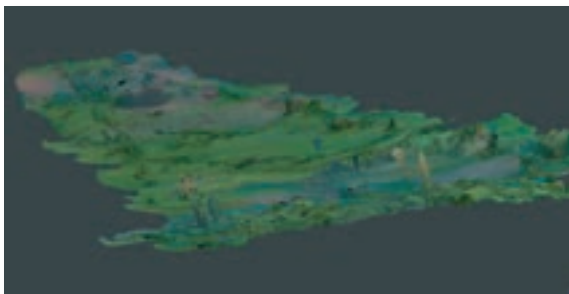
9<sup>th</sup> June: Dive 1: Forward deck from boilers to bow. 24m 53min [TC + AB].

6<sup>th</sup> July: Dive 1: Transverse engine and stern areas. 24m 66min. [TC + GP].

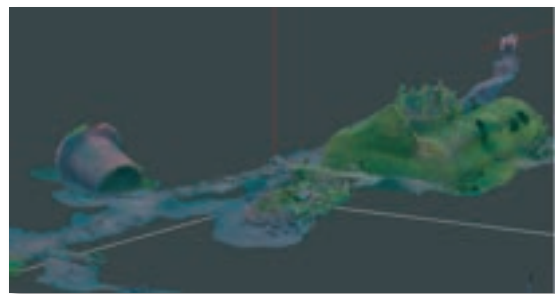
The first dive on 8<sup>th</sup> June was interrupted by the primary survey light flooding. This failure forced a reliance on backup dive lights which were smaller. The consequences of this for the survey were to limit the zone lit for each still image. Since photogrammetry requires up to 80% overlap between images, limiting the area surveyed by each image directly increase the swim path needed to complete the survey. This factor directly led to a lower final model quality, even though c15k images were processed for the whole model.

This lower quality is evident in three ways. Some of the flat areas of the model are slightly distorted, some areas of the wreck are not represented due to lack of coverage (the stern saloon area) and some areas are missing due to lack of overlap / image alignment by the software. The impact of these is that the final model is not scaleable and measurable, but it does still represent all major features of the wreck in a user navigable 3D model. These model deficits can be remedied with further surveys to plug gaps in data during 2023.

This model is output in two formats. One is a 3D fly-around video with features annotated for orientation and explanation. The second method is hosting of the 3D model online via the Sketchfab platform. This offers users the chance to navigate themselves around the model by zooming, sliding and rotating.



False-colour 3-D output of the bow section of the *Iona II*. Note that on a computer screen, this can be re-orientated to view from any angle. [Image: Tim Clements]



False-colour 3-D output of the *Iona II* aft boilers and funnel. Note that on a computer screen, this can be re-orientated to view from any angle. [Image: Tim Clements]

This model is accessible (copy and paste into browser) at:

<https://gbr01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fsketchfab.com%2F3d-models%2Ffiona-ii-shipwreck-f21a7819f3bc471d9b4821abf8beb8b3&data=05%7C01%7CRobert%40sea-scope.co.uk%7C54a5781526914026fab08db0ff3e5d9%7C1780908bcd8541b087485826a456d280%7C0%7C0%7C638121312429538338%7CUnknown%7CTWFpbGZsb3d8eyJWljojoiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTil6Ik1haWwiLCJXVCi6Mn0%3D%7C3000%7C%7C%7C&sdata=wScS1NpHHQE4Hrh4LjQ3xFd8dsRU1aNVE4wpY6MEtk%3D&reserved=0>

#### 4.1.2 Gull Rock site

9<sup>th</sup> June: Dive 2: 30m 58min [TC + AB]

7<sup>th</sup> July: Dive 1: 28m 48min. [TC + RP]

Following a briefing which involved studying a previous sketch of the site, the divers dropped up-slope of the anticipated site, with the intention of more accurate position marking. After a search to identify features, the cannon site was found in the last 5 mins of planned bottom time.

A 2 minute photogrammetry survey was made of the obvious gun-like object for later conversion into a 3D model. This rapid survey was thorough enough to create a scaleable model.



Screen grab of a short video demonstrating the 3-D image obtained from a canon at the Gull Rock site. The right-angled object is a special scale to allow measurements to be taken. [Image: Tim Clements]

#### 4.1.3 360° filming

While the photogrammetry project was being carried out on 8<sup>th</sup> June, another volunteer diver, Jon Slayer, offered to take some film with his 360° camera of the *Iona II* wreck and of the divers surveying her. His resulting film (7 minutes long) can be seen on Youtube.com here (copy and paste into browser):

<https://www.youtube.com/watch?v=XhHavtBGpcw>

Remember to move the cursor around the screen to get the 360° effect.



Jon Slayer

## 4.2 Protected Wreck Days

The four Protected Wreck Days took place on 19<sup>th</sup>-22<sup>nd</sup> August 2022. The following report has been contributed by Peta Knott who led these dives on behalf of the Nautical Archaeology Society.

The plan had been to undertake one dive on the *Iona II* (located approximately 1 km off the island's east coast in a depth of 22 m below chart datum), followed by a dive on the HMS *Montagu* (close to the island's SW Point at about 10 m depth below chart datum) on each of the four Protected Wreck Days. Unfortunately, south-west winds increased during these four consecutive days which meant that dives on the *Montagu* were not possible. Alternative second dives were arranged based on conditions, skipper recommendations and the divers' preferences. These included a dive on the wreck of the MV *Robert* (which lies close to the *Iona II* at a similar depth) or a dive with seals closer inshore.

Divers had half an hour to load their kit on the boat. During this time the Dive Supervisor checked their paperwork (dive waivers and covid statements) and got divers to do any last-minute Lateral Flow Tests. The crew gave a boat safety briefing before departure. During the 1hour 20min transit time to site it was usually too rough to do anything but look at the horizon. However, on the fourth day, the transit out was smooth enough to allow for the history and archaeology lecture on the *Iona II* to take place. On days two and three, the transit to site included briefly stopping off at Lundy to pick up the Dive Supervisor on the Saturday morning; and on Sunday, the two volunteer Festival Wardens joined as divers.

Once the boat was tied to the mooring of the MV *Robert*, the boat crew gave a briefing on exiting and entering the ship and also navigating to the *Iona II* site, so 30 m distant. The Dive Supervisor gave a brief history of the *Iona II* wreck using the underwater dive guide as reference. Each diver took one of these guides under water with them.

In between dives, the participants were given a half hour talk on the *Iona II* using the dive trail underwater guides and booklets to illustrate the history, wrecking, discovery and monitoring of the site. These were interactive sessions with numerous questions asked by the engaged divers. A shorter talk was also given about the HMS *Montagu* so that the divers still had an appreciation for the history and protection of the site even if they didn't get to visit it. This talk used the flyer that was created for this purpose. As the end of the surface interval approached, the boat crew gave their briefing about diving the next site and the diving supervisor also reminded the divers about what to look out for on the wreck dive or on the seal dive.

Those divers with cameras were asked to take viewpoint photographs from the positions marked on the illustration (right). 34 photographs were taken on 20<sup>th</sup> August together with 3 videos. The best have been added to the list entry on the National Heritage List for England via the *Enriching the List* project.

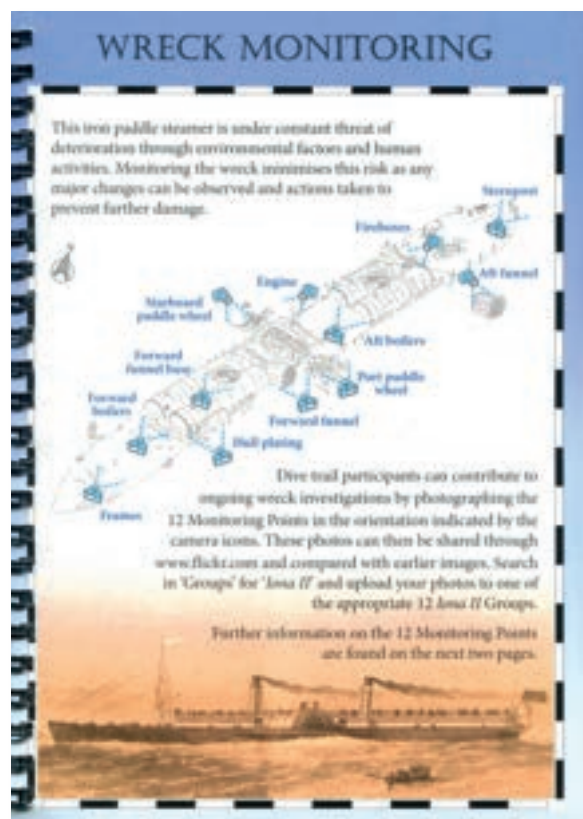


Illustration showing photographic viewpoint positions taken from the *Iona II* guide by Peta Knott/Wessex Archaeology

### 4.3 Cliff-top surveillance of cetacean species

Led by: Chris & Sharron Blackmore, Sea Watch Foundation

#### *Report by Chris Blackmore*

Most effort for this project happened between 9<sup>th</sup>-23<sup>rd</sup> July when Chris and Sharron were staying on Lundy. They were able to support the research of Jordan Williams (MSc study, University of Plymouth) who spent the whole of July on Lundy undertaking cetacean observations (see also section 4.10, p. 71).

The weather for this fortnight was, on the whole, hot and dry although there were occasional periods of drizzle. Only one sighting of a common dolphin was made from the island, although several were seen from those on board the *Oldenburg*, particularly on sailings when close to Ilfracombe. No sightings were made of bottlenose dolphins, though these are only occasionally seen at Lundy.

Seven effort-related watches were undertaken, five at Castle Parade and one each at the South-west Point, (where we recorded a sighting of a pod of 6 common dolphins plus 3 harbour porpoise) and The Battery. The total watch time across the fortnight amounted to 13 hours 40 minutes.

During the fortnight, there were 11 casual sightings made of cetaceans, nine of which were from Castle Parade, one from South-west Point and I believe for the first time, one from Earthquake. **18 harbour porpoise** sightings were recorded, comprising a total of 43 animals. There was just one sighting of **common dolphins** comprising a total of 6 animals.

In spite of the relatively few cetaceans recorded during the first few weeks of the Festival, over the course of the whole year there were records of common dolphin (often seen bow-riding the *Oldenburg*), minke whale, harbour porpoise and bottlenose dolphin. There was also the carcass of a Risso's dolphin which washed up in the Landing Bay during September, indicating this less common species may still venture into the Outer Bristol Channel.

During the Festival, an F-POD underwater remote acoustic recording device was fixed in place on the wreck of the MV *Robert* off the island's east coast by members of the local Appledore Sub-Aqua Club. The device is able to run continuously for at least two years before its batteries need changing. It forms the latest addition to a network of similar devices which have been deployed around England's south-west peninsula and it is hoped that this cover will now provide much more data about the movement of cetaceans within this area.



Harbour porpoises [photo: Rick Morris]



Common dolphins [photo: Rick Morris]



F-POD attached to the wreck of the MV *Robert* off Lundy's east coast [photo: Tara McEvoy-Wilding]. See also Blog entry in Appendix 8.

## 4.4 Outcomes of the Marine Bioblitz

Led by: Jon Moore and Cat Joniver

*Report by Jon Moore (joint leader of the Porcupine Marine Natural History Society (PMNHS) group).*

There were:

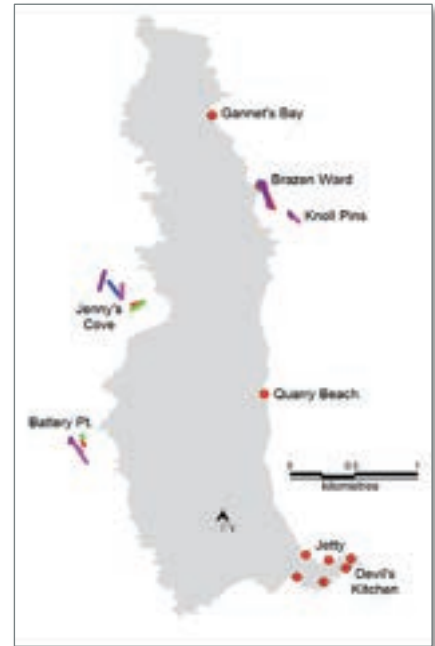
- 31 Marine Bioblitz participants during the six days from 14<sup>th</sup>-19<sup>th</sup> July (including 21 participants from PMNHS, five from DTOL, two from the MBA and three from Coastwise North Devon);
- 10 intertidal sites were visited (see red dots on map);
- Four dive sites were visited over two days (at Brazen Ward and the Knoll Pins; and at Battery Point and Jenny's Cove), with 20 dives undertaken by 10 pairs of divers (see coloured lines on map).

### 4.4.1 Recording of species (led by the PMNHS)

- **478 taxa<sup>3</sup>** were recorded in total (307 from shorelines, 214 from dives, 60 from both);
- 1239 records were collated (638 from shorelines, 601 from dives);
- A total of **160 taxa of algae** were recorded, **293 invertebrate taxa**, and **12 species of fishes**; or 478 taxa in all (including 8 marine lichens and 1 cyanobacterium/blue-green alga).
- and many 100s of photographs were taken!

A full list of all species recorded by PMNHS members during the Marine Bioblitz is included in Appendix 7 and has been published in the Society's *Bulletin* (Spring 2023 – no.18). All records will be entered onto the Marine Recorder database and they will then become available on the NBN Atlas (National Biodiversity Network Atlas – <https://nbnatlas.org>).

Unfortunately, no west coast intertidal sites were visited, largely due to topography and to access difficulties (by land or sea). Most time was spent in the island's south-east corner (particularly Devi's Kitchen and Rat Island), although forays were also made to Quarry Beach, Brazen Ward and Gannets' Bay. The geology of the south-east corner is of Devonian shale, softer than the granite found elsewhere and providing a multitude of surfaces, fissures, crevices, overhangs and fragmentation. The shore's south-east aspect provides some shelter but experiences sufficient wave action to provide a large range in exposure. Its lack of fine sediments, as elsewhere on Lundy, is one of the few constraints on habitat richness. I'm sure that we [the PMNHS team] did not come close to exhausting its potential for marine recording.



Intertidal sites (red dots) and dive locations (coloured lines) of PMNHS surveyors [map by Jon Moore]

<sup>3</sup> The term 'taxa' [singular: 'taxon'] is used when it has not been possible to identify a particular specimen to species level. The total records list includes records mostly identified to species level with a few to genus level.

### Intertidal sites

A total of 218 marine taxa were recorded from Devil's Kitchen and Rat Island combined. Some of my [JM's] personal highlights included the celtic sea slug *Onchidella celtica* on ridges in the middle of the shore, scarlet and gold star coral *Balanophyllia regia* in a shady hollow under a large low shore boulder, a small cryptic bryozoan *Filicrisia geniculata* tangled amongst kelp holdfasts and the tunnel through Rat Island, with its beautiful 'painted' pink encrusting coralline algae, bryozoan crusts (now including the non-native red-ripple bryozoan *Watersipora subatra*) and bright white barnacles *Chthamalus stellatus*.



Celtic sea slug *Onchidella celtica* on top of a limpet, Devil's Kitchen [photo: Jon Moore]

An expedition to 'thread the Needle's eye', through the tunnel from Devil's Kitchen to Three Cave Bay, onwards to Lametry Beach, then climb up to the Lighthouse, was rather more adventure than recording; but the large midshore rockpools (with dense *Bifurcaria bifurcata*) and the extensive gradually sloping low shore shale platform of Lametry did provide additional habitats and species.

The three sites we visited on the east coast (Quarry Beach, Brazen Ward and Gannet's Bay) are granite shores. Habitat diversity was therefore relatively limited: mainly comprising tops and sides of bedrock and boulders, plus (when we could lift them) under-boulder habitats. However, the lush lower shore algal communities were spectacular in their abundance and rich in species. A total of 171 taxa were recorded from these sites, of which 92 were algae. Under-boulder fauna was often limited by scour from coarse sediment, but a highlight was the numerous shore clingfish *Lepadogaster purpurea*.



Various algae dominated the low shore and sublittoral fringe at Quarry Bay [photo: Jon Moore]

Several species recorded during the Bioblitz are new records for Lundy. Keith Hiscock provided a consolidated list of records that had been compiled up to 2015 and this has been compared with the Bioblitz records. 76 additional species can now be added to that list. Many of those are polychaetes collected and identified by Teresa Darbyshire from cryptic habitats. The list also includes three recent non-natives and two species that have undergone recent taxonomic revisions that mean previous records were named for species that are only found outside the region.



The shore clingfish *Lepadogaster purpurea* [photo: Paul Brazier]

### Dive sites

Eleven of us participated in the diving, aboard dive boat *Barbara B* (skipper Ben Bengay, mate Sammy Davison). Figure 1 shows the locations of the four dive sites - the scattered dive tracks at each site was deliberate, as we attempted to cover a range of depths and habitats between the five pairs of divers. Many thanks to Isabelle Winder for taking GPS fixes, keeping the dive log and helping with specimens.

For most of us this was our first time diving Lundy and everyone had a target list of species they hoped to see. All four sites were predominantly bedrock but provided a wide range of habitats and depth zones. The Knoll Pins is the classic dive site that everyone wanted to go to, where the small population

of sunset cup coral *Leptopsammia pruvoti*, first discovered by Keith Hiscock in 1969, was a highlight. Other conspicuous, colourful and characterising features of Lundy included numerous pink sea fans *Eunicella verrucosa* (complete with occasional sea fan sea slugs *Duvaucelia odhneri* laying eggs), trumpet anemone *Aiptasia mutabilis* (nationally scarce, but locally common), red sea fingers *Alcyonium glomeratum*, yellow cluster anemone *Parazoanthus axinellae* and branching sponges (particularly *Axinella dissimilis*, *Homaxinella subdola*, *Raspailia ramosa* and *Stelligera montagui*). *Stelligera stuposa* were also frequent but appeared to be emaciated and abnormally coloured.



Sea fan sea slug *Duvaucelia odhneri*, beautifully camouflaged on a pink sea fan *Eunicella verrucosa* [photo: Jon Moore]

Table showing records for taxa recorded during the Marine Bioblitz (by taxonomic groups).

(DK = Devil's Kitchen; RI = Rat Island; 3CB = 3 Caves Bay; Lm = Lametry; QB = Quarry Bay; GB = Gannets' Bay)

	All	Intertidal			Subtidal	
		DK+RI	3CB+Lm	QB-GB	East	West
Calcarea (Porifera)	4	3	1	1		
Demospongiae (Porifera)	33	5	2	5	21	24
Stauromedusae (Cnidaria)	1	1				
Hydrozoa (Cnidaria)	17			2	14	10
Anthozoa (Cnidaria)	19	4	2	4	12	10
Polycladida (Platyhelminthes)	1				1	1
Nemertea	5					
Sipuncula (Annelida)	1					
Polychaeta (Annelida)	62	41	11	4	11	5
Thecostraca (Arthropoda)	8	4	2	5	2	2
Malacostraca (Arthropoda)	21	12	2	7	7	4
Hexapoda (Arthropoda)	1	1	1	1		
Polyplacophora (Mollusca)	1			1		
Gastropoda, excl. Nudibranchs	28	20	8	15	14	11
Nudibranchia (Mollusca)	14	2			10	7
Bivalvia (Mollusca)	5	3		2	2	1
Cheilostomatida (Bryozoa)	28	10	1	12	12	15
Ctenostomatida (Bryozoa)	3			3		
Cyclostomatida (Bryozoa)	7	3		3	5	3
Asteroidea (Echinodermata)	4	2		1	1	2
Ophiuroidea (Echinodermata)	5	2		1	3	1
Echinoidea (Echinodermata)	2	1		1	1	1
Holothuroidea (Echinodermata)	3				1	3
Ascidiacea (Chordata)	20	8		3	6	17
Actinopteri (Chordata)(fish)	12	2	2	2	5	7
Cyanobacteria (blue greens)	1	1				
Bangiophyceae (Rhodophyta)	3	2	1	1		
Florideophyceae (Rhodophyta)	96	50	31	56	32	29
Phaeophyceae (Ochrophyta)	37	24	15	21	12	6
Ulvophyceae (Chlorophyta)	24	12	13	12	1	1
Ascomycota (lichens)	8	5	4	6		
<b>Total</b>	<b>474</b>	<b>218</b>	<b>96</b>	<b>169</b>	<b>173</b>	<b>160</b>

4.4.2 DNA sampling of selected species (led by the Darwin Tree of Life marine project team)

*Summary of outcomes by Chris Fletcher, NHM*

DNA barcoding generally has a low success rate for marine organisms when compared to, say, insects. However, 20 of the species that were processed by the NHM produced good barcodes, most of which were new to the project. These will be sent to the Sanger institute for whole genome sequencing.



Trumpet anemones *Aiptasia mutabilis*  
[photo: Jon Moore]

Table listing the DTOL species processed by the Natural History Museum team from Lundy. [P]: photograph included on next page.

Order or Class	Family	Species	Common name
Poecilosclerida	Microcionidae	<i>Ophlitaspongia papilla</i>	bright red encrusting sponge
Leptothecata	Schizotrichidae	<i>Schizotricha frutescens</i>	feather hydroid
Actiniaria	Aiptasiidae	<i>Aiptasia mutabilis</i>	trumpet anemone
Scleractinia	Dendrophylliidae	<i>Balanophyllia regia</i>	scarlet and gold star cup coral
Spionida	Spionidae	<i>Malacoceros vulgaris</i>	spionid polychaete worm
Amphipoda	Ampithoidae	<i>Ampithoe rubricata</i>	amphipod
Amphipoda	Caprellidae	<i>Caprella acanthifera</i>	caprellid
Amphipoda	Caprellidae	<i>Phtisica marina</i>	caprellid
Isopoda	Idoteidae	<i>Idotea balthica</i>	Baltic isopod
Isopoda	Idoteidae	<i>Idotea granulosa</i>	granular isopod
Decapoda	Carcinidae	<i>Pirimela denticulata</i>	toothed crab
Gastropoda	Plakobranchidae	<i>Elysia viridis</i>	solar-powered sea slug
Nudibranchia	Calycidorididae	<i>Diaphorodoris luteocincta</i>	fried egg sea slug
Nudibranchia	Discodorididae	<i>Geitodoris planata</i>	dorid nudibranch
Nudibranchia	Dorididae	<i>Doris pseudoargus</i>	sea lemon
Nudibranchia	Facelinidae	<i>Favorinus brianus</i>	aeolid nudibranch
Nudibranchia	Polyceridae	<i>Limacia clavigera</i>	orange-clubbed sea slug
Systellommatophora	Onchidiidae	<i>Onchidella celtica</i>	Celtic sea slug
Pantopoda	Endeidae	<i>Endeis spinosa</i>	Sea spider [P]
Aplousobranchia	Clavelinidae	<i>Pycnoclavella producta</i>	sea squirt



Photographs of a selection of specimens collected by the DTOL team [L to R, top to bottom]: an anemone *Aulactinia verrucosa*; a sea spider *Endeis spinosa*; an isopod *Cymodoce truncata*; hydroid *Antenella secundaria*; an amphipod *Iphimedia* sp.; a caprellid shrimp *Caprella septentionalis*.

On leaving day (19<sup>th</sup> July), a quick last minute hunt was made for insects living on the Lundy Cabbage. Only one specimen could be found of Lundy's only endemic plant which was still in flower, which was just below the Beach Road. Unfortunately, they were not able to collect the endemic Lundy cabbage beetle (*Psylliodes luridipennis*) nor the endemic Lundy cabbage weevil (*Ceutorhynchus contractus*). However, the less impressive common pollen beetle (*Brassicogethes aeneus*) and the cabbage seed pod weevil (*Ceutorhynchus obstrictus*), which were both hiding amongst the Lundy cabbage's leaves, were collected.

## 4.5 Outcomes of other intertidal projects

### 4.5.1 Searches for non-native species

Whilst non-native species were to be recorded by anyone taking part in the Bioblitz, Keith Hiscock took it upon himself to hunt for them specifically. In addition, Cherry Leung (University of Exeter) was studying non-native species of seaweeds as her MSc research project and kindly shared her records with the Festival. The following observations were made:

**Harpoon weed *Asparagopsis armata*** [native to southern Australia and New Zealand] - the gametophyte stage – was visually dominant on bedrock under parts of the jetty on 17<sup>th</sup> July. The '*Falkenbergia*' (sporophyte) stage was also dominant in patches under and in the region of the jetty. Bushy berry wrack *Cystoseira baccata* persisted amongst the *Asparagopsis*.

**Oyster thief *Colpomenia peregrina*** [native to the north-east Pacific] was recorded by CL from Victoria Beach only.

**Wireweed *Sargassum muticum*** [native to the north-west Pacific] was frequent in rockpools in Devil's Kitchen. Floating plants were counted (and photographed) at low water on 15<sup>th</sup> July either side of the jetty and viewpoint photographs were taken. About 95 plants were counted on each side.

**Pom-pom weed *Caulocanthus okumarae*** [native to the north-west Pacific] was noted as still present (Devil's Kitchen?).

**Harvey's siphon weed *Melanothamus harveyi*** [native to the north-west Atlantic] was identified attached to *Callophyllis lacineata* collected from Ladies Beach (Joanne Harley).

A sample of **siphoned Japan weed *Dasysiphonia japonica*** [native to the western Pacific] was collected from the Knoll Pins as drift material entwined with the hydroid *Hydrallmania falcata* and attached to rock in shallow water at Brazen Ward.

No **Pacific oysters *Magallana gigas*** [native to the western Pacific] were found and this remained the case up until end of the Festival. Five Pacific oysters were found in early 2021 in the vicinity of Hell's Gate by Rat Island and were destroyed in order to prevent them from spawning.

The **red ripple bryozoan *Watersipora subatra*** [origin uncertain but known from Japan, Indonesia, Europe, California, Australia and New Zealand] has spread from its original location on Lundy (the cave behind the arch on the north side of Rat Island) where it was found in 2021 and is now infiltrating 'anemone cave' (see later repeat monitoring results). No doubt there will be more observations from others.

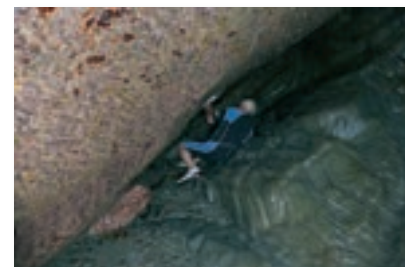
The presence of the **Australasian barnacle *Australminius modestus*** [native to Australia and New Zealand] was confirmed in the vicinity of the Landing Bay. It has been recorded at Lundy since at least 1977 but had not been relocated in recent years.

The kelp **wakame *Undaria pinnatifida*** [native to the north-west Pacific] was looked for but not found on the jetty piles – no inference is made that it will 'turn-up' but a watch should be kept.

### 4.5.2 Re-photographing intertidal cave anemones

The results of this photographic project, assessing the numbers of three species of anemone from within a small intertidal cave on the north-west side of Rat Island, were taken during the first week of the Festival by Keith Hiscock. He has compared his results with previous years when he's undertaken this monitoring task.

The reduction in numbers of *Sagartia elegans* and *Metridium senile* especially are notable and corresponds to the reduction in abundance of some other Anthozoa at Lundy since the mid-1980s.



The sloping cave on the NW side of Rat Island, with Keith Hiscock doing the inspecting [photo: Rosie Ellis]

The recent appearance of red ripple bryozoan *Watersipora subatra* as circular colonies on the cave wall may also have an effect on anemone numbers in the future.

Year	<i>Sagartia elegans</i>	<i>Metridium senile</i>	<i>Actinia equina</i>
1984	205	37	8
1985	507	75	4
1986	298	48	5
1991	123	14	38
2022	20	10	7

#### 4.5.3 Monitoring the cover of *Bifurcaria bifurcata* in a rockpool

The result for this project was obtained by Robert Irving from a mean of the estimates (by eye) of three surveyors of the percentage area of this shallow pool covered by the brown tuning-fork weed *Bifurcaria bifurcata*. The individual estimates (to the nearest 5%) were: 30%, 25% and 30%, providing a mean of 28.3%. The cover on previous occasions was given as:

Date of assessment	Percentage cover	Ascertained by
August 1984	27%	Accurate measurement of area
June 1995	21%	Mean of 3 estimates by eye
July 2022	28%	Mean of 3 estimates by eye

It would appear as though the figure obtained is 'in the region' of the estimates obtained in previous years, with current cover to be in a 'healthy state'.

## 4.6 Citizen science diving projects

Sadly, many of the proposed citizen science diving projects did not come to fruition. The reasons why this might have been so are discussed in section 6.1.2.2 (p. 80). On a more positive note, some of the projects did generate results, as described below.

### 4.6.1 Maximum Algal Depths

The only records returned for this project were by Keith Hiscock:

Date: 23<sup>rd</sup> June 2022 Location: Knoll Pins, east slope north of the canyon.

Polkadot weed *Haraldiophyllum bonnemaisonii* (a red foliose alga) recorded at 24.0 m bsl (= 20.6 m bcd).

[In September 2010, the deepest depth of this species at same location was 24.5 m bcd. In 1985 & 1986 it was 22.0 m bcd [when recorded as *Myriogramme bonnemaisonii*]. Photos were taken by KH in 2022.]

KH also noted when diving at Brazen Ward that the kelp *L. hyperborea* reached 13.5 m depth @ 0950 = c. 6.8m bcd. The same depth was recorded at the Knoll Pins for the deepest *L. hyperborea*. At the Battery site, the kelps present were all *Saccorhiza polyschides* with the deepest being at c. 6.3 m bcd.

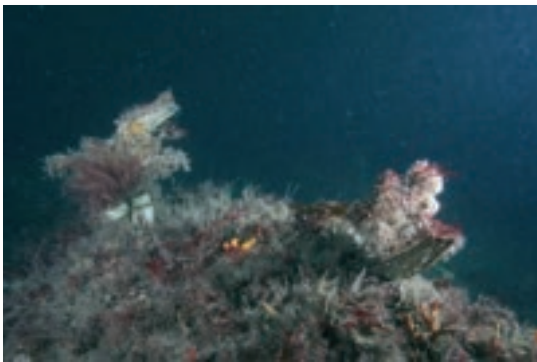
#### 4.6.2 Sunset cup coral searches

Just one set of dives was undertaken for this project. Searches for sunset cup corals were undertaken at Pete's Pinnacle, an underwater granite bedrock and boulder formation lying to the north of Gannets' Rock Pinnacle off the island's NE coast, by divers from the Vobster Dive Centre on 23<sup>rd</sup> August. The Pinnacle exhibits a wall from approx. 5 m to 29 m (BCD), with a continuation as a boulder slope beyond. Two diver pairs (Deb Evans / Ryan Blackman & James Gregory / Tim Clements) used open circuit twinsets and rebreathers to search around the base of Pete's Pinnacle for sunset cup corals but **none were found**.

#### 4.6.3 Pink sea fan health assessment project

Divers from the Vobster Quay Dive Centre measured sea fans at Brazen Ward on 23<sup>rd</sup> August. The results of these recordings were uploaded to the Festival website. Tim Clements also undertook a photogrammetry study of a single sea fan as an experimental comparison to the usual method of recording.

Keith Hiscock inspected a number of sea fans during dives on 18<sup>th</sup> & 19<sup>th</sup> July at sites off the island's east coast (see photos below).



Dead sea fans at Brazen Ward, 19<sup>th</sup> July 2022, with spent shark egg cases attached and overgrown by bryozoan turf [photo: Keith Hiscock]



Some fans appeared much healthier (though note there is also a shark egg case attached to the base of this sea fan) [photo: Keith Hiscock]

Pink sea fans are slow growing gorgonian corals, with some living to over 50 years old. The population at Lundy suffered from a bacterial infection at the turn of the century (2000-2001) which led to the branches of many colonies dying. In some cases the whole sea fan succumbed. Although few records were returned on the condition of pink sea fans during the Festival, those that were submitted indicate that the health of the current population is still of concern.

#### 4.6.4 Measuring the abundance and density of scallops

This project was attempted by one group of divers (though without the equipment needed to do it comprehensively), but the site chosen (within the No Take Zone) was not ideal, so they encountered very few live scallops, although they did find a number of dead shells.



A king scallop *Pecten maximus* [photo: Keith Hiscock]

#### 4.6.5 Searches for subtidal caves

The only dives carried out on this project were on 23<sup>rd</sup> August by three diving pairs from the Vobster Quay Dive Centre, who explored Pete's Pinnacle off the NE coast of the island. **No subtidal caves were found**.

#### 4.7 The effectiveness of the No Take Zone with regard to commercial crustacean species

Twelve day-visits to the island from Ilfracombe were made by *Barbara B* (skipper: Ben Bengey; crew: Sammy Davison) as four, 3-day forays: 27<sup>th</sup>-29<sup>th</sup> June, 12<sup>th</sup>-14<sup>th</sup> July, 2<sup>nd</sup>-4<sup>th</sup> August and 23<sup>rd</sup>-25<sup>th</sup> August.

Five strings of 10 pots/string were deployed both inside and outside of the MPA's No Take Zone on two days during each foray. Pots remained on the seabed for 24 hours (approx.) before being lifted. Once lifted, catches of common lobster, edible (brown) crab, spiny spider crab and velvet swimming crab were measured (carapace length/width) and for a proportion of the lobsters, also weighed.



A. Common lobster  
*Homarus gammarus*



B. Edible crab  
*Cancer pagurus*



C. Spiny spider crab  
*Maja brachydactyla*



D. Velvet swimming crab  
*Necora puber*

The four species of crustacea targeted by the present study, all of which were of commercial importance to pot fishermen when the initial NTZ monitoring programme was initiated in 2004. Spiny spider crabs and velvet swimming crabs are now of far less commercial importance.

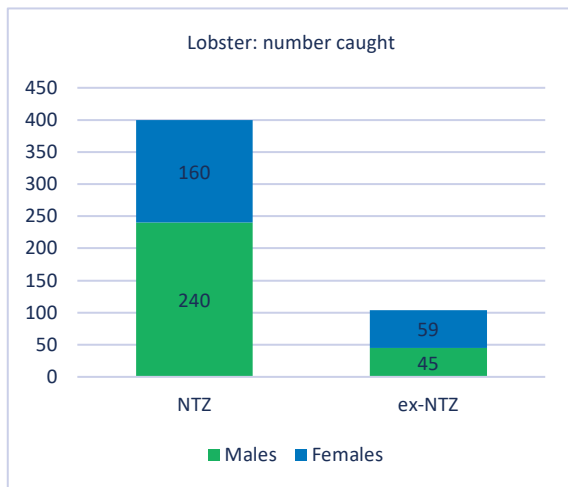


The underside of a female lobster that is 'in berry', showing the black eggs held against her abdomen using her swimmerets. [photo: Robert Irving]

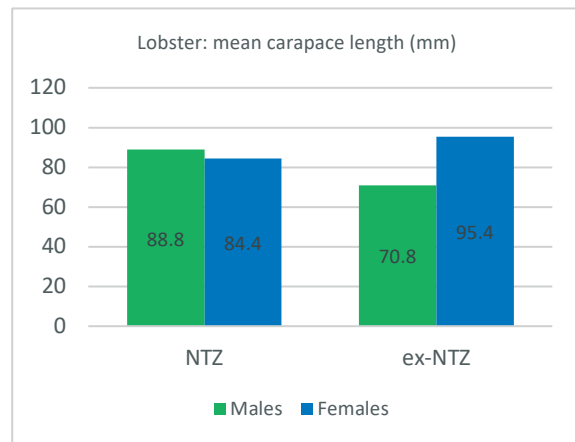


Extracting lobsters from one of the hauled pots [photo: Robert Irving]

As can be seen in the charts below, many more lobsters were caught inside the No Take Zone (NTZ) than outside it. However, there was less difference when their sizes (measured carapace length) were compared, although those found inside the NTZ were still, on average, 4% larger than those outside.

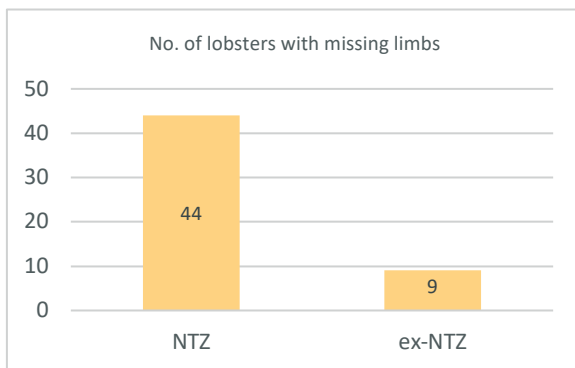


**Number caught** - 4x as many lobsters were caught inside the NTZ (400 individuals) as opposed to outside the NTZ (104 individuals), from a total of 400 deployed pots. Breaking this down by sex, 160 females were caught inside the NTZ and 59 outside it (a difference of 63%); and 240 males were caught inside the NTZ and 45 outside it (a difference of 81%).



**Length** - On average, females had a shorter carapace length within the NTZ (84.4 mm) compared to those caught outside the NTZ (95.4 mm); and, on average, males were found to have a longer carapace length within the NTZ (88.8 mm) compared to those caught outside the NTZ (70.8 mm). Taking both sexes together, individuals caught within the NTZ were 4% larger (in carapace length) than those caught outside the NTZ.

The higher density of lobsters within the NTZ was apparent when the degree of limb loss was assessed:



**Individuals exhibiting loss of limbs.**

Of all lobsters caught (504 individuals), 53 (or 10%) showed signs of limb loss or damage. Of those exhibiting such damage, 44 (83%) were caught within the NTZ and 9 (17%) were caught outside the NTZ. Within the NTZ, 31 (70%) of the damaged individuals were male and 30% were female.

Lobsters are known to fight for both territories and for mates, so this result might have been expected. As with other crustaceans, lobsters have the ability to regrow limbs, although this may take several moults to achieve.

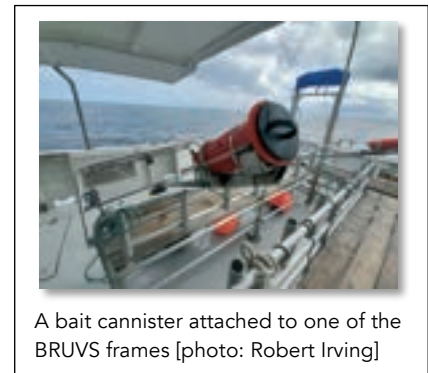
The results of the catches of edible crabs, spiny spider crabs and of velvet swimming crabs showed that far more individuals of all of these species were caught outside the NTZ than within it. It is tempting to think this may be because of the higher number lobsters present within the NTZ having the effect of keeping them away from the NTZ, though there is as yet no scientific evidence to back this up.

For the lobster population overall, when the number of lobsters with carapace length  $\geq 90$  mm is assessed (i.e. they are of a size that is legal to catch), the number caught was 6.6x as many inside the NTZ as opposed to outside it. The original NTZ study, undertaken between 2004-2007, found the number caught (with this same minimum size stipulation) was 5x inside the NTZ as opposed to outside it. These results show the NTZ remains of great benefit to the lobster population in particular.

#### 4.8 Recording fish diversity within the MPA using BRUVS

This study was devised in order to see how the recording of fishes using a baited camera system compared with recording of fishes by divers. Unfortunately, there were an insufficient number of divers able to undertake the latter study, but the study using BRUVS (Baited Remote Underwater Video System) went ahead.

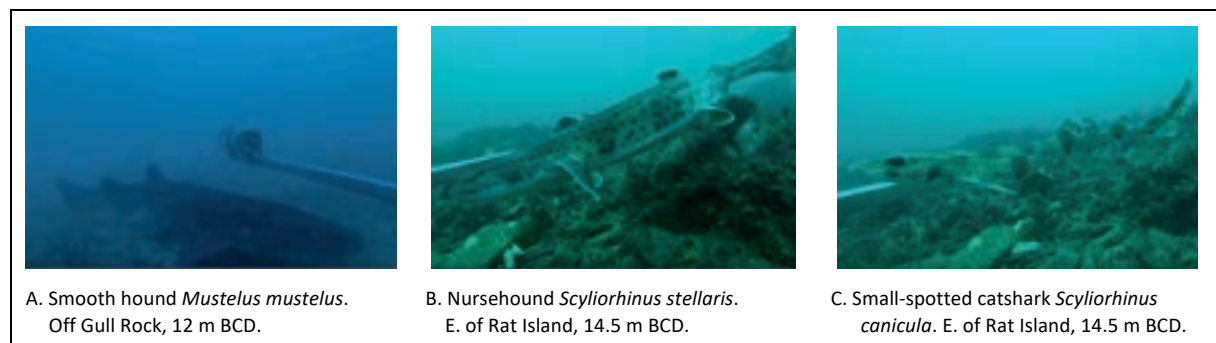
Three BRUVS frames were loaned to the project by the Blue Marine Foundation and were deployed on two separate days from the charter boat *Barbara B*. The deployments took place at varying depths (between 6.9 m and 21.8 m BCD) off both the west and east coasts, with each deployment lasting for an hour's duration on the sea bed. Six deployments were made on each of the two days.



A bait cannister attached to one of the BRUVS frames [photo: Robert Irving]

The fishes which were caught on camera fell into two groups: (1) those that were attracted by the bait; and (2) those that seemed oblivious of the bait but just happened to be in the area.

The first category were all species of sharks: smooth hound *Mustelus mustelus*; nursehound or bull huss *Scyliorhinus stellaris*; and small-spotted catshark *Scyliorhinus canicula*. All of these species are scavengers, tending to consume dead, dying or wounded fishes or, on occasion, shellfish. This is the reason why they are attracted to the bait of mashed-up mackerel.

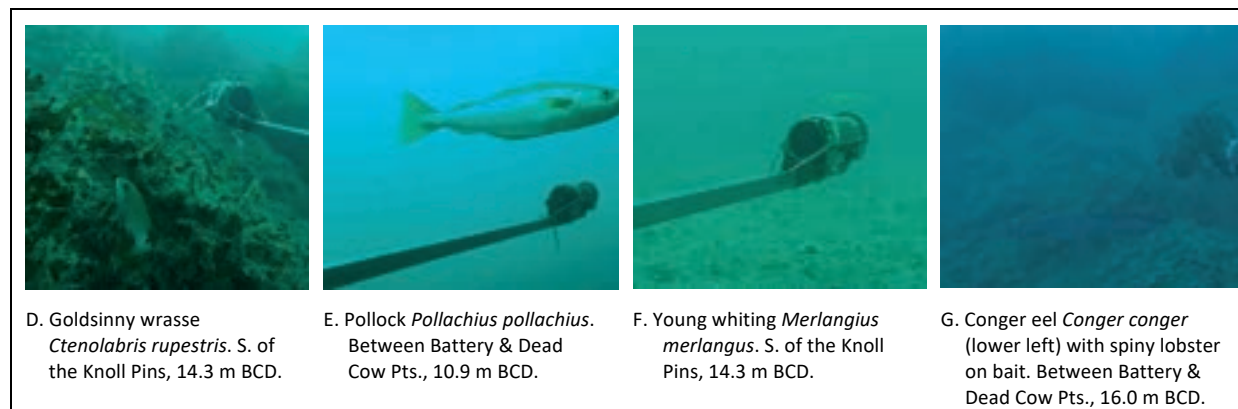


A. Smooth hound *Mustelus mustelus*. Off Gull Rock, 12 m BCD.

B. Nursehound *Scyliorhinus stellaris*. E. of Rat Island, 14.5 m BCD.

C. Small-spotted catshark *Scyliorhinus canicula*. E. of Rat Island, 14.5 m BCD.

The second category included species which are frequently encountered by divers when they are either close to the sea bed (such as various species of wrasse and the conger eel) or in open water (such as pollack). These species are not scavengers. Adult pollack will feed mostly on other (live) fish such as sand eels and members of the cod or herring families; wrasse species will feed on amphipods, other small crustaceans, worms and small molluscs; and conger eels mostly feed on live fishes or crustaceans at night.



D. Goldsinny wrasse *Ctenolabris rupestris*. S. of the Knoll Pins, 14.3 m BCD.

E. Pollock *Pollachius pollachius*. Between Battery & Dead Cow Pts., 10.9 m BCD.

F. Young whiting *Merlangius merlangus*. S. of the Knoll Pins, 14.3 m BCD.

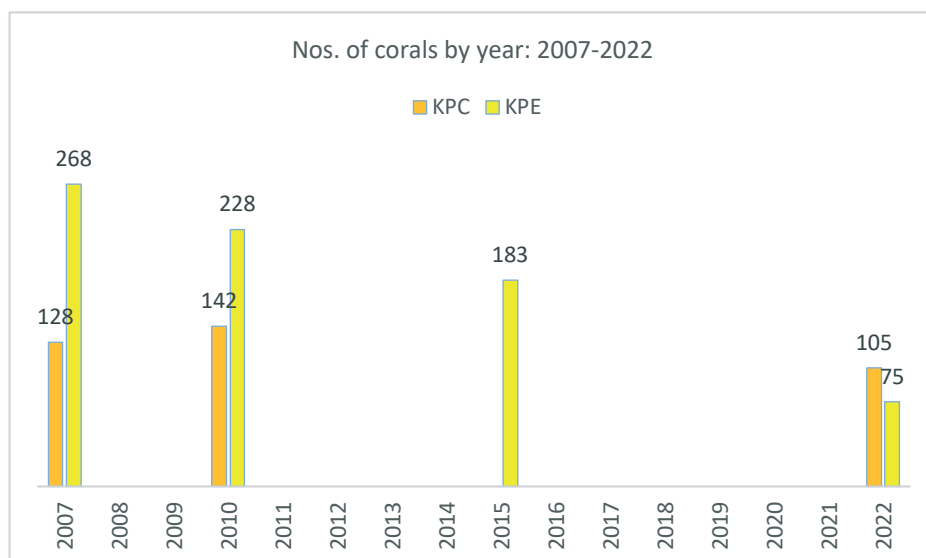
G. Conger eel *Conger conger* (lower left) with spiny lobster on bait. Between Battery & Dead Cow Pts., 16.0 m BCD.

A total of 13 species of fishes were recorded by the BRUVS, together with other scavenging invertebrate species including common lobster *Homarus gammarus*, spiny lobster *Palinurus elephas*, spider crab *Maja brachydactyla* and spiny starfish *Marthasterias glacialis*.

#### 4.9 Photographic monitoring of sunset cup coral populations

Two sites at the Knoll Pins were re-photographed by Keith Hiscock on 23<sup>rd</sup> June 2022 using a photogrammetry technique of overlapping adjacent frames. Analysis of the sets of photographs were then analysed by Robert Irving and compared with studies undertaken in 2015, 2010 and 2007. The results of the analysis are summarised as follows:

- Earlier studies have shown the population of sunset cup corals at the Knoll Pins Cave (KPC) site to have been in a state of steady decline over the past 40 years. For a 23 year period from 1981 until 2004, numbers of the corals at this site had declined by between 60-66%. It was supposed this was due to natural loss of ‘adults’ from the population (as they reached the end of their natural lifespan) coupled with a lack of new recruitment of ‘juveniles’ to the population. However, it was also suggested this rate of loss could have been accelerated by a number of possible external factors (such as weakening of the attachment to the rock surface by various boring organisms).
- In 2022, both sites (Knoll Pins Cave and Knoll Pins East) showed a continuation of this downward trend in total numbers (adults and juveniles) from the whole extent of each site from 2010 until 2022, particularly for the Knoll Pins East site where numbers fell from 228 individuals in 2010 to 75 individuals in 2022 (see histogram below).
- Within the defined, central ‘counting areas’ at the centre of the Knoll Pins Cave (KPC) site, a small increase in the number of adults (49 to 54) and a large increase in the number of juveniles (3 to 19) between the monitoring events of 2010 and 2022.
- Within the defined, central ‘counting areas’ at the centre of the Knoll Pins East (KPE) site, a noticeable decrease in the number of adults (54 to 38) and a considerable increase (3 to 15) in the number of juveniles between the monitoring events of 2010 and 2022.

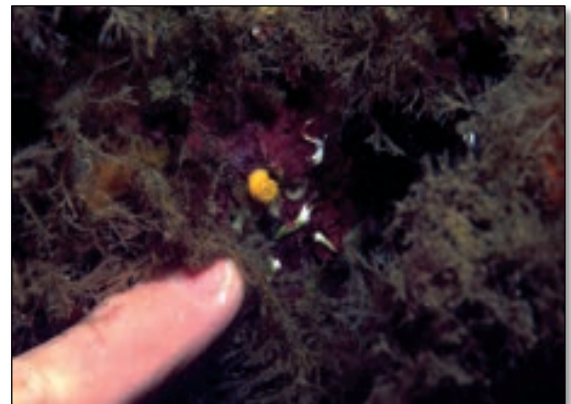


The total number of sunset cup corals (‘adults’ and ‘juveniles’) counted at both monitoring sites at the Knoll Pins. Note that photos taken at the KPC site in 2015 (not by KH or RI) were unable to be analysed due to inconsistent photographic coverage of the site.

It remains unclear why the numbers of sunset cup corals continue to decline at Lundy, although the increase in the number of juveniles (defined as being new recruits to the population of less than 5 mm in diameter) may indicate the ‘doom scenario’ is beginning to change.

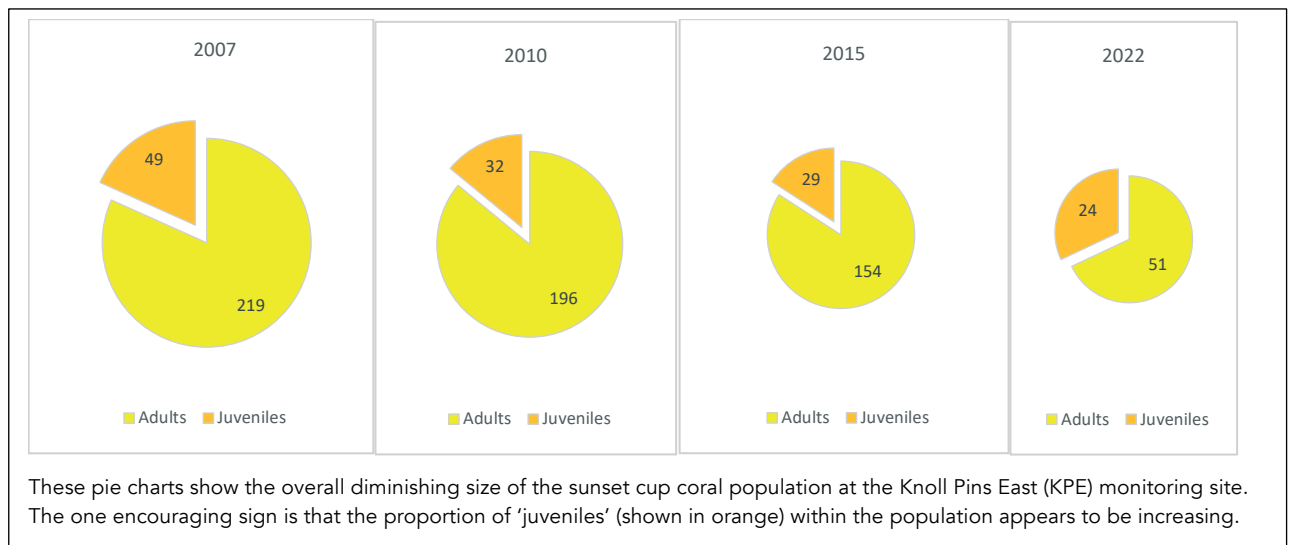


Photo showing some (numbered) sunset cup corals at the Knoll Pins East site. The black frame is attached to the camera and is used by the photographer to assist in judging overlap distances [photo: Keith Hiscock]



A ‘juvenile’ *Leptopsammia pruvoti*, approximately 3 mm across, found at the Knoll Pins East site in 1998 – the first occasion on which such a small individual had been recorded on film [photo: Robert Irving, taken in 1998]

The summary pages of the report that was written on this study in 2022 are presented in Appendix 13.



#### 4.10 MSc projects undertaken by students from Exeter and Plymouth Universities

In 2021, Natural England marine staff (SW Region) made a positive encouragement to students undertaking marine conservation-related Master of Science degrees at both the University of Exeter and at the University of Plymouth to consider undertaking their fieldwork at Lundy. A number of topics were suggested as areas of study. As a result, four students took up this challenge.



**Jordan Williams, University of Plymouth: (cetaceans)**

Jordan's thesis was entitled: *Investigating the occurrence of common dolphins and harbour porpoises within Lundy's Marine Protected Area.*

**Cherry Leung, University of Exeter: (non-native seaweeds)**

Cherry's thesis was entitled: *Assessing the impact of non-native marine algae on the native intertidal algal community at Lundy Island – a Marine Protected Area case study.*

**Meaghan Kendall, University of Exeter: (seal disturbance)**

Meaghan's thesis was entitled: *Investigating the impacts of seal ecotourism on Atlantic grey seals (Halichoerus grypus) at Lundy Island, Devon.*

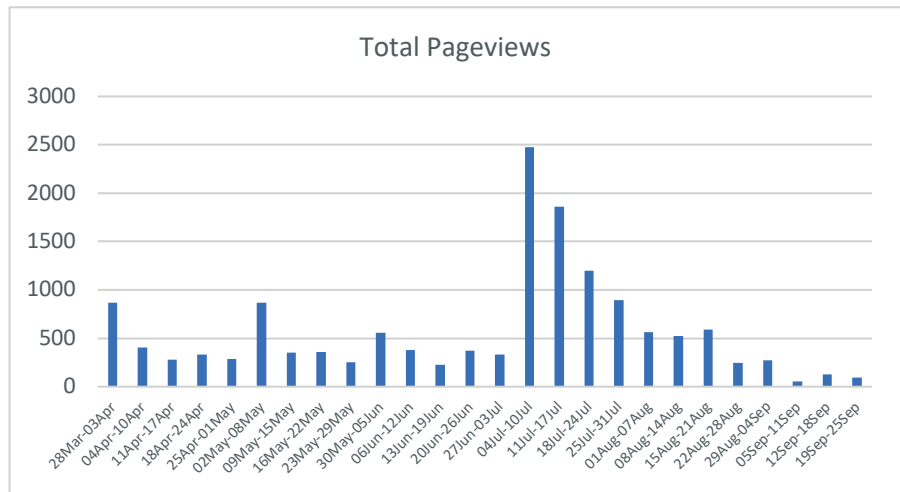
**Nicholas Martinez, University of Exeter: (litter on Lundy)**

Nicholas's thesis was entitled: *Litter on Lundy: a preliminary material flow analysis of Britain's Galapagos.*

### 4.11 Stats from the Festival website

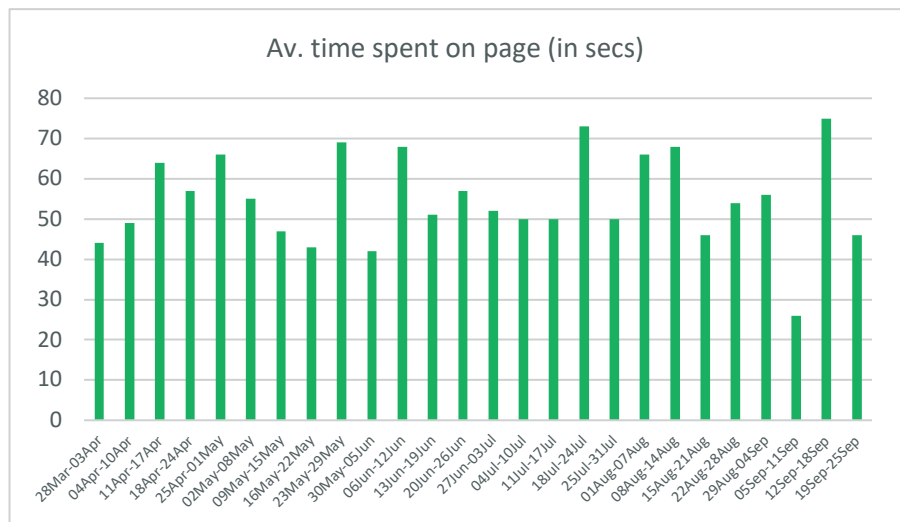
As for every website, stats are available to the managers of the site regarding the number of ‘hits’ any particular page of the site has had on a daily, weekly or monthly basis.

These charts show a selection of parameters indicating how much interest there was in the site. Note that the first week (28<sup>th</sup> March – 3<sup>rd</sup> April 2022) was when the site was launched; and that the Festival ran from 14<sup>th</sup> July – 10<sup>th</sup> September.



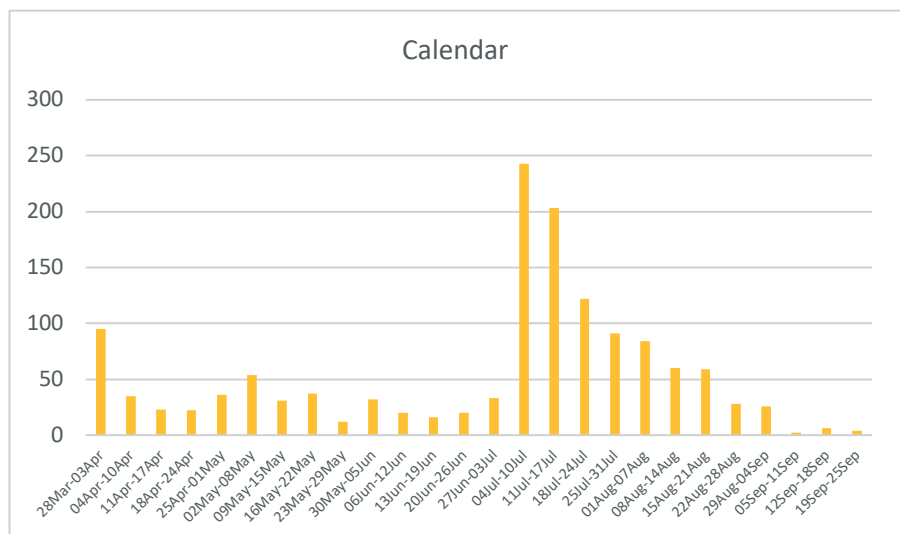
#### Total Page Views

As might be expected, the total number of views on all pages of the site went up considerably during the week preceding the start of the Festival (4<sup>th</sup> – 10<sup>th</sup> July). Thereafter, visits gradually fell off. However, note the maximum number: almost 2,500.



#### Average time on each page

This was encouraging as, for all weeks apart from the final week of the Festival, the lowest average time spent on a page was above 40 seconds. Essentially, this meant that people were actually taking the time to read what was on the pages!



#### Calendar

You’ll notice that the shape of this chart is almost identical with that of the total page views at the top of the page, but with just 10% of the views.



This composite image was featured on the website towards the end of the Festival. The image is made up of an assortment of tens of submitted Festival images [image: Finn Irving]

Some other photographs featured on the Festival website:



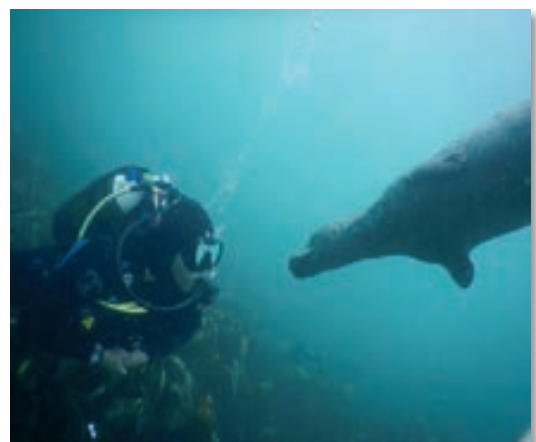
Red sea fingers *Alcyonium glomeratum* with their polyps expanded make for a spectacular photo! [photo: Paul Kay]



MS *Oldenburg* alongside the jetty at Lundy, flying the Marine Festival flag and the Ukrainian flag [photo: Robert Irving]



Trying out the 'match the photo to the description' game set out in the St Helen's Centre [photo: Tara McEvoy-Wilding]



Making eye contact [photo: Daisy Eagleton-Laing]

## 5. POST-EVENT

The Festival came to an end on Saturday, 10<sup>th</sup> September, although the original plan had been for Sunday 11<sup>th</sup> September to be the final day. The intention was for an additional sailing of the MS *Oldenburg* on the Sunday (thanks to the agreement of Derek Green, Lundy General Manager) but closer to the date in question it was apparent that an insufficient number of tickets had been sold for the Sunday sailing, so it was cancelled and the conclusion of the Festival brought forward by one day.

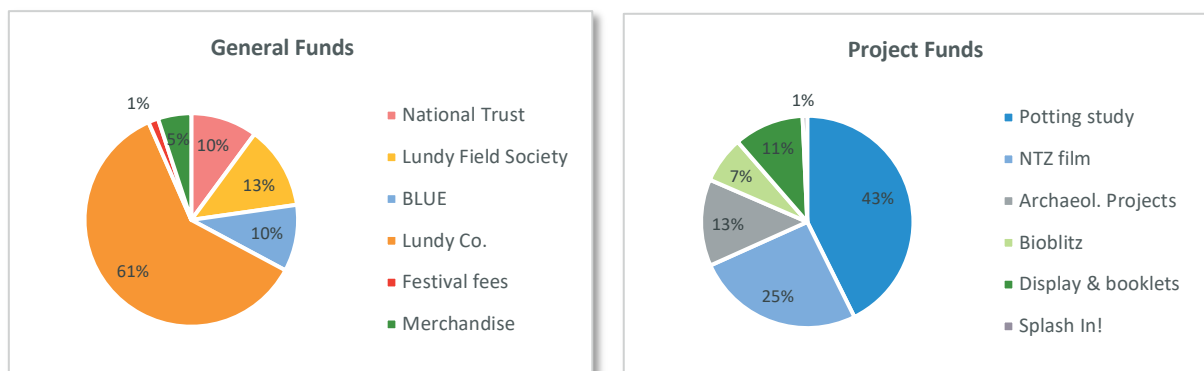
A number of follow-up tasks were undertaken by the Festival Co-ordinator before the conclusion of the Marine Festival project.

### 5.1 Festival accounts

The income to the Festival resulted from two main sources: General Funds (which could be spent as required); and Project Funds (with expenditure linked to a particular project).

Income for General Funds came from direct grant applications, donations, Festival fees, the sale of merchandise and monies 'in kind'. The total amount raised was in the region of £8,000.

Income for Project Funds came from the following organisations: Blue Marine Foundation (BLUE), Natural England, Historic England and the North Devon Biosphere. The total amount raised was in the region of £70,000.



The breakdown of income to the Festival into two pots (general funds and project funds), presented as proportional amounts.

It was disappointing that we were not able to acquire more income from 'Festival fees', i.e. from those participating in the Festival and shown in the chart above as constituting just 1% of the General Funds pot. The Lundy Company had generously allowed a substantial discount (of 45%) on *Oldenburg* ferry fees for Festival day participants who had explained their intention when booking their tickets. A £10 'Festival fee' was then added to the discounted ticket price, which still amounted to an overall discount of 22% on the standard day return fare. This was advertised on the 'Booking' section of the Festival website, so it is unclear why so few day visitors would not have asked for this discount. The 'Festival fee' was also included in the price of ferry tickets for those staying on the island and for those booking on the Festival dive boats.

The other source of income from visitors to the island was from the sale of merchandise from the island's shop. The Lundy Company had again generously agreed to no commission being charged for these items from the shop. The main stumbling block here was the fact that not all Festival



merchandise was available for sale from Day 1. This was due to inadequate time being allowed by the Co-ordinator to prepare these items and unforeseen delays in the printing of said items.

The funding for specific projects from various organisations was welcomed although the projects funded (such as the photogrammetry study of the Protected Wreck sites and the potting study investigating the effectiveness of the No Take Zone) were undertaken by specialists and not designed for mass participation by those attending the Festival.

## 5.2 Reports for sponsors

There were three main reports which needed to be written following the end of the Festival. Summaries of these reports are included as Appendices 10, 11 and 12.

- Blue Marine Foundation – report on the studies assessing the effectiveness of the No Take Zone

This project centred on investigating the abundance and size of large crustacean species (common lobster, edible crab, spider crab and velvet swimming crab) inhabiting the MPA's No Take Zone and comparing these figures with those obtained from outside the No Take Zone. The summary pages for this report can be found in Appendix 11.

[Irving, R.A. 2022. *The Lundy No Take Zone: an evaluation of its effectiveness after 19 years (2003- 2022)*. Project report to the Blue Marine Foundation by Sea-Scope Marine Environmental Consultants].

- Historic England – report on the Protected Wreck Days, photogrammetry of the two Protected Wrecks, and viewpoint photography on the *Iona II* wreck.

The summary page for this report can be found in Appendix 12.

[Irving, R.A., Clements T. and Knott, P. 2022. *Marine archaeological studies undertaken during the Lundy Marine Festival 2022*. Unpublished report to Historic England (Project 8049)].

- Natural England – report of the assessment of sunset cup coral populations at the Knoll Pins

The summary pages for this report can be found in Appendix 13.

[Irving, R.A. 2023. *The status of sunset cup coral populations at Lundy in 2022*. Natural England Commissioned Report No. XXX (yet to be allocated). Natural England].

## 5.3 Articles for membership magazines

A number of articles have been written for membership magazines following the end of the Festival. Those known to the author are listed below:

- Lundy Field Society's *Discovering Lundy* Annual Bulletin, No. 52 (published February 2023) – general article about Festival outcomes;
- Lundy Field Society's *Annual Report*, vol. 72 (due for publication July 2023) – summary of the results of the Festival.
- Porcupine Marine Natural History Society *Bulletins*, No. 18 (Autumn 2022) and No. 19 (Spring 2023).

## 5.4 Presentations about the Festival

- Presentation to the Lundy Field Society's AGM in CREDITON, mid Devon, on 11<sup>th</sup> March 2023 about the outcomes of the Marine Festival.
- Presentation to the Porcupine Marine Natural History Society on 18<sup>th</sup> March 2023 about the status of the sunset cup coral at Lundy.
- Presentation to Bournemouth Natural Sciences Society on 20<sup>th</sup> June 2023 about the Lundy MPA.

## 5.5 Completion of the NTZ film

Whilst most footage for this project was obtained during the first week of the Festival, a number of interviews have had to be done later on during the Festival and also after the Festival finished. There is also a need to return to Lundy to obtain footage of seabirds (particularly the auks) returning to the island.

Incorporation of results from the potting study via interview with RI. Also an interview with Sarah Clark at D&S IFCA.



*Left: Gareth Alvarez, Director at North Devon Moving Image, lining up the camera for the next shot.*

*Above: Photography students from Ilfracombe Academy who came over for six days of 'work experience', contributing to the film being made about Lundy's No Take Zone.*





## 6. LOOKING BACK – WAS IT ALL WORTH IT?

As the Marine Festival was the first (and perhaps last?) of its kind, it's important to assess how the whole event turned out.

### 6.1 Marking the homework – what worked and what didn't

There were five main aims of the Festival:

**1. To highlight the existence of the island's Marine Protected Area.**

All publicity material made a point of saying there was a Marine Protected Area around the island of Lundy. The website went into some detail about the history of the MPA if people wanted to find out about this. It is hoped that, if nothing else, the existence of the MPA might have been a fact that visitors would have learnt if they didn't know this already.

**2. To celebrate the MPA's 50<sup>th</sup> anniversary.**

The fact that the MPA marked its 50<sup>th</sup> birthday in 2022 was closely linked to the reason why there was a Marine Festival being held. Half of the flags and half of the bunting pennants had the 50<sup>th</sup> logo printed on them.

**3. To undertake a number of projects which would assist in the MPA's management.**

The website introduced the concept of participatory projects by having some fun cartoons for people to see what level of involvement they might be able to manage. The Co-ordinator was keen to show that participation in these projects shouldn't be just for marine biologists but that anyone could make a contribution. However, the projects for those with less recording experience did not go as well as was originally hoped (see section 6.1.2 below).

**4. To leave a worthwhile legacy behind once the Festival was over.**

This was considered very important. The film about the No Take Zone and this report are the main physical manifestations of legacy items, but it's hoped that some of the ideas, projects, experiences, photographs and merchandise will keep the memory of the Festival alive for years to come (see also section 6.5).

**5. To promote the cause of marine conservation in general.**

It could be supposed that the majority of visitors to Lundy would have some notion of what marine conservation is about – whether that be from marine pollution in the form of plastic litter or oil spills affecting all of the world's oceans; over-fishing; seabed destruction from bottom trawling; ocean acidification; or the loss of seagrass beds. The intention was for the Festival to encourage the positive (e.g. learn about how to identify marine creatures) rather than to shock with the negatives (e.g. *we must* do something about the state of our seas). Clearly this latter message is important too but that can come later once the 'hook of amazement and wonder' has made its mark.

Marine Protected Areas don't come with solid fences around them to protect what's within them. Education is perhaps the most important offering an MPA can bring with its designation.



### 6.1.1 What worked

To me, two things in particular were ‘hits’. Firstly, the appointment of the two volunteer Marine Festival Wardens was a great success. Having keen, knowledgeable assistants on hand to guide, encourage and educate enquiring visitors proved immensely valuable, not least for the Warden and the other Lundy staff who would have had to have coped with answering many more questions than they did had the two Marine Festival Wardens not been present.

Secondly, the Virtual Reality headsets were very popular and were also a success. It was a shame we didn’t have access to a wider library of British-themed marine life films, as many who wore the headsets would have been keen to see more. This is something that could be worked on. We had hoped to have been able to load onto the headsets the 3-D digital model of the Iona II protected wreck, so that visitors wearing the headsets could explore the wreck themselves, with items of particular significance scattered on the seabed being labelled with further information. However, the software we were aware of was not up to the task, so again, that will have to wait.

### 6.1.2 What didn’t work

#### 6.1.2.1 *The finances*

Sadly, the Festival lost money. There was insufficient income to cover all of the outgoings, despite a huge amount of unpaid effort put in by volunteers, loan-free equipment and generous sponsorship. There were fewer sales of Festival tickets than had been expected and thus the income from Festival fees (£10/person) was below what had been hoped for.

#### 6.1.2.2 *Disappointing take-up of diving projects*

Diving projects were not well attended – in fact the response from divers to participate in projects was extremely disappointing! The reasons for this are unclear but might have included:

- By the time dive boats were reserved for the Festival, most weekends had been already been booked by other diving groups. This left just mid-week dives which are understandably far less popular as it’s likely for participants to need to take time off work.
- Given current circumstances (particularly the cost of living crisis), everyone is having to watch how they spend their spare cash very carefully, and diving is an expensive hobby.
- Many potential participants would have been needing to travel a fair distance to get to Ilfracombe and the price of car fuel increased dramatically in the spring of 2022.
- Maybe the project descriptions given on the website were too daunting; the instructions on self-completion were unclear; or where equipment was required, it wasn’t readily available.

#### 6.1.2.3 *Complimentary air fills for divers*

By offering divers free air fills in return for data they would have collected, we had hoped to bolster participation in the diving projects. Tanks could be filled from the new compressor on Lundy (for those staying on the island). An arrangement had also been made with the Ilfracombe Dive Club (which has its own compressor) for Festival divers to receive free fills there (on their way back from Lundy) in return for data. However, many divers claimed free fills even when no data had been submitted.



#### 6.1.2.4 *Lack of take-up by Seasearch divers*

Seasearch is a diving project overseen by the Marine Conservation Society. It introduces divers to recording marine habitats and wildlife whilst on their dives in a methodical way, helping with the identification of species too. It has become a very valuable project for those organisations seeking information about nearshore sea beds. The Seasearch local groups in both Devon and Cornwall had been encouraged to visit Lundy during the Festival, but sadly none did.

#### 6.1.2.5 *Little take-up from local dive clubs*

Despite encouragement for their members to take part (including an evening presentation about the Festival given by the Co-ordinator), there was also little participation in any of the Festival's diving projects from either of the local dive clubs (Ilfracombe BSAC and Appledore SAC).

#### 6.1.2.6 *Use of the Warden's RIB*

The Warden's RIB sat high and dry on its trailer beside the Beach Building for almost the entire Festival. This was a great shame, especially given the calm seas which persisted for much of time. It meant that the 'On the Sea' projects were unable to take place; and also that it could not be used to ferry Bioblitz recorders to shores inaccessible from the land.

The problem with small boats at Lundy is that the island lacks a harbour, a sheltered place where boats can be tied up and left unattended on the water overnight. There are mooring buoys for boats in the Landing Bay, but should the wind get up overnight there is a high risk of a craft being ripped off its mooring and being dashed on the rocks – it's happened to several such craft over the years. However, getting the RIB into the water on its trailer down the steep beach at the foot of the jetty is difficult and getting it back out again even more so.

#### 6.1.2.7 *Real-time on-line access to the weekly presentations*

It was hoped that the weekly talks by visiting experts could have been beamed to a waiting world in real-time from the St Helen's Centre, now that there was relatively fast internet access from the building. However, there was a lack of immediate know-how, the equipment to do this and a dedicated videographer to be able to do this. There was also difficulty experienced in getting the recordings of the talks up onto the website afterwards. We apologise to those who missed out on these talks as a consequence of this, and also to the speakers themselves.

#### 6.1.2.8 *Sale of merchandise*

Disaster! - the *What am I?* card game (see section 3.5.2) didn't appear in the Shop until *after* the Festival had ended! This was partly because the game was still being designed when the Festival started (the Co-ordinator had just run out of time!), and it took the printers longer than expected to produce the end product. This meant that revenue from its sales (primarily from the island's Shop) were far lower than was originally hoped.

## 6.2 Innovative approaches

One of the things which the Festival Co-ordinator was keen to see happen during the Festival was to explore the use of technology to support scientific research and also for educational interpretation. Various novel pieces of equipment and/or techniques were used, as indicated below:

- **Use of the iNaturalist app**

An experimental means of recording marine life on the shore using a dedicated app and mobile phone cameras. Allowed for non-experts to feel they were contributing to the Marine Bioblitz. Once uploaded (from the St Helen's Centre or from home), photos were identified by experts and automatically added to a list of recorded species.

- **Photogrammetry surveys**

*Protected wreck sites* – Tim Clements estimated he took at least 1,500 overlapping photographs of the *Iona II* protected wreck! In order to ensure that the software will recognise these areas of overlap during the 'stitching process', the same object must be taken from all angles, side-to-side and above-and-below. This needs to be done quite rapidly, in order for the photographer to remember which areas have been covered and which haven't. The technique lends itself really well to the interpretation of wreck sites.

*Sunset cup coral sites* – Tim also experimented with taking overlapping photographs of the two sunset cup coral monitoring sites. These certainly helped with the later analysis of the sites as whole entities.

Pink sea fans – Again, taking overlapping photographs of individual pink sea fans was experimental. It could well help with identifying individual sea fans and in assessing how any one fan appears from year to year.

- **Underwater 360° camera film**

Jon Slayer travelled down from London on two occasions to use his 360° camera to help with the interpretation of the *Iona II* protected wreck in particular. These are the short films which can then be viewed through the Virtual Reality headsets for an 'all immersive experience'.

- **Use of small video cameras**

GoPro cameras have been attached to the side of lobster pots to film lobsters and crabs approaching and investigating the pots and then entering through the trap entrance to find the bait. This was done during the NTZ potting project. A similar idea could be used for the remote filming of red band fish *Cepola macrophthalmia* utilising their vertical burrows, possibly through time-lapse photography or by means of trip sensors turning camera(s) on and off.

- **Use of aerial drones for filming**

Aerial drones were used by the NDMI film team to obtain aerial footage of the island's coastline, of the potting boat and of other activities happening during the Festival. Special permission had to be obtained from the Warden to allow this to happen. There are strict rules which must be followed by licensed drone pilots to prevent disturbance to farm animals, wild mammals, grey seals and to members of the public. However, an aerial perspective of scenery can be spectacular.

- **Virtual Reality headsets**

As has been pointed out already (see section 3.2.8.4), these VR headsets proved very popular with visitors. They provide a great way for non-divers to see what life is like under the sea and, by being able to look all around, it's possible, quite literally, to feel completely immersed!

### 6.3 How might improvements be made for next time?

- A small committee is required to share the load of organising such an event and for dividing up the jobs which need doing. A team of volunteers is also required to help out.
- More use should be made of a website for on-line interactive information and marine games.
- More use should be made of various social media platforms to help spread word of an event in the first place and for those who have participated to enthuse others.
- More short films should be made available for the VR headsets. Possible purchase of ?4 sets should be considered by the St Helen's Centre for both terrestrial and marine interpretation.
- Could more be made of educational games in general, particularly in the St Helen's Centre? The possibility of interactive computer games (see below).

### 6.4 Other ideas that never came to fruition

- Various interactive games for installing in the St Helen's Centre. Ideas included: *Underwater Explorers* - a virtual trip around the island in a mock-up cockpit of an underwater submersible, with features of interest to discover and be informed about; *Sounds of the Sea* – a vision & sound interactive game, where a particular marine sound (the calls of various seabirds, of seals and of cetaceans) listened to on headphones had to be matched to images of said marine animals appearing on a small screen;
- Guess the weight of the largest lobster caught from within the NTZ. However, the answer to this wouldn't have been known until the end of the Festival, so it would not have been possible to offer a winner "instant gratification" of a prize!
- Guess the number of species of seaweeds or invertebrates recorded during the Marine Bioblitz. Again, a delay in knowing the precise figures due to the need for identification taking longer than the stay of the taxonomists on Lundy.
- Collecting litter and other refuse which had washed up on the Landing Bay beach and depositing it all in a see-through container at the back of the beach. The amount being washed ashore would then have been apparent to all visitors, and an accompanying display board would have highlighted the problem of marine litter, especially the plastic components.
- For sale in the Shop: enamel lapel badges featuring the 50 years logo (all manufacturing of these takes place in China, so considered not ethical!); hats and caps featuring Festival logo; copies of the '50 years of the Lundy MPA' board game (only one 'beta version' of this was produced and was left in the Tavern for anyone to play). A large wooden jigsaw of Paul Naylor's composite photo-poster? Insufficient money for large enough orders to be placed to ensure a profit was made on any sales.
- Expanding the Splash In! underwater photographic competition to include video shorts (lasting no more than 1 min. per entry). These would have been edited sequences linked with the Festival in some way, perhaps showing the behaviour of some particular animal under water or in a rockpool, or snippets of the various events happening during the Festival.
- Proposed Feedback Questionnaire for all those coming over to the island on board the MS *Oldenburg*. This would have provided answers regarding how much (or how little) visitors knew about the MPA.



- A display of seal skeletons (*Septimus & Augusta*) by the Seal Research Trust in the St Helen's Centre during August. A skeleton of a Risso's dolphin might be on its way...?
- Use of an underwater Remote Operated Vehicle (ROV). One of these was offered for use during the Festival by a company with experience of working on historic shipwrecks. However, its operator was unable to accompany it.
- Use of a hydrophone (not attached to the sea bed) to record dolphin calls at various points around the island.
- Use of an underwater static video camera positioned on the jetty and linked to a monitor in the Beach Building.

## 6.5 Leaving a legacy

- The original idea was to produce a film of the Festival – its various activities, projects and scientific investigations. However, this was not to be...
- A second idea was **to produce a film about the island's No Take Zone**. At the time of writing this report (February 2023) the film is being edited with a couple of final interviews needing to be filmed. The hope it will be ready for a public viewing (hopefully in a venue somewhere in North Devon) by summer/autumn 2023.
- **This report**, which is being distributed to all sponsors of the Marine Festival.
- **A joint scientific paper** (with the team from the University of Plymouth led by Prof. Emma Sheehan) on the effectiveness of No Take Zones in the UK, to be submitted to an Open Access journal.
- Possible paper(s) in the *Journal of the Lundy Field Society*.



## ACKNOWLEDGMENTS

Many individuals helped to make Lundy's Marine Festival 2022 a success. The majority are listed below, but it's likely others have been missed off and if you are one of those, please accept our apologies. Your efforts have not been forgotten all the same.

Name	Organisation	For
Patrick Adkins	Marine Biological Association	MBA DTOL logistics
Gareth Alvarez	North Devon Moving Image	Making of the NTZ documentary film
Andrew Bengey	Lundy Diving charters	Dive boat hire and logistics
Ben Bengey	<i>Barbara B</i>	Boat skipper
Richard Breese	Lundy Field Society member	Assistance with trying to set up the live broadcast (via Youtube) of recording of the weekly Friday evening talks by guest speakers
Andrew Bristow	Brightsea Print Group	Assistance with printing merchandise for sale
Greg Brown	OceanMind	Invited speaker for weekly talks programme
Simon Brown	Accupixel Ltd.	Processing of photogrammetry images
Richard Campey	One Stop Nature Shop	Photos of Lundy seabirds
Tim Clements	Vobster Quay Dive Centre	Lead on photogrammetry studies
Steve Corcoran	Ilfracombe Aquarium	Assistance with loan of aquarium tanks
Nicola Cusack	Marine Conservation Society	Advice linked with first edition of <i>Guide to Lundy's Marine Wildlife</i>
Tim Davis	Lundy Field Society member	Permission to use personal map of Lundy as part of the Festival website
Sammy Davison	<i>Barbara B</i>	Boat crew
Diasy Eagleton-Laing	Volunteer Marine Festival Warden	All round assistance with running the Festival
Rosie Ellis	Lundy Warden	On-island logistics & liaison; i/c of rockpool rambles, snorkel safaris and coastal walks
Sam Fanshawe	Blue Marine Foundation	Assistance with sponsorship & loan of BRUVS units
Chris Fletcher	Natural History Museum, London	NHM DTOL logistics
Bob Foster-Smith	-	Creation of cartoons for use on the Festival website.
Shaun Galliver	Ilfracombe & N. Devon Dive Club	Arranging air fills for divers
Derek Green	Lundy General Manager	Support of the Lundy Company for all Festival activities. Discounts on <i>Oldenburg</i> prices, camping and diving air.
Lyndsey Green	Lundy Shore Office (Bideford)	Help with visitor logistics and finances
Summer Grundy	Marine Biological Association	Modification of species recording app iNaturalist
Finn Irving	Toucan Creative	Web design and maintenance
Joanna Harley	Marine Biological Association	MBA DTOL logistics
Keith Hiscock	LFS / MBA	Sharing his 50+ years of Lundy marine knowledge
Geoff Huelin	Walrus Fisheries	Help with NTZ potting project
Lauren Hughes	Natural History Museum, London	Organising DTOL participation
Inez Januszczak	Natural History Museum, London	NHM DTOL management
Cat Joniver	PMNHS	Helping to organise PMNHS participation
Rob Joules	National Trust	Help with appropriating NT funding
Peta Knott	Nautical Archaeology Society	Leading on the Protected Wreck Days and writing the new leaflet about the wreck of HMS <i>Montagu</i> .
Tara McEvoy-Wilding	Volunteer Marine Festival Warden	All round assistance with running the Festival
Claire Moody	Plastic Free North Devon	Loan of VR headsets
Jon Moore	PMNHS	Organising PMNHS participation
Simon Moses	Pharoah Print & Design	Printing of poster and leaflet
Paul Naylor	Underwater photographer	Invited speaker for weekly talks programme
Bettina Newman	BMLD	Design of Marine Life booklet
Terry Newman	Historic England	Help with appropriating HE funding for PWDs
Steve Ottley	Brightsea Print Group	Assistance with printing merchandise for sale
Michael Pitts	Film maker	Invited speaker for weekly talks programme
Lawrence Raybone	Ilfracombe Aquarium	Agreeing to loan of two aquarium tanks



<b>Name</b>	<b>Organisation</b>	<b>For</b>
Matthew Lee	Redbox VR	Help with VR headset operation
Shion Reynell	University of Plymouth	Joint fieldworking on NTZ potting project
Alan Rowland	Lundy Field Society	Help with appropriating LFS funding
Kesella Scott-Somme	Marine Biological Association	Organising DToL participation
Emma Sheehan	University of Plymouth	Joint working on NTZ potting project
Jon Slayer	Freelance camera and stunt man	360° underwater filming
Jean-Luc Solandt	Marine Conservation Society	Invited speaker for weekly talks programme
Paul St Pierre	RSPB	Article on Lundy seabird recovery for website
Zach Wait	Lundy Company	Assistance with visitors to the St Helen's Centre
Claire Wallerstein	Marine litter & climate change activist	Invited speaker for weekly talks programme
Rob Waterfield	Lundy Manager	On-island logistics & permissions
Sue Waterfield	Lundy Shop Manager	Assistance with sale of Festival goods
Rob Wells	Seal Research Trust	Invited speaker for weekly talks programme
Mark Westcott	BMLD	Design of Festival poster & leaflet; and of the MPA interpretation display panels.
Rob Whitney	North Devon Moving Image	Making of the NTZ documentary film



## APPENDICES

### INFORMATION SHEETS

- Appendix 1 – Minimum Diving Qualifications for volunteer divers
- Appendix 2 – Dive boat programme and logistics
- Appendix 3 – Marine Festival Press Release
- Appendix 4 – Schedule of Events for the Press Day, 14<sup>th</sup> July 2022
- Appendix 5 – Leaflet on intertidal accessibility for the Marine Bioblitz
- Appendix 6 – Using the iNaturalist app on your mobile phone
- Appendix 7 – Species recorded during the Marine Bioblitz
- Appendix 8 – Species sampled by the Darwin Tree of Life project
- Appendix 9 – Festival Wardens’ weekly blog posts
- Appendix 10 – The programme of the weekly talks given by invited guest speakers

### MAIN PROJECT REPORTS

- Appendix 11 – Summary pages of the report to the Blue Marine Foundation on the NTZ Potting Study and the BRUVS fish recording project
- Appendix 12 – Summary pages of the report to Historic England on the Protected Wreck Days and the photogrammetry studies of the protected wrecks
- Appendix 13 – Summary pages of the report to Natural England on the status of the sunset cup coral *Leptopsammia pruvoti* at Lundy in 2022





## Appendix 1 – Minimum Diving Qualifications



### Diving Qualifications



All those who intend to take part in any of the Festival’s diving projects will be asked to sign this statement before they dive at Lundy. The organisers of the Festival cannot be held responsible for any diving-related incident which may befall you during your dive(s) at the island. It should be understood that **you dive entirely at your own risk**. If you are unfamiliar with your dive buddy, you are asked to make your qualifications and diving experience known to them (and to insist they tell you their qualifications and their diving experience), before you enter the water.

#### YOU MUST

- Be aged 18 or over;
- Be a trained diver qualified to the level of BSAC Sports diver, SAA Club diver or PADI Advanced Open Water diver; or an equivalent level;
- Have recent experience of cold water diving including a minimum of 20 logged dives, 10 of which should be in the UK and 2 of which should be within the last 6 months;
- Have your own dive gear (or rented dive gear) which must have been serviced recently and be within test date;
- Have a current in-date diving medical or self-certification declaration;
- Have third party liability diving insurance; and
- Be fit on the day and fully able to participate.

I have read the above and can confirm I satisfy each point	
Name (capitals)	Signature



## Appendix 2 – Dive boat programme and logistics

The table below gives you an indication of which diving projects we'll hope to undertake on which days during the Festival. Of course, the projects concerned and the sites to be visited may have to be altered on the day in light of prevailing weather and sea conditions. You'll see that some of the departure times are pretty early in the morning. This is so that we can take advantage of slack water at the chosen sites. This may mean you need to book accommodation in Ilfracombe for the night before, depending from how far you are travelling. When booking such accommodation, please mention the early departure time, an early breakfast and possibly a packed lunch.

\*Note that Muster Time on the quayside is 30 mins. before time of departure. This will allow time to load gear onto the boat.

Date (2022)	Day	Dive boat	Times of LW	Times of HW	Groups/proposed locations for dives (based on projects to be undertaken) & assuming appropriate weather/sea conditions	*Muster Ilfracombe	Depart Ilfracombe	Return Ilfracombe
08-Jun	Wed	Barbara B	06:43/19:09	12:57	<b>Private Charter: Iona II &amp; Gull Rock wreck site</b> (photogrammetry, 360° photography & ROV studies - only small no. of divers on boat)	05:40	06:00	15:00
09-Jun	Thu	Barbara B	07:54/20:20	14:06	<b>Private Charter: Iona II &amp; Gull Rock wreck site</b> (photogrammetry, 360° photography & ROV studies - only small no. of divers on boat)	06:40	07:00	15:30
22-Jun	Wed	Barbara B	07:15/19:42	13:21	Allcomers: 1st dives: east coast (2 sites) suggest <b>off VC Quarry &amp; S. Halfway Bay</b> : (RBF/burrow searches for mantis shrimps) 2nd dives: west coast (2 sites) suggest vicinity of <b>Pilot's Quay</b> : sea fan health check; Ross counts; branching sponges counts <u>OR</u> 2nd: Fish transect dives <b>inside NTZ &amp; outside NTZ (east or west coasts)</b>	09:00	09:30	17:00
23-Jun		Barbara B	08:18/20:47	14:27	Vobster group: 1st dives: east coast (2 sites): <b>N. Halfway Bay &amp; S. of Knoll Pins</b> (RBF searches/burrow searches for mantis shrimps) 2nd dives: west coast (2 sites) suggest <b>off Needle Rock</b> : sea fan health check; Ross counts; branching sponges counts <u>OR</u> 2nd: Fish transect dives <b>inside NTZ &amp; outside NTZ (east or west coasts)</b>	09:30	10:00	17:30
06-Jul	Wed	Barbara B	05:03/17:21	11:15	<b>Private Charter</b> : Photogrammetry: (small no. on boat): 1st dives: <b>Knoll Pins</b> . 2nd dives: <b>Gull Rock wreck site</b>	05:40	06:00	16:00
07-Jul	Thu	Barbara B	05:54/18:16	12:09	Vobster group: 1st dives: Scallop dives <b>inside NTZ (mid-east coast)</b> . 2nd dives: West side - vicinity of <b>off SW Point</b> : spiny lobster counts; sea fan health check; Ross counts; branching sponges counts	07:30	08:00	16:00
08-Jul	Fri	Barbara B	06:55/19:23	13:12	Allcomers: 1st dives: Scallop dives <b>outside</b> the NTZ ( <b>mid-east coast</b> ). 2nd dives: West side: <b>off St Philip's Stone</b> (+deepest algal depths; spiny lobster sightings; sea fan health check; Ross counts; branching sponges counts)	07:30	08:00	16:00



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18-Jul	Mon	Obsession II	04:00/16:15	10:07	Porcupine MNHS: <b>Bioblitz</b> : 1st dives - <b>off Brazen Ward</b> . (+deepest algal depths; spiny lobster sightings; kelp holdfasts & stipes). 2nd dives - West side: <b>Jenny's Cove area</b> (+deepest algal depths; spiny lobster sightings; sea fan health check; Ross counts; branching sponges counts; fish transects outside of NTZ)	07:15	07:45 (incl. jetty pick-up at Lundy)	18:00
19-Jul	Tue	Obsession II	04:46/17:01	10:51	Porcupine MNHS: <b>Bioblitz</b> : 1st dives - <b>Knoll Pins</b> (+counts of SCCs). 2nd dives - <b>off Battery Point</b> . (+deepest algal depths; spiny lobster sightings; sea fan health check; Ross counts; branching sponges counts).	05:15(?) [to be confirmed]	05:45(?) (incl. jetty pick-up at Lundy)	15:30
21-Jul	Thu	Barbara B	06:22/18:45	12:30	Allcomers. 1st dives- <b>off Gull Rock</b> (density of burrowing anemones; searches for red band fish; searches for mantis shrimp burrows; sea fan health check). 2nd dives - <b>Gannets' Bay</b> (ratio of kelp species)	07:30	08:00	16:00
21-Jul		Obsession II	06:22/18:45	12:30	Allcomers. 1st dives: <b>off the Quarries</b> (sea fan health check; Ross counts; branching sponges counts). 2nd dives - <b>N. Rat Island</b> (ratio of kelp species)	06:30	07:00	16:00
22-Jul	Fri	Barbara B	07:19/19:52	13:31	Allcomers. 1st dives - Fish transect dives <u>inside</u> NTZ ( <b>Gull Rock</b> ). 2nd dives - West side: <b>off Devil's Slide</b> (deepest algal depths; spiny lobster searches; sea fan health checks; Ross counts; branching sponges counts)	06:30	07:00	16:30
25-Jul	Mon	Barbara B	10:31	04:20/16:49	Allcomers. 1st dives - <b>SW Point</b> (deepest algal depths; searches for spiny lobster). 2nd dives - Fish transect dives <u>outside</u> NTZ ( <b>N. Rat Island</b> ).	06:30	07:00	16:00
19-Aug	Fri	Barbara B	05:24/17:45	11:35	NAS: PWDs - <b>Iona II</b> followed by <b>HMS Montagu</b> . Viewpoint photos on the <i>Iona II</i> .	04:30	05:00	14:30
20-Aug	Sat	Barbara B	06:12/18:48	12:30	NAS: PWDs - <b>Iona II</b> followed by <b>HMS Montagu</b> . Viewpoint photos on the <i>Iona II</i> .	05:00	05:30	15:00
21-Aug	Sun	Barbara B	07:24/20:22	13:50	NAS: PWDs - <b>Iona II</b> followed by <b>HMS Montagu</b> . Viewpoint photos on the <i>Iona II</i> .	05:30	06:00	15:30
22-Aug	Mon	Barbara B	08:58/21:49	15:23	NAS: PWDs - <b>Iona II</b> followed by <b>HMS Montagu</b> . Viewpoint photos on the <i>Iona II</i> .	06:30	07:00	16:00
23-Aug	Tue	Obsession II	10:11	04:00/16:32	Vobster group: 1st dives -deep dives off <b>Seal's Rock(?) &amp; Pete's Pinnacle</b> (searching for small caves; photos/counts of sunset cup corals; sea fan health check). 2nd dives - on East side - <b>off Gull Rock</b> (sea fan health check & fish transect dives <u>inside</u> NTZ).	06:30	07:00	16:00



## Appendix 3 – Marine Festival Press Release

### **PRESS RELEASE**

Date of issue: 11th July 2022

#### **LUNDY MARINE FESTIVAL 2022 - 14th July until 11th September**

Thursday 14th July will mark the start of a two month-long Festival celebrating the 50th anniversary of the country's first Marine Protected Area at Lundy.

There is a great deal being planned for everyone to get involved in. During the Festival there will be activities such as a marine bioblitz (recording all of the marine species found on the shores and in the subtidal), coastal walks, themed and interactive games, rockpool rambles and, for the really intrepid, snorkel safaris. There'll also be citizen science projects such as using the iNaturalist app on your mobile phone to record photos of marine species you encounter so experts can identify them; or, if you're a diver, inspecting the health of pink sea fans, a nationally protected species.

The Darwin Tree of Life project, overseen by staff from the Natural History Museum and the Marine Biological Association, will be on the island for the first few days of the Festival, when the island's Church will be doubling up as a 'pop-up' marine laboratory.

Thanks to sponsorship from the Blue Marine Foundation, we are also making a short film about the effectiveness of the MPA's No Take Zone off the island's east coast, something of particular relevance given the government's recent announcement of establishing five trial Highly Protected Marine Areas elsewhere around the English coast.

Within the MPA lie three shipwrecks of historic importance, two of which (the *Iona II*, a paddle steamer which sank in 1864; and a battleship HMS *Montagu*, which ran into the island in 1906) will be featured in special Protected Wreck Days being organised by the Nautical Archaeology Society and funded by Historic England. A recent photogrammetry survey of the *Iona II* will allow the wreck to be viewed in 3-D when using Virtual Reality headsets.

The Marine Protected Area at Lundy has been a leading light in the field of marine conservation in the UK. It was the country's first statutory Marine Nature Reserve (1986), the first to have a Zoning Scheme (1993), the first to have a No Take Zone (2003) and the first to become a Marine Conservation Zone (2010). It has led the way in marine environmental protection and management in the UK through solid science and effective conservation work.

We look forward to welcoming you to the island to learn more about its marine life, its shipwrecks and the management of its waters.

Full details of what's being planned are on the Festival's website ([www.lundymarinefestival.org.uk](http://www.lundymarinefestival.org.uk)).

#### **Editors' Notes**

- Lundy is owned by the National Trust and managed by the Landmark Trust. The two charities have worked together since 1969 to restore and protect all that is cherished and special about Lundy. Every day visit and every overnight stay helps to secure the future of the island and its landscape, buildings and wildlife.  
**Enquiries about Lundy** itself and getting to and from the island should be directed to the Lundy Shore Office on 01271 863636; <https://www.landmarktrust.org.uk/lundyisland/>
- The Lundy Marine Festival is being organised and run by Robert Irving, a marine biological consultant who has been involved with Lundy and the management of its MPA for 40 years. He has acted as Secretary to the MPA's Advisory Group for 30 years and as Secretary to the island's Management Forum for the past 5 years.



**Enquiries about the Marine Festival** should be directed to Robert Irving - robert@sea-scope.co.uk, 07713 114006. [www.lundymarinefestival.org.uk](http://www.lundymarinefestival.org.uk)

- **About Blue Marine Foundation:**

Blue Marine Foundation is a UK ocean conservation charity set up in 2010 by some of the team behind the award-winning documentary film 'The End of the Line'. Blue Marine aims to restore the ocean to health by addressing overfishing, one of the world's biggest environmental problems. The charity is dedicated to creating marine reserves, restoring vital habitats and establishing models of sustainable fishing. Its mission is to see 30 per cent of the world's ocean under effective protection by 2030. [www.blumarinefoundation.com](http://www.blumarinefoundation.com)

QUOTES:

**Rob Joules**, North Devon General Manager, National Trust, said:

*"The National Trust is excited to be working alongside other partners in celebrating the 50<sup>th</sup> anniversary of the country's first Marine Protected Area at Lundy. The Marine Protected Area has made a significant contribution to conserving this special place and the upcoming events will be an opportunity to enjoy and experience it first-hand."*

**Sophie Hare**, Marine Lead Adviser, Natural England, said:

*"We are excited to support the Lundy Marine Festival to mark the 50<sup>th</sup> anniversary of Lundy as a Marine Protected Area and celebrate the island's outstanding marine wildlife. As the UK's first Marine Nature Reserve, Lundy has a special place in our conservation history and has pioneered approaches to marine management. We are proud to be part of Lundy's strong and active partnership whose work continues to protect the area's rich biodiversity."*

**Terence Newman**, Maritime Archaeologist, Historic England, said:

*"We are delighted to have helped fund the Festival as part of the 50<sup>th</sup> anniversary celebrations of the Lundy Marine Protected Area, and to support the opportunity to showcase the protected wreck Iona II and the scheduled monument HMS Montagu. The special Protected Wreck Days will provide information to understand these sites better and to ensure that they continue to be cared for, now and for future generations."*

**Sarah Clark**, Deputy Chief Officer, Devon and Severn Inshore Fisheries and Conservation Authority, said:

*"Devon and Severn Inshore Fisheries and Conservation Authority (D&S IFCA) is pleased to see the Marine Festival at Lundy come to fruition and supports all the work involved in it. The designation of the Lundy Marine Protected Area and all the work undertaken to manage the fishing activities in the site to conserve the special habitats and species have been at the forefront of marine conservation. D&S IFCA has been heavily involved in previous research on the benefits of the No Take Zone and is excited to see further monitoring work undertaken as part of the festival, to identify how the populations of lobsters and other species have changed over time"*.

**Dr Keith Hiscock**, originally from Ilfracombe and one of the first advocates of a Marine Reserve at Lundy, is now Chair of the Lundy MPA Advisory Group. He said:

*"The Marine Festival is a great way to celebrate 50 years since a management plan for the then voluntary MPA was agreed. It will also be a way to re-visit some of the monitoring work that is so important for management, to collect new records and for participants to simply enjoy Lundy's fabulous marine life."*

**Sam Fanshawe**, UK Projects Officer for the Blue Marine Foundation, said:

*"Lundy Island was a pioneer of UK marine conservation back in the 1980s, being the first statutory Marine Nature Reserve and the first of just four sites to set up a No Take Zone where no fishing at all takes place. The area provides a rare and therefore vitally important opportunity to measure the impact of these safe havens for marine life. Earlier surveys showed a rapid, large increase in abundance and size of lobsters within the No Take Zone and a 'spillover' effect into adjacent waters. Blue Marine is delighted to join in the Lundy Marine Festival and to support a film that captures Lundy Island's conservation journey and the first surveys in over a decade to look at how lobsters have fared, as well as other important commercial species such as edible crab and scallops. The findings will inform a new tranche of Highly Protected Marine Areas being piloted in UK waters, to help restore our marine ecosystems and replenish fish stocks."*

## Appendix 4 - Schedule of Events for the Media Day, 14<sup>th</sup> July 2022

[as distributed to all sponsors and members of the press and media invited to attend the first day of the Marine Festival]

### Thursday, July 14<sup>th</sup> - Schedule of events

- 10.00 – Depart Ilfracombe aboard the MS *Oldenburg*.** [While you're waiting (and have a strong phone signal), why not download the **iNaturalist** app onto your phone? This allows the identification of photos of species you may not know. There's a special 'front end' that's been designed solely for the Marine Festival. Full written instructions on using the app will be available at the Information Desk on the *Oldenburg*.]
- 12.00 - Arrive at Lundy** [You will disembark at the jetty at the southern end of the Landing Bay. The Beach Building is the wooden building at the foot of the jetty. As well as snorkelling gear, the building is also fitted out with a brand new diving compressor.]
- 12.15 – Welcome and Festival opening – Beach Building. Derek Green (Lundy General Manager) and Robert Irving (Marine Festival Co-ordinator). Overview of activities.** [Meet the island's Warden, Rosie Ellis, and the two volunteer Festival Wardens, Tara McEvoy-Wilding and Daisy Laing.]
- 12.30 – Marine Bioblitz begins – Landing Bay / Devil's Kitchen.** [The time of low water today is 13:04, with the tide dropping to 1.01 m above its lowest level known as Chart Datum. This is the best time to explore the lowest parts of the shore, which are rarely exposed to the air. Members of the Porcupine Marine Natural History Society and Coastwise North Devon are here to record as many species of marine wildlife as they can over the next 5 days.]
- 13.00 – onwards – Cetacean spotting with Chris & Sharron Blackmore – Castle parade.** [Members of Sea Watch Foundation, Chris and Sharron are regular visitors to Lundy at this time of year. This year, they are joined by Jordan Williams, an MSc student from Plymouth Univ., who is also making sound recordings of cetaceans under water.]
- 12.00 – 15.00 - Lunch served in the Marisco Tavern, at the centre of 'the village'. Also take the opportunity to visit the island's Shop, a little further up the road.**
- 13.30 – 14.30 Opportunity for media interviews – various locations including Castle parade - a good site with the MPA as a backdrop.**
- [14.30 – Pop up marine biology lab., St Helen's Church.** Staff from the Darwin Tree of Life project will be on hand to process specimens collected during the Bioblitz, for later determination of their DNA. Take the opportunity to have a look down a microscope. And find out about the MPA's first 50 years by looking at the display panels.]
- 15.00 – Free time**
- 16.00 – Boarding M.S. *Oldenburg*.** [Allow 15-20 minutes from the Tavern to walk down the Beach Road to get to the back to the jetty.]
- 18.30 – Arrive Ilfracombe**

Special thanks to the main sponsors of the Lundy Marine Festival 2022:





## Appendix 5 Leaflet describing intertidal areas around the coast of Lundy (for the Intertidal Bioblitz)



### INTERTIDAL AREAS AROUND THE COAST OF LUNDY



This leaflet lists the 'shores' around Lundy, most of which are accessible from the land (albeit with several having difficult access). It has been produced for the purposes of the Marine Festival's Intertidal Bioblitz Project.

Most shores will involve a bit of a scramble down cliffs and are not visited very often (i.e. there is no well-worn path). Remember that the exit route from a particular shore is likely to be the same as the entry route; this is particularly relevant once the tide has turned and starts to flood - and during spring tides this will happen quickly.

At most all intertidal areas on the west side of the island are inaccessible from the land, but during the Bioblitz, if sea/wind conditions allow, we will endeavour to drop people on to shores using the Warden's Rib. However, this may require swimming or wading ashore, so a wetsuit or drysuit is recommended for these excursions.

**PLEASE REMEMBER:**

1. BEFORE YOU SET OUT, MAKE SURE YOU KNOW THE TIME OF LOW WATER AND YOU HAVE A MEANS OF TELLING THE TIME ON YOU.
2. NEVER VENTURE ON TO A REMOTE SHORE ENTIRELY ON YOUR OWN (IN CASE YOU HAVE AN ACCIDENT).
3. BEFORE YOU SET OUT, ALWAYS NOTIFY SOMEONE 'BACK AT BASE' WHERE YOU ARE GOING AND WHEN YOU EXPECT TO RETURN.
4. WHEN YOU DO RETURN, MAKE SURE YOU TELL THAT PERSON YOU'RE BACK!

Sites are set out north to south, although they are numbered in anti-clockwise order, starting in the South-East corner.



### Intertidal areas around the coast of Lundy

Name	Descriptions	Notes on Access	P	Location
17 North Light landing point	Steep cliff shore.	A little used path can get you down to water level here, but it requires caution! <b>Wetsuit</b>	L	
16 N. of Gannet's Rock	Steep cliff shore. Known to host scarlet-and-gold star corals.	<b>Wetsuit</b> in calm conditions (wetsuit or drysuit recommended). <b>Wetsuit</b>	M	
15 Gannet's Bay	Rounded boulder and cobble shore.	Access from the East Side Path to central point of the Bay, then scramble down on south or north side. <b>Wetsuit</b>	M	
14 Brazen Ward	Steeply sloping bedrock.	Obvious path leads down to the Civil War platform. Thereafter, a scramble onto rocky shore. <b>Wetsuit</b>	M	
13 The Devil's Slide	Granite bedrock at foot of smooth incline to top of cliffs. Popular with climbers.	<b>Wetsuit</b> - possible in calm conditions (wetsuit or drysuit recommended). <b>Wetsuit</b>	L	
12 The Pyramid, N. Jenny's Cove	Granite bedrock forming a steeply sloping shore. [Nesting seabirds - access permission required.]	Land access possible but awkward - not encouraged because of nesting seabirds. <b>Wetsuit</b> or drysuit recommended. <b>Wetsuit</b>	M	
11 Halfway Wall Bay	Rounded boulder and cobble shore.	Backed by near-vertical cliffs without an obvious path, so <b>Wetsuit</b> or drysuit recommended. <b>Wetsuit</b>	L	

**ACCESS:** **Wetsuit** **Drysuit** **Difficult** **Wetsuit** **Steeply sloping** **Wetsuit** **Wetsuit** **Wetsuit**

**P =** Priority in obtaining marine biological records:

**L** Low

**M** Medium

**H** High

### Intertidal areas around the coast of Lundy

Name	Description	Notes on Access	P	Location
20 Dead Cow Point	Non-vertical granite cliffs. Very restricted access. Repeat records would be useful.	Not accessible in very calm conditions. May need to scramble over rocks or dig up requirements. <b>Difficult</b>	M	
22 Quarry Beach	Round boulder and cobble shore.	A long path (possibly a stile) runs from below the southern end of the Quarry platform. Access to beach from south of beach side. <b>Difficult access only</b>	M	
11 White Beach	Round boulder and cobble shore.	Inaccessible for all but the hardest from the land side. <b>Difficult access only</b> Wading or swimming advice. <b>Advanced</b>	L	
10 Sugar Loaf	Granite outcrop.	Inaccessible for all but the hardest from the land side. <b>Difficult access only</b> Wading or swimming advice. <b>Advanced</b>	L	
9 Ladies Beach	Granite cobbles and small boulders surrounded by high cliffs.	Long staircase from the north end of Landing to west side of cliff. <b>Difficult access only</b> Wading or swimming advice. <b>Advanced</b>	M	
8 Miller's Cote	Granite outcrop (fishing gullies - access permission required)	From the Landing Bay Outcrop (staff likely to permit access to Ladies Beach unless at low water springs). <b>Advanced</b>	L	
7 Historic Beach	Small granite boulders.	From the Landing Bay. <b>Straightforward</b>	L	
21 Plover Quay	Granite bedrock (fishing traps - access permission required)	A walk, narrow, steep track leads off the outcrop onto steep cliffs. <b>Difficult access only</b> <b>Difficult</b>	M	

**ACCESS:** **Very Difficult** **Difficult** **Advanced** **Straightforward** **Difficult access only**

**P:** Priority in obtaining marine biological records **High** **Medium** **Low**

### Intertidal areas around the coast of Lundy

Name	Description	Notes on Access	P	Location
22 Lantry Beach	Round boulders and cobbles with some remains of beach and bedrock. A small pond and an extensive upper midshore platform.	Access via a field rope and a scramble on low cliffs. The beach top of the South Light. <b>Advanced</b>	M	
23 Hermaid's Pool	A deep (but poor) pebbly beach with some remains of beach and bedrock. A small pond and an extensive upper midshore platform.	Access via a field rope and a scramble on low cliffs. The beach top of the South Light. <b>Advanced</b>	L	
24 2-Cove Beach	A 'V' shaped cove about 100m across below the South Light. Flat slabs of rock and rounded cobbles overlooking the beach. Not a small cove at the foot of cliff backing the beach.	Access either from the east via a scramble down the cliffs on both sides of South Light or from the west via the Hermaid's Eye cove. Because of the presence of many waterfalls. <b>Difficult</b>	L	
25 Hermaid's Eye cove	A large (and usually a small) cove whose main entrance is found on the SW side of the Devil's Kitchen. The exit is much smaller and higher up. Little attached marine life due to abrasion and most of it being above 100m through scree and gold star corals are present at entrance.	Only accessible on low water tides. "Treading the Hermaid's Eye" is popular for intertidal explorers. A tricky scramble from the Devil's Kitchen around small headlands with living sea urchins. <b>Difficult</b> Fishing at the South Light. <b>Difficult</b>	M	
1 Devil's Kitchen	Slate shore with rockpools, gullies and large boulders and bedrock formations. Biologically richest shore on Lundy.	Easy access at the back of the Beach Building. <b>Straightforward</b>	M	
2 Mt Island (S. side)	A Lundy runs through to N. side, with a few low-lying rockpools to make through.	Wear footwear which can get wet. Beware possible presence of seals within the cove. <b>Advanced</b>	M	
3 Mt Island (N. side)	Steep slate bedrock cliff. Deep, water-filled gullies separate Manna Island.	Difficult access from Devil's Kitchen. Gullies with extensive moulting or by shore down. <b>Difficult</b>	M	
4 Mt Island	Very sheltered, dominated by brown algae. Steep slate bedrock cliff.	Best access made is through the tunnel. <b>Difficult</b>	M	
5 The Jetty	Steep slate (shaded) bedrock beneath jetty.	Made up to rock, moulting or use a life-line kayak. Can scramble round to the Landing Bay at low water springs. <b>Advanced</b>	M	
6 Landing Bay	Sand with flat (slate) pebbles/cobbles.	At the foot of the Beach Building. <b>Straightforward</b>	L	

**ACCESS:** **Very Difficult** **Difficult** **Advanced** **Straightforward** **Difficult access only**

**P:** Priority in obtaining marine biological records **High** **Medium** **Low**

\* See also 4, 11, 12, 13 of the Lundy Biodiversity Plan (Lundy Biodiversity Plan) <https://www.lundy.com/wordpress/wp-content/uploads/2015/07/Lundy-Biodiversity-Plan.pdf>

## Appendix 6 Using the iNaturalist app on your mobile phone

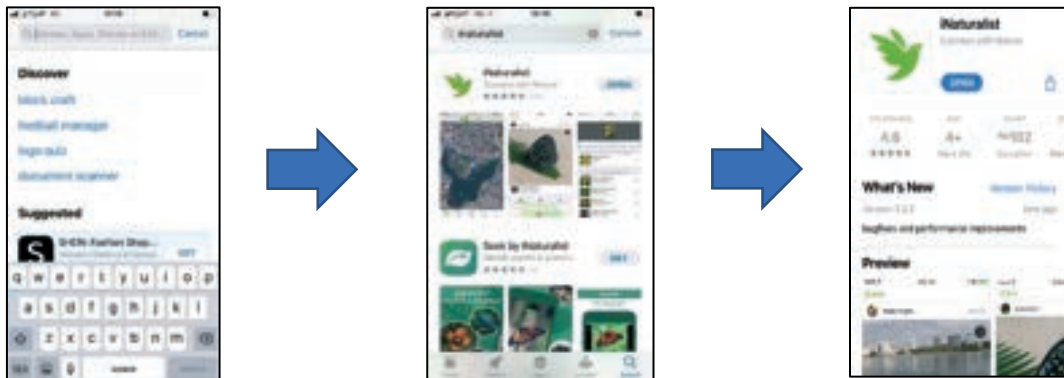
As part of the Festival's Marine Bioblitz, we'll be using some novel technology that's been specially adapted for use at Lundy. Even if you have difficulty telling a barnacle from a limpet, having the iNaturalist app on your phone will allow others (who see your photo) to tell you what it is, meaning you can still participate in the Bioblitz even though you may not consider yourself an expert at all!

Within the iNaturalist app, an 'umbrella project' for the Lundy Marine Festival has been set up by Summer Grundy (Data Manager at the Marine Biological Association in Plymouth) which links to the July and August Marine Bioblitz project periods.

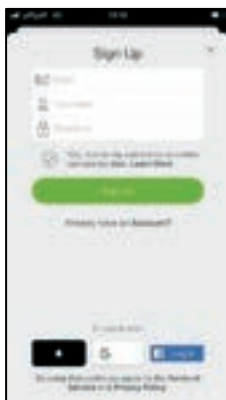
We've set out below what you'll need to do to make use of the app.

### A. Downloading and signing up to the iNaturalist app

- 1) Download the iNaturalist app to your phone or tablet from the iTunes app store or Google play store.



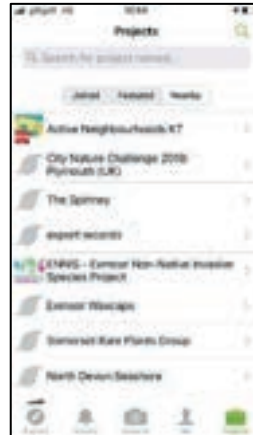
- 2) The first time you open the app, you can view a quick tutorial.
- 3) At the end of the tutorial, you can choose to sign in (if you already have an account), or you need to select "Sign up now!"



- 4) Provide an email, username, and password and click "Sign up".

### B. Directing to the correct project

1. Sign into the app and click on the 'projects' on the right hand side of the lower panel.

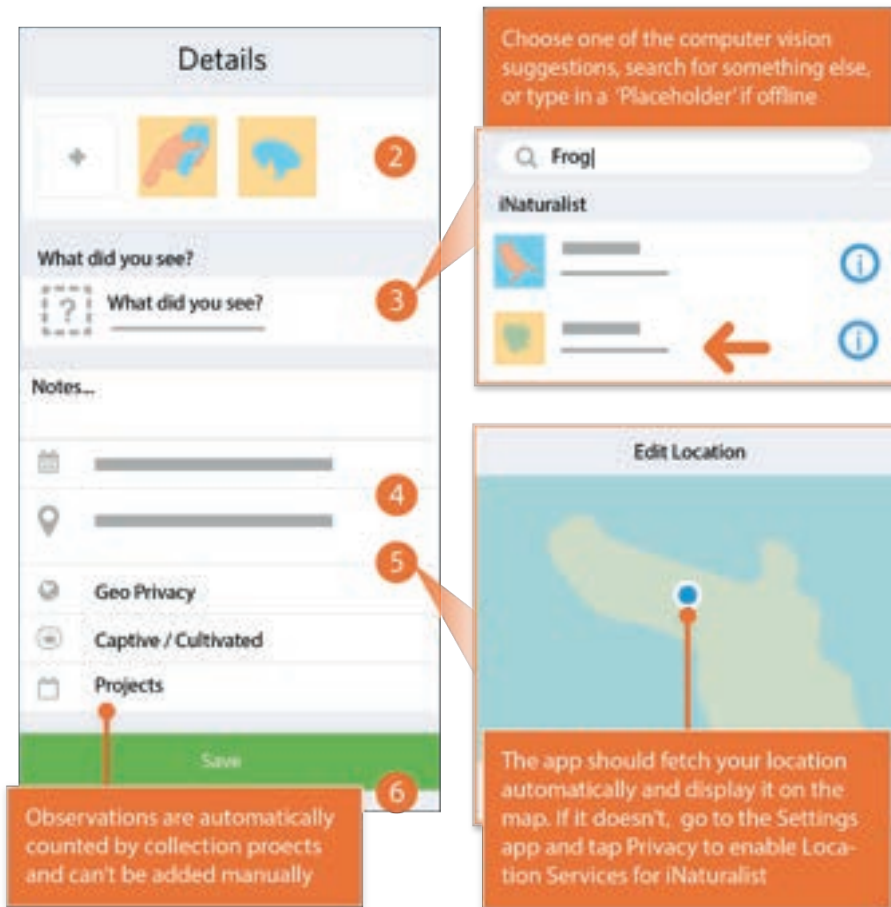


2. Click on the search icon and type in 'Lundy Marine Bioblitz' and select either the 'Lundy Marine Bioblitz July 2022' or 'Lundy Marine Bioblitz August 2022', depending on whether you are taking part in the Bioblitz from 14th-19th July or from 11th-16th August. Once on the project page, click join. **Now you are joined, any observations you make within the project location and time period will automatically be part of the project.**

### C. How to Make an Observation with your iPhone (see later for Android instructions)

1. Tap **observe** on the lower panel of app.
2. Add one or more photos as **evidence**.
3. Choose **what** you saw.
4. **When** you saw it should be added automatically.
5. **Where** you saw it should be added automatically. If it doesn't, check Privacy in the Settings app.
6. **Save** your observation.





7. **Upload** to share with the community. This should happen automatically. If it doesn't, tap the Upload button. You can turn off automatic upload from the app settings from the Me tab.



8. Check back for **activity** on your observation from the community or be notified by email to the address in your account settings.



### How to Make an Observation with your Android

1. Tap the **observe** button from the My Observations tab.



2. Add one or more photos as **evidence**.
3. Choose **what** you saw.
4. **When** you saw it should be added automatically.
5. **Where** you saw it should be added automatically. If this doesn't happen, check app permissions in the Settings app.
6. **Save** your observation.

7. **Sync** to share with the community. This should happen automatically. If it doesn't, tap the button. You can turn off auto upload from the Settings tab.



8. Check back for **activity** on your observation from the community or be notified by email to the address in your account settings.





## Appendix 7 All species recorded during the Marine Bioblitz

[ordered taxonomically, listed by Jon Moore; note that metadata for each species record was also collected]

Phylum	Class	Family	Genus	Species	Phylum	Class	Family	Genus	Species
Porifera	Demospongiae		Indet.	-	Porifera	Demospongiae	Halichondriidae	Halichondria	panicea
Porifera	Demospongiae		Indet.	-	Porifera	Demospongiae	Halichondriidae	Ciocalyptra	penicillus
Porifera	Demospongiae		Indet.	-	Porifera	Demospongiae	Halichondriidae	Hymeniacion	perlevis
Porifera	Demospongiae		Indet.	-	Porifera	Demospongiae	Halichondriidae	Hymeniacion	kitchingi
Porifera	Calcarea	Leucosoleniidae	Leucosolenia	-	Porifera	Demospongiae	Hymedesmiidae	Phorbos	fictitius
Porifera	Calcarea	Syconidae	Sycon	ciliatum	Porifera	Demospongiae	Hymedesmiidae	Hemimyscale	columella
Porifera	Calcarea	Baeriidae	Leuconia	nivea	Porifera	Demospongiae	Microcionidae	Ophlitaspongia	papilla
Porifera	Calcarea	Grantiidae	Grantia	compressa	Porifera	Demospongiae	Chalinidae	Haliclona	oculata
Porifera	Demospongiae	Geodiidae	Pachymatisma	johnstonia	Porifera	Demospongiae	Chalinidae	Haliclona	viscosa
Porifera	Demospongiae	Chondrillidae	Thymosia	guernei	Porifera	Demospongiae	Dysideidae	Dysidea	fragilis
Porifera	Demospongiae	Tethyidae	Tethya	citrina	Porifera	Demospongiae	Darwinellidae	Aplysilla	sulfurea
Porifera	Demospongiae	Suberitidae	Protosuberites	epiphytum	Porifera	Demospongiae	Halisarcidae	Halisarca	dujardini
Porifera	Demospongiae	Polymastiidae	Polymastia	penicillus	Cnidaria	Staurozoa	Halicystidae	Halicystus	auricula
Porifera	Demospongiae	Polymastiidae	Polymastia	boletiformis	Cnidaria	Hydrozoa		Indet.	-
Porifera	Demospongiae	Polymastiidae	Polymastia	mamillaris	Cnidaria	Hydrozoa	Aequoreidae	Aequorea	vitrina
Porifera	Demospongiae	Clionidae	Cliona	celata	Cnidaria	Hydrozoa	Haleciidae	Halecium	halecinum
Porifera	Demospongiae	Axinellidae	Axinella	damicornis	Cnidaria	Hydrozoa	Aglaopheniidae	Aglaophenia	-
Porifera	Demospongiae	Axinellidae	Axinella	infundibuliformis	Cnidaria	Hydrozoa	Aglaopheniidae	Aglaophenia	tubulifera
Porifera	Demospongiae	Axinellidae	Axinella	disimilis	Cnidaria	Hydrozoa	Aglaopheniidae	Gymnangium	montagui
Porifera	Demospongiae	Suberitidae	Homaxinella	subdola	Cnidaria	Hydrozoa	Halopterididae	Antennella	secundaria
Porifera	Demospongiae	Stelligeridae	Stelligera	montagui	Cnidaria	Hydrozoa	Plumulariidae	Nemertesia	antennina
Porifera	Demospongiae	Stelligeridae	Stelligera	stuposa	Cnidaria	Hydrozoa	Plumulariidae	Nemertesia	ramosa
Porifera	Demospongiae	Raspalliidae	Raspallia	hispidia	Cnidaria	Hydrozoa	Schizotrichidae	Schizotricha	frutescens
Porifera	Demospongiae	Raspalliidae	Raspallia	ramosa	Cnidaria	Hydrozoa	Sertulariidae	Abietinaria	abietina



## Lundy Marine Festival 2022



Porifera	Demospongiae	Dictyonellidae	Tethyspira	spinosa	Cnidaria	Hydrozoa	Sertulariidae	Dynamena	pumila
Cnidaria	Hydrozoa	Sertulariidae	<i>Abietinaria</i>	<i>abietina</i>	Nemertea	Pilidiophora	Lineidae	<i>Siphonenteron</i>	<i>bilineatum</i>
Cnidaria	Hydrozoa	Sertulariidae	<i>Dynamena</i>	<i>pumila</i>	Nemertea	Pilidiophora	Lineidae	<i>Lineus</i>	<i>viridis</i>
Cnidaria	Hydrozoa	Sertulariidae	<i>Hydrallmania</i>	<i>falcata</i>	Nemertea	Pilidiophora	Lineidae	<i>Micrura</i>	<i>purpurea</i>
Cnidaria	Hydrozoa	Sertulariidae	<i>Sertularella</i>	<i>gayi</i>	Nemertea	Pilidiophora	Lineidae	<i>Riseriellus</i>	<i>occultus</i>
Cnidaria	Hydrozoa	Sertulariidae	<i>Tamarisca</i>	<i>tamarisca</i>	Nemertea	Hoploneurtea	Emplectonematidae	<i>Emplectonema</i>	<i>gracile</i>
Cnidaria	Hydrozoa	Campanulariidae	<i>Obelia</i>	<i>geniculata</i>	Annelida	Golfingiidae	Golfingiidae	<i>Nephasoma</i>	<i>minutum</i>
Cnidaria	Hydrozoa	Campanulariidae	<i>Rhizocaulus</i>	<i>verticillatus</i>	Annelida	Polychaeta	Polynoidae	<i>Alentia</i>	<i>gelatinosa</i>
Cnidaria	Anthozoa	Alcyoniidae	<i>Alcyonium</i>	<i>digitatum</i>	Annelida	Polychaeta	Polynoidae	<i>Harmathoe</i>	<i>clavigera</i>
Cnidaria	Anthozoa	Alcyoniidae	<i>Alcyonium</i>	<i>glomeratum</i>	Annelida	Polychaeta	Polynoidae	<i>Harmathoe</i>	<i>extenuata</i>
Cnidaria	Anthozoa	Gorgoniidae	<i>Eunicella</i>	<i>verrucosa</i>	Annelida	Polychaeta	Polynoidae	<i>Harmathoe</i>	<i>fragilis</i>
Cnidaria	Anthozoa	Cerianthidae	<i>Cerianthus</i>	<i>lloydii</i>	Annelida	Polychaeta	Polynoidae	<i>Harmathoe</i>	<i>impar</i>
Cnidaria	Anthozoa	Epizoanthidae	<i>Epizoanthus</i>	<i>couchii</i>	Annelida	Polychaeta	Polynoidae	<i>Malmgrenia</i>	<i>mcintoshii</i>
Cnidaria	Anthozoa	Parazoanthidae	<i>Parazoanthus</i>	<i>axinellae</i>	Annelida	Polychaeta	Polynoidae	<i>Lepidonotus</i>	<i>clava</i>
Cnidaria	Anthozoa	Parazoanthidae	<i>Isozoanthus</i>	<i>sulcatus</i>	Annelida	Polychaeta	Sigalionidae	<i>Pholoe</i>	<i>inornata</i>
Cnidaria	Anthozoa	Actiniidae	<i>Actinia</i>	<i>equina</i>	Annelida	Polychaeta	Sigalionidae	<i>Sthenelais</i>	<i>boa</i>
Cnidaria	Anthozoa	Actiniidae	<i>Actinia</i>	<i>fragacea</i>	Annelida	Polychaeta	Phyllodocidae	<i>Myrta</i>	<i>picta</i>
Cnidaria	Anthozoa	Actiniidae	<i>Anemonia</i>	<i>viridis</i>	Annelida	Polychaeta	Phyllodocidae	<i>Phyllodoce</i>	<i>mucosa</i>
Cnidaria	Anthozoa	Actiniidae	<i>Bunodactis</i>	<i>verrucosa</i>	Annelida	Polychaeta	Phyllodocidae	<i>Eulalia</i>	<i>clavigera</i>
Cnidaria	Anthozoa	Aiptasiidae	<i>Aiptasia</i>	<i>mutabilis</i>	Annelida	Polychaeta	Glyceridae	<i>Glycera</i>	<i>fallax</i>
Cnidaria	Anthozoa	Sagartiidae	<i>Cylista</i>	<i>elegans</i>	Annelida	Polychaeta	Glyceridae	<i>Glycera</i>	<i>lapiidum</i>
Cnidaria	Anthozoa	Epizoanthidae	<i>Epizoanthus</i>	<i>couchii</i>	Annelida	Polychaeta	Sphaerodoridae	<i>Sphaerodorum</i>	<i>gracilis</i>
Cnidaria	Anthozoa	Sagartiidae	<i>Actinothoe</i>	<i>sphyrodeta</i>	Annelida	Polychaeta	Hesionidae	<i>Psamathe</i>	<i>fusca</i>
Cnidaria	Anthozoa	Corallimorphidae	<i>Corynactis</i>	<i>viridis</i>	Annelida	Polychaeta	Syllidae	<i>Syllis</i>	<i>gracilis</i>
Cnidaria	Anthozoa	Caryophylliidae	<i>Caryophyllia</i>	<i>smithii</i>	Annelida	Polychaeta	Syllidae	<i>Nudisyllis</i>	<i>puligera</i>
Cnidaria	Anthozoa	Caryophylliidae	<i>Caryophyllia</i>	<i>inornata</i>	Annelida	Polychaeta	Syllidae	<i>Brania</i>	<i>pusilla</i>
Cnidaria	Anthozoa	Dendrophylliidae	<i>Balanophyllia</i>	<i>regia</i>	Annelida	Polychaeta	Syllidae	<i>Proceraea</i>	<i>picta</i>
Cnidaria	Anthozoa	Dendrophylliidae	<i>Leptopsammia</i>	<i>pruvoti</i>	Annelida	Polychaeta	Nereididae	<i>Nereis</i>	<i>pelagica</i>



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Platyhelminthes	Euryleptidae	Prostheceraeus	vittatus	Annelida	Polychaeta	Nereididae	Perinereis	cultrifera
Annelida	Nereididae	<i>Platynereis</i>	-	Annelida	Polychaeta	Sabellidae	<i>Bispira</i>	<i>volutacornis</i>
Annelida	Nephtyidae	<i>Nephtys</i>	-	Annelida	Polychaeta	Sabellidae	<i>Parasabella</i>	<i>langerhansii</i>
Annelida	Eunicidae	<i>Marphysa</i>	<i>sanguinea</i>	Annelida	Polychaeta	Sabellidae	<i>Fabricia</i>	<i>stellaris</i>
Annelida	Lumbrineridae	<i>Lumbrineris</i>	<i>latreilli</i>	Annelida	Polychaeta	Sabellidae	<i>Myxicola</i>	-
Annelida	Oeonidae	<i>Arabella</i>	<i>iricolor</i>	Annelida	Polychaeta	Sabellidae	<i>Pseudofabricia</i>	<i>aberrans</i>
Annelida	Dorvilleidae	<i>Ophryotrocha</i>	-	Annelida	Polychaeta	Serpulidae	<i>Spirobranchus</i>	-
Annelida	Dorvilleidae	<i>Schistomeringos</i>	<i>neglecta</i>	Annelida	Polychaeta	Serpulidae	<i>Spirobranchus</i>	<i>triqueter</i>
Annelida	Orbiniidae	<i>Orbinia</i>	-	Annelida	Polychaeta	Serpulidae	<i>Filograna</i>	<i>implexa</i>
Annelida	Spionidae	<i>Annides</i>	<i>oxycephala</i>	Annelida	Polychaeta	Serpulidae	<i>Salmacina</i>	<i>dysteri</i>
Annelida	Spionidae	<i>Boccardia</i>	<i>proboscidea</i>	Annelida	Polychaeta	Serpulidae	<i>Indet.</i>	-
Annelida	Spionidae	<i>Boccardia</i>	<i>polybranchia</i>	Annelida	Polychaeta	Serpulidae	<i>Circeis</i>	<i>spirillum</i>
Annelida	Spionidae	<i>Malacoceros</i>	<i>girardi</i>	Annelida	Polychaeta	Serpulidae	<i>Spirorbis</i>	<i>tridentatus</i>
Annelida	Spionidae	<i>Malacoceros</i>	<i>vulgaris</i>	Arthropoda	Thecostraca	Verrucidae	<i>Verruca</i>	<i>stroemia</i>
Annelida	Spionidae	<i>Polydora</i>	-	Arthropoda	Thecostraca	Chthamalidae	<i>Chthamalus</i>	<i>montagui</i>
Annelida	Spionidae	<i>Dipolydora</i>	<i>flava</i>	Arthropoda	Thecostraca	Chthamalidae	<i>Chthamalus</i>	<i>stellatus</i>
Annelida	Spionidae	<i>Dipolydora</i>	<i>saintjosephi</i>	Arthropoda	Thecostraca	Balanidae	<i>Semibalanus</i>	<i>balanoides</i>
Annelida	Spionidae	<i>Pseudopolydora</i>	<i>pulchra</i>	Arthropoda	Thecostraca	Balanidae	<i>Balanus</i>	<i>balanus</i>
Annelida	Mageloniidae	<i>Magelona</i>	<i>alleni</i>	Arthropoda	Thecostraca	Balanidae	<i>Balanus</i>	<i>crenatus</i>
Annelida	Chaetopteridae	<i>Chaetopterus</i>	-	Arthropoda	Thecostraca	Elmniidae	<i>Austrorhinus</i>	<i>modestus</i>
Annelida	Cirratulidae	<i>Cirratulus</i>	<i>cirratus</i>	Arthropoda	Thecostraca	Pyrgomatidae	<i>Adna</i>	<i>anglica</i>
Annelida	Capitellidae	<i>Capitella</i>	-	Arthropoda	Malacostraca	Caprellidae	<i>Indet.</i>	-
Annelida	Capitellidae	<i>Mediomastus</i>	<i>fragilis</i>	Arthropoda	Malacostraca	Caprellidae	<i>Pariambus</i>	<i>typicus</i>
Annelida	Capitellidae	<i>Notomastus</i>	-	Arthropoda	Malacostraca	Sphaeromatidae	<i>Dynamene</i>	<i>bidentata</i>
Annelida	Arenicolidae	<i>Arenicolides</i>	<i>branchialis</i>	Arthropoda	Malacostraca	Janiridae	<i>Janira</i>	<i>maculosa</i>
Annelida	Arenicolidae	<i>Arenicolides</i>	<i>ecaudata</i>	Arthropoda	Malacostraca	Idoteidae	<i>Idotea</i>	-
Annelida	Oweniidae	<i>Galathowenia</i>	<i>oculata</i>	Arthropoda	Malacostraca	Ligiidae	<i>Ligia</i>	<i>oceanica</i>
Annelida	Sabelliidae	<i>Sabellaria</i>	<i>spinulosa</i>	Arthropoda	Malacostraca	Indet.	<i>Indet.</i>	-



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Annelida	Polychaeta	Sabellidae	<i>Amphiglena</i>	<i>mediterranea</i>	Arthropoda	Malacostraca	Nephropidae	<i>Homarus</i>	<i>gammarus</i>
Arthropoda	Malacostraca	Palinuridae	<i>Palinurus</i>	<i>elephas</i>	Mollusca	Gastropoda	Epitonidae	<i>Epitonium</i>	<i>clathrus</i>
Arthropoda	Malacostraca	Porcellanidae	<i>Pisidia</i>	<i>longicornis</i>	Mollusca	Gastropoda	Triviidae	<i>Trivia</i>	<i>arctica</i>
Arthropoda	Malacostraca	Porcellanidae	<i>Porcellana</i>	<i>platycheles</i>	Mollusca	Gastropoda	Triviidae	<i>Trivia</i>	<i>monacha</i>
Arthropoda	Malacostraca	Majidae	<i>Maja</i>	<i>brachydactyla</i>	Mollusca	Gastropoda	Velutinidae	<i>Marsenia</i>	<i>perspicua</i>
Arthropoda	Malacostraca	Oregoniidae	<i>Hyas</i>	-	Mollusca	Gastropoda	Muricidae	<i>Nucella</i>	<i>lapillus</i>
Arthropoda	Malacostraca	Inachidae	<i>Inachus</i>	-	Mollusca	Gastropoda	Nassariidae	<i>Tritia</i>	<i>incrassata</i>
Arthropoda	Malacostraca	Cancridae	<i>Cancer</i>	<i>pagurus</i>	Mollusca	Gastropoda	Nassariidae	<i>Tritia</i>	<i>reticulata</i>
Arthropoda	Malacostraca	Polybiidae	<i>Necora</i>	<i>puber</i>	Mollusca	Gastropoda	Hermæidae	<i>Hermæa</i>	<i>bifida</i>
Arthropoda	Malacostraca	Carcinidae	<i>Carcinus</i>	<i>maenas</i>	Mollusca	Gastropoda	Limapontiidae	<i>Placida</i>	<i>dendritica</i>
Arthropoda	Malacostraca	Carcinidae	<i>Xaiva</i>	<i>biguttata</i>	Mollusca	Gastropoda	Aplysiidae	<i>Aplysia</i>	<i>punctata</i>
Arthropoda	Malacostraca	Xanthidae	<i>Xantho</i>	<i>hydrophilus</i>	Mollusca	Gastropoda	Tritoniidae	<i>Duvaucelia</i>	<i>odhneri</i>
Arthropoda	Malacostraca	Xanthidae	<i>Xantho</i>	<i>pilipes</i>	Mollusca	Gastropoda	Dotidae	<i>Doto</i>	-
Arthropoda	Hexapoda	Neanuridae	<i>Anurida</i>	<i>maritima</i>	Mollusca	Gastropoda	Dotidae	<i>Doto</i>	<i>fragilis</i>
Mollusca	Polyplacophora	Tonicellidae	<i>Lepidochitona</i>	<i>cinerea</i>	Mollusca	Gastropoda	Dotidae	<i>Doto</i>	<i>pinnatifida</i>
Mollusca	Gastropoda	Lottiidae	<i>Testudinalia</i>	<i>testudinalis</i>	Mollusca	Gastropoda	Calyciadoridae	<i>Diaphorodoris</i>	<i>alba</i>
Mollusca	Gastropoda	Patellidae	<i>Patella</i>	<i>depressa</i>	Mollusca	Gastropoda	Calyciadoridae	<i>Diaphorodoris</i>	<i>luteocincta</i>
Mollusca	Gastropoda	Patellidae	<i>Patella</i>	<i>ulyssiponensis</i>	Mollusca	Gastropoda	Polyceridae	<i>Limacia</i>	<i>clavigera</i>
Mollusca	Gastropoda	Patellidae	<i>Patella</i>	<i>vulgata</i>	Mollusca	Gastropoda	Polyceridae	<i>Polycera</i>	-
Mollusca	Gastropoda	Patellidae	<i>Patella</i>	<i>pellucida</i>	Mollusca	Gastropoda	Polyceridae	<i>Polycera</i>	<i>kernowensis</i>
Mollusca	Gastropoda	Trochidae	<i>Phorcus</i>	<i>lineatus</i>	Mollusca	Gastropoda	Polyceridae	<i>Polycera</i>	<i>quadrilineata</i>
Mollusca	Gastropoda	Trochidae	<i>Steramphala</i>	<i>cineraria</i>	Mollusca	Gastropoda	Cadlinidae	<i>Cadlina</i>	<i>laevis</i>
Mollusca	Gastropoda	Trochidae	<i>Steramphala</i>	<i>umbilicalis</i>	Mollusca	Gastropoda	Dorididae	<i>Doris</i>	<i>pseudoargus</i>
Mollusca	Gastropoda	Calliostomatidae	<i>Calliostoma</i>	<i>zizyphinum</i>	Mollusca	Gastropoda	Discodorididae	<i>Discodoris</i>	<i>rosi</i>
Mollusca	Gastropoda	Littorinidae	<i>Littorina</i>	<i>littorea</i>	Mollusca	Gastropoda	Facelinidae	<i>Favorinus</i>	<i>bianus</i>
Mollusca	Gastropoda	Littorinidae	<i>Melarhaphe</i>	<i>neritoides</i>	Mollusca	Gastropoda	Ellobiidae	<i>Leucophytia</i>	<i>bidentata</i>
Mollusca	Gastropoda	Littorinidae	<i>Littorina</i>	-	Mollusca	Gastropoda	Otinidae	<i>Otina</i>	<i>ovata</i>
Mollusca	Gastropoda	Littorinidae	<i>Littorina</i>	<i>saxatilis</i>	Mollusca	Gastropoda	Onchidiidae	<i>Onchidella</i>	<i>celtica</i>



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Mollusca	Gastropoda	Rissoidea	Rissoa	<i>parva</i>	Mollusca	Bivalvia	Mytilidae	Mytilus	<i>edulis</i>
Mollusca	Bivalvia	Pectinidae	<i>Aequipecten</i>	<i>opercularis</i>	Bryozoa	Gymnolaemata	Scrupariidae	Scruparia	<i>ambigua</i>
Mollusca	Bivalvia	Anomiidae	<i>Indet.</i>	-	Bryozoa	Gymnolaemata	Scrupariidae	Scruparia	<i>chelata</i> <i>membranacea</i>
Mollusca	Bivalvia	Anomiidae	<i>Heteranomia</i>	<i>squamula</i>	Bryozoa	Gymnolaemata	Membraniporidae	<i>Membranipora</i>	<i>a</i>
Mollusca	Bivalvia	Semelidae	<i>Abra</i>	<i>alba</i>	Bryozoa	Gymnolaemata	Electridae	<i>Electra</i>	<i>pilosa</i>
Bryozoa	Gymnolaemata		<i>Indet.</i>	-	Bryozoa	Gymnolaemata	Flustridae	<i>Flustra</i>	<i>foliacea</i>
Bryozoa	Gymnolaemata		<i>Indet.</i>	-	Bryozoa	Gymnolaemata	Cellariidae	<i>Cellaria</i>	-
Bryozoa	Gymnolaemata		<i>Indet.</i>	-	Bryozoa	Gymnolaemata	Cellariidae	<i>Cellaria</i>	<i>fistulosa</i>
Bryozoa	Stenolaemata	Crisiidae	<i>Indet.</i>	-	Bryozoa	Gymnolaemata	Candidae	<i>Caberea</i>	<i>boryi</i>
Bryozoa	Stenolaemata	Crisiidae	<i>Fillicrisia</i>	<i>geniculata</i>	Bryozoa	Gymnolaemata	Candidae	<i>Scrupocellaria</i>	-
Bryozoa	Stenolaemata	Crisiidae	<i>Crisida</i>	<i>cornuta</i>	Bryozoa	Gymnolaemata	Candidae	<i>Cradoscrupocellaria</i>	<i>reptans</i>
Bryozoa	Stenolaemata	Crisiidae	<i>Crisia</i>	-	Bryozoa	Gymnolaemata	Candidae	<i>Scrupocellaria</i>	<i>scrupea</i>
Bryozoa	Stenolaemata	Crisiidae	<i>Crisia</i>	<i>denticulata</i>	Bryozoa	Gymnolaemata	Bugulidae	<i>Bugulina</i>	<i>avicularia</i>
Bryozoa	Stenolaemata	Crisiidae	<i>Crisia</i>	<i>eburnea</i>	Bryozoa	Gymnolaemata	Bugulidae	<i>Bugulina</i>	<i>flabellata</i>
Bryozoa	Stenolaemata	Lichenoporidae	<i>Disporella</i>	<i>hispidia</i>	Bryozoa	Gymnolaemata	Bugulidae	<i>Bugulina</i>	<i>turbinata</i>
Bryozoa	Gymnolaemata	Alcyoniidae	<i>Alcyonidium</i>	<i>hirsutum</i>	Echinodermata	Asteroidea	Luidiidae	<i>Luidia</i>	<i>ciliaris</i>
Bryozoa	Gymnolaemata	Alcyoniidae	<i>Alcyonidioides</i>	<i>mytili</i>	Echinodermata	Asteroidea	Asterinidae	<i>Asterina</i>	<i>gibbosa</i>
Bryozoa	Gymnolaemata	Flustrellididae	<i>Flustrellidra</i>	<i>hispidia</i>	Echinodermata	Asteroidea	Asterinidae	<i>Asterina</i>	<i>phylactica</i>
Bryozoa	Gymnolaemata	Umbonulidae	<i>Oshurkovia</i>	<i>littoralis</i>	Echinodermata	Asteroidea	Asteriidae	<i>Marthasterias</i>	<i>glacialis</i>
Bryozoa	Gymnolaemata	Exochellidae	<i>Escharoides</i>	<i>coccinea</i>	Echinodermata	Ophiuroidea	Ophiotrichidae	<i>Ophiotrix</i>	<i>fragilis</i>
Bryozoa	Gymnolaemata	Watersiporidae	<i>Watersipora</i>	<i>subtorquata</i>	Echinodermata	Ophiuroidea	Ophiotomidae	<i>Ophiocomina</i>	<i>nigra</i>
Bryozoa	Gymnolaemata	Cryptosulidae	<i>Cryptosula</i>	<i>pallasiana</i>	Echinodermata	Ophiuroidea	Amphiuridae	<i>Amphiura</i>	<i>filiformis</i>
Bryozoa	Gymnolaemata	Bitectiporidae	<i>Pentapora</i>	<i>foliacea</i>	Echinodermata	Ophiuroidea	Amphiuridae	<i>Amphipholis</i>	<i>squamata</i>
Bryozoa	Gymnolaemata	Smittinidae	<i>Parasmittina</i>	<i>trispinosa</i>	Echinodermata	Ophiuroidea	Ophiuridae	<i>Ophiura</i>	<i>albida</i>
Bryozoa	Gymnolaemata	Schizoporellidae	<i>Schizoporella</i>	<i>unicornis</i>	Echinodermata	Echinoidea	Parechinidae	<i>Psammecchinus</i>	<i>miliaris</i>
Bryozoa	Gymnolaemata	Celleporidae	<i>Cellepora</i>	<i>pumicosa</i>	Echinodermata	Echinoidea	Echinidae	<i>Echinus</i>	<i>esculentus</i>
Bryozoa	Gymnolaemata	Celleporidae	<i>Celleporina</i>	<i>caliciformis</i>	Echinodermata	Holothuroidea	Holothuriidae	<i>Holothuria</i>	<i>forskali</i>
Bryozoa	Gymnolaemata	Celleporidae	<i>Omalosecosa</i>	<i>ramulosa</i>	Echinodermata	Holothuroidea	Cucumariidae	<i>Indet.</i>	-



Bryozoa	Gymnolaemata	Aeteidae	Aetea	<i>anguina</i>	Echinodermata	Holothuroidea	Phylloporidae	<i>Neopentadactyla</i>	<i>mixta</i>
Chordata	Asciacea	Clavelinidae	<i>Clavelina</i>	<i>lepadiformis</i>	Chordata	Actinopteri	Blenniidae	<i>Lipophrys</i>	<i>pholis</i>
Chordata	Asciacea	Clavelinidae	<i>Pycnoclavella</i>	<i>producta</i>	Chordata	Actinopteri	Blenniidae	<i>Parablennius</i>	<i>gattorugine</i>
Chordata	Asciacea	Clavelinidae	<i>Pycnoclavella</i>	<i>aurilucens</i>	Chordata	Actinopteri	Pholidae	<i>Pholis</i>	<i>gunnellus</i>
Chordata	Asciacea	Polyclinidae	<i>Morchellium</i>	<i>argus</i>	Chordata	Actinopteri	Gobiidae	<i>Pomatoschistus</i>	<i>flavescens</i>
Chordata	Asciacea	Polyclinidae	<i>Aplidium</i>	<i>turbinatum</i>	Chordata	Actinopteri	Gobiidae	<i>Thoragobius</i>	<i>ephippiatus</i>
Chordata	Asciacea	Polyclinidae	<i>Aplidium</i>	-	Cyanobacteria	Cyanophyceae	Rivulariaceae	<i>Rivularia</i>	<i>bullata</i>
Chordata	Asciacea	Polyclinidae	<i>Aplidium</i>	<i>nordmanni</i>	Rhodophyta			<i>Indet.</i>	-
Chordata	Asciacea	Polyclinidae	<i>Aplidium</i>	<i>pallidum</i>	Rhodophyta			<i>Indet.</i>	-
Chordata	Asciacea	Polyclinidae	<i>Aplidium</i>	<i>punctum</i>	Rhodophyta	Bangiophyceae	Bangiaceae	<i>Porphyra</i>	-
Chordata	Asciacea	Didemnidae	<i>Didemnum</i>	<i>pseudofulgens</i>	Rhodophyta	Bangiophyceae	Bangiaceae	<i>Pyropia</i>	<i>leucosticta</i>
Chordata	Asciacea	Didemnidae	<i>Didemnum</i>	<i>maculosum</i>	Rhodophyta	Bangiophyceae	Bangiaceae	<i>Porphyra</i>	<i>umbilicalis</i>
Chordata	Asciacea	Didemnidae	<i>Polysyncraton</i>	<i>bilobatum</i>	Rhodophyta	Florideophyceae	Rhodothamniellaceae		
Chordata	Asciacea	Didemnidae	<i>Diplosoma</i>	<i>spongiforme</i>	Rhodophyta	Florideophyceae		<i>Rhodothamniella</i>	<i>floridula</i>
Chordata	Asciacea	Didemnidae	<i>Lissoclinum</i>	<i>perforatum</i>	Rhodophyta	Florideophyceae	Acrochaetiaceae	<i>Rhodochorton</i>	<i>purpureum</i>
Chordata	Asciacea	Perophoridae	<i>Perophora</i>	<i>listeri</i>	Rhodophyta	Florideophyceae	Nemaliaceae	<i>Nemalion</i>	<i>elminthoides</i>
Chordata	Asciacea	Asciidae	<i>Ascidia</i>	<i>mentula</i>	Rhodophyta	Florideophyceae	Nemaliaceae		-
Chordata	Asciacea	Asciidae	<i>Ascidia</i>	<i>virginica</i>	Rhodophyta	Florideophyceae	Scinaiceae	<i>Scinaia</i>	
Chordata	Asciacea	Styelidae	<i>Stolonica</i>	<i>socialis</i>	Rhodophyta	Florideophyceae	Bonnemaisoniaceae	<i>Asparagopsis</i>	<i>armata</i>
Chordata	Asciacea	Styelidae	<i>Botryllus</i>	<i>schlosseri</i>	Rhodophyta	Florideophyceae	Bonnemaisoniaceae	<i>Asparagopsis</i>	<i>armata</i>
Chordata	Asciacea	Styelidae	<i>Botrylloides</i>	<i>leachii</i>	Rhodophyta	Florideophyceae	Bonnemaisoniaceae	<i>Bonnemaisonia</i>	<i>asparagoides</i>
Chordata	Actinopteri	Gobiesocidae	<i>Lepadogaster</i>	<i>purpurea</i>	Rhodophyta	Florideophyceae	Bonnemaisoniaceae	<i>Bonnemaisonia</i>	<i>hamifera</i>
Chordata	Actinopteri	Gadidae	<i>Pollachius</i>	<i>pollachius</i>	Rhodophyta	Florideophyceae	Gelidiaceae	<i>Gelidium</i>	<i>spinosum</i>
Chordata	Actinopteri	Gadidae	<i>Trisopterus</i>	<i>luscus</i>	Rhodophyta	Florideophyceae	Gelidiaceae	<i>Gelidium</i>	<i>pulchellum</i>
Chordata	Actinopteri	Gadidae	<i>Trisopterus</i>	<i>minutus</i>	Rhodophyta	Florideophyceae	Gelidiaceae	<i>Gelidium</i>	<i>pusillum</i>
Chordata	Actinopteri	Labridae	<i>Centrolabrus</i>	<i>exoletus</i>	Rhodophyta	Florideophyceae	Pterocladaceae	<i>Pterocladella</i>	<i>capillacea</i>
Chordata	Actinopteri	Labridae	<i>Ctenolabrus</i>	<i>rupestris</i>	Rhodophyta	Florideophyceae	Palmariaaceae	<i>Palmaria</i>	<i>palmata</i>
Chordata	Actinopteri	Labridae	<i>Labrus</i>	<i>bergylta</i>	Rhodophyta	Florideophyceae	Dumontiaceae	<i>Dilsea</i>	<i>carnosa</i>



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Chordata	Actinopteri	Labridae	<i>Labrus</i>	<i>mixtus</i>	Rhodophyta	Florideophyceae	Dumontiaceae	<i>Dumontia</i>	<i>contorta</i>
Rhodophyta	Florideophyceae	Kallymeniaceae	<i>Metacallophyllis</i>	<i>laciniata</i>	Rhodophyta	Florideophyceae	Plocamiaceae	<i>Plocamium</i>	<i>cartilagineum</i>
Rhodophyta	Florideophyceae	Kallymeniaceae	<i>Kallymenia</i>	<i>reniformis</i>	Rhodophyta	Florideophyceae	Furcellariaceae	<i>Halarachnion</i>	<i>ligulatum</i>
Rhodophyta	Florideophyceae	Kallymeniaceae	<i>Meredithia</i>	<i>microphylla</i>	Rhodophyta	Florideophyceae	Caulacanthaceae	<i>Catenella</i>	<i>caespitosa</i>
Rhodophyta	Florideophyceae	Peyssonneliaceae	<i>Peyssonnelia</i>	-	Rhodophyta	Florideophyceae	Caulacanthaceae	<i>Caulacanthus</i>	<i>okamurae</i>
Rhodophyta	Florideophyceae	Hildenbrandiaceae	<i>Hildenbrandia</i>	-	Rhodophyta	Florideophyceae	Cystocloniaceae	<i>Calliblepharis</i>	<i>ciliata</i>
Rhodophyta	Florideophyceae	Hildenbrandiaceae	<i>Hildenbrandia</i>	<i>rubra</i>	Rhodophyta	Florideophyceae	Cystocloniaceae	<i>Calliblepharis</i>	<i>jubata</i>
Rhodophyta	Florideophyceae	Corallinaceae	<i>Indet.</i>	-	Rhodophyta	Florideophyceae	Cystocloniaceae	<i>Cystoclonium</i>	<i>purpureum</i>
Rhodophyta	Florideophyceae	Corallinaceae	<i>Corallina</i>	-	Rhodophyta	Florideophyceae	Cystocloniaceae	<i>Rhodophyllis</i>	<i>divaricata</i>
Rhodophyta	Florideophyceae	Corallinaceae	<i>Corallina</i>	<i>ferreyrae</i>	Rhodophyta	Florideophyceae	Rhodymeniaceae	<i>Rhodymenia</i>	<i>pseudopalmeta</i>
Rhodophyta	Florideophyceae	Corallinaceae	<i>Ellisolandia</i>	<i>elongata</i>	Rhodophyta	Florideophyceae	Rhodymeniaceae	<i>Rhodymenia</i>	<i>ardissonae</i>
Rhodophyta	Florideophyceae	Corallinaceae	<i>Corallina</i>	<i>officinalis</i>	Rhodophyta	Florideophyceae	Champiaceae	<i>Gastroclonium</i>	<i>ovatum</i>
Rhodophyta	Florideophyceae	Corallinaceae	<i>Jania</i>	<i>rubens</i>	Rhodophyta	Florideophyceae	Lomentariaceae	<i>Lomentaria</i>	<i>articulata</i>
Rhodophyta	Florideophyceae	Hapalidiaceae	<i>Melobesia</i>	<i>membranacea</i>	Rhodophyta	Florideophyceae	Callithamniaceae	<i>Aglaothamnion</i>	-
Rhodophyta	Florideophyceae	Mesophyllumaceae	<i>Mesophyllum</i>	<i>lichenoides</i>	Rhodophyta	Florideophyceae	Callithamniaceae	<i>Callithamnion</i>	<i>corymbosum</i>
Rhodophyta	Florideophyceae	Lithophyllaceae	<i>Titanoderma</i>	-	Rhodophyta	Florideophyceae	Callithamniaceae	<i>Gaillona</i>	<i>hookeri</i>
Rhodophyta	Florideophyceae	Gracilariaceae	<i>Gracilaria</i>	<i>gracilis</i>	Rhodophyta	Florideophyceae	Callithamniaceae	<i>Aglaothamnion</i>	<i>pseudobyssoides</i>
Rhodophyta	Florideophyceae	Ahnfeltiaceae	<i>Ahnfeltia</i>	<i>plicata</i>	Rhodophyta	Florideophyceae	Callithamniaceae	<i>Callithamnion</i>	<i>tetricum</i>
Rhodophyta	Florideophyceae	Phylloporaceae	<i>Gymnogongrus</i>	<i>crenulatus</i>	Rhodophyta	Florideophyceae	Ceramiceae	<i>Ceramium</i>	-
Rhodophyta	Florideophyceae	Phylloporaceae	<i>Phyllophora</i>	<i>crispa</i>	Rhodophyta	Florideophyceae	Ceramiceae	<i>Ceramium</i>	<i>ciliatum</i>
Rhodophyta	Florideophyceae	Phylloporaceae	<i>Phyllophora</i>	<i>pseudoceranoides</i>	Rhodophyta	Florideophyceae	Ceramiceae	<i>Ceramium</i>	<i>echinotum</i>
Rhodophyta	Florideophyceae	Phylloporaceae	<i>Schottera</i>	<i>nicaeensis</i>	Rhodophyta	Florideophyceae	Ceramiceae	<i>Ceramium</i>	<i>virgatum</i>
Rhodophyta	Florideophyceae	Phylloporaceae	<i>Stenogramma</i>	<i>interruptum</i>	Rhodophyta	Florideophyceae	Ceramiceae	<i>Ceramium</i>	<i>pallidum</i>
Rhodophyta	Florideophyceae	Phylloporaceae	<i>Mastocarpus</i>	<i>stellatus</i>	Rhodophyta	Florideophyceae	Ceramiceae	<i>Ceramium</i>	<i>secundatum</i>
Rhodophyta	Florideophyceae	Gigartineae	<i>Chondrus</i>	<i>crispus</i>	Rhodophyta	Florideophyceae	Ceramiceae	<i>Ceramium</i>	<i>shuttleworthii</i>
Rhodophyta	Florideophyceae	Gigartineae	<i>Chondracanthus</i>	<i>acicularis</i>	Rhodophyta	Florideophyceae	Wrangeliaceae	<i>Griiffithsia</i>	<i>corallinoides</i>
Rhodophyta	Florideophyceae	Polydaceae	<i>Polydides</i>	<i>rotunda</i>	Rhodophyta	Florideophyceae	Wrangeliaceae	<i>Halurus</i>	<i>equisetifolius</i>



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Rhodophyta	Florideophyceae	Plocamiaceae	<i>Plocamium</i>	-	Rhodophyta	Florideophyceae	Callithamniaceae	<i>Plumaria</i>	<i>plumosa</i>
Rhodophyta	Florideophyceae	Plocamiaceae	<i>Plocamium</i>	<i>lyngbyanum</i>	Rhodophyta	Florideophyceae	Wrangeliaceae	<i>Sphondylothamnion</i>	<i>multifidum</i>
Rhodophyta	Florideophyceae	Delesseriaceae	<i>Acrosorium</i>	<i>ciliolatum</i>	Ochrophyta	Phaeophyceae	Ectocarpaceae	<i>Ectocarpus</i>	-
Rhodophyta	Florideophyceae	Delesseriaceae	<i>Cryptopleura</i>	<i>ramosa</i>	Ochrophyta	Phaeophyceae	Ectocarpaceae	<i>Spongonema</i>	-
Rhodophyta	Florideophyceae	Delesseriaceae	<i>Delesseria</i>	<i>sanguinea</i>	Ochrophyta	Phaeophyceae	Ralfsiaceae	<i>Ralfsia</i>	-
Rhodophyta	Florideophyceae	Delesseriaceae	<i>Drachiella</i>	<i>spectabilis</i>	Ochrophyta	Phaeophyceae	Chordariaceae	<i>Elachista</i>	<i>fuscicola</i>
Rhodophyta	Florideophyceae	Delesseriaceae	<i>Hypoglossum</i>	<i>hypoglossoides</i>	Ochrophyta	Phaeophyceae	Chordariaceae	<i>Leathesia</i>	<i>marina</i>
Rhodophyta	Florideophyceae	Delesseriaceae	<i>Membranoptera</i>	<i>alata</i>	Ochrophyta	Phaeophyceae	Sphaecelariaceae	<i>Sphaecelaria</i>	-
Rhodophyta	Florideophyceae	Delesseriaceae	<i>Drachiella</i>	<i>heterocarpa</i>	Ochrophyta	Phaeophyceae	Stypocaulaceae	<i>Halopteris</i>	<i>filicina</i>
Rhodophyta	Florideophyceae	Delesseriaceae	<i>Phycodrys</i>	<i>rubens</i>	Ochrophyta	Phaeophyceae	Stypocaulaceae	<i>Halopteris</i>	<i>scoparia</i>
Rhodophyta	Florideophyceae	Delesseriaceae	<i>Polyneura</i>	<i>bonnemaisonii</i>	Ochrophyta	Phaeophyceae	Cladostephaceae	<i>Cladostephus</i>	<i>spongiosus</i>
Rhodophyta	Florideophyceae	Delesseriaceae	<i>Erythrogllossum</i>	<i>laciniatum</i>	Ochrophyta	Phaeophyceae	Dictyotaceae	<i>Dictyopteris</i>	<i>polypodioideis</i>
Rhodophyta	Florideophyceae	Delesseriaceae	<i>Radicalingua</i>	<i>thysanorhizans</i>	Ochrophyta	Phaeophyceae	Dictyotaceae	<i>Dictyota</i>	<i>dichotoma</i>
Rhodophyta	Florideophyceae	Dasyaceae	<i>Dasyshiponia</i>	<i>japonica</i>	Ochrophyta	Phaeophyceae	Dictyotaceae	<i>Dictyota</i>	<i>dichotoma</i>
Rhodophyta	Florideophyceae	Dasyaceae	<i>Heterosiphonia</i>	<i>plumosa</i>	Ochrophyta	Phaeophyceae	Sporochneaceae	<i>Carpomitra</i>	<i>costata</i>
Rhodophyta	Florideophyceae	Rhodomelaceae	<i>Vertebrata</i>	<i>byssoides</i>	Ochrophyta	Phaeophyceae	Sporochneaceae	<i>Sporochneus</i>	<i>pedunculatus</i>
Rhodophyta	Florideophyceae	Rhodomelaceae	<i>Osmundea</i>	<i>hybrida</i>	Ochrophyta	Phaeophyceae	Desmarestiaceae	<i>Desmarestia</i>	<i>aculeata</i>
Rhodophyta	Florideophyceae	Rhodomelaceae	<i>Osmundea</i>	<i>osmunda</i>	Ochrophyta	Phaeophyceae	Desmarestiaceae	<i>Desmarestia</i>	<i>ligulata</i>
Rhodophyta	Florideophyceae	Rhodomelaceae	<i>Osmundea</i>	<i>pinnatifida</i>	Ochrophyta	Phaeophyceae	Desmarestiaceae	<i>Desmarestia</i>	<i>viridis</i>
Rhodophyta	Florideophyceae	Rhodomelaceae	<i>Polysiphonia</i>	-	Ochrophyta	Phaeophyceae	Scytosiphonaceae	<i>Scytosiphon</i>	-
Rhodophyta	Florideophyceae	Rhodomelaceae	<i>Carradoriella</i>	<i>elongata</i>	Ochrophyta	Phaeophyceae	Laminariaceae	<i>Laminaria</i>	-
Rhodophyta	Florideophyceae	Rhodomelaceae	<i>Leptosiphonia</i>	<i>fibrata</i>	Ochrophyta	Phaeophyceae	Laminariaceae	<i>Laminaria</i>	<i>digitata</i>
Rhodophyta	Florideophyceae	Rhodomelaceae	<i>Vertebrata</i>	<i>fruticulosa</i>	Ochrophyta	Phaeophyceae	Laminariaceae	<i>Laminaria</i>	<i>hyperborea</i>
Rhodophyta	Florideophyceae	Rhodomelaceae	<i>Melanothamnus</i>	<i>harveyi</i>	Ochrophyta	Phaeophyceae	Laminariaceae	<i>Laminaria</i>	<i>ochroleuca</i>
Rhodophyta	Florideophyceae	Rhodomelaceae	<i>Vertebrata</i>	<i>lanosa</i>	Ochrophyta	Phaeophyceae	Laminariaceae	<i>Saccharina</i>	<i>latissima</i>
Rhodophyta	Florideophyceae	Rhodomelaceae	<i>Vertebrata</i>	<i>nigra</i>	Ochrophyta	Phaeophyceae	Phyllariaceae	<i>Saccorhiza</i>	<i>polyschides</i>
Rhodophyta	Florideophyceae	Rhodomelaceae	<i>Vertebrata</i>	<i>fucoides</i>	Ochrophyta	Phaeophyceae	Alariaceae	<i>Alaria</i>	<i>esculenta</i>
Rhodophyta	Florideophyceae	Rhodomelaceae	<i>Polysiphonia</i>	<i>stricta</i>	Ochrophyta	Phaeophyceae	Fucaeae	<i>Ascophyllum</i>	<i>nodosum</i>



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Rhodophyta	Florideophyceae	Rhodomelaceae	Vertebrata	<i>thuyoides</i>	Chlorophyta	Ulvophyceae	Cladophoraceae	<i>Cladophora</i>	<i>rupestris</i>
Ochrophyta	Phaeophyceae	Ectocarpaceae	<i>Indet.</i>	-	Chlorophyta	Ulvophyceae	Cladophoraceae	<i>Lychaete</i>	<i>pellucida</i>
Ochrophyta	Phaeophyceae	Fucaceae	<i>Fucus</i>	<i>guiryi</i>	Chlorophyta	Ulvophyceae	Bryopsidaceae	<i>Bryopsis</i>	<i>hypnoides</i>
Ochrophyta	Phaeophyceae	Fucaceae	<i>Fucus</i>	<i>serratus</i>	Chlorophyta	Ulvophyceae	Bryopsidaceae	<i>Bryopsis</i>	<i>plumosa</i>
Ochrophyta	Phaeophyceae	Fucaceae	<i>Fucus</i>	<i>spiralis</i>	Chlorophyta	Ulvophyceae	Codiaceae	<i>Codium</i>	-
Ochrophyta	Phaeophyceae	Fucaceae	<i>Fucus</i>	<i>vesiculosus</i>	Chlorophyta	Ulvophyceae	Codiaceae	<i>Codium</i>	<i>fragile</i>
Ochrophyta	Phaeophyceae	Fucaceae	<i>Fucus</i>	<i>vesiculosus</i>	Chlorophyta	Ulvophyceae	Codiaceae	<i>Codium</i>	<i>tomentosum</i>
Ochrophyta	Phaeophyceae	Fucaceae	<i>Pelvetia</i>	<i>canaliculata</i>	Chlorophyta	Ulvophyceae	Codiaceae	<i>Codium</i>	<i>vermilara</i>
Ochrophyta	Phaeophyceae	Himantaliaceae	<i>Himantalia</i>	<i>elongata</i>	Ascomycota	Eurotiomycetes	Verrucariaceae	<i>Verrucaria</i>	-
Ochrophyta	Phaeophyceae	Sargassaceae	<i>Sargassum</i>	<i>muticum</i>	Ascomycota	Eurotiomycetes	Xanthopyreniaceae	<i>Pyrenocollema</i>	<i>halodytes</i>
Ochrophyta	Phaeophyceae	Sargassaceae	<i>Bifurcaria</i>	<i>bifurcata</i>	Ascomycota	Lichinomycetes	Lichinaceae	<i>Lichina</i>	<i>confinis</i>
Ochrophyta	Phaeophyceae	Sargassaceae	<i>Treptacantha</i>	<i>baccata</i>	Ascomycota	Lichinomycetes	Lichinaceae	<i>Lichina</i>	<i>pygmaea</i>
Ochrophyta	Phaeophyceae	Sargassaceae	<i>Ericaria</i>	<i>selaginoides</i>	Ascomycota	Eurotiomycetes	Verrucariaceae	<i>Verrucaria</i>	-
Chlorophyta	Ulvophyceae	Ulvaeeae	<i>Ulva</i>	-	Ascomycota	Eurotiomycetes	Verrucariaceae	<i>Verrucaria</i>	-
Chlorophyta	Ulvophyceae	Ulvaeeae	<i>Ulva</i>	-	Ascomycota	Eurotiomycetes	Verrucariaceae	<i>Verrucaria</i>	<i>maura</i>
Chlorophyta	Ulvophyceae	Ulvaeeae	<i>Ulva</i>	<i>lactuca</i>	Ascomycota	Eurotiomycetes	Verrucariaceae	<i>Wahlenbergiella</i>	<i>mucosa</i>
Chlorophyta	Ulvophyceae	Ulvaeeae	<i>Ulva</i>	<i>fenestrata</i>					
Chlorophyta	Ulvophyceae	Ulvaeeae	<i>Ulva</i>	<i>rigida</i>					
Chlorophyta	Ulvophyceae	Kornmanniaceae	<i>Blidingia</i>	-					
Chlorophyta	Ulvophyceae	Kornmanniaceae	<i>Blidingia</i>	<i>marginata</i>					
Chlorophyta	Ulvophyceae	Ulotrichaceae	<i>Spongomorpha</i>	<i>aeruginosa</i>					
Chlorophyta	Ulvophyceae	Ulotrichaceae	<i>Acrosiphonia</i>	<i>arcta</i>					
Chlorophyta	Ulvophyceae	Cladophoraceae	<i>Chaetomorpha</i>	<i>ligustica</i>					
Chlorophyta	Ulvophyceae	Cladophoraceae	<i>Chaetomorpha</i>	<i>linum</i>					
Chlorophyta	Ulvophyceae	Cladophoraceae	<i>Chaetomorpha</i>	<i>melagonium</i>					
Chlorophyta	Ulvophyceae	Cladophoraceae	<i>Cladophora</i>	-					
Chlorophyta	Ulvophyceae	Cladophoraceae	<i>Cladophora</i>	<i>albida</i>					
Chlorophyta	Ulvophyceae	Cladophoraceae	<i>Cladophora</i>	<i>hutchinsiae</i>					

## Appendix 7 Species sampled by the Darwin Tree of Life project

A total of 68 species were sampled by the DTOL teams from the Natural History Museum and the Marine Biological Association. These are new species to the DTOL collection. A selection will then undergo DNA extraction which, if successful, will form the definitive identification of that particular species.

Species	Common Group	Species	Common Group
<i>Codium tomentosum</i>	Green algae	<i>Nephasoma minutum</i>	Sipunculan worm
<i>Cladophora albida</i>	Green algae	<i>Ampithoe rubricata</i>	Amphipod
<i>Cladophora lehmanniana</i>	Green algae	<i>Caprella septentrionalis</i>	Amphipod
<i>Codium fragile ssp. fragile</i>	Green algae	<i>Iphimedia obesa</i>	Amphipod
<i>Vertebrata fruticulosa</i>	Red algae	<i>Phtisica marina</i>	Amphipod
<i>Halurus equisetifolius</i>	Red algae	<i>Caprella acanthifera</i>	Amphipod
<i>Calliblepharis ciliata</i>	Red algae	<i>Pseudoprotella phasma</i>	Amphipod
<i>Rhodomela confervoides</i>	Red algae	<i>Idotea neglecta</i>	Isopod
<i>Pterocladia capillacea</i>	Red algae	<i>Idotea granulosa</i>	Isopod
<i>Cystoclonium</i>	Red algae	<i>Idotea balthica</i>	Isopod
<i>Sphondylothamnion multifidum</i>	Red algae	<i>Cymodoce truncata</i>	Isopod
<i>Bonnemaisonia asparagoides</i>	Red algae	<i>Astacilla damnoniensis</i>	Isopod
<i>Phyllophora pseudoceranooides</i>	Red algae	<i>Xantho pilipes</i>	Crab
<i>Nemalion elminthoides</i>	Red algae	<i>Pirimela denticulata</i>	Crab
<i>Calliblepharis jubata</i>	Red algae	<i>Xaiva biguttata</i>	Crab
<i>Plocamium cartilagineum</i>	Red algae	<i>Verruca stroemia</i>	Barnacle
<i>Callithamnion tetricum</i>	Red algae	<i>Endeis spinosa</i>	Sea Spider
<i>Leuconia nivea</i>	Sponge	<i>Anoplodactylus angulatus</i>	Sea Spider
<i>Ophlitaspongia papilla</i>	Sponge	<i>Modiolula phaseolina</i>	Bivalve
<i>Aurelia aurita</i>	Jellyfish	<i>Bittium reticulatum</i>	Sea snail
<i>Haliclystus salpinx</i>	Stalked Jellyfish	<i>Pusillina inconspicua</i>	Sea snail
<i>Calvadosia campanulata</i>	Stalked Jellyfish	<i>Leucophytia bidentata</i>	Sea snail
<i>Antennella secundaria</i>	Hydroid	<i>Lamellaria perspicua</i>	Sea snail
<i>Schizotricha frutescens</i>	Hydroid	<i>Lamellaria perspicua</i>	Sea snail
<i>Tamarisca tamarisca</i>	Hydroid	<i>Onchidella celtica</i>	Sea slug
<i>Hydrallmania falcata</i>	Hydroid	<i>Doris pseudoargus</i>	Sea slug
<i>Gymnangium montagui</i>	Hydroid	<i>Polycera quadrilineata</i>	Sea slug
<i>Actinia fragacea</i>	Anemone	<i>Cadlina laevis</i>	Sea slug
<i>Aiptasia mutabilis</i>	Anemone	<i>Onchidella celtica</i>	Sea slug
<i>Aulactinia verrucosa</i>	Anemone	<i>Doris pseudoargus</i>	Sea slug
<i>Parazoanthus axinellae</i>	Anemone	<i>Polycera quadrilineata</i>	Sea slug
<i>Balanophyllia regia</i>	Hard coral	<i>Cadlina laevis</i>	Sea slug
<i>Alcyonium glomeratum</i>	Soft coral	<i>Elysia viridis</i>	Sea slug
<i>Micrura purpurea</i>	Nemertean worm	<i>Geitodoris planata</i>	Sea slug
<i>Emplectonema gracile</i>	Nemertean worm	<i>Favorinus blianus</i>	Sea slug
<i>Riseriellus occultus</i>	Nemertean worm	<i>Limacia clavigera</i>	Sea slug
<i>Cephalothrix linearis</i>	Nemertean worm	<i>Diaphorodoris alba</i>	Sea slug
<i>Lineus ruber</i>	Nemertean worm	<i>Discodoris rosi</i>	Sea slug
<i>Siphonenteron bilineatum</i>	Nemertean worm	<i>Cradoscrupocellaria reptans</i>	Bryozoan
<i>Lineus viridis</i>	Nemertean worm	<i>Caberea boryi</i>	Bryozoan
<i>Mysta picta</i>	Polychaete worm	<i>Aplidium punctum</i>	Sea squirt
<i>Malacoceros vulgaris</i>	Polychaete worm	<i>Pycnoclavella producta</i>	Sea squirt
<i>Arenicolides ecaudata</i>	Polychaete worm	<i>Didemnum pseudofulgens</i>	Sea squirt
<i>Arenicolides branchialis</i>	Polychaete worm	<i>Ascidia virginea</i>	Sea squirt
<i>Mediomastus fragilis</i>	Polychaete worm	<i>Aplidium elegans</i>	Sea squirt
<i>Malacoceros girardi</i>	Polychaete worm	<i>Stolonica socialis</i>	Sea squirt
<i>Syllis gracilis</i>	Polychaete worm		



## Appendix 8 Festival Wardens' weekly blog posts

Daisy Eagleton-Laing and Tara McEvoy-Wilding, our two volunteer Festival Wardens, were invited to write a weekly blog throughout the Festival, which was then published on the Festival website. Their blogs are included below.

### BLOG POST 1: 14-19 July 2022

*This blog, which will continue on a weekly basis throughout the Festival, is written by Daisy Eagleton-Laing (on the right in the photo) and Tara McEvoy-Wilding, two marine biology students from Exeter University who are about to embark on the final year of their undergraduate course. Earlier in the year, they both applied to be volunteer wardens for the Marine Festival, and they will be on the island right through until the end of the Festival on 10th September. This is the first of their weekly blogs from the island.*



#### Our first impressions of Lundy

Tara and I first stepped on to the *Oldenburg* at Bideford on a misty morning in early July. Once out of the eastuary and whilst standing on the upper deck, we watched the sea closely and were delighted when a pod of common dolphins popped up alongside the ship. Soon Lundy's green east coast came into view and a short while later we arrived into the Landing Bay. Disembarking, we were greeted by Rosie (Lundy's Warden) and made our first trek up to the village (something we'll be doing many times in the weeks ahead!). The next week or so, prior to the start of the Marine Festival, was packed with snorkelling, diving and data collection, giving us the opportunity to experience how special Lundy's marine life really is.

#### The beginning of the Marine Festival

This week saw the start of Lundy's much anticipated Marine Festival, celebrating the 50<sup>th</sup> anniversary of its Marine Protected Area. The long weekend kicked off on Thursday with the arrival of some of our fantastic supporters: the Porcupine Marine Natural History Society, the Marine Biological Association, Blue Marine Foundation, MARINELife, Sea Watch Foundation and the Natural History Museum.

Following a welcome to Lundy by Derek Green, the island's General Manager, and a few words about the Marine Festival from its Co-ordinator, Robert Irving, various marine experts began their field activities immediately by jumping straight into a BioBlitz of Lundy's most extensive rocky shore known as the Devil's Kitchen. Members of the Marine Biological Association and the Natural History Museum collected samples for the Darwin Tree of Life Project, which aims to sequence the genome of all lifeforms in the British Isles. The Porcupine Society compiled a list of organisms, many of which required microscopic study in the St Helen's Centre, now acting as a pop-up marine biology lab. Alongside this, visitors were able to join in with cetacean watches directed by the Sea Watch Foundation, occurring around the south-east coast of Lundy.

The BioBlitz continued into Friday, which also saw two snorkel safaris led by the island's Warden Rosie Ellis. The snorkelers spotted some fantastic species including spiny starfish, star ascidians, dead man's fingers and plumose anemones, not to mention a large school of sand eels or, as Rosie calls them, "puffin food". On Friday evening, our first marine expert talk was given by Dr Keith Hiscock about why Lundy's marine life is so special, which included the development of marine conservation in the UK and changes to Lundy's marine life over the past 50 years.

Data collection on the rocky shore continued into Saturday with the discovery of the non-native marine algae species green sea fingers (*Codium fragilis*), commonly mistaken for the native velvet horn seaweed (*Codium tomentosum*). Further microscopic examination revealed the specimen to be *C. fragilis*, identified by a small triangular point at the end of each frond. The St Helen's centre pop up lab also had virtual reality headsets providing an experience of diving with Lundy's curious seals, as well as interesting displays which were praised by those who saw them.

The marine experts continued identifying specimens throughout Sunday. During the afternoon, a rockpool ramble was held by Wardens at Devil's Kitchen, for the public to explore Lundy's marine life up close. Some interesting species were spotted including a worm pipefish, velvet swimming crabs and a whopping 56 Celtic Sea slugs(!), which are only about 4 mm long!

### BLOG POST 2: 21-28 July 2022



Royalty stepped foot on the island this week! Thursday saw the arrival of HRH The Princess Royal, Master of the charity Trinity House (the statutory lighthouse authority), who came to visit the North and South Lighthouses. As well as watching her arrival by helicopter, we collected some interesting invertebrates from the rocky shore for visitors to view in the St Helens Centre (a.k.a. the Church) later that day, before returning them to the sea in the evening.

On Friday evening, an engaging talk and film was presented by ocean campaigner Claire Wallerstein. Claire spoke about how her years of marine plastic pollution activism had sparked further interest into the effect of climate change in the south-west of England, particularly in her home county of Cornwall. She presented her own film which was followed by a Q&A session about how we all can do our bit to tackle climate change, as well as giving us examples of Cornish organizations doing their bit.

The weekend brought high winds and rain (the latter much needed on the island), luckily clearing for our dives on Sunday morning. The first dive was on the MV *Robert*, a coaster which sank in 1975 and lies in about 22 m depth off the island's east coast. The hull is now covered in white, orange and dark green plumose anemones. Up close, we spotted a range of sea slug species, including the fried egg sea slug (*Diaphorodoris luteocincta*), a yellow-edged polycera (*Polycera faeroensis*), a lined polycera (*Polycera quadrilineata*) and a *Doto fragilis*. The second dive was at Brazen Ward, where we sat amongst the kelp and watched curious seals swim around us.

On Monday, Tara and Warden Rosie held a busy snorkel safari. The groups spotted spider crabs, spiny starfish and crystal jellyfish. We held a rockpool ramble on Wednesday, where we found a tiny cushion star, several crab species including edible crabs and Montagu's crab and lots of blennies darting about the rockpools which everyone enjoyed! After the ramble, we set up the digital microscope in the Beach Building, where we got to see some of the creatures from the rockpools up close! The highlight was watching the cushion star moving around using its hundreds of tube feet.

Throughout the week, we have been running sessions in the St Helens Centre for visitors to try out 'Diving with Seals' through our Virtual Reality headsets, on loan from Plastic Free North Devon. As well as this, we have been able to show visitors different seaweed species down our microscope and for them to have a closer look at some species of periwinkle and topshell!

Dolphins have been spotted off the South-West Point this week by Plymouth University MSc student Jordan Williams, as well as from the *Oldenburg*. We hope that the dolphins continue to show up around the island! This week sadly saw the last of our puffins leave Lundy for the open Atlantic, but they will be back next year! However, the island is still host to breeding Manx shearwaters and fulmars!

### **BLOG POST 3: 21-28 July 2022**

On Friday the 29<sup>th</sup> we were delighted to welcome the fantastic Paul Naylor to the Island to show his presentation, "The colourful lives of our marine neighbours". Paul captivated the audience with his extensive knowledge of the behaviour of many species of British marine life, particularly the brilliant tompot blenny. There were plenty of questions from audience members afterwards. One which stood out was from a little girl who asked how and why spider crabs decorate their carapaces with seaweed.

On Saturday Rosie and Daisy carried out another busy rockpool ramble. Some brilliant critters were spotted but one that stood out was a foot long conger eel which was revealed by Rosie after moving some serrated wrack growing on a large rock.

At the beginning of the week, during a leisurely snorkel, a large group of spidercrabs were spotted moulting in the Landing Bay, with over 30 individuals crowding together- safety in numbers! If you're visiting Lundy soon, look out for the spider crabs moulted carapaces that wash up on the beach.

The St Helens Centre (church) continues to be the epicentre for Marine Festival activities. Tuesday saw the biggest crowd yet, with many families visiting to have a go on the virtual reality headsets, draw their favourite marine creatures and look at life underneath the microscope.

On Wednesday, we set up a mini lab in the boat building with a digital microscope for visitors to view rockpool critters on a laptop screen. The public were particularly fascinated with the sea mat/ bryozoan filter feeders, whose appendages could be seen waving around in the water.

Thursday (4th) saw the arrival of guest speaker Michael Pitts, a cinematographer and film producer whose work has appeared in numerous BBC, National Geographic and Discovery channel productions. We joined both Michael and Robert on a trip to film lobster pots on the seabed, placed within Lundy's No Take Zone (NTZ) to monitor the size and abundance of lobsters and crabs. This project is part of a larger Festival monitoring study looking at the effectiveness of the NTZ. We are looking forward to Michael's talk tomorrow, "In at the deep end - capturing drama and detail on film". More about that in our next bulletin!



**BLOG POST 4: 5-11 August 2022**

Natural history cameraman and producer Michael Pitts gave an enthralling presentation in the St Helens Centre on Friday evening. We were privileged to be shown examples of techniques he has used to capture some incredible wildlife sequences. Sharing stories from his extensive career in documentary filming and production from all over the world, Michael intrigued one and all. The audience was particularly captivated with his experiences of filming sharks in the Galapagos and of recording the hatching of endangered Komodo dragons. Inspired by the talk, there were multiple questions at the end particularly about Michael's upcoming work (keep your eyes peeled!).

Saturday saw the arrival of two 180 litre rockpool display tanks on the *Oldenburg*, kindly loaned to us by Ilfracombe Aquarium. Once set up in the Boat Building, island warden Rosie, Tara and I, explored the rocky shore of Devil's Kitchen to find some critters (to be returned from where we found them later on). We found snakelocks anemones, beadlet anemones, a Montagu's crab and a few common prawns which are now living happily in the display.

We also saw the arrival of Joe Dennet and Meg Hayward-Smith from Research Development UK, who are carrying out a programme of underwater acoustic research using a network of F-PODs made by the company Chelonia [see photo on p. 58 of this report]. The F-PODs are passive acoustic monitoring devices that record the 'voices' of cetaceans, with subsequent analysis allowing for trends of presence, movement and behaviour to be made. We are delighted to say that Lundy has been chosen as one of their special long-term monitoring sites!

At the beginning of the following week, we spent time creating a new visitor game involving matching rockpool species with their descriptions. This proved to be a hit in the St Helens Centre later in the day. In the late afternoon, as visitors queued for the *Oldenburg*, we set up a microscope station and had a special anemone feeding time in the Boat Building. This was much enjoyed by the public who gathered around the tank to watch the anemones consume their food!

Stay tuned for the next blog, featuring the presentation given by Rob Wells on grey seals!

**BLOG POST 5: 12-18 August 2022**

Friday evening saw the return of our weekly Marine Festival talk, this week presented by Rob Wells from the Cornwall Seal Research Group Trust. Rob's talk was titled "The lives of grey seals in the south-west". As Lundy is famous for its seals, the St Helens Church was packed with visitors eager to find out more about them. Rob spoke about the differences in movement and location between individual seals, as well as the methods and importance of monitoring their abundance and distribution in times of anthropogenic threat. He was also able to tell the story of *Septimus*, a bull seal he had been monitoring which he then found dead on a beach, but whose skeleton has proved a superb educational tool. There were multiple questions after the talk, particularly on identifying seals using their unique patterns and colouring.

With scorching temperatures over the weekend, we saw an increase in visitors spending time in the much cooler church. The public were kept entertained with activities including virtual reality diving with seals, children's marine activity sheet, draw your favourite marine creature, a microscope station and the rockpool species matching game.

On Tuesday, Robert Irving, Marine Festival coordinator, arrived on board the *Barbara B* to deploy three BRUVS (Baited Remote Underwater Video Systems), hoping to find out if the No Take Zone has had any impact on nearshore fish populations. After deploying the three BRUVS, we waited for an hour for the GoPro video cameras to record any life on the seabed. When brought back on board, we noticed the bait pole of one of the BRUVS was covered in small spiny starfish (*Marthasterias glacialis*) - a sign the bait arm had erroneously ended up touching the seabed and not being held in mid-water - which were thrown back quickly. After dropping us back to the jetty, Robert continued the BRUVS deployment up the east coast, whilst we set out for another rockpool ramble.

On Wednesday, I set out on an East coast seal survey whilst Tara acted as shore support for a snorkel safari. 102 adult seals were counted on the survey, most of them spotted in the north-east area, with no pups yet to be sighted (a bit too early yet!).

We are greatly looking forward to our weekly Friday evening presentation from Peta Knott from the Nautical Archaeology Society, her talk is titled "Experiencing protected wrecks in your drysuit or your dressing gown".

**BLOG POST 6: 19-25 August 2022**

This weekend was the Protected Wrecks weekend, with a Friday evening talk from Peta Knott, Education Manager with the Nautical Archaeology Society, on "Experiencing protected wrecks in your dry suit or your dressing gown". It was very enjoyable, with lots of questions from the audience at the end, and it was great to find out about all of the virtual dive trails that are available on the Nautical Archaeology Society's website ([www.nauticalarchaeologysociety.org](http://www.nauticalarchaeologysociety.org)).

Throughout the long weekend, Festival dive boats took divers to dive on the *Iona II*. The original plan was to have second dives on the HMS *Montagu*, but sadly the south-westerly winds prevented this. Instead, the options became the MV



*Robert* or diving in the shallows with seals. Daisy and I got to go out on the boat on Sunday and to dive the *Iona*, which was great! We were given dive guides by Peta which could be taken under water, which helped us to work out what bit of metal we were looking at! On the second dive, I found a Leach's spider crab (*Inachus phalangium*) hiding in a snakelocks anemone; and also a tagged lobster (number 427) - one of those tagged as part of the No Take Zone potting project.

During a swim on Tuesday, we spotted loads of salps (also known as sea grapes) floating around the jetty. These are a type of planktonic tunicate, that pumps water through its body and filter feeds internally. They are found in long chains, produced by one individual cloning itself. This sighting was short-lived however, as when we returned to the jetty on Thursday, they had all broken up and created a skin on the top of the water.

This week, lobster potting surveys on the *Barbara B* took place on Tuesday, Wednesday and Thursday - the last visits for the potting boat. Daisy and I joined in on Wednesday, and we got to measure lobsters, edible crabs, spiny spider crabs and velvet swimming crabs. The pots also brought up two conger eels, a 3-beard rockling and what we think was a nursehound, although it wasn't on the boat for very long! Clinging onto the pots were spiny starfish, long-clawed porcelain crabs, tiny squat lobsters and some very small spider crabs, which were all interesting to see!

On Thursday, Tara did a seal survey along the east coast, and counted around 90 seals at low tide, with the highest number hauled out at Brazen Ward. In the afternoon we sadly had to wave goodbye to Daisy on the *Oldenburg* - we will miss her!

#### **BLOG POST 7: 26 August – 1 September 2022**

On Friday, Tara and Rosie did a snorkel safari, taking two groups into the water. The highlights were two spiny starfish, a family of four large common prawns that were hiding under a beam at the end of the jetty and lots of plumose anemones! The visibility was poor at the start, due to the large volume of dead salps floating near the edge, but out round the jetty it was much better! There is now only one snorkel safari left this summer!

In the evening, Jean-Luc Solandt gave his talk about the achievements of UK Marine Protected Areas in the last 50 years. He discussed successful campaigns the Marine Conservation Society have run; where the UK's MPAs are located and what their varying levels of protection are; and showed us images of the impact that Marine Protected Area status can make. Following the talk, there was a discussion with the audience about Marine Protected Areas, fish farms and how we can all help marine conservation around the UK.

The rockpool tank in the boat building is doing well, with snakelocks, beadlet and gem anemones, common prawn, a shanny and a hermit crab. The Montagu's crab has now come out of hiding following his carapace moult! In the Church, the 'draw your favourite marine creature' wall is still growing and visitors are continuing to enjoy the Virtual Reality headsets.

On Wednesday, I did another seal survey of the East Coast, counting 87 seals in total, which were mostly sheltering in two or three bays due to the easterly winds. I didn't find any new pups, although unfortunately I saw a dead pup floating in Three-Quarter Wall Bay. The easterlies have meant it's been harder to get in the sea this week, so I'm looking forward to the winds dropping next week!

#### **BLOG POST 8: 2 – 10 September 2022**

This week's talk was from Greg Brown on the use of remote sensing techniques to detect 'bad actors' within the fishing industry. He discussed the range of techniques used, with their good and bad points, as well as a project that ran earlier this year around Lundy, where they monitored vessels going in and out of the Marine Protected Area.

On Tuesday I set off on a seal survey starting at 6:40 at Lamentry Bay, it was quite windy, so there were lots of waves, but despite the weather I still saw 60 seals. This included 4 pups on Ladies Beach which were great to see! Using the Cornwall Seal Group's data base, we should be able to find out who the mums are.

Wednesday was the last snorkel safari of the year. We briefed everyone and walked down the slipway and into the water to put our fins on. Meanwhile, we were being watched by a male seal, who came up behind the group and made a big splash, which is a warning sign, so we decided not continue with the safari as we didn't want to stress the seals out. Two new pups were also spotted around the Landing Bay.

Thursday and Friday saw the last few days of the St Helen's Church activities, with visitors enjoying the virtual reality headsets, and drawing a few more marine creatures. The headsets have definitely been a big success, with people of all ages experiencing virtual diving with seals over the summer, with many great reviews!

Robert Irving closed the Festival on Saturday afternoon with his talk entitled 'Lundy Marine Festival 2022- What's been happening?' He discussed the results of some of the studies that occurred during the Festival, as well as the successes of the Festival overall. Rosie and Derek announced the winners of the Splash In! photography competition, with some excellent photos of crawfish and seals amongst the winning shots.



## Lundy Marine Festival 2022



This marked the end of the Festival, and I spent my last few days on Lundy packing up things in the Church, doing a seal survey and generally helping out. I have thoroughly enjoyed my summer on Lundy and will definitely be back!!

## Appendix 9: A synopsis of the weekly talks given by invited guest speakers

15<sup>th</sup> July

**Keith Hiscock**

Associate Fellow at the Marine Biological Association

***Lundy's marine life and why it is 'special'***

*This presentation will illustrate the range of intertidal and subtidal habitats present around Lundy, highlighting some of the important and special plants and animals. It will explore why Lundy's marine life is so rich but also how it has changed in the past 50 years.*



Keith has been visiting Lundy since he was a child growing-up in Ilfracombe. He first camped and explored the island in 1967 and first dived there in 1969. He became one of a small group of people proposing Lundy as a marine nature reserve and 'brokered' the development of the management plan for a voluntary reserve that was completed in 1972. From then onwards, he has organised many surveys and established monitoring sites around the island, inviting experts in different taxonomic groups to catalogue Lundy's marine life. He has visited Lundy in almost every year since 1969 and has been a member of the Lundy Field Society for more than 50 years.

22<sup>nd</sup> July

**Claire Wallerstein**

***How climate change is already affecting the marine environment of the South West - without many of us even having noticed***

*Claire, who once ran one of Cornwall's most active beach cleaning groups, talks about her journey to discovering - after eight years of intense campaigning on the marine plastic crisis - that climate change poses an even greater threat to our seas.*



With a background working internationally as a print and radio reporter and translator, Claire moved home to Cornwall in 2010. She set up Rame Peninsula Beach Care, a very active beach cleaning and marine plastic campaigning charity, which she ran for eight years, and also helped launch the Cornish Plastic Pollution Coalition.

In 2020 she created Cornwall Climate Care ([cornwallclimate.org](http://cornwallclimate.org)) with filmmaker Bryony Stokes. This charity is making a series of 30-minute documentaries that aim to positively inspire audiences and spark community conversations and action on the climate crisis. The films are available online and are widely used in public and school screenings.

29<sup>th</sup> July

**Paul Naylor**

***The colourful lives of our marine neighbours***

*Our seas are home to a wonderful diversity of animals that are colourful in more than just the visual sense. Through underwater photographs and video, Paul Naylor will share the secrets of diligent wrasse, over-confident gobies, sneaky blennies, signalling cuttlefish, battling limpets, self-adorning crabs and more.*



Paul Naylor is a Devon-based marine biologist and underwater photographer with a passion for showing people what beautiful and fascinating animals live around the British coast, through articles, talks, films, social media and TV, as well as his book – *Great British Marine Animals* (the 4<sup>th</sup> edition was published recently). The creatures' intriguing behaviour and colourful life stories are the particular focus of his still photography and video, both for scientific research and engaging audiences. His footage has appeared on

the BBC's One Show, Blue Planet UK, Countryfile and Autumnwatch. Paul works with conservation organisations and the media to raise the profile of our wonderful marine life and the importance of caring for our seas.

5<sup>th</sup> August

**Michael Pitts**

***In at the deep end - capturing drama and detail on film***

Michael Pitts is a cinematographer and film producer with over 30 years experience of making wildlife and science documentaries across the world. His work has appeared in numerous BBC, Discovery Channel and National Geographic television productions.



Michael was principal cameraman for the underwater filming for two recent BBC1 series: Sir David's Attenborough's 'Great Barrier Reef' and 'Mission Galapagos'; and he was the Director of Photography on 'A Plastic Ocean', which was released in January 2017. It shows the proliferation of plastic and the damage it causes to our environment and wildlife across the world's oceans.

He has been awarded EMMYs for cinematography on two landmark BBC productions: Sir David Attenborough's 'The Private Life of Plants' and the first 'Blue Planet' series. In addition, he has received the Kodak award for cinematographic excellence and the New York Festival's Gold award for cinematography for his filming of 'Dragons of Komodo'.

His presentation **In at the Deep End** spans his career both above and below the surface.

12<sup>th</sup> August

**Rob Wells**

Cornwall Seal Research Group Trust

***The lives of grey seals in the south-west***

*A network of volunteers monitors seal sites around south-western counties and beyond. We look out for marine problems. We survey the seals and we photograph the unique patterns on seals' coats to give each one a name. By pooling information we can track the progress, welfare and the lives of our seals.*



Rob was born on the Yorkshire coast and was introduced to wildlife by his father. He had no life sciences education after the age of 14 as he had imagined biology to be mostly cutting up dead rats and dogfish. Later, as a graduate engineer, he worked with jet engines. Then he changed to physics teaching, setting up school wildlife clubs. At one school, he set up a Nature Reserve. Next, he ran a guest house and craft business. Then back into science teaching. On retirement to Cornwall, he has immersed himself for 13 years in seals, marine strandings and other sea life.

19<sup>th</sup> August

**Peta Knott**

Education Manager, Nautical Archaeology Society

***Experiencing protected wrecks in your drysuit or your dressing gown.***

*Experience protected wrecks either under water, through the Nautical Archaeology Society's protected wreck days, or online through their virtual dive trails. Get all the background understanding of the wrecks from the experts so that you can see the remains under water or online with the eyes of an archaeologist.*



Peta is a marine archaeologist and diver who has a passion for sharing maritime heritage with the public. She created the *Iona II* Dive Guidebooks when working for Wessex Archaeology in 2014. For the last five

years she has managed the internationally accredited Education Programme for the Nautical Archaeology Society, providing divers and non-divers with practical training and heritage awareness.

26th August

**Jean-Luc Solandt**

Principal Specialist, Marine Protected Areas, Marine Conservation Society

***UK MPAs for the last 50 years: What progress has been achieved?***

*MPAs started small - in number and size, and have grown (since Lundy was established with 2 other sites) to 374 sites covering over 338,000 kilometres of UK sea. But how relevant are they? What difference have they made to our seas and to people? Can we really rate ourselves as 'world leading' as our leaders claim? What reasons do we have for optimism in a challenging period?*



Dr Jean-Luc Solandt is a Londoner who emerged into reality at Liverpool University, then marine biological training on the Isle of Man. There he learned to dive and developed the skills necessary for a decade of tropical marine science from studying fish behaviour in Australia to running conservation expedition science projects from Fiji to Tanzania. Trained in coral reef ecosystem dynamics by a PhD in sea urchin herbivory in Jamaica in the mid 90s, Jean-Luc confronted the impact of man's degradation of our seas that has since driven him to try to restore habitat richness. Since joining the MCS 20 years ago, Jean-Luc has enabled EU-wide protection of the basking shark, helped set up an MPA in the Maldives, and worked with environmental lawyers ClientEarth to establish a mechanism to risk-assess fishing in MPAs that has since led to over 20,000km square of UK MPAs being protected from bottom towed fishing gears.

2nd September

**Greg Brown**

Fisheries Analyst, OceanMind

***Deterrence through detection, testing the use of remote sensing in UK marine protected areas***

*Greg's talk will focus on how we can use technology, specifically remote sensing and machine learning, to understand fishing activity better and to detect and deter 'bad actors' within the fishing industry. He will talk about the results of the recent UK MPA project which was funded by the Becht Family Charitable Trust. The project has focused on five protected areas around England, working with the Marine Management Organisation and relevant Inshore Fisheries and Conservation Authorities.*



Greg's early career was Marine Science based as he gained a degree in Marine Biology and a masters in Environmental Biology. He has worked in various locations around the world, but has always enjoyed working in the UK with the special marine environment we have here. The early part of his career was at the Inshore Fisheries and Conservation Authority, where he started as a Marine Environment officer, working on MPA management. Whilst at the IFCA he transitioned into an enforcement role, which he found both challenging and rewarding. From this role he moved to OceanMind (<https://www.oceanmind.global/>) where he has been able to put his skills and knowledge to good use on a global scale, whilst the UKMPA project has still allowed him to work 'closer to home' which he has enjoyed tremendously.

9<sup>th</sup> September

**Robert Irving**

Co-ordinator, Lundy Marine Festival 2022

***The Lundy Marine Festival 2022 - what's been happening?***

*The Marine Festival this summer started out life as a straightforward Marine Bioblitz. However, it was soon realised that here was an opportunity to celebrate the MPA's 50 years of existence and to do much more than simply catalogue its marine life.*





*Robert will explain the various projects and activities that have been taking place over the summer and present some of the early findings of studies undertaken as part of the Festival.*

Robert is a marine biologist who has been involved with Lundy since 1983 when he was appointed by the then Nature Conservancy Council to help steer the process of changing the voluntary marine nature reserve into becoming the country's first statutory Marine Nature Reserve. He has remained a key player in its management ever since, being an integral part of both the MPA's Advisory Group and the island's Management Forum. He has been responsible for devising and the running of the Marine Festival at Lundy this summer.



## Appendix 10 - Summary pages of the report to the Blue Marine Foundation on the NTZ Potting Study and the BRUVS fish recording project

As part of the Lundy Marine Festival, held during the summer of 2022 in celebration of the 50<sup>th</sup> anniversary of the island's Marine Protected Area (MPA), fieldwork was undertaken to assess the current effectiveness of the No Take Zone (NTZ), established in 2033, which lies adjacent to the island's east coast. The intention had been to investigate marine life other than commercially important species found within the NTZ (particularly species of nature conservation interest) and to compare populations present with those found outside the NTZ but still within the MPA. Unfortunately, not all of the projects proposed were able to be undertaken, so efforts concentrated on two particular studies: one which assessed populations of decapod crustaceans of commercial value; and one which recorded fish populations both inside and outside the NTZ.

As one of the projects being run during the Festival, a potting study was proposed that repeated the comprehensive No Take Zone monitoring studies undertaken between 2004 and 2007, albeit at a reduced level of intensity and over a shorter period of time. The plan was to deploy strings of crustacean-catching baited pots both at sites within the NTZ and outside of the NTZ. A second project was also undertaken which aimed to assess the diversity and abundance of fish life within the MPA, both inside and outside the NTZ, using BRUVS frames (Baited Remote Underwater Video System). The vessel Barbara B (skipper Ben Bengey) was used for both projects.

For the potting project, special dispensation from the Devon and Severn Inshore Fisheries and Conservation Authority was required to allow for the use of pots within the NTZ. Potting was undertaken on 12 stipulated days during the summer of 2022 (27<sup>th</sup> – 29<sup>th</sup> June; 12<sup>th</sup> – 14<sup>th</sup> July; 2<sup>nd</sup> – 4<sup>th</sup> August; and 23<sup>rd</sup> – 25<sup>th</sup> August). Fifty new East Coast reels were deployed as five strings of 10 pots each. An equal number of strings were set outside the NTZ as were set within it.

### Key findings of the potting study

- **The total number of lobsters caught within the NTZ was considerably higher (by a factor of x4) than outside the NTZ.** If just the number of lobsters of a legal size ( $\geq 90$  mm carapace length) is considered, **the number of lobsters caught within the NTZ is higher by a factor of x6.6 compared to those caught outside the NTZ.**
- The average carapace length of lobsters caught within the NTZ was 3.3 mm greater than the average carapace length of lobsters caught outside the NTZ. **Without the removal of individuals by potting boats, lobsters are able to live longer and grow larger within the NTZ.**
- Of the 20% of the lobster catch which were weighed, **the average weight of lobsters caught within the NTZ was 18% (102 g) heavier than those caught outside the NTZ.**
- Very few edible crabs were caught within the NTZ, with 95% being under the legal size for landing. Just 7 individuals were caught inside the NTZ compared to 137 caught outside the NTZ. This is thought to be due to differences in the availability of suitable habitat rather than competition with lobsters.
- There were 10x as many common spider crabs caught outside the NTZ as were caught inside the NTZ. Again, this is thought to be due to availability of suitable habitat.



### **Comparisons with the original monitoring studies of the NTZ (2004-07) – Hoskin *et al.*, 2011)**

- When assessing the number of legally-landable common lobsters ( $\geq 90$  mm carapace length) caught inside and outside the NTZ, the 2004-07 study found there were 5x as many within the NTZ compared to outside it after two years of monitoring. It is therefore clear that the results from the present study (of 6.6x as many lobsters of landable size being caught inside than outside) are consistent with these earlier studies.
- For edible crab, the 2004-07 study found numbers caught remained fairly comparable and constant for each year studied, the Catch Per Unit Effort (CPUE) being 2.5 (i.e. an average of 2.5 individuals caught per pot) both inside and outside the NTZ. By contrast, the present study found the CPUE for individuals caught outside the NTZ to be 6.85 and for those caught inside the NTZ to be 0.35, with all individuals being small (average carapace width being 108 mm) and noticeably less than the minimum landing size of 150 mm female / 160 mm male).

Three BRUVS frames belonging to the Blue Marine Foundation were kindly lent for use during the Lundy study. Unfortunately, due to lack of availability of a vessel, only two days' worth of deployments (six deployments per day) were able to be accomplished during the two weeks' loan period.

### **Key findings of the BRUVS study**

- 13 species of fishes were recorded during the 12 deployments of the three BRUVS units, undertaken on 16<sup>th</sup> and 26<sup>th</sup> August 2022.
- Of these, just four species appeared to be attracted to the smell of the bait in the water column (smooth hound *Mustelus mustelus*, nursehound *Scyliorhinus stellaris*, small-spotted catshark *Scyliorhinus canicula* and conger eel *Conger conger*). The remaining nine species were also recorded by the video cameras but showed no interest in the bait at all.
- There were no detectable variations in fish diversity or numbers due to the presence of the NTZ. It was considered that any differences were due primarily to changes in seabed habitat.
- All of the fish species had been recorded from Lundy before, although smooth hound is rarely encountered.
- The most frequently observed and most numerous species was the goldsinny wrasse *Ctenolabrus rupestris*. When the cameras were pointing in the direction of open water, the most frequently recorded species was pollack *Pollachius virens*.

Irving, R.A. 2022. *Lundy No Take Zone: an evaluation of its effectiveness after 19 years (2003-2022)*. Project report to the Blue Marine Foundation by Sea-Scope Marine Environmental Consultants.



## Appendix 11 - Summary pages of the report to Historic England on the Protected Wreck Days and the photogrammetry studies of the protected wrecks

The overall purpose of the Marine Festival at Lundy was to raise awareness of the importance of both marine nature conservation and marine archaeology in general. It was the first time such a Marine Festival had been held on Lundy.

Within the boundary of the Lundy MPA, there lie two Protected Wrecks, both of which were designated in 1990: the paddle steamer *Iona II*, which sank in 1864; and artefacts dating from the 15<sup>th</sup> or possibly 16<sup>th</sup> century present off Gull Rock, also known as the 'Cannon site'. There is also one subtidal Scheduled Monument, designated in 2019: HMS *Montagu*, a Duncan class battleship which sank in 1906.

Under the over-arching 'umbrella' of the Festival, four projects were proposed to Historic England for funding to investigate and promote the marine archaeological resources of the MPA utilising volunteer divers. Each of these four projects were intended to assist with the long-term management of the marine archaeological resource of the MPA. All of these projects were subsequently funded by a grant from Historic England (HE Project #8049).

### Project 1 – **Four Protected Wreck Days (PWDs)**, run by the Nautical Archaeology Society (NAS).

Four days of hardboat diving were set aside for the opportunity to dive on two of the MPA's historic wrecks: the *Iona II* and HMS *Montagu*. New and existing interpretive materials were produced to assist in the interpretation of these historic sites. Four PWDs were listed in the Marine Festival calendar for Friday 19<sup>th</sup> to Monday 22<sup>nd</sup> August. A total of 20 divers visited the wreck of the *Iona II*. Unfortunately, dives on the HMS *Montagu* had to be called off due to fresh south-westerly winds and dives on the MV *Robert* (a coaster which sank in 1975 off the east coast) were undertaken instead.

### Project 2 - **Photographic survey of the *Iona II* wreck site**

Divers were encouraged to retake photographs from viewpoints positioned all over and around the wreck site (especially in good visibility conditions), as part of the continuing monitoring of the site. A total of 37 photographs were taken by three divers. The best (i.e. the most informative) of these photographs have been added to the list entry on the National Heritage List for England via the Enriching the List by Peta Knott (NAS).

### Project 3 - **Photogrammetric survey of the *Iona II* protected wreck**

A 3-D digital image of the whole wreck site was produced by Tim Clements (Vobster Quay Dive Centre) for interpretive purposes and for future monitoring/survey planning of the site.

### Project 4 - **Photogrammetric survey of the Gull Rock wreckage site**

A 3-D digital image of this intriguing site was produced by Tim Clements for interpretive purposes and for future monitoring/survey planning of the site.

Ref. Irving, R.A., Clements T. and Knott, P. 2022. *Marine archaeological studies undertaken during the Lundy Marine Festival 2022*. Unpublished report to Historic England (Project 8049).



## Appendix 12 – Summary pages on the report to Natural England on the status of the sunset cup coral *Leptopsammia pruvoti* at Lundy in 2022

This report summarises the results of the on-going monitoring study of sunset cup corals which Natural England has been undertaking (in part) to assess the condition of the Lundy Special Area of Conservation (SAC) in the outer Bristol Channel.

The sunset cup coral *Leptopsammia pruvoti* is only present at a handful of sites around the coast of SW England. These sites represent the northern outposts of its geographical range, which is centred in the western Mediterranean, with the small populations at Lundy being at its northernmost extreme.

The coral, whose internal skeleton is approximately 17 mm in diameter and up to 30 mm in height, consists of a single polyp enclosing a hard, cup-like skeleton of calcium carbonate. Its bright yellow and orange colouring make it stand out against the drab colouring of surrounding bryozoan turf on a vertical rock face, making it of great visual appeal. Within the British marine fauna it is nationally rare and Lundy is one of the few places this exotic-looking coral can be seen outside of the Mediterranean. The biotope in which it is found [*Sponges, cup corals and anthozoans on shaded or overhanging circalittoral rock (CR.FCR.Cv.SpCup)*] is identified as a circalittoral rock sub-feature of the SAC, which requires monitoring on a regular basis to assess its overall condition.

The underwater photographic monitoring which has been undertaken at Lundy since the early 1980s has shown that the numbers of this charismatic species have been gradually declining. Over a 23 year period, from 1981 until 2004, its numbers have decreased by between 60-66%. More recent studies have shown this trend to be continuing.

It is uncertain why this should be happening and a number of possible causes have been put forward following previous monitoring events of the population. The loss of individual corals may be due to weakening of their attachment to the rock face by small boring worms and bivalve molluscs which tunnel underneath them. They may then be knocked off the rock face as collateral damage by any one of the following: grazing wrasse species; inadvertent collision by a large crustacean walking over them; sudden movements of grey seals close to where the corals are; or perhaps by divers accidentally bumping into them.

The present study assesses the results of the photographic monitoring which was undertaken at Lundy on 23<sup>rd</sup> June 2022, a project carried out as part of the Lundy Marine Festival, which celebrated 50 years of the island's Marine Protected Area in 2022. Two series of overlapping photographs were taken at two locations at the Knoll Pins, rock pinnacles which are found 100 m off the east coast of Lundy. The sunset cup corals which appeared within each of these photographs were matched to their locations in earlier monitoring photographs and numbered accordingly. Individuals were classed as being either 'adults' (> 5 mm) or as 'juveniles' (< 5 mm), although these terms relate to their size rather than to their maturity.

Counts of individuals were made from a defined rectangular area at the centre of each site, measuring 0.71 m<sup>2</sup> for the Knoll Pins Cave site and 0.61 m<sup>2</sup> for the Knoll Pins East site. The same rectangular shapes were able to be transferred to images obtained from monitoring events in 2015, 2010 and 2007, so that comparisons of counts were possible from earlier surveys.

The results showed:

- Both sites (Knoll Pins Cave and Knoll Pins East) showed a continuation of a downward trend in total numbers (adults and juveniles) from the whole extent of each site from 2010 until



2022, particularly for the Knoll Pins East site where numbers fell from 228 individuals in 2010 to 75 individuals in 2022.

- Within the defined 'counting areas' at the centre of the Knoll Pins Cave site, a small increase in the number of adults (49 to 54) and a large increase in the number of juveniles (3 to 19) between the monitoring events of 2010 and 2022.
- Within the defined 'counting areas' at the centre of the Knoll Pins East site, a noticeable decrease in the number of adults (54 to 38) and a considerable increase (3 to 15) in the number of juveniles between the monitoring events of 2010 and 2022.

It remains unclear why the numbers of sunset cup corals continue to decline at Lundy, although the increase in the number of juveniles appearing may indicate the 'doom scenario' is beginning to change. Research into work undertaken in the Mediterranean on this species has revealed mean lifespan of 13 years, so the 'turnover' of adults in the Lundy populations is likely to be more rapid than had first been thought.

It is recommended that monitoring events take place more frequently than they currently do (at least on an annual basis for the next four years, and for one of those years for monitoring events to take place once a month during the summer months), so that a better understanding is gained of when reproduction is likely to take place, when new recruits are likely to appear and how long adults are likely to live for.

Note that in the report, the scientific name of the sunset cup coral is written as *Leptopsammia pruvoti* (or *L. pruvoti* for short) and the common name is given as the sunset cup coral (or SSC for short).

Ref. Irving, R.A. 2023. The status of sunset cup coral populations at Lundy in 2022. NECRxxx. Natural England.

## Front cover photographs



The nudibranch *Discodoris rosi*, found by Sarah Bowen and David Kipling off Battery Point during the Marine Bioblitz. This beautiful sea slug, about 2 cm long, has only been recorded from a few locations in south Cornwall in recent years, so this first record for Lundy extends its range significantly northwards.

[Photo: David Kipling]



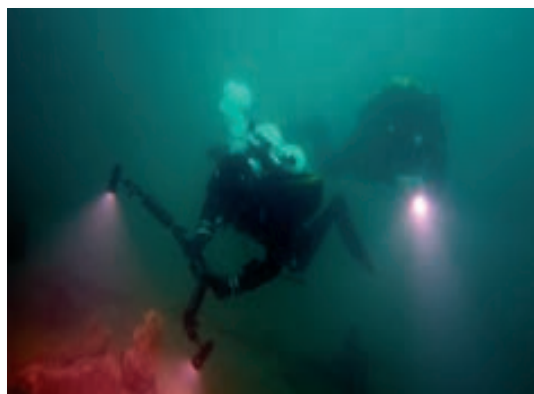
Marine biologists (and members of the Porcupine Marine Natural History Society) Paul Brazier and Anne Bunker discuss seaweed identification in the St Helen's Centre. The Marine Bioblitz recorded a total of ~160 different seaweed species.

[Photo: Robert Irving]



Lundy residents Sue and Rob Waterfield take time out to try Virtual Reality headsets on loan from the charity Plastic Free North Devon. They were able to dive with the seals at Lundy yet remain completely dry! This proved to be a particularly popular activity for visitors to the St Helen's Centre.

[Photo: Robert Irving]



Tim Clements, with buddy Andy Boyles, undertaking a photogrammetry study of the protected wreck of the *Iona II*. Over 1500 overlapping images allowed for a digital 3-D image to be produced, helping with the future interpretation of this wreck.

[Photo: Jon Slayer]

This report should be cited as:

Irving, R.A. 2023. *The Lundy Marine Festival 2022: an appraisal*. Unpublished report to sponsors, supporters and participants.



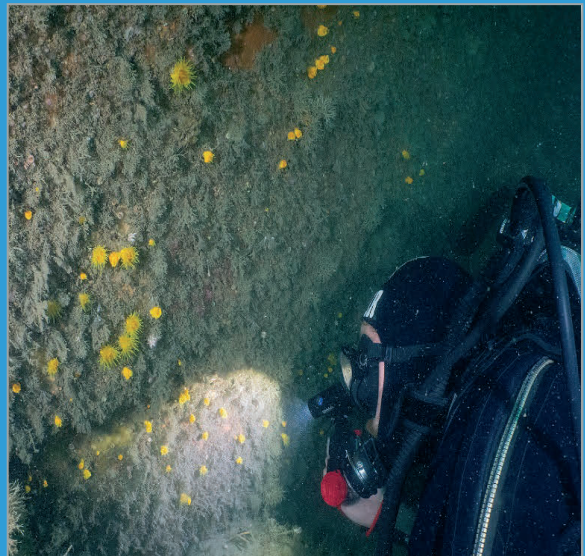
Low shore seaweeds exposed at Gannets' Bay, Lundy [photo: Jon Moore]



A group of yellow cluster anemones *Parazoanthus axinellae* at Brazen Ward, Lundy [photo: Paul Naylor]



Spiny starfish *Marthasterias glacialis* and assorted encrusting sponges on a near-vertical rock face, Knoll Pins, Lundy [photo: Paul Naylor]



Diver inspecting some of the sunset cup corals *Leptopsammia pruvoti* at the Knoll Pins, Lundy [photo: Paul Naylor]

