

MARINE ARCHAEOLOGY AND LUNDY MARINE NATURE RESERVE - AN ASSESSMENT

By

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INTRODUCTION

This report details the results of three weeks of fieldwork carried out in the waters of Lundy Marine Nature Reserve during June and July 1994 by Philip Robertson, Marcus Heyes, Andrew Hibbert, and Alan James.

The team operated from a Rigid Inflatable Boat with SCUBA diving equipment. Using Dive into History forms (Fig. 1), a sport diver's tick-in-the-box recording form for shipwrecks being jointly promoted by The Royal Commission on the Historic Monuments for England (RCHME) and the Nautical Archaeology Society (NAS), basic data on wreck condition, burial location, marine life colonisation and site history could be collected with the minimum of difficulty. This was backed up by stills photography on each site as well as underwater video footage.

The aim of the fieldwork was to provide an initial assessment of the marine archaeological resource within Lundy Marine Nature Reserve (MNR) and to suggest how management of the submerged cultural heritage might be integrated within the overall management of the MNR as outlined in its management plan (English Nature 1994). In connection with this Marcus Heyes concentrated on establishing the importance of the wrecks within the MNR to marine conservation. This is the subject of a separate submission.

For the purposes of information dissemination, copies of this report have been sent to English Nature, RCHME, Devon County Council, the Archaeological Diving Unit, the Landmark Trust, and the National Trust.

THE RESOURCE

a GEOLOGICAL CONTEXT

The sea-bed on Lundy's south coast is almost entirely comprised of slate (360-375 million years old). Elsewhere, Eocene Granite (c.52 million years old), the island's principal geological component, extends up to 1 kilometre offshore (English Nature 1994, 8). Whereas the subtidal substrata on the exposed west, north and south coasts, are predominantly of bed rock, the east coast has extensive areas of softer sediments. These softer sediments may be more favourable to the long term survival of archaeological material than the rock of the west coast, a hypothesis which is reflected in the condition of Lundy's known wrecksites (see below).

b SHIPPING HISTORY

It is thought that an ice-sheet surrounded Lundy during the ice ages and that rising sea levels following the last ice-age probably cut Lundy off from the mainland around 7000 BC. Flint microliths from the Mesolithic period are evidence that humans used the land bridge to good effect but we cannot be sure that boats were in use around Lundy until the late Bronze Age as is proven by evidence of occupation at the north-east tip of the island. Continued settlement since the Iron Age was facilitated by a sheltered anchorage and sand/slate beach at the southeastern corner of the island where islanders were able to pull their boats up on the beach after coastal fishing trips, or perhaps, trade excursions to the mainland.

More recent times witnessed a rapid rise in the volume of shipping in the Bristol Channel. The port of Bristol, which grew after the 16th Century with the opening up of English colonies in the New World (Davis 1962, 36-7), played a major part but many

Site or wreck name _____

Site location _____

Date of latest dive or survey ____/____/____

Dive time in _____ (24 hour clock)

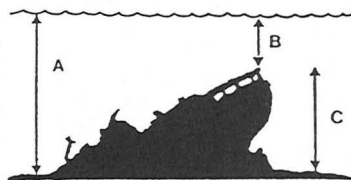
time out _____

Depth recorded during this dive

- A Maximum depth of wreck _____ m
 B Minimum depth of wreck _____ m
 C Height above sea bed _____ m

Depth determined by

- depth gauge ☐
 dive computer ☐
 echo-sounder ☐
 estimate ☐



Dive conditions

Current _____ knots

Weather _____

Underwater visibility _____ m Usual visibility _____ m to _____ m

Which best describes the wreck condition

- | | |
|---|---|
| Intact <input type="checkbox"/> | Scattered <input type="checkbox"/> |
| Starting to break up <input type="checkbox"/> | Flat on bed <input type="checkbox"/> |
| Burial prevents good judgement <input type="checkbox"/> | Isolated artefact / artefact scatter <input type="checkbox"/> |

How much do you think remains _____ %

Hull is made mostly of

- Wood ☐
 Metal ☐
 Concrete ☐
 Fibreglass ☐
 Can't tell ☐
 Burial obscures ☐

Ship Structure

- Keel ☐
 Frames ☐
 Knees ☐
 Hull planking ☐
 Flush ☐
 Overlap ☐
 Metal hull plates ☐
 Stem/stern ☐
 Masts/derricks ☐
 Hold(s) ☐
 Enclosures/cabins ☐
 Rudder ☐

Aircraft

- Fuselage ☐
 Wing(s) ☐

The wreck is fastened with

- Wooden pegs/treenails ☐
 Copper bolts ☐
 Iron bolts ☐
 Riveted ☐
 Welded ☐
 Can't tell ☐

Ships gear and fittings

- Anchor(s) ☐
 Anchor chain/cable ☐
 Engine/boiler(s) ☐
 Steering gear ☐
 Guns/armament ☐
 Ballast ☐
 Propeller(s) ☐
 Rigging materials ☐
 Winches ☐
 Hatches ☐
 Portholes ☐
 Decking ☐

Aircraft gear

- Engine(s) ☐
 Armament ☐

Sea bed shape

- Flat ☐
 Sloping ☐
 Undulating ☐
 Gullies ☐
 Outcrops ☐
 Mobile ☐

Sea bed type

- Bedrock ☐
 Boulders ☐
 Cobbles ☐
 Gravel ☐
 Sand ☐
 Mud ☐

Dangers

- Collapse rock/structure ☐
 Fishing net/fine ☐
 Dredging ☐
 Sharp edges/projections ☐
 Currents ☐
 Navigation hazards ☐

How much of the site or wreck do you think might be buried ____ %

Estimate the amount of the site or wreck covered by vegetation ____ %

Have you seen evidence of the following at or near the site

- | | | |
|---------------------------------------|-----------------------------------|--|
| Pollution <input type="checkbox"/> | Angling <input type="checkbox"/> | Coastal defence works <input type="checkbox"/> |
| Anchorage <input type="checkbox"/> | Potting <input type="checkbox"/> | Marina developments <input type="checkbox"/> |
| Water sports <input type="checkbox"/> | Trawling <input type="checkbox"/> | Oil/gas industry <input type="checkbox"/> |

ships were involved in the transportation of coal from the ports of South Wales to national and international destinations. Indeed, several of Lundy's wrecks were ships servicing this trade.

Given the lack of navigational technology, Lundy, situated mid-channel, with its dangerous rocks and tidal races constituted a serious hazard to shipping during this period; and by the late 18th Century, the need for a lighthouse on Lundy was made known to Trinity House (Langham 1994, 157). Old Light first shone in 1820 (*ibid.*, 158) but was largely unsuccessful due to fog. In later times, a fog battery on the west coast and two further lighthouses at the island's north and south tips were added to warn shipping of the island's dangers. However, Lundy did also provide shelter for shipping and, from the 1780's, pilot vessels used to meet incoming traffic or discharge outgoing ships at the island.

The islanders' reliance on the sea for communication with the mainland has remained until the present day with small coasters and fishing boats able to anchor in the Landing Bay on the south-east of the island. Much of this traffic has fulfilled a service and supply function although after the 1780's, the islanders did export copper, mined from the east side of the island and transported to the mainland on small coasters from an unfinished pier. This pier is not visible today.

Given evidence for Lundy's occupation, there is a potential for locating marine archaeological remains dating at least from the Bronze Age to the present day. While some material may have eroded from the clifftops and shoreline into the sea, the underwater archaeological record is made up mostly of shipwrecks and their associated remains, an emphasis which reflects the danger which Lundy posed to shipping.

c NUMBER OF WRECKS

An accurate knowledge of the numbers of known wrecks and of the potential for further discoveries is central to management planning of the archaeological resource. Fortunately, the subject of local shipwrecks has been well researched by many Lundy enthusiasts (Gibson 1983; Heath 1991; Larn 1974; Bouquet 1967; Langham 1994, 142-156).

The systematic recording of shipwrecks in the UK began in the late 17th and early 18th centuries and it is reasonable to presume that there were many Lundy shipwrecks before this date which went unrecorded. The earliest record of a wreck on the island is that of the collier Marie, lost on 19th September 1757 (Langham 1994 142). After this date "over 200 shipwrecks have been recorded around Lundy island" (Gibson 1993). It is unlikely that all 200 wrecks occurred within the MNR because references were usually given in fairly vague terms (ie. 'inside Lundy'). Moreover, until the end of the 19th century, when shipping traffic was at its heaviest and technology related to safety was relatively primitive, sinkings were common and a busy salvage industry evolved. Tugs were often at hand, and unless serious damage had been incurred, sunken boats were often raised to the surface, repaired and pressed back into service.

Of the 200+ recorded, 13 wreck sites are recorded in Lundy's management plan (Fig. 2) but the number of located sites may be as many as 20-25. The discrepancy in figures results from several complicating factors. Firstly, the remains of the wreck known as SS Carmine Filomena may consist of two or three separate shipwrecks. Secondly, sport diver secrecy and Lundy's popularity as a diving location hint at hidden knowledge.

Divers who visit Lundy often dive only on the well known sites and few actively search for new wrecks. Therefore, with only 10-20% of the potential resource located to date, there is clearly potential for further discoveries. A proportion of the hidden wrecks may lie within the 30-45 metre depth range which is at the safety limit of scuba diving, a principal factor in their seclusion to date.

d SITE CONDITION

The majority of Lundy's known sites are well broken up. Only SS Iona II and SS Earl of Jersey may be described as 'semi-intact but breaking up'. Only MV Robert can be described as 'intact'.

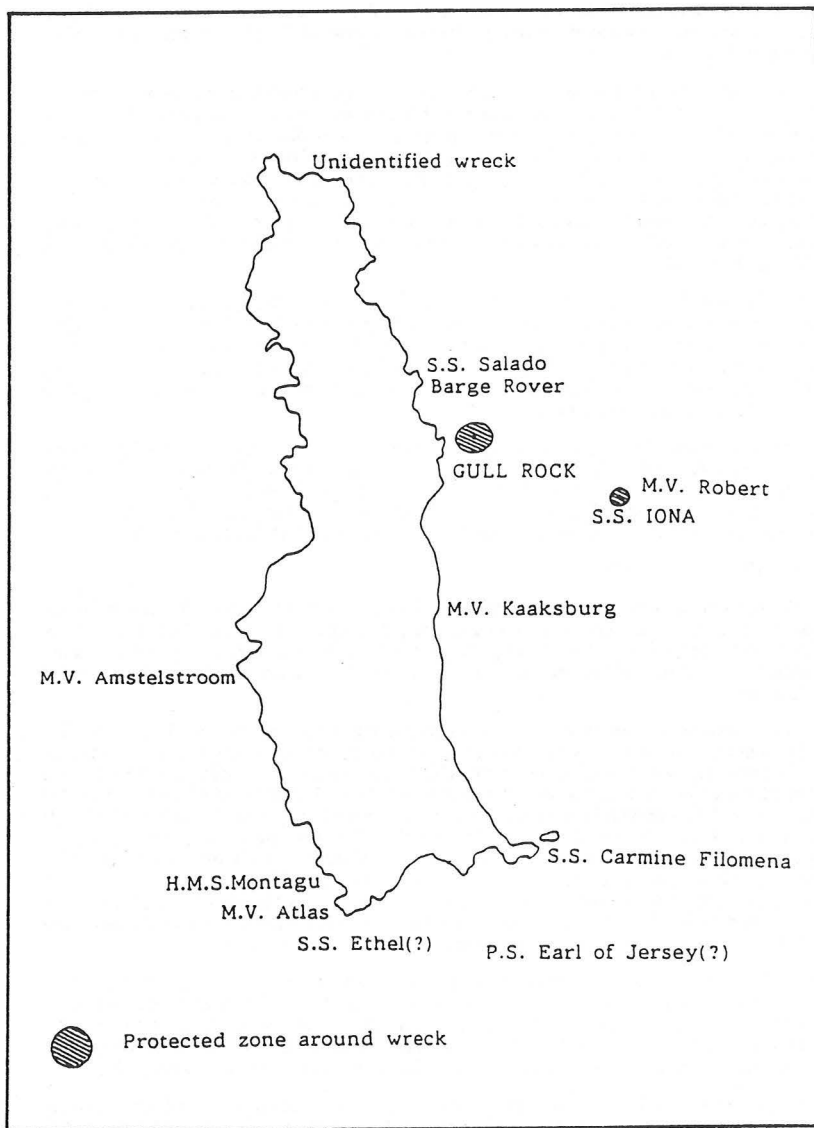


Fig 2. The location of certain, well-known wrecks and the protected zones around those of archaeological interest. From English Nature (1994, 14).

The principal factors in the rapid deterioration of these wrecks have been Lundy's exposed location, its strong tides, and hard rock geology. When a wreck occurred close inshore where tidal surge and wave force are potent factors, it has often broken up quickly. This is most evident in the swift deterioration of MV Kaaksburg, a relatively recent wreck (1981) which is visible along the shoreline of Lundy's east coast. Underwater, the shallower wrecks tend to be fairly broken up, probably because they are also located close inshore where the tidal surge is strongest (Salado, MV Amstelstroom). Those ships which are lying in deeper water appear to be more intact (Iona II, Robert, Earl of Jersey).

In the case of Iona II, Gull Rock, and Robert, the existence of mobile, soft sediments off the east of the island may have been a factor in the improved preservation of these wrecks. By contrast, where hard rock substrata exist, particularly on the north and west of the island, the chances of long term archaeological preservation are reduced.

While the natural environment has played an important part in the wrecking process, the effects of commercial salvage must not be forgotten (HMS Montagu) and should be taken into account in an assessment of the area.

e DEPTH

In the intertidal zone, the bow section of Kaaksburg is visible from a boat off Lundy's east coast. It is reported that the stern section of the ship sank into deeper water after the ship was wrecked (Langham 1994, 156).

Underwater, most of the wrecks close inshore are within the 0-18 metre range accessible by novice to intermediate divers (Carmine Filomena, Amstelstroom, Montagu, Salado). Beyond this range, Gull Rock (20m), Robert (24-27m), Iona II (24-27m) can all be dived by intermediate to advanced divers, and only Earl of Jersey (c.36m) should be seen as a dive solely for advanced divers.

f UNDERWATER VISIBILITY

During this project visibility varied from 4-8m. When plankton blooms visibility may be reduced. Nevertheless, the overall situation compares favourably with most other UK diving locations.

g WEATHER AND CURRENTS

Lundy experiences mild, wet winters and cool summers. Prevailing winds are from the south-west and these result in an almost continual swell from the west or south-west. There is no shelter from this direction and the west coast, open to the Atlantic Ocean, experiences extremely exposed conditions. Wrecks on the west coast are only diveable in near flat calm or during occasional spells of easterly winds, usually during anticyclones. In comparison, the east coast is relatively sheltered and is only occasionally subject to high winds and wave exposure. Wrecks on the east coast are therefore diveable even in fresh south-westerly or westerly conditions.

The Bristol Channel experiences some of the highest tidal rise and fall in the UK. In 1992, the mean tidal range was recorded as 7.2m at spring tides and 3.2m at neaps (English Nature 1994, 13). While the north and south coasts of the island experience currents at speeds up to five knots, the east and west coasts experience relatively weak tidal currents. Nevertheless, careful planning is the key to safe diving on all Lundy's wrecks.

ASSESSMENT OF KNOWN RESOURCES

a ASSESSMENT CRITERIA

Criteria were developed to assess the importance of the known shipwrecks within the MNR, to help qualify the importance of each site, and any need or suitability for *in-situ* management. These criteria include age; function; construction; dimensions; location; condition; marine colonisation; historic interest; resource sensitivity; suitability for interpretation.

Unfortunately, it was not possible to dive on all the island's known wrecks during the project. This accounts for any omissions which there may be in the following pages. Those wrecks which are marked with an asterisk (*), were dived by the project team. Otherwise, assessment notes have been compiled with the assistance of the Archaeological Diving Unit.

b SHIPWRECKS (listed in order of management priority)

SS. IONA II

The 'Iona II' lies north-east of the landing beach in 20m (at low water) within a protected zone of 50m radius around position 51 11'.03 N, 004 38'.78 W (Admiralty Chart 1164) (ADU 1994, 24). The sea-bed is composed of coarse mud.

The 'Iona II' was a paddle steamer built in 1863 at Govan and she was designed as a fast ferry for use around the Clyde. With an L.O.A of 245ft, a beam 25ft, draught 9ft and paddle wheels 20ft in diameter, and a specially designed twin cylinder oscillating engine, this ship was capable of 24 knots speed and was bought by Charles Hopkins Boster of Richmond, Virginia (America) allegedly to break the Federal blockade of Confederate supply routes. While running a 'general cargo' from Glasgow to Nassau, she sank at the beginning of her first trans-Atlantic voyage in 1864 (Captain Chapman) and contemporary accounts describe intensive salvage operations.

This relatively well-preserved site was found in 1976 by a diving company looking for the Robert. One of the divers salvaged material from the site, some of which has been deposited in Greenock Museum.

Due to the revolutionary design and function of the vessel, Iona II was considered to be of archaeological and historical importance and, consequently, the site was designated by the Secretary of State for National Heritage under the Protection of Wrecks Act 1973 (Designation January 3, 1990; 1989 No2; 1989/2294). Access is therefore limited to holders of a Department of National Heritage (DNH) licence. General photographs and hand sketches of the site have been made (Fig. 3) and video footage may be available, but a systematic survey of the wreck has yet to be completed (Rule 1991, 8-9; Langham 1994, 149-50).

Deterioration of the engines and of one of the paddle wheel assemblies has been evident in recent years (ADU *pers. comm.*). This may have been caused by impacts from fishing gear, as is suggested by reports from the Archaeological Diving Unit who found pieces of trawl netting and some wire trace on the wreck in 1991. However, the ADU did not locate any bottom gear such as an otter board or trawl beam to support this theory and the nets may have been deposited by currents (ADU, *pers. comm.*).

Other possible causes of deterioration include natural degradation and sport diver interference. The ADU found shot line remains tied around the main crank shaft on Iona II (1991). While this may be debris left over from archaeological survey it may also have been caused by un-licensed dives. References in Lundy's dive log do confirm that un-licensed diving is quite common on Iona II; the site is close to Robert and the echo-sounder traces can be misleading. Alternatively, damage might well have been caused by haphazard placement of a shot-line or boat anchor during diving in the area and this conclusion prioritizes even further the need to buoy Robert in order to eliminate any possibility of error.

Management priorities for Iona II include the need for a measured survey of the vessel and the production of a site plan. This would be a pre-requisite if the site is to be opened up for public access in the future. The question of whether it is advisable to 'tidy up' the site by removing debris fishing gear and shot lines will also need to be addressed but this will be part of a wider management decision (see below).

GULL ROCK

The site known as Gull Rock consists of a scatter of objects including two wrought iron breech blocks, a wrought iron gun and stone cannon balls situated at the bottom of a rocky slope in approximately 25-30m of water in a protected area of 100m radius around

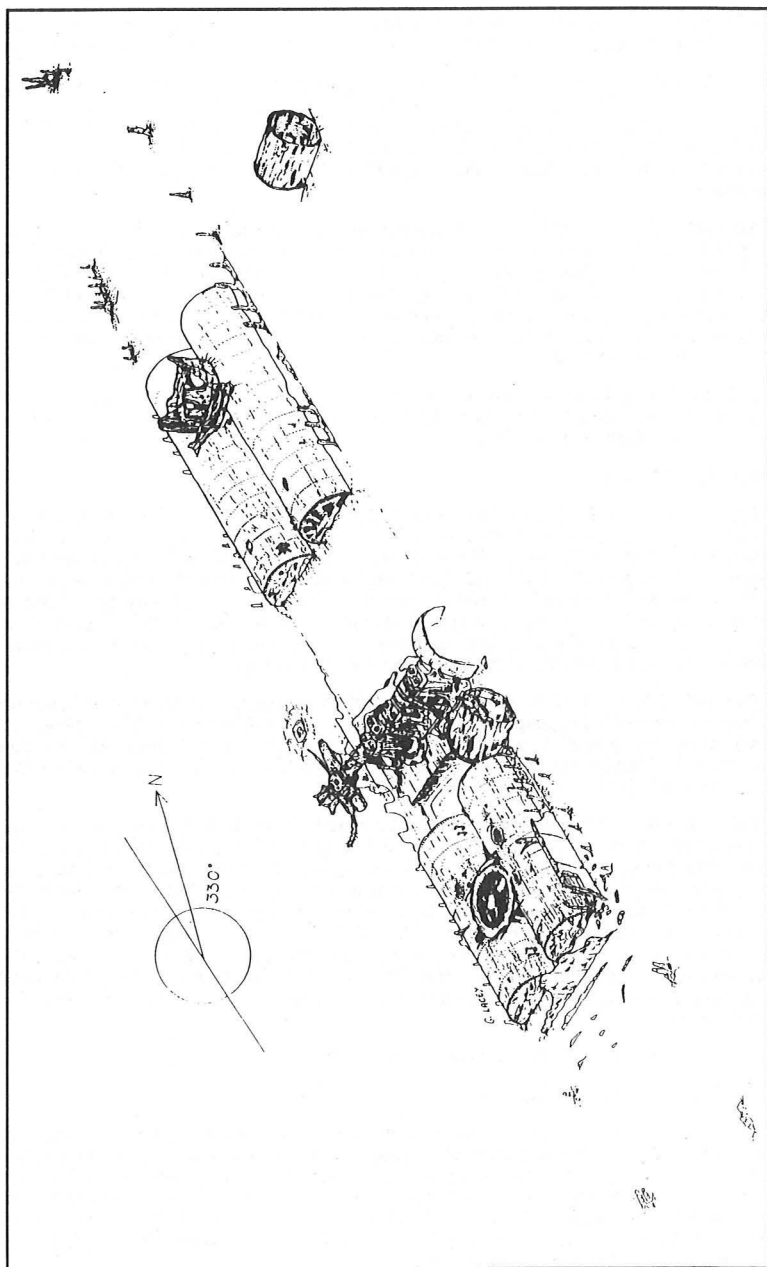


Fig. 3. Isometric sketch of the Iona II by Carol Rule (reproduced with her permission). From N. Rule (1001).

position 51.11'.11 N, 004 39'.41 W (Admiralty Chart 1164). Gull Rock is a low energy site and the sea-bed is composed of soft, grey, shelly silt covered with lighter mobile silt.

The Secretary of State for National Heritage designated this site under the Protection of Wrecks Act 1973 because of the possible early date for the ordnance (15th/16th century) and the potential for the preservation of further material in deep sediments nearby (Designation March 14, 1990; 1990 No.1; 1990/234). Access to the vessel is therefore limited to holders of a DNH licence. Under licence, survey work at Gull Rock has been carried out.

An application was made in 1994 to raise the cannonballs and gun breech for dating purposes. This excavation licence was not granted because the gun was not thought to be under threat, and its dating could be done *in situ*. Moreover, the proposed facilities for raising and conserving the material were thought to be insufficient. It should be noted that Gull Rock is a sensitive site and that future investigations should be done in a very controlled manner if archaeological material and marine sediments in and around the site are not to be de-stabilised.

Gull Rock is marked as a diving site in the Lundy Field Guide and survey reports indicate that unlicensed dives have taken place which may have displaced artefacts on the site (John Heath, *pers. comm.*).

MV ROBERT (*)

This wreck is located off the east shore at a point 51 11'.25 N, 004 38'.88 W (Decca) on an undulating seabed of coarse mud. The bottom of the wreck is at a depth of 18m at low water and the wreck sits on her starboard side, up to 9m proud of the sea-bed. It is estimated that up to 5% of the wreck may be buried in the sea-bed and that as much as 80% of the hull is covered in marine growth. This wreck has effectively become an artificial reef and an increase in marine growth over time has been noted by sport divers. There was evidence of fishing line on the site and the site is very popular with charter boat operators and sport divers because it is visually exciting.

The hull of Robert is almost completely intact. Although the wooden wheel house has collapsed, the rudder, rigging gear (deck winches), and hatches are in place (plate 1, at rear). Only the propeller, portholes and mast structures were conspicuous by their absence. In addition, the cargo hold (intact) was empty except for some duck boarding. The hull itself appears to be fairly stable.

This site, owned by BCD Marine, Great Yarmouth, Norfolk, is the wreck of the single screw coaster Robert. This ship was lost off Lundy Island in 1975 with a cargo of coal which listed to starboard and caused the vessel to capsize. Robert is not of archaeological importance but, because of its intact structure and exceptional value as an artificial reef, should be a high management priority in terms of shipwreck conservation. Besides unavoidable natural erosion, the principal threats to Robert result from over diving. There is certainly a case for buoying this site permanently during the summer season (see below) and for establishing photographic datum points to assess degradation of the wreck over time and to enable study of marine life colonisation. The site also has significant interpretative potential.

Video footage and stills photographs are available of this site.

SS CARMINE FILOMENA (*)

Wreckage is scattered over an extensive site between 50 and 150 yards offshore, to the east of Rat Island at Lundy's south east corner. An approximate position for the centre of this site is 51 09'.78 N, 004 38'.95 W. The wreck(s) lies at a depth of 8-12m on an undulating sea-bed consisting of sand and pebbles. This is a moderate to high energy site with strong tidal currents. However, as much as 15% of the site may be buried in sand and there is extensive marine growth cover (approximately 40%) over the wreck. Lobster pots and angling line were visible on the wreck.

The remains consist of a fragmented scatter of metal frames and hull plates fixed by rivets, steam boilers and cargo holds containing some pieces of coal. The site is

extremely scattered and it is very difficult to define any orientation to this wreck and, in particular to distinguish individual structures from a twisted melee of wreckage. In fact, what appears initially to be one wreck may be the remains of two or three ships, as is indicated by a section of timber planking at one part of the site (not seen during survey but reported by Lundy Warden). One of the other ships on the site may be the Hanna Moore (wrecked in 1866). Such a conclusion is backed up by scattered wreckage found on the south coast of Rat Island indicating that this exposed promontory caused more than its fair share of shipwrecks.

The ship known as Carmine Filomena was a steam driven Italian cargo vessel of 5,287 ton displacement which struck Rat Island in fog while on route to Genoa from Cardiff with a cargo of coal. This ship is of limited archaeological importance and salvage rights to the site are owned by BCD Marine, Great Yarmouth, Norfolk.

However, this shallow site is easily accessible from the landing beach and, after Robert and Montagu, Carmine Filomena is probably Lundy's most dived wreck. Certain sections of the wreck offer moderate or good potential as a training wreck for archaeological survey because the site is relatively flat, and its shallow depth means that long bottom times are possible. Future surveys should concentrate on trying to establish the number of wrecks on this site and to distinguish between them, as well as surveying in detail particular structures such as the steam boilers. The site also has interpretative potential.

Video footage and stills photographs of this site are available.

SS. EARL OF JERSEY

This wreck is located off the south coast of Lundy at a 51 09.46 N, 004 39.41 W, in 26m of water below chart datum. The remains have been dispersed around a system of deep gullies. While the substrata is hard rock, coarse gravel sediments overlay this at the base of each gully. The site is a low to moderate energy site

The shape of the ship is quite well defined by the metal ribs and paddle arches but the site is breaking up. The wreck is locally thought to be that of the paddle tug Earl of Jersey, 147 ton displacement, which sank off the island on 28th November 1898 (Langham 1994, 150).

The survey team did not manage to dive on this wreck, which is relatively difficult to locate and, lying in deep water, does not allow much bottom time. However, local divers report that the wreck makes for a very scenic dive. If identification of this vessel is correct, then the wreck is thought to be of moderate archaeological importance but more information would be needed to confirm this.

MV AMSTELSTROOM (*)

This wreck is located close inshore below Battery Point (west coast) at 51 10'.49 N, 004 41'.07 W (Decca) in 12-15 metres of water within a complex gully system of granite boulders. The remains lie above and below the kelp line. While there is heavy moderate algal growth on the surrounding rocks, the ship itself is only about 30-40% covered. There was evidence of lobster potting on the site.

The remains are extremely scattered and they consist of fragmented metal hull plating with rivet fastening, and various metal objects from the ship's deck structure, such as winches, an anchor, and anchor chain. Approximately 15-30% of the ship are thought to remain but some more of the hull may be buried under granite stones. The site is a high energy one and the ship has been reduced to artefact scatter within 50 years.

This wreck is locally thought to be that of the Dutch ship MV Amstelstroom, a coaster of 395 tons which was stranded in fog on 18th July 1948. Salvage rights to the vessel are owned by BCD Marine, Great Yarmouth, Norfolk. The site is of limited archaeological value but, when weather conditions allow, it represents a very scenic dive. There would be scope for survey work to determine the wider extent of the wreck and to attempt to map existing remains within the complex gully system.

Video footage and stills photographs of this site are available.

H.M.S. MONTAGU (*)

This wreck lies north-south, close inshore below Shutter Point around a position 51 09'.71N, 004 40'.61W (Decca) on an undulating gully system of granite boulders overlying granite bedrock in 10-14m of water. The wreckage lies above and below the kelp line and there is extensive algal cover over the site (approximately 50-60%).

Montagu was heavily salvaged over a 6 month period resulting in the removal of the ship's guns, condensers, pumps, armour plating and much non-ferrous metal. This salvage, together with some souvenir hunting and natural erosion of remains has contributed to the swift deterioration of this wreck to a condition of artefact scatter, consisting mainly of metal frames and riveted armour plating as well as some gun mountings and 12 inch gun shells. Existing salvage rights are owned by BCD Marine, Great Yarmouth, Norfolk.

Montagu was a battleship of the Duncan Class, launched in Devonport in 1901. Manned by 750 crew, the ship measured 14,000 tons displacement, 418 feet (L.O.A.), 75.5 feet (beam), 27.25 feet (draught). She was wrecked in fog in 1906. Montagu would have been of archaeological interest but commercial salvage and the quick disintegration of her hull have diminished her importance. The site is a popular recreational dive when weather conditions allow and there is an ongoing risk of souvenir hunting, in particular for objects such as the gun shells. There may be a case for tagging the remaining shells to discourage removal.

Video footage and stills photographs of this site are available.

SS SALADO (*)

This wreck is located close inshore at a point 51 11'.71 N, 004 39'.99 W (Decca) in 7-10m of water on an undulating sea-bed of granite boulders. The ship lies within the kelp zone and approximately 80% of the wreck was covered by heavy algal growth. Presumably there would be less kelp cover during winter and spring. There was evidence of lobster potting on the site.

The remains consist of steel hull plates and frames together with some remains of the ship's coal cargo. The hull is extremely broken up and in many areas the metal appears to have moulded to the rock face by corrosion. Approximately 20% of the ship remains today.

This ship is locally thought to be the site of the Salado, a steam powered, steel built cargo ship which struck the Mouse Hole and Trap in fog during March 1897 (Langham 1994, 149-50). The ship, 2188 ton displacement was carrying a cargo of coal and there were twenty-five people on board.

The Salado is of limited archaeological value and does not need any active management. This wreck does make an attractive shallow wreck dive for novices, or an ideal second dive and should be promoted as such.

SEAL ROCK

The remains of an unidentified ship can be seen lying in 10-18m at low water at the northern side of Seal Rock, off Lundy's north east tip. The remains lie on an undulating seabed of granite boulders and the site is a high energy one.

The wreckage consists of isolated artefact scatter, mostly fragmented metal frames and hull plating. The method of fastening could not be identified. The site is located on a dropoff to 40m depth and while more of the wreck may lie at the bottom of the slope, this could not be confirmed during survey. From the materials used in construction of this vessel, it is reasonable to assume that the vessel dates from the mid 19th or early 20th Centuries. Given this identification and the condition of existing remains, this site is not thought to be of archaeological importance and no active management is called for.

RESOURCE PROTECTION ISSUES

Resource protection relates to protection from intentional or unintentional damage from

human interaction with the resource.

a LEGISLATION

The legal situation surrounding ownership and protection of shipwrecks and other archaeological material within Lundy MNR is confusing. The salvage rights to some of Lundy's wrecks are owned by a commercial salvage company, BCD Marine of Great Yarmouth. Under ownership law, sport divers are not allowed to remove artefacts from these vessels, a position which BCD have recently reiterated in writing ('Wrecks off Lundy' 1994, 54).

Part IX of the Merchant Shipping Acts of 1894 deals with the ownership of 'wreck' material, a term which "includes items from a vessel or casualty, but not material that has been inundated or has come from the shore" (Firth 1993, 68). Under this law, wreck salvaged from the sea-bed must be declared to the 'Receiver of Wreck' who must advertise finds, and retain them for one year to allow the original owner to make a claim. After the year, if material is not claimed it becomes Crown property although ownership usually passes to the salvor in lieu of a reward. In the past, the government has been willing to reward salvors of wreck which is of historic or archaeological interest in an attempt to encourage reporting of finds. However, there is little evidence that this policy has been successful and few finds are reported (*ibid.*).

The 1894 law does not encourage divers to leave archaeological material *in-situ* and diverges somewhat from the anti souvenir hunting stance taken by Lundy MNR. Another disadvantage is that divers are not encouraged to report the location of archaeological sites. For example, archaeological material which has been located but not recovered need not be reported to the Receiver. Although these problems are widely appreciated, no viable alternative has been proposed.

However, Lundy MNR does offer the opportunity to go one step further. Ideally, souvenir hunting for archaeological remains should be banned completely within the MNR as is the position for marine life souvenir hunting. The Marine Warden should be prepared to explain that, in conservation terms, reporting the location of material on the sea-bed (to him/her) is far preferable to removing artefacts because it results in better recognition of sites within the MNR and enables systematic survey work to be carried out where necessary. Many divers visiting Lundy do seem to report their finds to the Warden but there is still evidence of secrecy. The procedure of reporting finds could be facilitated by ensuring that all dives within the MNR must be reported, together with observations, in the Lundy Dive Log. This would be beneficial not only to archaeology but to the wider interests of MNR management.

The Protection Of Wrecks Act 1973, under which Iona II and Gull Rock are designated, aims to: "ensure that wrecks of historical, archaeological or artistic importance in United Kingdom territorial waters are protected from unauthorised interference and that only competent and properly equipped people survey and excavate such sites" (Marine Directorate, 1986).

Designations are made by the Secretary of State for National Heritage. This designation identifies the site of a wrecked vessel and the extent of a "restricted area" around it. Within this area it is an offence to carry out activities which can broadly be defined as diving or salvage operations, to deposit anything which will result in damage to the wreck, and to tamper with or remove any part of the vessel and its cargo unless under licence (Oxley in press). This law can benefit nature conservation interests because biological species within the zone are protected as a result of enforced exclusion.

The Ancient Monuments and Archaeological Areas Act 1979 could theoretically be applied to wrecks and other archaeological structures within the MNR although no sites in UK territorial waters have previously been scheduled (Firth 1993, 70). Furthermore, scheduling requires that a potential Ancient Monument is of 'national importance' (Breeze 1993, 4 of 4). Except for Iona II and Gull Rock, none of the known wrecks are thought to be 'national importance'. At any rate, the government has stated that scheduling wrecks under the Protection of Wrecks Act 1973 would usually take

precedence over scheduling under the Ancient Monuments and Archaeological Areas Act 1979 (Firth 1993, 70).

b ACCESS RESTRICTION AND LICENCES

There is no case for restricting access to any of the wrecks beyond the designations which are already in place.

The Protection of Wrecks Act 1973 complicates the issue of access to wrecks within Lundy MNR by devolving management of Iona II, and Gull Rock, away from the Lundy Warden to the Department of National Heritage (DNH). While DNH have confirmed that the Lundy Warden would have the power to challenge those diving illegally on Iona II or Gull Rock, Andrew Gibson justifiably complained that he was forced to manage a Reserve 'with two holes in it' because the Warden is not included in the licensing process.

Alternatives to the existing situation have been proposed by the ADU and discussed by the Advisory Committee On Historic Wreck Sites of the DNH. These alternatives are that:

All future Lundy area licences are to be issued with the proviso that written permission to dive on the designated sites has to be obtained in writing from the Lundy Warden with copies sent to the DNH.

All licences are copied to the Warden and/or English Nature and the National Trust for comment.

The Lundy Warden becomes the principal 'licensee' of Iona II and Gull Rock, and with a suitable archaeological advisor, manages access to and oversees survey work on the sites.

The ADU favour the third proposal and have submitted a formal suggestion. Although precedents exist for this management structure (Duart Point, Scotland [ADS 1994, 26]), the DNH recently decided that in the case of Lundy MNR, such a step could not be taken. The reason given was that the Lundy Warden was not a suitably qualified archaeologist and did not have the time to escort divers on a controlled access agreement to ensure that the archaeological integrity of Lundy's designated sites was unimpaired (Advisory Committee On Historic Wreck Sites, 1994). However, if the Lundy Warden was put through the training scheme of the NAS, then this would theoretically solve the problem of suitable qualification and with this concession, DNH might reconsider their position.

Given that such an arrangement is granted and the Warden is given the go-ahead by his/her paymasters to oversee dives on site, then it would become feasible to apply for a visitor licence in order to open up controlled access to Iona II. This wreck is being dived illegally at present because it is accessible from MV Robert and detection is therefore difficult. Indeed there have been unconfirmed reports of a chain line joining the two wrecks.

The MNR should aim to move towards a situation where approved groups could dive on the site under licence, and could receive a specially designed log book stamp to confirm their dive on a Protected Historic Wreck. This gesture would provide excellent Public Relations for the Protected Wrecks legislation and help to foster better understanding of the importance of conserving the underwater heritage. By contrast, Gull Rock is not thought to be a suitable candidate for controlled access in the future.

c PRIVATE COLLECTING

Collection of artefacts from wreck sites is as unacceptable as the collection of live marine species and should be banned within the MNR (except under certain circumstances: see above). This message should be promoted in relevant interpretative programmes.

While promoting such a philosophy is relatively easy, policing it is more difficult and

responsibility will inevitably fall on the Marine Warden. However, it must be hoped that by promoting an anti-souvenir hunting ethos within the MNR, the issue will become self-policed; archaeological souvenir hunting will become as unfashionable amongst diving groups in the future as marine life collection is now.

RESOURCE MANAGEMENT

In aiming to integrate the management of Lundy MNR's archaeological heritage with aspects of nature conservation, it should be recognised that many of the cornerstone principals of heritage management underwater apply also to nature conservation.

For instance: say no to souvenir hunting. Say mostly no to destructive excavation methods. Say yes to the need for baseline survey data. Say yes to diver education: "take only photographs, leave only bubbles".

a BUOYS AND MOORINGS

English Nature have proposals to 'establish mooring and anchorage areas as appropriate to prevent damage to vulnerable area' (English Nature 1994, 52). While none of the other wrecks within the MNR need to be buoyed, the establishment of a proper buoy and mooring system on Robert will assist the long term conservation of this popular wreck. Currently this site is periodically buoyed in the summer but when no buoy is in place, the wreck can be missed even with Decca marks and an echo sounder. Laying a temporary shot line inevitably results in the use of large anchors, or heavy weights which are dragged over the site. Damage to Robert and nearby, to Iona II, as well as to marine life on the sea-bed may result from this activity.

Mooring buoys are also important to the diving tourism business, the effective management of which demands sites which are enjoyable to dive, are easily located, that moorings exist to secure a boat or boats, and that a descent line be available. Buoying may also be an advantage for anglers, enabling quick location of the wreck site. If in the future, non-diving methods of interpretation are utilised, then a buoyed site such as Robert would be very beneficial as an operating base.

There are no known examples of wreck moorings in the UK. However, the idea has been developed in Canada, the U.S.A, and probably elsewhere (Fig. 4). The North Americans commonly use 5000 or 2500 pound concrete blocks cast from left-over concrete mix, the placement of which must be carefully planned to enable the best approach to the wreck. Planning must also take into account local current movement to avoid possible damage to the wreck and the surrounding sea-bed (Douglas 1994, 46). Use of a weight such as this might cause a significant scour pit in the soft sediments surrounding Robert and the implications of this to nature conservation interests would need to be considered.

The anchor block could incorporate an interpretative plaque bolted onto it and a slack finder line attached to the wreck. In the North-American model, attachments are as per the diagram included. It should be noted that all fittings are galvanised, and that the ratio of rope length to vertical distance between buoy and anchor block is 1:1.5 to allow for currents and wave movement. In the tidal environment of the Bristol Channel, this ratio would need to be increased. Note that a vessel mooring line, about 20 feet in length with a looped end for the dive boat to tie up to, is attached below the buoy.

Setting up a system such as this would need some capital investment. It might be possible to raise some of the finance from dive boats using the MNR on the basis of a "user pay" philosophy. If a compulsory fee is impractical then a voluntary donation should be considered in return for this and other services provided. However, this method would not be expected to provide large returns.

Moorings would also need some maintenance. Initially this would involve checking for wear on the rope and fittings, removing the lines and buoys in winter and replacing them before the summer season.

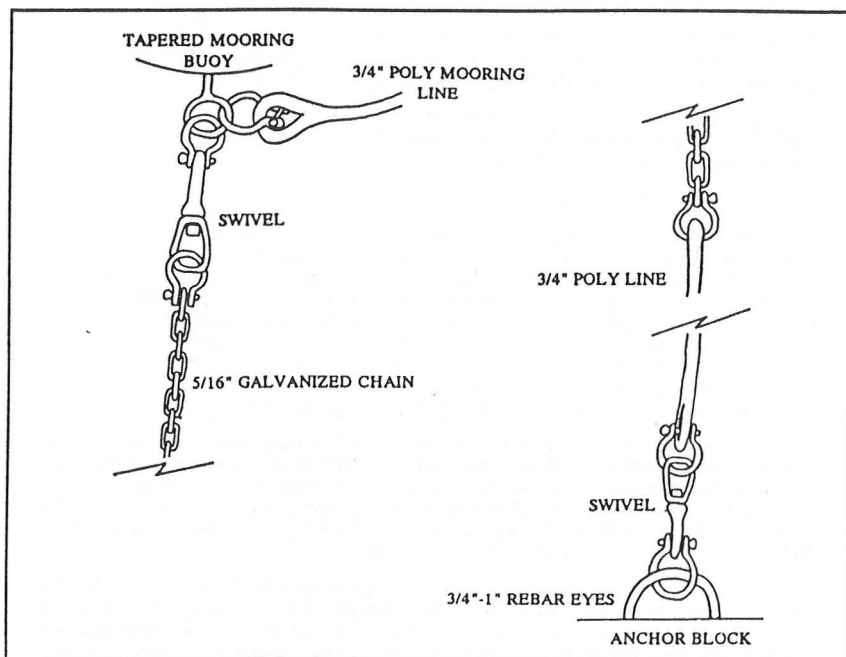


Fig. 4. Details of the buoy and mooring system (after Isle Royale National Park in Shipwreck Mooring Buoy Project). (From Douglas 1994.)

b UNDERWATER ARCHAEOLOGY

Where underwater archaeology involves controlled excavation of a wrecksite it becomes a complex and costly procedure. Removing artefacts from water to air requires that stringent conservation procedures are in place before it can be justified. Excavation could only be justified within the MNR if very specific circumstances demand such a response, such as a rescue situation where there is unavoidable threat to an archaeological site.

If excavation applications are made, English Nature should critically evaluate the damage that excavation may pose to the marine habitat since they will inevitably cause destabilisation of sediments and marine life in the localised area with possible consequences further afield. In general, it is thought that intrusive operations like archaeological excavation go against the ethos of the MNR.

However, not all underwater archaeology is destructive. Where non-destructive methods of research are used, such as remote-sensing or field surveys, these should be encouraged since they will add to knowledge of Lundy's archaeological resource without damage to it or to marine life.

c FIELD SURVEYS

Field surveys involving diver operated non-destructive survey methods should be encouraged. Where relevant, English Nature may wish to recommend that the survey incorporates a marine biological element to ensure an integrated approach to research. Where field surveys centre on the biological attributes of the wreck, these should be supported on archaeological grounds since they will add to the knowledge of the wreck's environment without doing damage to the site itself.

The central thrust of archaeological survey work should be towards compiling base-line survey data on each wreck site which will enable rates of wreck deterioration to be assessed. This will be important in future resource management. In particular, no systematic measured survey has been completed of Iona II and ongoing deterioration warrants this step. Baseline surveys of Carmine Filomena, Robert, Earl of Jersey, Amstelstroom would all be useful and, in some cases, the resulting site plans would become an integral part of any site interpretation in the future.

It would also be advantageous for the Marine Warden to have a supply of NAS/RCHME 'Dive Into History' forms to hand out to each visiting dive group to encourage data collection from each site and to foster a further understanding of marine archaeology and wreck conservation.

d ARTEFACT MANAGEMENT

The casual recovery of artefacts should be opposed. However, if an object of importance is shown to be under unavoidable threat then it should be removed. This object will have to be conserved, a process which begins as soon as that object is disturbed. In many cases, the conservation of the object will have to be carried out on the mainland, either by a museum, or university. This procedure may be lengthy and expensive.

If the removal of that artefact detracts from the integrity of a site, an accurate reproduction, carefully marked and dated as such could be installed *in-situ*.

If a site appears threatened as a result of souvenir hunting, then several steps can be taken to discourage the removal of artefacts. Artefacts can be tagged as part of an inventory process. This might become appropriate on Iona II and Robert, and for the gun shells on Montagu, if a more regulated management approach is undertaken.

Under special circumstances, such as in the case of a ship's bell, artefacts can be permanently secured although this should be done as unobtrusively as possible. It is thought that this is an inappropriate measure for any of the wrecks within the MNR.

There is a case for 'tidying up' some of the wrecks by removing debris fishing gear such as lobster pots, monofilament line, and trawl netting (visible on Carmine Filomena, Salado, Amstelstroom, Iona II, Robert); these can pose a danger to divers and may detract from the 'wreck experience'. However, where removal of netting may de-stabilise protected areas, material should be left *in-situ*. It should also be left in place if an educational point can be made from its presence.

e REMOTE SENSING

A systematic research programme using remote sensing equipment, primarily echo sounders, magnetometers and side-scan sonar used in conjunction with accurate position fixing equipment (Differential GPS) and followed up by diver searches on positive 'hits' would help to establish an accurate picture of the MNR's total archaeological resource. This would enable managers to assess accurately the importance of all sites and to manage access to them, if necessary, by diverting interest from over-dived and/or archaeologically sensitive sites to newly located and less sensitive sites.

There are few appropriately skilled and equipped teams in the UK; accordingly, commercial deployment would be expensive. A research programme of this sort could be achieved by incorporating a remote sensing element within the scope of an NAS field school or by encouraging Universities such as Bangor (Wales) or Southampton (England)

to take on a programme of remote sensing research.

f COMMERCIAL FISHING

It is understood that most of the commercial fishing carried out within the MNR is limited to potting for lobsters and crabs (English Nature 1994, 14). This is unlikely to cause much damage to archaeological remains except in the most sensitive of areas where soft sediments are easily de-stabilised, perhaps, for instance, at Gull Rock. Surveys on the wrecks did identify signs of discarded lobster pots (Carmine Filomena, Salado, Amstelstroom). These could be removed from the site, although more for the danger they pose to divers, than for the risk to archaeological remains.

It should be noted that bottom trawling techniques will be harmful to archaeological remains. Nets have been seen at Iona II, although it is unclear whether these result from direct impact of fishing gear on the wreck or from current transportation. However, it is understood that only one trawling permit has ever been granted and if this is so, then the Iona II nets were probably transported by currents. Nevertheless, future applications to trawl using techniques which have contact with the sea-bed of the MNR should be opposed on archaeological grounds.

g COMMERCIAL SALVAGE

Commercial salvage should be seen as distinct from underwater archaeology because it is always destructive, both to archaeology and marine life.

BCD Marine of Great Yarmouth, Norfolk, own salvage rights to a number of wrecks off the Devon coast including Montagu, Amstelstroom, Robert, and Carmine Filomena. However, the salvors have not exercised these rights in recent times and it is unlikely that any of the Lundy vessels still represent a viable salvage proposition. If further applications are made to salvage wreck from within Lundy MNR, English Nature should stand in opposition. They should oppose salvage on archaeological grounds because all of Lundy's wrecks represent a vital, non-renewable part of its submerged cultural resource. They should oppose it on grounds of damage to nature conservation because of the inevitable damage to marine life and sediments on the site and within the surrounding area.

It might be advisable for English Nature to apply to BCD for ownership rights of the above vessels to protect them for the future. This would also facilitate management objectives such as buoying Robert since, otherwise, permission to attach mooring line directly to the ship would theoretically have to be obtained from the vessel's owners.

h USER STATISTICS

Statistics of numbers diving within the MNR would enable questions of resource management to be addressed (eg. dive pressure on the ROBERT).

This could best be achieved by formalising the Lundy Dive Log. Charter boat operators and individual diving groups would have to register each dive within the MNR, together with numbers of divers in a party, and observations on the site. The benefits of this would transcend management of Lundy's archaeological resource facilitating an assessment of pressure on marine life habitats within the Reserve.

INTERPRETATION

Interpretation should not be seen as simply providing information. It is based on accurate information, but in the presentation thereof, interpretation seeks to make the information meaningful to the observer. At its best, interpretation makes the detached observer into a participant and encourages him/her to go out and learn more about the subject.

a USER GROUPS

While diving groups remain the principal target audience, interpretation should aim to attract non-divers (including school groups, day-trippers, university students) who visit Lundy in far greater numbers and cannot normally access marine archaeology.

b FIELD CENTRE/VISITOR CENTRE

The Marisco Tavern, with its shipwreck relics and maps already provides informal interpretation of Lundy's maritime heritage and improving on this would be difficult without heavy capital investment. Possible ideas for the future might include a video link to an R.O.V. operating in chosen locations around the island to include Robert.

If it is decided in the future to develop a Field Centre or Visitor Centre on Lundy (as suggested by English Nature 1994, 60) then such a facility should interpret aspects of maritime heritage and promote courses in marine archaeology alongside marine biology or ecology.

c INTERPRETATIVE LEAFLETS

It is understood that English Nature have recently produced a series of leaflets which are handed out to visitors as they land from the MV Oldenburg. It would be advantageous to include a leaflet about marine archaeology within this series. A leaflet text could be compiled relatively easily and would include details of Lundy's main wrecksites, in particular those designated under the Protection of Wrecks Act 1973, the importance of wrecks to marine life, an anti-souvenir hunting message with advice on what visitors or sport divers should do in the event that they locate 'wreck', and some information on how visitors may learn more about marine archaeology.

d SITE PLANS

Site plans would be the main product of field surveys and provide the base line data from which to assess rates of wreck deterioration in the future. These site plans, produced with a description of the wreck, the story of the demise of the ship and its importance to the MNR, could be attractively produced and laminated for sale to sport divers visiting the island. Robert, Iona II (if the site is opened up to controlled access), and Carmine Filomena all lend themselves to this medium of interpretation although more survey data would be needed to produce accurate plans of all the sites.

e INTERPRETATIVE PLAQUES UNDERWATER

A plaque should be placed on the Robert, securely mounted to the buoy anchor block. The plaque should identify the ship, the date built and date of sinking, its type and size, and a brief statement about the final incident, including loss of life. It might also include a catch phrase akin to "Take only photographs, leave only bubbles" (cf. Save Ontario Shipwrecks [S.O.S]). The format should be relatively small and made of non corrosive metal with raised text for durability and appearance.

f WALKS

The Lundy Warden takes guided walks around the island and could incorporate a maritime walk into this programme, describing the lighthouse and its history, the story of the wreck of Montagu and Lundy's other incidents.

Aspects of Lundy's maritime heritage could be incorporated into a round island boat trip focussing on the history of its lighthouses, as well as the history of shipwrecks around the island (with a close up view of Kaaksburg).

It would also be beneficial to place an interpretative poster on the MV Oldenburg about the island's marine archaeological resource, in particular its two Protected Wrecks. It might be possible to approach the Department of National Heritage, who are in the process of developing interpretative boards for some of the UK's other Protected Wrecks, to fund this project.

g STAMPS

Consider marine archaeology and Lundy's maritime heritage as a subject for future stamp editions.

RECOMMENDATIONS.

a OVERVIEW

In general it is thought that Lundy MNR offers a welcome chance to integrate management of marine archaeology alongside nature conservation in a way that is not practised yet in the UK but is commonplace abroad. Moreover, increased archaeological input to Lundy MNR will not only benefit Lundy. By setting a good example, Lundy MNR could help to affect a more archaeologically sensitive approach amongst UK divers which can only be of long term benefit to the future of our underwater heritage.

The recommendations made in this report should be taken as a starting point for discussions concerning the management of marine archaeology within the MNR in future years.

b MANAGEMENT

It is understood that resources for implementing this plan are minimal and that the Lundy Warden is hard pressed to fulfil his/her existing marine remit. While he/she should be encouraged to take on many of the concepts, and if possible, some of the practical tasks, it might be possible for a project encompassing these ideas to be taken on by a suitably appointed archaeology committee with voluntary diving support, providing that the committee and its objectives have the full support of English Nature and the Landmark Trust. Alternatively, if the diving services side of Lundy Marine Reserve is given out to franchise (as proposed by English Nature 1994, 70), some of the practical tasks might be incorporated into a franchise agreement.

c PRIORITISED RECOMMENDATIONS

The following recommendations are given for consideration by English Nature, the Landmark Trust and those committed to marine archaeology within Lundy MNR.

1 Resource protection issues:

Enrol the Lundy Warden on the training scheme of the NAS.

Apply to the DNH for the Lundy Warden to become the principal 'licensee' of Iona II and Gull Rock, so that, with a suitable archaeological advisor, he/she may manage access to and oversee survey work on the protected sites.

Apply for a visitor licence on Iona II to enable controlled access to the site under supervision.

Ensure that the Lundy Warden is aware of the legal position concerning access to Protected Wrecks and enable him/her to challenge those diving illegally on Iona II or Gull Rock.

Oppose applications to trawl within the MNR on archaeological grounds.

Oppose plans for further salvage work on the wrecks within the MNR and ban the use of explosives.

Consider applying for ownership of all wrecks from their existing owners to ensure protection for the future, and to facilitate practical management.

2 Resource Management:

Buoy Robert during the main diving season and include an interpretative plaque on the mooring block.

Ensure that all dives within the MNR are properly recorded in the Lundy Dive Log.

Compile user statistics of divers within Lundy MNR and use numbers to help assess dive pressure on sites such as Robert.

Ban sport divers recovery of wreck artefacts as well as marine life souvenir

hunting within the MNR.

Encourage sport divers to report the location of archaeological material on the sea-bed either to the Lundy Warden or by report in the Lundy Dive Log.

Have copies of 'Dive into History' (see introduction) available for use by visiting divers and use this form to record both known features and newly located sites.

Oppose plans for excavation of wreck sites except where unavoidable threat to an archaeological site requires a rescue excavation.

Manage archaeological remains *in-situ*. An artefact should be removed from the sea-bed only if it is important and under unavoidable threat. This work should only be carried out with the agreement of the Lundy Warden after the appropriate conservation requirements have been fulfilled.

Make it the Warden's responsibility to report the recovery of artefacts to the Receiver of Wreck.

Consider tagging wreck artefacts *in-situ* which are at risk of being stolen, in particular from Iona II, Robert, and Montagu.

Keep popular wrecks free of discarded lobster pots, fishing net and angling line which may detract from the wreck and possibly, pose a danger to divers. Only leave material *in-situ* if removal will destabilise the site and its environment, or if educational mileage can be achieved from its presence.

Support wreck field study/survey proposals, both those with archaeological and biological perspectives. As basic aims of archaeological fieldwork promote the following:

1. A systematic measured survey of Iona II with a detailed site plan as the final aim.
2. A systematic programme of remote sensing research within the MNR in order to locate hidden wrecksites.
3. Establish the number of wrecks *in-situ* on the site of Carmine Filomena; distinguish between them; survey in detail particular structures such as the steam boilers.
4. Establish photographic baseline data for Robert at vulnerable points of the wreck such as superficial deck structure. Repeat photographs every year and assess change to the site.
5. Determine the wider extent of the Amstelstroom and attempt to map existing remains within the complex gully system.

Where fieldwork aims to be purely biological, English Nature might encourage fieldworkers to contact archaeologists who may have some prior knowledge of the site(s) concerned, and if possible, to incorporate some archaeological recording. English Nature should also require that archaeological field projects incorporate marine biological study into their project plan. Finally, the Lundy Warden should insist that project participants remove all survey debris from the site once work has been finished (to prevent the Everest Base Camp effect!).

3 Interpretation:

Establish an interpretative board on the Landing Beach or MV Oldenburg about the Protected Wrecksites and Lundy's marine archaeological resource. Pursue DNH for funding.

Include a leaflet about marine archaeology within the existing leaflet series.

Use site plans from field surveys to develop underwater plans for Iona II,

Robert, and Carmine Filomena.

Incorporate aspects of Lundy's maritime heritage into the island's other interpretative programmes such as walks, boat trips, slide talks, and stamp collections.

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