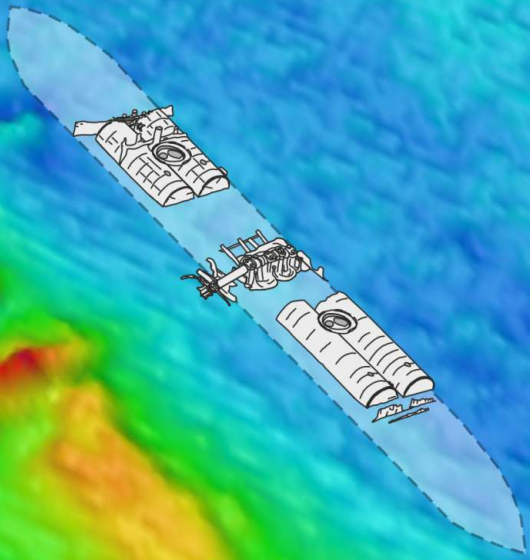
IONA II DIVE TRAIL

Wreck Investigations & Monitoring



Since the wreck of the paddle steamer *Iona II* was rediscovered in 1976, numerous investigations of the site have taken place. These include archaeological surveys, dive club surveys and marine life surveys. Dive Trail participants are able to continue the investigations into the *Iona II* through the photographic monitoring system.

ENGLISH HERITAGE

The Landmark Trust

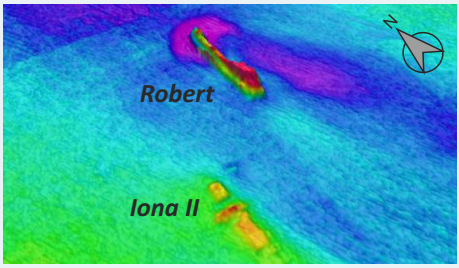
wessex archaeology

www.landmarktrust.org.uk/lundyisland/iona-ii-dive-trail

FINDING THE WRECK

Wreck Discovery

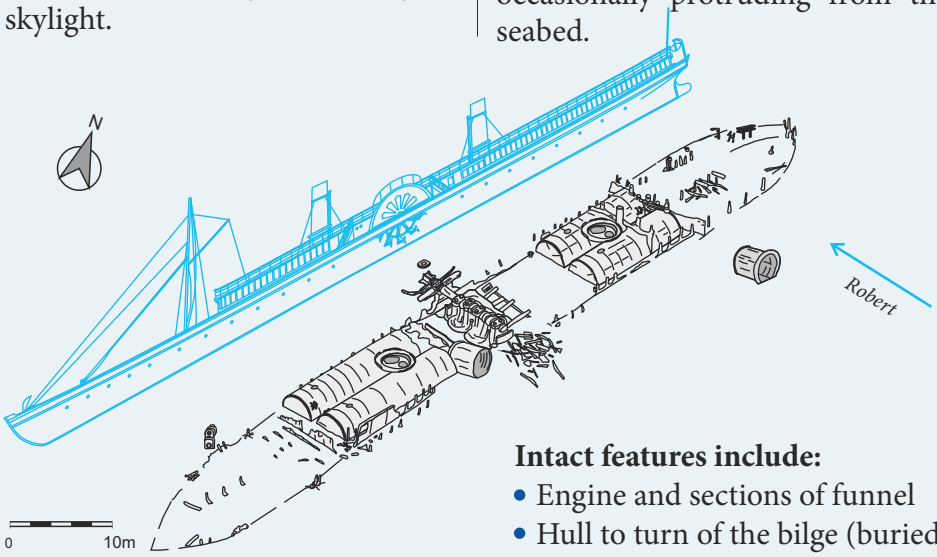
The *Iona II* wreck was discovered in 1976 by a commercial diving company who were searching for the recent wreck the *Robert*. The two wrecks are only 30m apart as can be seen in the image to the right. One of the divers from this company, John Shaw, subsequently excavated the length of the wreck with many items raised and deposited either with a museum, the Receiver of Wreck or in private possession. Some of the cargo of coal was recovered along with 'Hamilton' pottery, beer bottles and a protective grill for a glass skylight.



Bathymetric survey (Courtesy of UKHO 2008)

Wreck Remains

When the wreck was rediscovered the main features of the wreck were the two sets of boilers with the engine in between. The outline of the hull vessel was visible in parts but mainly evident through frames occasionally protruding from the seabed.



Missing features include:
masts, deckhouses and the majority of funnels

Intact features include:

- Engine and sections of funnel
- Hull to turn of the bilge (buried) and a 2m x 4m section of hull
- Pairs of forward and aft boilers
- Port paddle wheel and parts of starboard paddle wheel

ASSESSMENT & PROTECTION

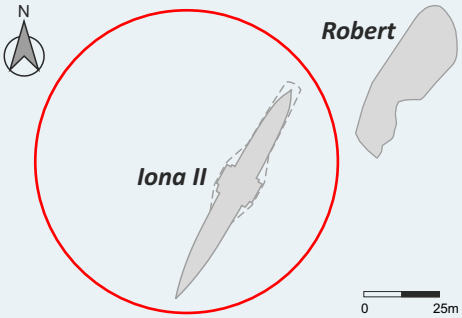
Assessment

In August 1989, the Archaeological Diving Unit (ADU), completed a survey of the wreck. As the diving contractor for UK's marine heritage the ADU was responsible for researching, assessing and monitoring wrecks.

The ADU divers noted that the main threat to the wreck was from divers who had already removed some brass fittings from the engine and had left a hammer behind.

Hull remains (ADU)

After the underwater investigations, the archaeological remains of the crankshaft, pistons and valve gear were compared with shipyard drawings to confirm that the wreck was the *Iona II*. The engine was a one off design and matched exactly with the engineers' drawings.



Designated Area (red) of the *Iona II* wreck

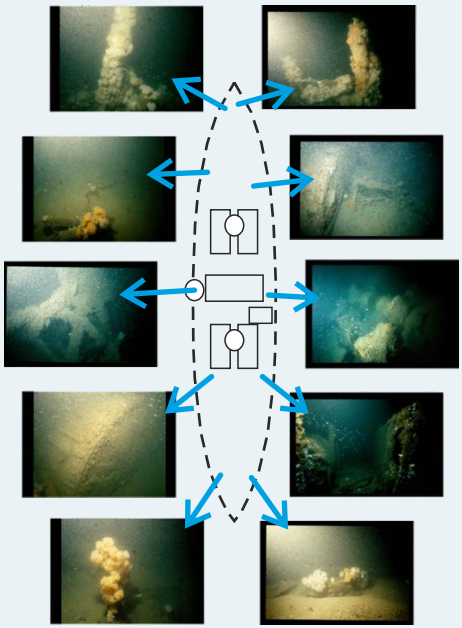
Protection

As a result of the ADU's assessment, the *Iona II* was recommended for protection. In 1989, the *Iona II* was designated under the Protection of Wrecks Act 1973. The reasons for being protected are as follows:

- Historical significance
- The only protected paddle steamer in British waters
- Represents the high quality of Clyde shipbuilding
- Contribution to the development of mass leisure travel
- American Civil War connections
- Threatened by human activities

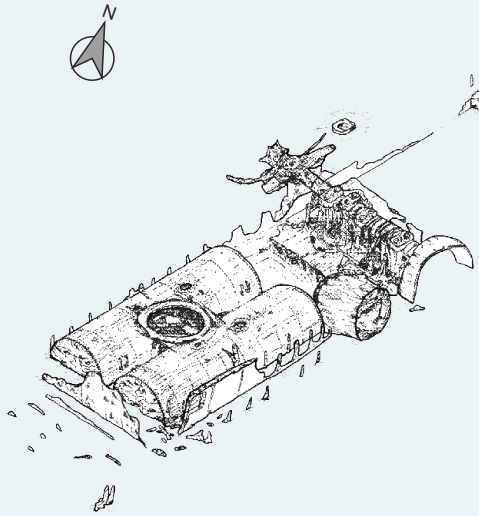
The protection status meant that all divers needed to apply for a licence to dive the wreck. This was a way to encourage responsible diving on this fragile site.

DIVE CLUB SURVEY 1990



Survey photograph locations (S. Prentice)

In June 1990 a small group of divers from the Potters Bar Sub Aqua Club, north of London, visited the site to survey the wreck. Under the guidance of archaeologist Margaret Rule, the team prepared to measure the wreck using the Direct Survey Method developed by Nick Rule for the Mary Rose project. Bad weather, however, limited their time on the wreck and they were only able to complete a basic photographic survey of the site with some measurements.



Isometric drawing of the *Iona II* (C. Rule)

Using this data in conjunction with some information from the ADU, one of their members, Carol Rule, was able to create an isometric sketch of the *Iona II*. This was the first visualisation of the wreck remains and has been the basis of all subsequent illustrations.

ARCHAEOLOGY 1991–1995

From 1991–1995, the Archaeological Diving Unit (ADU) continued their role as diving contractor for UK's marine heritage. They completed regular surveys of the *Iona II* site which monitored the condition of the wreck and informed management recommendations. Some of the observations over the years include:

1991

- Damage from dragged anchors
- Brass engine fittings removed
- Collapse of port paddle wheel in winter storms

1992

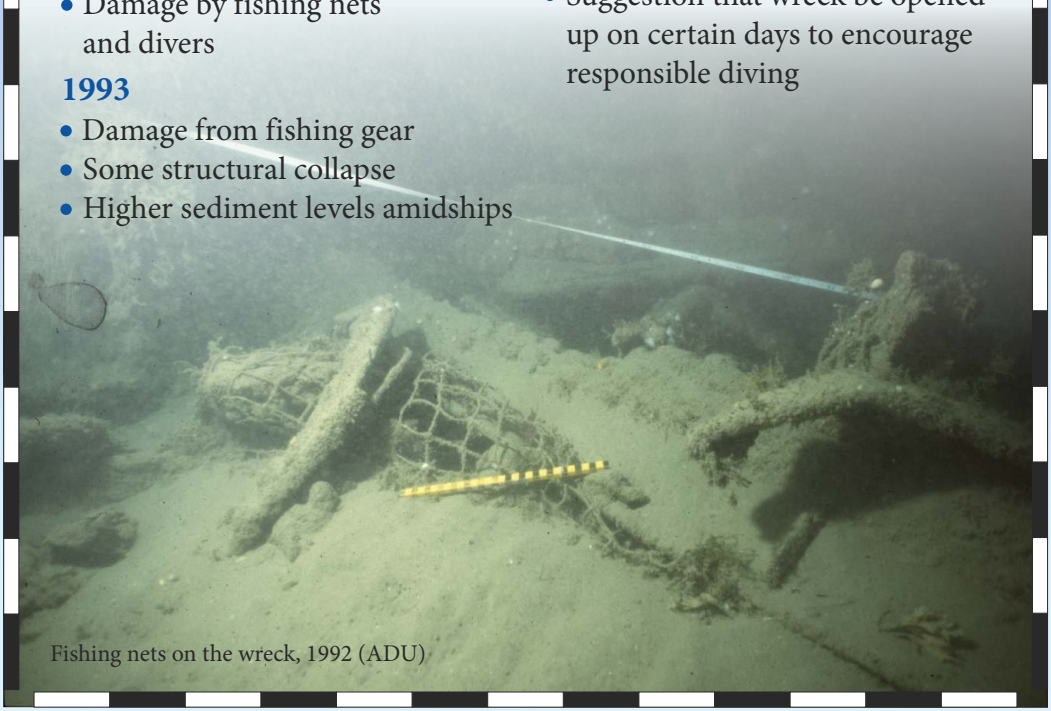
- Increase in hull corrosion
- Crankshaft elements deteriorated
- Paddle wheel assemblies crumbled
- Damage by fishing nets and divers

1993

- Damage from fishing gear
- Some structural collapse
- Higher sediment levels amidships

1995

- Partial datum survey completed by NAS students
- Gaps filled in Isometric drawing
- First suggestion that sediment levels change throughout the year
- Port paddle wheel almost disintegrated
- Unauthorised fishing and diving taking place
- Suggestion that wreck be opened up on certain days to encourage responsible diving



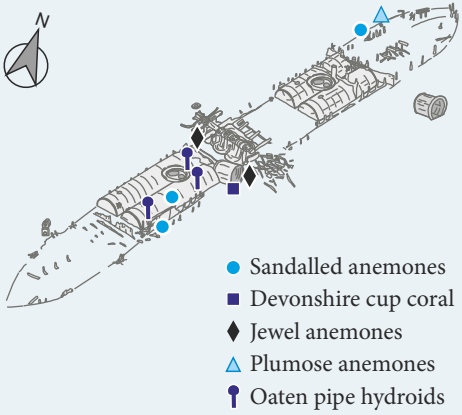
Fishing nets on the wreck, 1992 (ADU)

MARINE LIFE SURVEY 1995

In June 1995, fifteen divers from the Marine Conservation Society carried out a number of conservation projects within the Marine Nature Reserve of Lundy Island, one of them being an assessment of marine life on the *Iona II* wreck.

Forty-three different species were identified on this wreck the most predominant species being oaten pipe hydroids (*Tubularia indivisia*). Sponges were rare and when seen were quite small and all on upward-facing horizontal surfaces of the wreck. Also common was the seaweed *Cryptopleura ramosa* and sandalled anemone *Actinothoe sphyrodeta* and Devonshire cup coral *Caryophyllia smithii*.

Iona II marine life (M. Deaton)



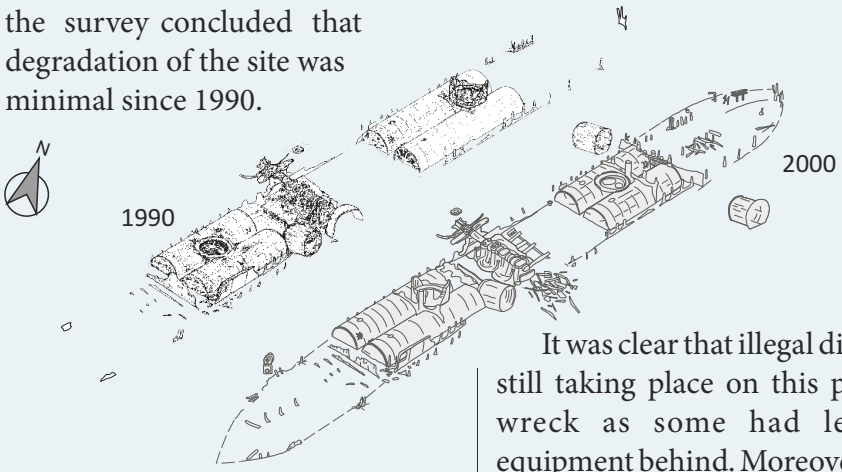
MV *Robert* marine life (R. Holden)

This survey highlighted the difference in marine life inhabiting the *Iona II* compared to the nearby *Robert*. The newer and more upright wreck of the *Robert* is covered in colourful plumose anemones which prefer the strong tidal currents available around this wreck. This is in contrast to the more restrained marine life of the *Iona II* which protrudes less from the seabed and is dominated by oaten pipe hydroids.

SITE SURVEYS 2000-2001

The Site Survey in 2000

Despite setbacks due to poor weather and the fuel crisis, the Malvern Archaeological Diving Unit (MADU) licenced survey was quite successful. It observed that the bow section was buried while the stern was quite exposed. The superstructure was possibly located in the north-east and several new anomalies were identified. Indications of possible illegal diving activities were also found. Overall, the survey concluded that degradation of the site was minimal since 1990.



Isometric drawings of the *Iona II*

The major discovery of this survey was that the boilers in Rule's isometric drawing were depicted in a transposed position with the larger boilers recorded in the aft of the vessel rather than in the forward section. This error had not been picked up for 10 years possibly due the typically poor visibility on the site making navigation quite difficult.

The Site Survey in 2001

Returning the following year, the MADU focussed on the forward section of the vessel but noted that bow of the vessel had become exposed and the aft had become buried, suggesting yearly cycles of sediment movement.

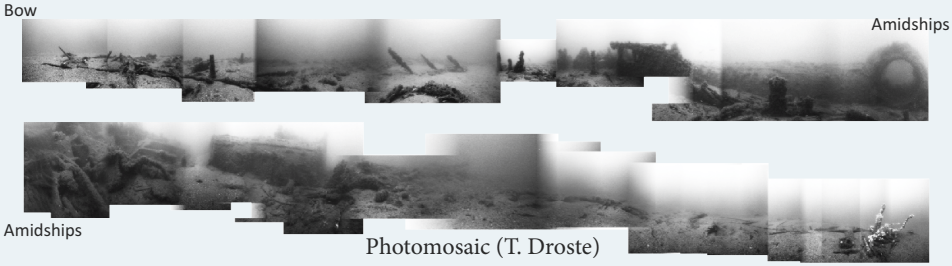
It was clear that illegal diving was still taking place on this protected wreck as some had left dive equipment behind. Moreover, whilst MADU was on site an unlicensed group of divers arrived who thought that the site had been deregulated.

At the conclusion of the two years work, MADU recommended that a dive trail be established or a licenced dive club could offer tours of the site to combat illegal diving.

WRECK VISUALISATIONS

Photomosaic

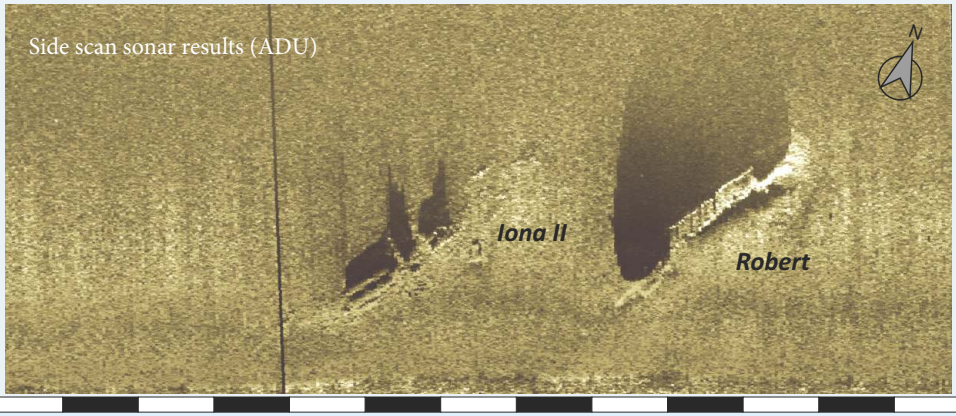
In 2001, a group of German divers completed several licenced dives on the wreck. One of them was Thomas Droste, who produced a photomosaic of port side elevation of the *Iona II*. This gave an unprecedented view of the entire length of the wreck showing how the majority of archaeological remains are clustered amidships.



Photomosaic (T. Droste)

Side Scan Sonar

In 2002 the ADU completed a comprehensive side scan sonar (SSS) survey of the site. The sonar results were mapped and then used to direct divers over the site. The results of the SSS showed that the *Iona II* and *Robert* were only 30m apart which was why divers were finding it so easy to access the designated wreck from the undesignated *Robert*. The survey also identified a flaw in the designated area which meant that not all of the wreck was in the protected area. The 50m radius of the area had been calculated using inadequate equipment in an unstable inflatable boat which had led to the inaccurate positioning.



PROTECTION OF WRECKS

In 2004 Wessex Archaeology became the diving contractor for the protection of wrecks. They took over the work that the ADU had been doing monitoring protected wrecks, such as the *Iona II*.

2004

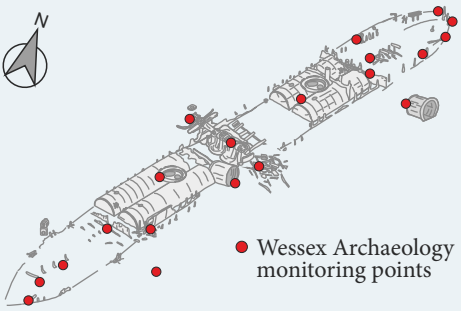
Wessex Archaeology established a monitoring system for the *Iona II*. Points were selected based on easily identifiable features that would allow changes to the structure and sediment levels to be monitored.

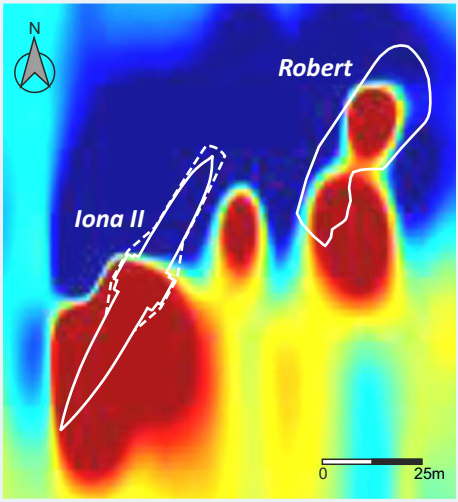
2008

Wessex returned to the site and undertook diver and magnetometer surveys. In particular, the area of debris to the north of the wreck where there had been reports of vessel super structure remains. Despite the magnetometer and metal detector search, no major structure was located.

2012

Despite bad weather and mechanical failures, Wessex Archaeology completed a photo and video survey of the southern part of the wreck using the monitoring points established in 2004.





Magnetometer survey (Wessex Archaeology)

Magnetometer equipment (Wessex Archaeology)

LICENSEE INVESTIGATIONS

Wittering Divers Ltd

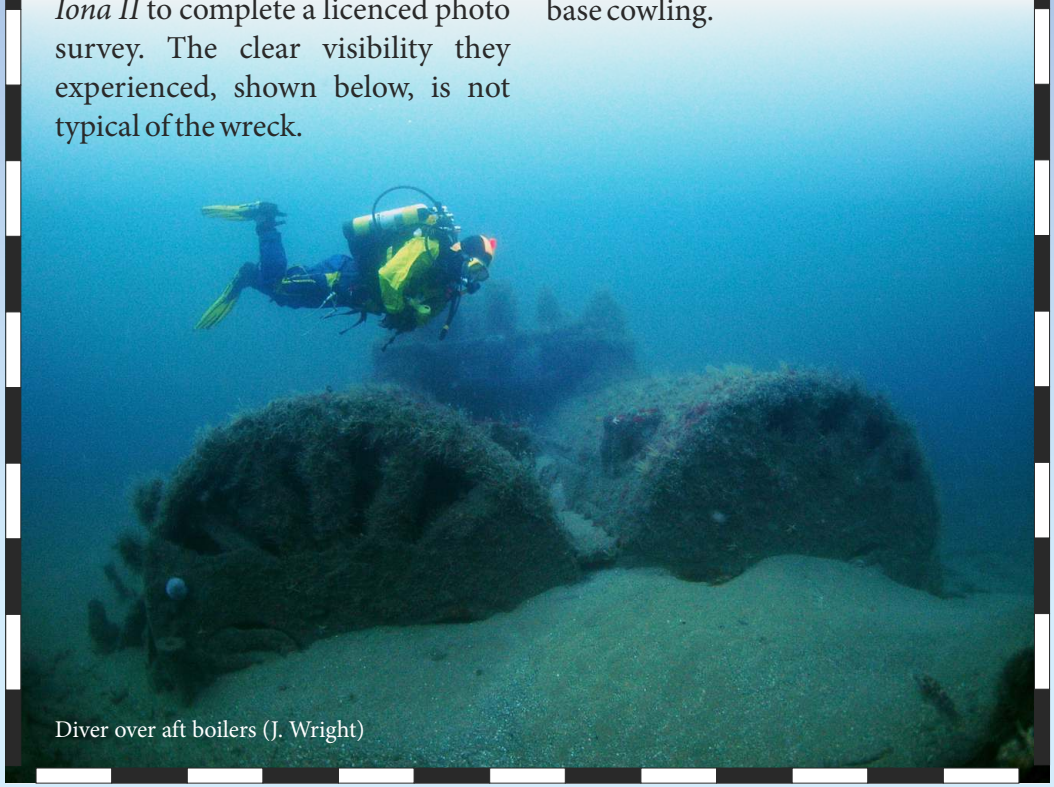
Over two days in July 2005, Tony Dobinson of Wittering Divers Ltd completed a photographic survey of the *Iona II* for the WreckMap Britain project. While the identifying features of the boilers, the engine and forward funnel section were clearly visible, there was some structural degradation and debris noticed in the area of the paddles.

Appledore Sub Aqua Club

In 2010, this local club visited the *Iona II* to complete a licenced photo survey. The clear visibility they experienced, shown below, is not typical of the wreck.

Severnside Sub Aqua Club

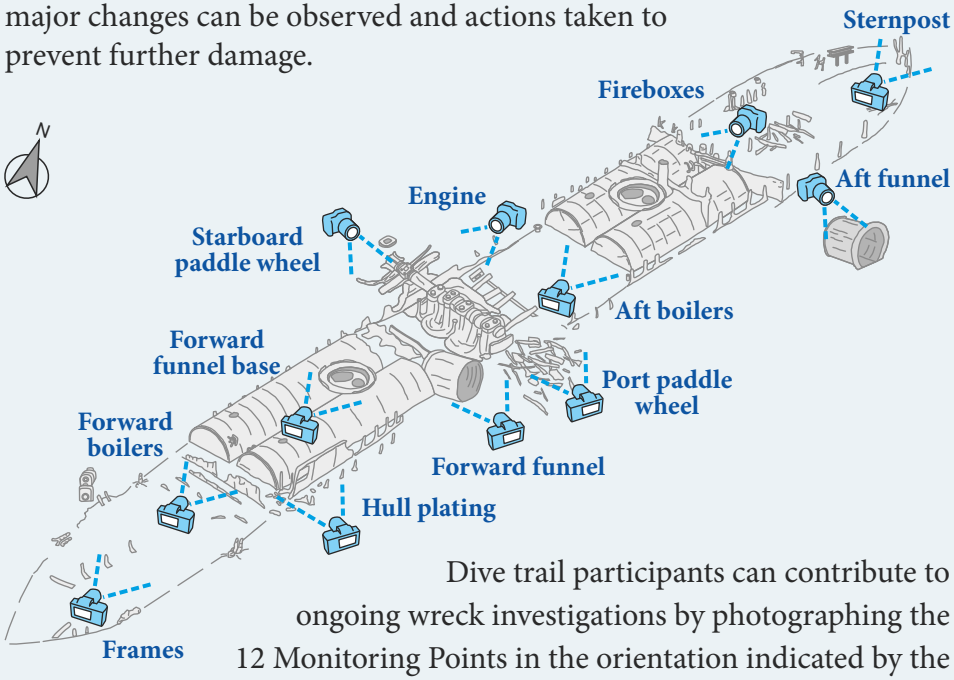
A visitor licence was granted in June 2011 to eight divers from this club to carry out a photographic survey. Wessex Archaeology's monitoring points were divided between the four buddy pairs to ensure all features would be recorded. Divers noted that there was a general increase in sediment over the whole wreck, while certain wreck features had degraded. Notably, the curved horizontal section of the sternpost was lost as well as the forward funnel base cowling.



Diver over aft boilers (J. Wright)

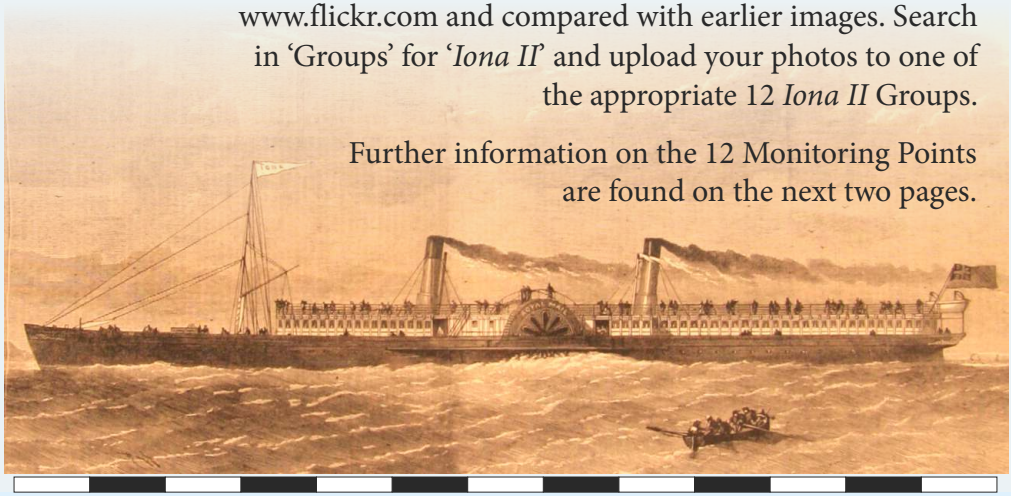
WRECK MONITORING

This iron paddle steamer is under constant threat of deterioration through environmental factors and human activities. Monitoring the wreck minimises this risk as any major changes can be observed and actions taken to prevent further damage.

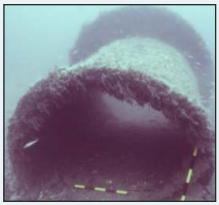


Dive trail participants can contribute to ongoing wreck investigations by photographing the 12 Monitoring Points in the orientation indicated by the camera icons. These photos can then be shared through www.flickr.com and compared with earlier images. Search in 'Groups' for '*Iona II*' and upload your photos to one of the appropriate 12 *Iona II* Groups.

Further information on the 12 Monitoring Points are found on the next two pages.



MONITORING POINTS



Aft funnel

Since becoming detached from the deck and settling to the port side of the wreck, this section of funnel has remained fairly stable over the past few decades.

Aft boilers

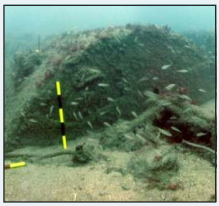
These shorter aft boilers are covered in a layer of concretion. The plating of the starboard boiler has corrosion holes making the silt inside visible. Piles of ballast may be visible aft of these boilers.

Engine

The crankshaft and pistons were intact when the wreck was rediscovered; however, since then various brass fittings have been removed from the machinery.

Fireboxes

Depending on the sediment levels around the wreck, it may or may not be possible to see the fireboxes at the base of the boilers.



Forward boilers

Piles of coal and a grill are occasionally visible forward of the boilers depending on the sediment levels. The bulkhead forward of these boilers has almost disintegrated.

Forward funnel

The remains of a section of funnel from the forward stack has remained relatively stable on the seabed and provided a surface on which marine turf has grown.

MONITORING POINTS

Forward funnel base

Until about 2011 small upright sections of funnel were visible around the funnel base; however, these have since disintegrated.

Frames

Depending on the sediment levels, these frames are sometimes exposed or somewhat buried.

Hull plating

The only hull plating remaining above the surface, corrosion is quite common in this area and the square hole pictured is increasing in size.

Port paddle wheel

This wheel structure was intact in the 1970s with spokes still attached but no floats. By the mid 1990s it had almost disintegrated to its current state.

Starboard paddle wheel

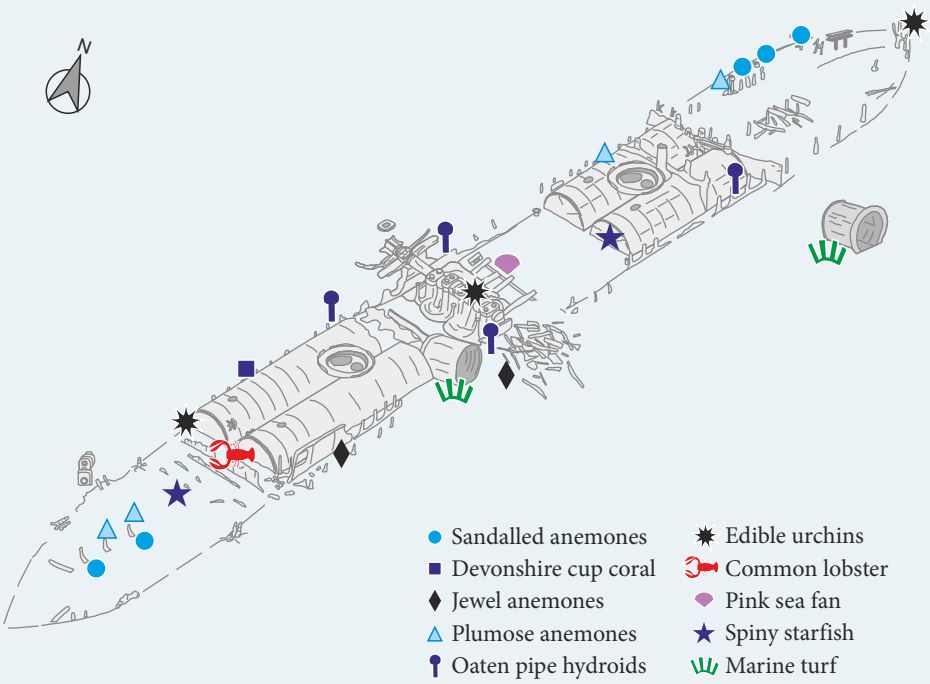
This paddle wheel was fairly intact when the wreck was rediscovered. It collapsed in 1990 with further disintegration taking place over the following years.

Sternpost

The sternpost area has remained fairly stable since the wreck was discovered in 1976. However, in 2011 a curved metal bracket was been bent around the upright section and then lost.

MARINE LIFE MONITORING

The *Iona II* is also an important component of the Lundy Marine Conservation Zone. The wreck provides a hard substrate on which habitats for many species can develop and provides shelter for other organisms.



For divers more interested in marine life, the Seasearch monitoring scheme provides ample opportunities for divers to record sightings of certain species or monitor the health of certain habitats.
http://www.seasearch.org.uk/recording.htm

For more information about the *Iona II*
www.landmarktrust.org.uk/lundyisland/iona-ii-dive-trail