

WELSH PRINCES

Dr Timothy Whitton profiles the research vessel *Prince Madog* and her predecessor of the same name, which together have delivered 50 years of seagoing research, operating mainly in the Irish sea.



The first RV *Prince Madog* in her original black livery, on a flat calm Menai Strait. IVOR REES

There is a Welsh legend that one of the sons of the Prince of Gwynedd (north west Wales), named Madog, set sail in 1170 on a westerly course and reached North America with his companions, and even made a return trip with the establishment of a Welsh-speaking tribe. True or not, the name of the great marine explorer, Prince

Madog, is a fitting one for the two research vessels which have successively explored and studied the waters of the Irish Sea and beyond from their base in Menai Bridge on the Isle of Anglesey over the last 50 years.

The first *Prince Madog*, operational from 1968 to 2001, was introduced to help improve the research options at the University College of North Wales (now Bangor University). In the 1960s the

Marine Science laboratories of the University College were increasing their offshore research activities, but without their own vessel to facilitate this. In 1963 the university addressed this, and £70,000 was provided for a vessel after Lord Hailsham, the Minister of Science, endorsed the project.

Between 1963 and 1965 several designs and existing stern trawlers were considered. These included an impressive design from T.R. Little & Co of Liverpool, based on a South African research vessel designed by Mr Nisbet, who designed *Discovery II*, but it was too expensive. The

accepted proposal was based on a Myrefisk stern trawler designed by Burness, Corlett & Partners of Basingstoke.

The initial modifications to the design included changing the insulated fish room and deep freezer into accommodation for scientists, and the addition of a bow thruster. The hydraulic stern gantry (or A-frame) of the trawler remained, making *Prince Madog* one of the first research vessels to have one. Stern A-frames are found on almost all multi-purpose research vessels today. The vessel had a three-blade variable pitch propeller, derricks and a





▲ The bell from the original Prince Madog is on permanent display in Bangor University's Marine Centre Wales building.

▼ Prince Madog makes her way down the Menai Strait.

NICHOLAS LEACH

starboard gantry to enable sampling and scientific instruments to be deployed.

In 1965 the £103,000 contract to build the vessel was awarded to Ramsey SB and Engineering Co Ltd, Isle of Man. Further design refinements and modifications were made before the work began, including the layout of the deck winches and the addition of an echo sounder mount protruding from the bow for precision depth recording.

Due to concerns over stability, a set of the double-bottom tanks were filled with cement,



▲ Prince Madog (1968-2001) with original rigid-hull workboat stowed on the port side, and an instrument mooring awaiting deployment on the aft deck. BANGOR UNIVERSITY

providing permeant ballast. The vessel featured a backward-sloping stern when launched. However, it was realised that scientists and crew would be unable to reach heavy sampling equipment from the bulwark, and so the stern was made vertical.

The keel was due to be laid in July 1965, with a delivery date of August 1966. However, the keel was not laid until 8 October 1965, with full construction starting in January 1966. To make matters worse, the seamen's strike in early 1966 delayed material and equipment deliveries.

BUILDING PROBLEMS

Two other smaller vessels were also under construction in the yard at the time, and the director announced he was emigrating to Canada. To the university's frustration, the vessel was still not complete by the summer of 1967, and the Commonwealth Islands Expedition vessel *Insula* was chartered to allow planned research to be undertaken.

Sea trials took place from 13 to 15 February 1968, after which the first *Prince Madog* left Ramsey under Captain Thomas Donovan on 23 February, with her long-awaited arrival at Menai Bridge pier the following day. *Prince Madog* was the largest

and last vessel built by the Ramsey yard, and her build quality was excellent.

The new pride of the marine laboratories at Bangor University was soon gainfully employed and enjoyed a career undertaking a wide range of biological and oceanographic surveys, research campaigns and commercial charters. She was, and remained, the largest research vessel in the UK university sector. She annually undertook geological surveys along the continental margin. These 'Western Approaches' cruises contributed greatly to understanding the geological evolution of the North Atlantic.

She took students out on trips lasting several days. These were eventually scaled back to day trips as student numbers increased. The vessel also hosted two Royal visits, one

from the Duke of Edinburgh and the other from Prince Charles. Embarrassingly, during the Duke's visit, which included a short trip down the Menai Strait, the vessel ran aground on sandbanks off Beaumaris, and had to be pulled free by an escorting RAF rescue launch. However, a senior university staff member had accidentally knocked the autopilot control, and so was not the fault of the crew.

Due to the vessel's success, even though she was only ten years old, the university looked into acquiring a replacement in 1978, or having an additional vessel which was larger and could facilitate longer multidisciplinary research cruises. This did not progress until the 1990s, when a university working party was tasked with finding



▲ Prince Madog (1968) heading under the Telford suspension bridge in the Menai Strait. The funnel is painted in the University colours of the time. IVOR REES



▲ Clockwise from top left: bridge of the original Prince Madog; trawl sampling for animals on the seabed, with deck-mounted winch pulleys; Prince Charles visits Prince Madog in 1974 (he visited the current Prince Madog in 2016 at the opening of the Marine Centre Wales). BANGOR UNIVERSITY

the means to replace the ship.

This was made possible in 1999, when a Joint Infrastructure Fund bid between Vosper Thornycroft and Bangor University was successful. Both parties contributed towards the £3.7 million build cost and onshore infrastructure improvements needed for a new vessel.

In 2001 the original *Prince Madog* was sold to a farmer's son on the Wirral, and he chartered the renamed *Madog* as a dive and fishing vessel for several years based in Liverpool. She was sold to Danish company Nord-Marine in 2007, and has been in their ownership ever since. Nord-Marine chartered her as a survey vessel, mostly working in the North Sea. Nord-Marine made significant changes to her structure and equipment, removing the stern A-frame, replacing the derricks with hydraulic cranes and installing a four-point anchoring system. She was up for sale in early 2018.

A NEW PRINCE MADOG

As already mentioned, funding had been secured in 1999 for a replacement vessel, which was ordered under a joint venture between Bangor University and Vosper Thornycroft's VT Marine Services. A case was made that the UK research vessel fleet had small day boats (less than

25m), which were operationally constrained, and large seagoing vessels (greater than 50m), which were uneconomical for many academic research and survey activities, but nothing in between.

So a 34-35m vessel was proposed, with modern scientific equipment. The vessel was based on *Celtic Voyager*, operated by the Irish Institute, but was about 4m longer. However, despite the similarities, the superstructure and lifting gear of the final design differed significantly from that of *Celtic Voyager*, with a larger stern A-frame and a foremast. With the exception of the bulbous bow, she was very similar below the waterline to the original *Prince Madog*, with a variable-pitch propeller and single bow thruster.

Visser Research Vessel 3485 (which became *Prince Madog*) was completed by Visser Ven Helder in the Netherlands, with the hull constructed in Romania. She arrived at Menai Bridge Pier on 11 July 2001, 33 years after her predecessor.

The vessel's activities have been similar to those of the previous ship, with the University conducting teaching and research on board, and maintaining the scientific instruments and providing technical support. However, VT Marine Services was initially responsible for managing the



▲ Clockwise from top left: launching the first Prince Madog's hull at the Ramsey yard before the backward-sloping stern was altered; the vessel at Port Dinorwic (Felinheli) dry dock in her original black livery; the bow echo sounder transducer fairing seen during the build. BANGOR UNIVERSITY & IVOR REES



▲ The current Prince Madog in dry dock, showing the stern and ducted variable pitch four-blade propeller. BEN POWELL



▲ Prince Madog (1968) out of the water, showing the three-blade variable pitch propeller. The stern was modified to be vertical after the hull launch, to aid in handling of scientific equipment from the stern bulwark. IVOR REES



▲ The current Prince Madog alongside the older Celtic Voyager of the Irish Marine Institute on which her design was based, seen at Menai Bridge, Anglesey, September 2017. Due to design refinements and changes, Prince Madog is visually quite different above the waterline. AUTHOR

BANGOR UNIVERSITY RESEARCH VESSELS

	PRINCE MADOG (1)	PRINCE MADOG (1)
BUILDER	Ramsey Ship Building & Engineering Co, IOM	Scheswerf Visser BV, Netherlands
OWNER/ OPERATOR	University College, North Wales (Bangor University)	VT Group (2001 to 2011)/ P&O Maritime (2011- present) Ocean Sciences (Bangor Univ)
DELIVERED	24.2.1968	11.7.2001
TONNAGE	185 tonnes	390
DIMENSIONS	28.7 m x 7m x 3.4m (draught)	34.1m x 8.5m x 3.7m (draught)
PROPULSION	Lister Blackstone ESS6M diesel, 600hp, three-blade controllable pitch prop.	Wärtsilä 20C diesel, 1,080kW, four-blade controllable pitch propeller
THRUSTERS	Single 80hp bow thruster	Single 150kW bow thruster
SERVICE SPEED	10.5 knots	10 knots
CAPACITY	9 crew, 8 scientists	7/8 crew, 11/10 scientists
ENDURANCE	7 days	10 days



▲ On board Prince Madog, showing (clockwise from top left) deployment of a mooring system for wave measurements, scientific trawling operations and the multibeam echosounder head retracted inside the hull. AUTHOR & BEN POWELL

vessel, providing crew and chartering the vessel. P&O Maritime took over as the joint venture partner in 2011, forming the P&O Maritime Ocean Sciences (POMOS).

Prince Madog is more spacious and stable than her predecessor, with modern instruments on the hull and able to be deployed from the starboard hydrographic winch and stern A-frame. A major capability enhancement came in 2012 with the installation of a multi-beam echo sounder for 3D seabed mapping. As *Prince Madog* often operates in shallow coastal waters, the multi-beam transducer was installed on an extendable ram within the hull, thus being protected when not in use or operating in shallow water.

More recently, in addition to regular teaching trips and one-off research projects, the vessel has undertaken regular research with the marine renewable sector in Wales (SEACAMS/2 projects) and scallop stock assessments and research with both the Isle of Man and Welsh governments.

Although most research and commercial work has been based off the west coast of Britain, *Prince Madog* has undertaken surveys in the North Sea, navigating the Caledonian Canal, and creating much interest from the passing public as she transits Neptune’s staircase locks.

Celtic Voyager and the current *Prince Madog* have gained another sister vessel, in

the shape of *Simon Stevin* of the Flanders Marine Institute in Belgium. The 36.3m vessel, built by Damen, was based on *Prince Madog*, but with a different layout and incorporating improvements, such as full diesel-electric drive at survey speeds for ‘silent’ operation, improving acoustic data quality, as well as having another main drive propeller, which gives a dynamic positioning capability.

CURRENT STATUS

The small and aging status of the regional research fleet, cited to support building the current vessel, remains true today. *Prince Madog* is the newest multi-purpose regional research vessel in the UK currently available for academic use, with the larger 52.5m *Corystes* and Irish *Celtic Voyager* (to be replaced by a 50m vessel) very busy with public sector survey work, but both nearing the end of their operational lives.

The Natural Environment Research Council (NERC), which operates the Royal Research Ships, is focused on large global class vessels in the future, and so *Prince Madog* remains a unique asset for the UK research community, as well as the researchers and students of Bangor University.

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▲ The first Prince Madog, renamed Madog, at Liverpool in 2002, during her time as dive charter and fishing vessel. NICHOLAS LEACH