

Special Feature

The Fleet

INFOMAR's inshore vessels are designed for this particular kind of work, with four of them making up Geological Survey Ireland's fleet – the *R.V. Keary*, *R.V. Mallet*, *R.V. Lir* and *R.V. Geo*. The latter two are RIBs (Rigid Inflatable Boats) with a shallow draft and so are particularly suited to working in areas such as Roaringwater Bay. As a shallow bay, it took many weeks of mapping effort by both vessels to complete, not to mention the challenge of working around mussel and oyster farms, and other obstacles. By making use of periods of high tide, the *R.V. Geo*, being the smallest of all the boats, can actually carry out seabed mapping into intertidal areas (beaches and mudflats that dry out at low tide and are flooded at high tide), effectively reaching shallower than the zero metre mark on the nautical charts. This can be quite hazardous work, with the crew having to take great care not to run aground on sand bars or strike uncharted rocks. How much can be completed in a day depends on a lot of factors, as the elements often conspire to hinder a survey boat's progress – currents, waves and wind have a major effect, sometimes halting operations altogether.

Coastal and shallow water mapping actually takes longer than deep water mapping. It might seem like the opposite should be the case but the reason for this is that the sonar that is used to create these 3D maps actually behaves a bit like a flashlight – the closer it is to its target, the smaller its area of effect. Imagine mowing the lawn, with the lawnmower shrinking in size as you reach the edge of the garden – it takes more and more effort to complete each subsequent pass.

Life on the Boat

For the crew on the boats, life is a mixture of scientific work and looking after the boats themselves. Because they are small, with a crew of only two on the *R.V. Geo* and three on the *R.V. Keary* for example, the people on board have to know how to safely crew the boat at sea while also collecting good quality seabed data. There is always a skipper, which is the captain of the boat and a surveyor, who uses the survey equipment to do the mapping and also an activity called watchkeeping – in this case looking out for obstacles and hazards at sea when the skipper is busy with other work. On the *R.V. Keary* and the *R.V. Mallet*, there is also a third crew member called a data processor. While the data will be examined carefully back at base, this person also needs to examine it at sea soon after it is collected, to make sure there are no problems with the equipment and that the survey is being carried out correctly. Typically the crew work for two weeks at a time, with breaks in between.

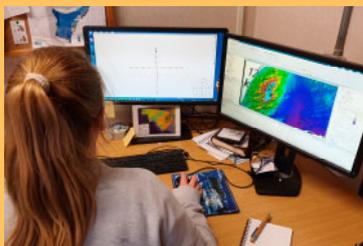


Top: Catching a stray net whilst out surveying. **Above:** The fleet that surveys up to 30 nautical miles out to sea. **Right:** Inside *RV Geo*. **Below:** Processing data back at the office.



Scanning Equipment

The survey boats' primary mapping instrument is known as a Multibeam echosounder, usually attached below the hull – this emits sonar pulses in a fan-shape below the vessel, which are reflected back from the seabed. The computer measures how long the sound has taken to return and can then convert that to water depth. This can happen tens of times per second, therefore giving a lot of detail about the seabed in a short space of time.



The data actually appears on the surveyor's screen as the vessel moves along its track, like a strip left by a paint brush – in effect it looks like the vessel is "painting" in the seafloor. Though at this unprocessed stage, this real-time image allows the crew to spot interesting features, hazards or shipwrecks while at sea that may warrant further inspection.