MARINE MONITOR

What's the best way to look at all the creepy crawlies that live at the bottom of the sea? By ROV of course. **Chris Leadbeater** went to Sweden's Koster Islands to find out more...

One of the on-board scientists makes a final inspection before letting the ROV plunge 100m into the deep

I'M STANDING on the broad metal deck of the R/V Skagerak, where Martin Larsvik is showing me his robot. And an impressive robot it is too, kitted out with a propeller, a video camera and all manner of lights. Specifically, it is an 'ROV' – a 'Remotely Operated Vehicle' – designed to explore far underwater and beam images of what it finds back to the surface. In two minutes, Martin will launch it over the side of the boat, sending it to do its lonely work in the cold, dark depths.

Martin has a brilliant job. He is a scientist at the Sven Lovén Centre, a research unit linked to the University of Gothenburg in west Sweden. This explains why we are floating on the Skagerak, a sea strait that runs along Sweden's west coast and splits it from Norway. It is also the inspiration for the name of Martin's boat.

To be precise, we are in Kosterhavet, Sweden's first marine national park. Opened last September, it is a big place, 150 square miles of sea swirling around the Koster Islands – a group of Swedish islets that sits five miles from the mainland. And it is a special place too. Some 6,000 species are found below its choppy waves – everything from twitching anemones to multi-coloured fish – while a further 6,000 species can be found on the islands – soaring birds, rare butterflies, even huge, noisy harbour seals.

There is a good reason for such a range of creatures. The Koster Islands are separated from Sweden proper by the Kosterfjord – an oceanic trench that plunges to 250 metres. The mixture of chilly water in the trench and warm water by the shore – and the fact that the sea here has the ideal level of saltiness – makes for a perfect breeding ground.

You might even call Kosterhavet the Galapagos Islands of Europe. Certainly, Martin has plenty to keep him busy. After easing the ROV over the side and unfurling the cable that lets it talk to the ship's computers – he shows me how he fills his days.

"Pay attention!" Author Chris Leadbeater protests at being given detention

We go downstairs into the belly of the vessel, where a large white screen is already displaying the pictures that the ROV is transmitting from the seabed. Martin has lowered the robot to 110 metres – quite a distance. But the arrival of this sizeable metal beast from above does not appear to have stopped what seems to be quite a party among the critters that live at this level. A crayfish scuttles across the bottom, while a crab pauses in front of the lens – and then hides itself quickly in the sand.

For his next trick, Martin drives the ROV upwards, following an underwater cliff. Anemones blink as the searchlight picks them out, while, at 40 metres, daylight starts to break in, and several redfish come into view, darting about with jerky movements.

Not only is the ROV extremely important, allowing Martin to carry out his studies. It is also good for the environment, letting him and his team look at the seabed and what happens there without having to send down divers or other equipment that might disturb the wildlife. So the fish are happy, and nobody gets wet. That's some system.

For more on the Sven Loven Centre and tours of Kosterhavet, see www.loven.gu.se
For more on Sweden, see www.visitsweden.com

You do the math: Martin Larsvik on why understanding seawater salinity is crucial

What's an ROV?

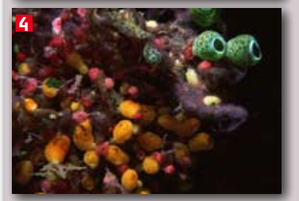
Use of 'Remotely Operated Vehicles' is nothing new. These clever contraptions have been delving into underwater locations that we can't easily reach for decades. They have been deployed for military purposes – an ROV recovered a nuclear bomb from the Mediterranean Sea in 1966 after an American B52 plane crashed – as well as to search for oil and gas fields. They have also helped to find the locations of lost ships. An ROV was involved in the discovery of the wreck of the Titanic in 1985. But it is only recently that scientists like Martin have started using them for academic research. While there are many types of ROV, all tend to carry the same basic equipment – a video camera, bright lights and an 'umbilical cable' that links them to the surface. This cable takes electricity down, and brings video images and data back to the boat.

CREEPY *AND* CRAWLY:

FIVE SLIMY SPECIES FOUND IN KOSTERHAVET

1 Lion's Mane Jellyfish
This wobbly beast looks like a bunch of pink, fluffy flowers floating quietly in the water – but it packs a powerful punch. It comes armed with more than a thousand tentacles, which sting with sulphuric acid. Some of them can be several metres long.

2 Sea Cucumber
This crazy creature has a great trick. It can expel its intestines and replace them with new ones. It has no brain, but does have lots of nerves and tentacles. It burrows into the seabed and ingests the animals it finds there.



3 Neanthes Virens
A green-coloured variety of the 'bristle worm' – so named for the 100 or so brushy bits stuck to its body. Oddly, it has to commit suicide to reproduce. Both males and females explode to release sperm and eggs into the water.

4 Sea Squirt
Tiny organisms barely 2mm long. They are hermaphrodites – they have both male and female parts – but these two halves mature at different rates to prevent inbreeding. They look strangely like flowers.

5 Sea Urchin
Sea Urchins have round bodies loaded with sharp spines to defend themselves. But they move about too, and can even climb walls using suction cups.

More information on the creatures of Kosterhavet can be found in biologist Stefan Edman's book 'Koster Sea', published by Gullers Forlag