Tristan da Cunha and St Helena Science Cruise

By Dr Katie Brigden

First published 16th May 2018

13/03/18 – 31/03/18 Halfway through and the story so far…

SAERI scientists Katie Brigden and Paul Brewin recently joined the 2018 BAS-CEFAS science survey around Tristan da Cunha and St Helena; a joint funded project through the UK government's Blue Belt programme and Overseas Development Aid. The survey aims to carry out a suite of survey tasks at each location, in order to support and inform on fisheries and marine biodiversity. Here's how they got on during the first leg of the cruise:

On the 13th March, the survey team assembled in Stanley, Falkland Islands and joined the BAS science ship *RRS James Clark Ross* (JCR). For those who are unfamiliar, this vessel more typically is seen exploring the Antarctic and its use as a research platform in temperate and sub-tropical regions is relatively new and exciting.

The RRS James Clark Ross in more familiar colder waters. (Photo courtesy of BAS).

The team was made up of scientists from BAS, CEFAS, Plymouth Marine Lab, RSPB, University College London, UK Hydrographic Office, SAERI and independent experts in various fields. With blue skies overhead, the sun shining and whales blowing all around the ship as we left the Narrows, the project got off to a promising start. It was a 10 day steam to Tristan da Cunha, where the survey would be focusing on biodiversity and habitats associated with seamounts. The transit time provided an opportunity for some initial work – as well as plenty of time for the team to get to know one another and to get acquainted with the ship we would be calling home for the next 5 weeks!

Sei whale blow as the ship departs Stanley. (Photo courtesy of Simon Morley).

Science started from day 1. The marine geophysicists spent their time multibeam mapping the seabed (using acoustic technology to produce accurate, aerial-like images of the seafloor); while the benthic and fisheries scientists examined previously caught samples they had brought with them – corals, starfish and sponges for identification, and bluenose warehou stomach contents for diet analysis. This data will be essential for better understanding their place in the food-web. Out on deck, the resident bird and mammal experts enjoyed the luxury of sighting live specimens, noting a distinct shift from more southern, colder water species to warmer, sub-Antarctic species as we headed north. This shift was particularly obvious in the prions, with lots of fairy and slender-billed prions observed in first half of leg, but within the Tristan EEZ it was the broadbills which dominated. Also interesting to note, the black-browed albatross, commonly seen in the Falklands, was also observed in the Tristan EEZ and is becoming more common here. Across the ten days, around 50 species of seabirds were sighted, including 10 species of albatross: black-browed; southern and northern royals; wandering; shy; Atlantic yellow-nosed; grey headed; Tristan; sooty; and light mantled sooty. Plenty to keep everyone entertained during the journey!

Black-browed albatross seen while in Tristan waters. (Photo courtesy of Katie Brigden).

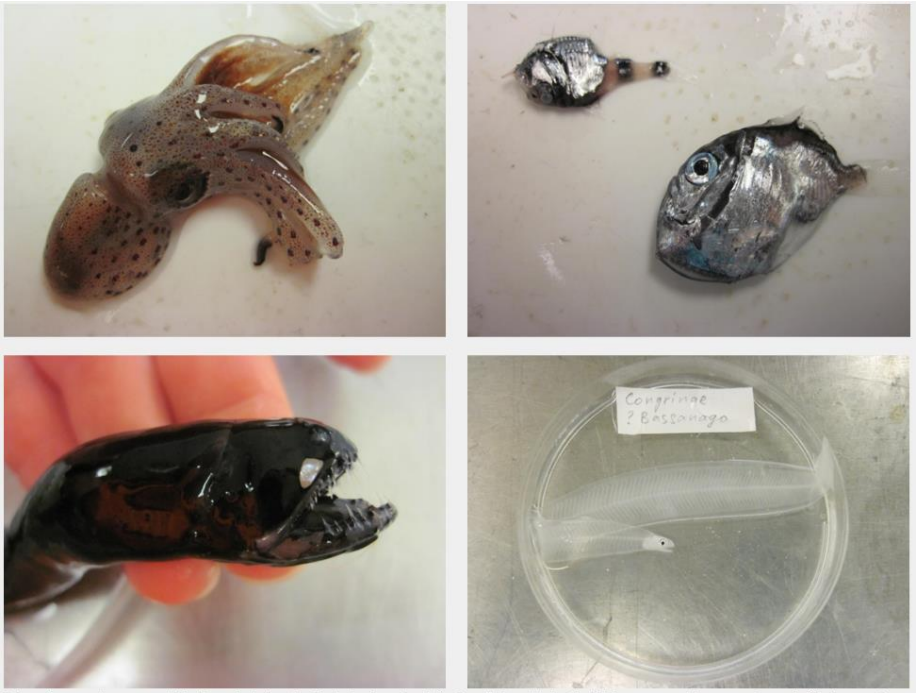
Fortunately we were lucky with the weather and after a fairly smooth 10 day sail we arrived at our first survey site, Yakhont Seamount. The start of the science programme 'proper' saw everyone excited to begin and almost everyone turning out for the first deployment of gear. The first pelagic camera deployment resulted

in an early visit from a blue shark; the trawl nets caught well, with a good selection of small fish, squid and crustaceans; and some interesting benthic (seabed) species were seen on the Shelf Underwater Camera System 'SUCS'.

Blue shark seen on the first pelagic camera deployment. (Photo courtesy of James Bell, CEFAS).

The vessel worked 24 hours over the following 8 days and everyone settled into their new routine of day or night shift to allow the science programme to continue round the clock. At each site, multibeam seabed mapping was carried out first in order to map and build a picture of the seabed before the SUCS was deployed to obtain more detailed information regarding seabed habitat and species through the use of high quality scaled images. Trawl nets were then deployed, first the 'AGT' (Agassiz trawl) which samples the benthic species; then, after nightfall, the 'RMT' (Rectangular Midwater Trawl) samples the pelagic realm. For these sites, it was the first time such an extensive and targeted suite of surveying had been carried out, and the on-board team were excited to see the ecological diversity, with sea pens; corals; sponges; urchins; salps; lobster larvae; squid and octopus; fish species at different stages of development, including conger eel larvae, lanternfish, pearlsides, hatchet fish and scabbard fish.

Underwater SUCS image showing Lophelia coral. (Photo courtesy of Dave Barnes).



Interesting specimens caught in the pelagic trawls. Clockwise from top left: Jewelled squid, hatchet fish, conger eel larvae, gulper eel. (Photos courtesy of Katie Brigden).

After 8 days of science, we journeyed north to Tristan da Cunha 'the most remote inhabited island' for members of the team to meet with Tristan Government, associated organisations and islanders, and update them on the survey outcomes. The rest of the team was also lucky enough to have the opportunity to get ashore for a few hours and see this fantastic island up close. The weather was also incredibly kind to us, with flat calm blue seas and glorious sunshine – a fantastic day to end the Tristan leg of the survey!

Ashore at Tristan. (Photo courtesy of Katie Brigden).

There will be more from Katie and Paul after the next leg of the survey around St Helena. In the meantime, follow the project on Twitter at https://twitter.com/saeri_fi?lang=en and https://twitter.com/DevelopingOcean