Cruise report: Voador seamount, Azores

(22-29 June 2010)

Projects: CoralFISH and Hermione

Objectives: to conduct fishing experiments in areas with and without cold-water corals, to identify new areas with cold-water corals, and conduct acoustic transects on top of the Voador seamount.

Ship: R/V "Arquipélago"
Cruise leader: Telmo Morato
Scientific team: Diana Catarino, Gui Menezes, Mirko de Girolamo, Telmo Morato, Tiago Bento, Valentina Matos

Trip Summary

Date	Description
22/06/2010	Departure from Horta harbour at around 16:00. Arrival at the first sampling point on the 23rd at 04:00
23/06/2010	Bottom longline fishing experiment VOA(1)V10 with a stone-stone gear configuration. Seven legs of the main acoustic transect were performed during the day. Sardines for dinner to celebrate São João.
24/06/2010	Bottom longline fishing experiment VOA(5)V10 with a stone-stone gear configuration. Four legs of the main acoustic transect were performed during the night and 5 legs of the complementary transect were performed during the day.
25/06/2010	Bottom longline fishing experiment VOA(2)V10 with a stone-stone gear configuration. Five legs of the main acoustic transect were performed during the night and 5 legs of the complementary transect were performed during the night.
26/06/2010	Bottom longline fishing experiment VOA(4)V10 with a stone-stone gear configuration. Two legs of the main transect were performed during the day.
27/06/2010	Bottom longline fishing experiment VOA(6)V10 with a stone-buoy gear configuration.
28/06/2010	Bottom longline fishing experiment VOA(4)V10 with a stone-stone gear configuration. Departure from the sampling area at 13:00 arrival to Horta harbour on the 29th at 02:00. END OF CRUISE

Fishing experiments

Number of fishing sets performed = 6
Gear type = five sets with of stone-stone bottom longline and 1 set with stone-buoy bottom longline.
Average number of hooks per set = 4,920
Total number of hooks = 30,240
Location of the longline sets = Table 1 and Figure 1
Distance from Horta harbour to the sampling area: 110 nm approx.

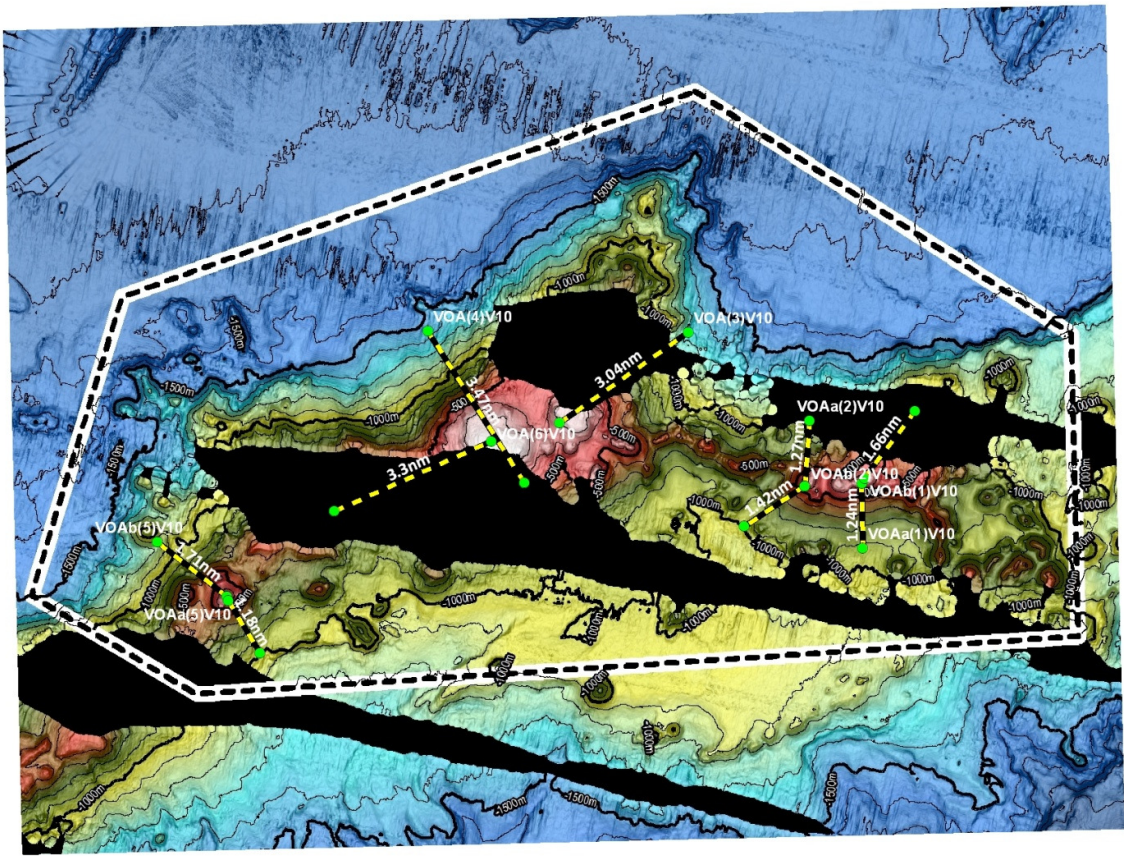

Figure 1- Map of the fishing experiments conducted in Voador Seamount, Azores. Bathymetric data courtesy: IFREMER.

Table 1- Location of the fishing experiments conducted in Voador Seamount, Azores

Date	Set Code	Longitude	Latitude	Depth (m) Min	Depth (m) Max	Gear type	Nº of hooks	Fish catch Weight Kg	Fish catch Nº	Inverteb. Nº
23/06/2010	*VOAa(1)V10*	30° 35.170' W	37° 31.049' N	322	914	S-S	2160	135.1	148	7
		30° 35.182' W	37° 29.792' N							
23/06/2010	*VOAb(1)V10*	30° 33.830' W	37° 32.420' N	338	855	S-S	3000	317.6	296	6
		30° 35.100' W	37° 31.135 ' N							
25/06/2010	*VOAa(2)V10*	30° 36.549' W	37° 31.020' N	327	976	S-S	2400	123.4	68	10
		30° 36.397' W	37° 32.283' N							
25/06/2010	*VOAb(2)V10*	30° 36.549' W	37° 31.020' N	345	955	S-S	2160	110.9	138	13
		30° 38.052' W	37° 30.269' N							
28/06/20	*VOA(3)V1*	30° 42.093'	37° 32.529'	26	124	S-S	5160	216.5	161	24

10	*0*	W 30° 38.515' W	N 37° 34.514' N	7	2					
26/06/2010	*VOA(4)V10*	30° 43.365' W 30° 45.626' W	37° 31.224' N 37° 34.196' N	217	1400	S-S	5400	214.1	285	39
24/06/2010	*VOAa(5)V10*	30° 49.894' W 30° 50.629' W	37° 28.045' N 37° 29.071' N	351	970	S-S	2040	126.2	125	5
24/06/2010	*VOAb(5)V10*	30° 50.661 W 30° 52.321' W	37° 29.151' N 37° 30.237' N	313	1144	S-S	2760	132.0	110	4
27/06/2010	*VOA(6)V10*	30° 47.995' W 30° 44.154' W	37° 30.757' N 37° 32.031' N	232	508	S-B	5160	282.9	411	17
TOTAL							30240	1658.7	1742	125

S-S is stone-stone longline configuration; S-B is stone-buoy longline configuration

Fishing data

The fishing data collected included location of the set, depth, fishing effort, catch, by-catch and biological sampling of selected fish species. Sampling protocols used were those from the local fishing research cruises adapted for CoralFISH. Additionally, fish tissues were sampled for genetic and stable isotopes studies. In total six sets were preformed, 30,240 hooks set and 1,742 fish were collected, representing a weight of 1.6 tons.

Cold-water corals and other invertebrates' data

Data on cold-water corals and other invertebrates' by-catch were collected following the sampling protocol from the COLETA program, the observer program and adapted to CoralFISH. The number of corals and other invertebrates collected was lower than expected. The use of a stone-stone longline gear configuration didn't increase substantially the number of corals collected. In total, 53 corals and 72 other benthic invertebrates were collected in Voador seamount, representing 3.90 invertebrates per 1,000 hooks for the stone-stone longline and 3.29 invertebrates per 1,000 hooks in the stone-buoy longline. It should be noted that not all depth strata were sampled in all sets. Three main hypotheses will be tested in the future: a) bottom longline in the Azores do not show high levels of cold-water corals by-catch, b) Voador seamount does not harbour large aggregations of cold water corals or sponges, c) low by-catch show that Voador seamount was highly impacted by fishing in the past. Sampling of the longline set locations with the ROV LUSO is scheduled for August 2010 to gather data to clarify these hypotheses.

Acoustic data

The acoustic data was collected following transects on top of the Voador seamount. One transect was performed during the day and night with 64 nm each (Figure 2, Table 2). Additionally, one complementary transect was performed following the peaks of the seamount during the day and night with 21nm each. Data on the DSL

(deep scattering layer) and other fish aggregations was collected to be analysed later.

Number of acoustic transects = 2 (day and night) + 2 (day and night)
Number of legs in each acoustic transect = 11 + 5
Total distance of each transect = 64 + 21 nautical miles (day and night)
Mean speed of sounding = 8 knots
Duration of each transect = 9 + 3 hours (day and night)
Location of the transect = Table 2 and 3, Figure 2 and 3

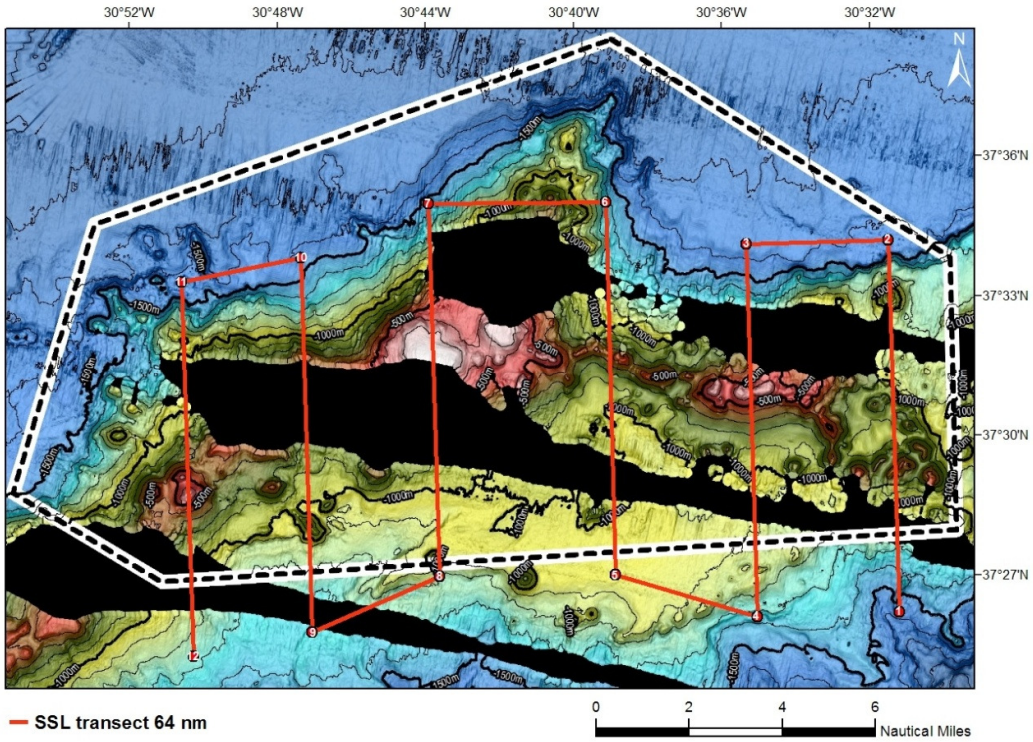

Figure 2- Map showing the transect and leg numbers of the main acoustic transect, crossing the bathymetric strata from ~1500m to the shallowest peaks. Bathymetric data courtesy: IFREMER.

Table 2- Location and leg numbers of the main acoustic transect, crossing the bathymetric range of the Voador seamount

Leg	Longitude	Latitude	Distance nm	Day	Night
Leg 1	30° 31.600' W	37° 26.250' N	8.00	23/06/2010	25/06/2010
Leg 2	30° 31.644' W	37° 34.249' N	3.04	23/06/2010	25/06/2010
Leg 3	30° 35.481' W	37° 34.238' N	8.01	23/06/2010	25/06/2010
Leg 4	30° 35.432' W	37° 26.232' N	3.17	23/06/2010	25/06/2010
Leg 5	30° 39.239' W	37° 27.195' N	8.02	23/06/2010	25/06/2010
Leg 6	30° 39.240' W	37° 35.210' N	3.80	23/06/2010	26/06/2010
Leg 7	30° 44.032' W	37° 35.276' N	8.02	23/06/2010	26/06/2010
Leg 8	30° 43.970' W	37° 27.259' N	2.97	26/06/2010	24/06/2010
Leg 9	30° 47.428' W	37° 26.125' N	8.05	26/06/2010	24/06/2010
Leg 10	30° 47.501' W	37° 34.171' N	2.60	26/06/2010	24/06/2010
Leg 11	30° 50.731' W	37° 33.714' N	8.05	26/06/2010	24/06/2010

12	30° 50.653' W	37° 25.670' N

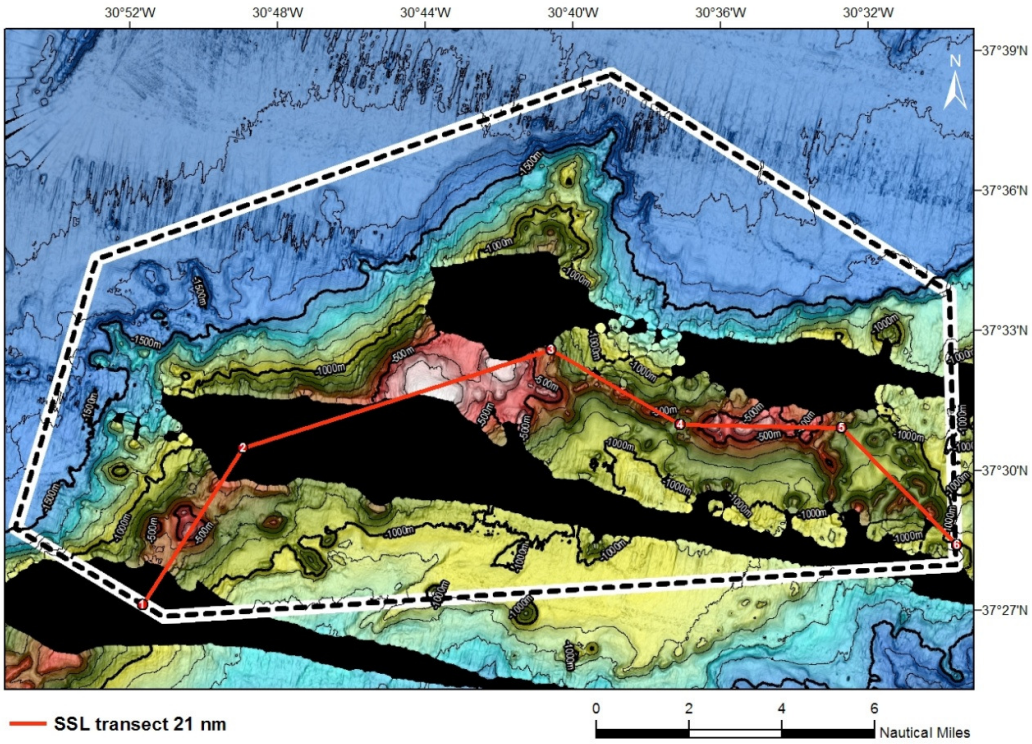

Figure 3- Map showing the transect and leg numbers of the complementary acoustic transect, following the seamount peaks. Bathymetric data courtesy: IFREMER.

Table 3- Location and leg numbers of the complementary acoustic transect, following the seamount peaks.

Leg	Longitude	Latitude	Distance nm	Day	Night
Leg 1	30° 52.010' W	37° 27.558' N	4.00	24/06/2010	25/06/2010
Leg 2	30° 49.207' W	37° 30.877' N	6.95	24/06/2010	25/06/2010
Leg 3	30° 40.798' W	37° 32.821' N	3.21	24/06/2010	25/06/2010
Leg 4	30° 37.352' W	37° 31.148' N	3.46	24/06/2010	25/06/2010
Leg 5	30° 33.000' W	37° 30.995' N	3.53	24/06/2010	25/06/2010
6	30° 29.966' W	37° 28.412' N			