



# **CORALFISH 2009 Cruise Report: CF0609**

15-25<sup>th</sup> June 2009

Eastern Ionian,  
Cephalonia and Zakynthos

**Dr. Chris Smith & Shipboard Scientific Crew  
Hellenic Centre for Marine Research**

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### Expedition Objectives

The general objective of the expedition was to survey and map and document cold water corals in the Ionian Sea. More specific objectives included:

- To collect multibeam acoustic bathymetry data
- To make high resolution side scan maps for target location
- To document and record cold water corals and their environment using ROV
- To characterise near bottom waters using CTD.
- To take bottom sediment samples for geophysical and biological analysis.

### Cruise Participants

For a full list and dates of participation see Table 1.

- HCMR, Institute of Marine Biological Resources: Chief Scientist, scientific staff (fisheries biologists).
- HCMR, Institute of Oceanography: scientific staff (geologists, oceanographers, biologists, technical staff – Deep Tow, CTD and Box Core).
- HCMR, Underwater Activities: technical staff (ROV support and diver).
- University of Bari; fisheries biologist observer from the CoralFish partner with experience on Italian Ionian Sea coral areas

### Area of Operations

The area of operations was in the Ionian Sea off the West coast of Greece and included (see Fig 1):

- West coast of Cephalonia,
- West coast of Zakynthos

### Principal Equipment Deployed

RV Aegaeo (65 m)

Multibeam: Seabeam 2021 (20 KHz), hull mounted

Deep Tow: Geoacoustics Deep Tow 2000 (Side scan: 114/410 KHz; Sub-bottom: Geochirp II, 1-12 KHz)

CTD: Seabird SBE 25

ROV: DSSI Max Rover, 2000 m rated.

Box Corer: USNEL 0.1 m<sup>2</sup>.

### Summary of Scientific Activities

The cruise was split into two parts. The first part of the cruise was dedicated to acoustic data acquisition with multibeam and deep tow (side scan sonar and sub-bottom profiler) over the operational area. The second part of the cruise involved ROV dives to identify and document targets of interest located from the acoustic mapping, and finally limited sediment sampling with box corer.

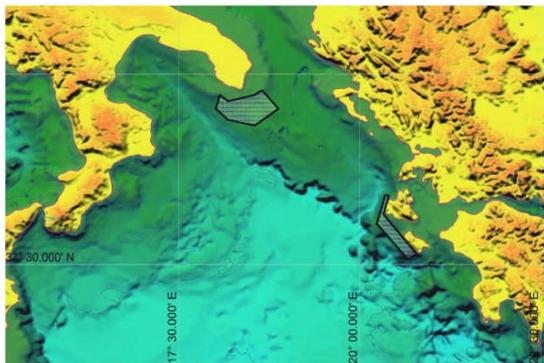
- Multibeam: Total area coverage was approximately 1650 km<sup>2</sup>. Fig 1 and Table 2 for summary.
- Deep Tow: Total area coverage was approximately 164 km<sup>2</sup>. Fig 1 and Table 2 for summary.
- The Max Rover ROV was involved in 5 dives for a total duration of 918 minutes (15.3 hours). See Table 3 for summary.
- Approximately 40 megafaunal taxa were observed on the dives between 400 and 800 m depth.
- CTD profiles were undertaken at 5 sites across the area for characterisation of near bottom waters and calibration of the multibeam system. See Table 4 for summary.
- Box Cores: 2 cores were taken for seabed characterisation (geochemistry and biology) See Table 5 for summary.
- From the 10 day cruise, approximately 1.5 days were spent in transit, 1 day stopped with bad weather, 0.5 day for the mid-cruise staff changeover and 7 days spent working.

The full activities diary is recorded at the end of this report.

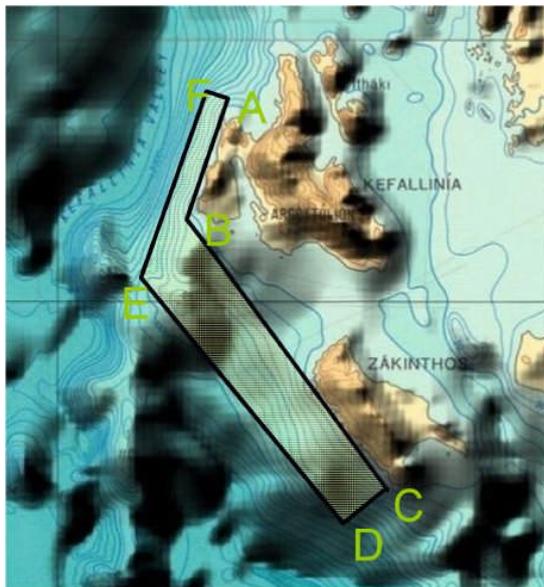
### Public Relations Activities

- Video and photographs were taken for later use.
- Before the cruise details were announced with related publications in two Greek newspapers.

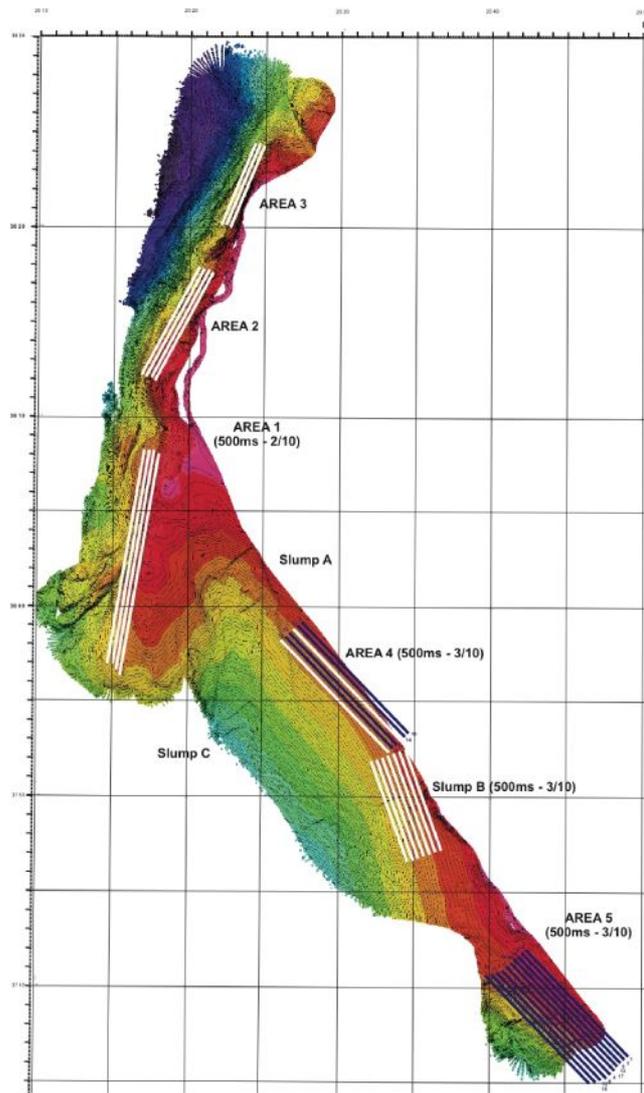
**Figure 1. CoralFish June 2009 Eastern Ionian Sampling Areas**



**Ionian Sea Sampling Sites**



**Eastern Ionian Greek sampling sites**



**Multibeam Map created during the sampling cruise, with different deep tow areas.**

**Table 1. CoralFish June 2009 Participants and Dates on Board**

No.	Name	Institution	Position	15-21	21-25
1	Smith, C.	HCMR/IMBR	Chief Scientist	X	X
2	Sakellariou, D.	HCMR/IO	Geologist	X	
3	Roussakis, G.	HCMR/IO	Geologist	X	X
4	Georgiou, P.	HCMR/IO	Geologist	X	
5	Madopoulos, I.	HCMR/IO	Geologist	X	
6	Pambides, P.	HCMR/IO	Geologist	X	
7	Ballas, D.	HCMR/IO	Multibeam	X	X
8	Maroulakis, S.	HCMR/IO	Geologist	X	X
9	Renieris, P.	HCMR/IO	Geologist	X	
10	Fotopoulos, T.	HCMR	Deep Tow/ROV	X	X
11.	Pancucci, A.	HCMR/IO	Biologist		X
12.	Salomidi, M.	HCMR/IO	Biologist		X
13	Mytilinaiou, C.	HCMR/IMBR	Fisheries Biologist		X
14	Kallergis, M	HCMR	ROV		X
15	Manousakis, L.	HCMR	ROV		X
16	Katsaros, K.	HCMR	ROV		X
17	Vavilis, P.	HCMR	Diver		X
18	Carlucci, R.	Univ. Bari, Italy	Fisheries Biologist		X
19					
				10	13

**Table 2. Acoustic Data Collection**

Date	Gear	Area
16.06.09 day	Multibeam	West of Cephalonia
16.06.09 night	Multibeam	SW Cephalonia to SW Zakynthos
17.06.09 day	Multibeam	SW Cephalonia to SW Zakynthos
17.06.09 night	Deep Tow & Multibeam	Area 1: SW Cephalonia
18.06.09 day	Deep Tow & Multibeam	Area 1: SW Cephalonia
18.06.09 night	Deep Tow & Multibeam	Area 4: NW Zakynthos
19.06.09 day	Deep Tow & Multibeam	Area 4: NW Zakynthos
19.06.09 afternoon	Multibeam	SW Zakynthos
19.06.09 night	Deep Tow & Multibeam	Area 5: SW Zakynthos
20.06.09 day	Deep Tow & Multibeam	Area 5: SW Zakynthos
20.06.09 evening	Multibeam	W Cephalonia
20.06.09 night	Deep Tow & Multibeam	Area 3: NW Cephalonia
21.06.09 night	Multibeam	SW Cephalonia Area
23.06.09 night	Multibeam	W Cephalonia Area

**Table 3. ROV: Max Rover Dive Summary**

No.	Date	Site	Position	Depth	Duration
CFROV01	21.06.09	SW Cephalonia	37 56.411 20 15.297	820-807	139
CFROV02	23.06.09	SW Cephalonia	37 58.960 20 16.446	614-585	182
CFROV03	23.06.09	SW Cephalonia	38 04.051 20 16.541	752-415	236
CFROV04	23.06.09	NW Cephalonia	38 20.421 20 22.695	754-468	116
CFROV05	24.06.09	SW Cephalonia	37 58.955 20 16.364	636-571	245
				Total	918

**Table 4. CTD**

Sample	Date	Area	Position	Depth
CTD CF01	16.06.09	SW Cephalonia	38 00.420 26 10.000	3000
CTD CF02	18.06.09	W Cephalonia	38 10.386 20 16.527	1065
CTD CF03	18.06.09	NW Zakynthos	37 56.673 20 22.968	1300
CTD CF04	19.06.09	SW Zakynthos	37 35.605 20 45.013	1262
CTD CF05	21.06.09	NW Cephalonia	38 27.410 20 26.715	1200

**Table 5. Box Cores**

Sample	Date	Area	Position	Depth
BC CF-1	24.06.09	SW Cephalonia	37 58.992 20 16.758	570
BC CF-2	24.06.09	SW Cephalonia	37 58.999 20 16.501	600

## CoralFish 2009 Diary

### 15.06.09 Monday

12:50 Depart Piraeus for Corinthiakos, (weather NW, F2, clear)

On Board:

C. Smith – Chief Scientist, IMBR

G. Roussakis – IO

D. Sakellariou – IO

G. Roussakis – IO

D. Ballas – IO

S. Maroulakis – IO

P. Georgiou – IO

I. Madopoulos – IO

P. Pambides – IO

P. Renieris – IO

T. Fotopoulos – IO

13:00 Scientific meeting on board (cruise aims, work to be undertaken)

15:55 Enter Corinth Canal

16:30 Depart Corinth Canal

23:00 Pass Rio Bridge

### 16.06.09 Tuesday

Weather NW, F3, clear

05:20 CTD CF01 SW of Cephalonia, 3000 m (multibeam calibration)

06:20 Finish CTD

Setting up multibeam

07:30 Start multibeam SW of Cephalonia, box set running north along W coast of Cephalonia, working deep parallel lines towards shallow, approx. 200-1000 m, 20 nm long.

10:45 Finish first line, deep.

19:55 Finish first box, last shallow line, heading SE for long box W coast of Zakynthos, shallow line.

23:45 Finish first line W of Zakynthos, return parallel line deeper.

### 17.06.09 Wednesday

Weather NW, F3, clear

08:15 Finish 3<sup>rd</sup> Zakynthos line

12:25 Finish 4<sup>th</sup> Zakynthos Line, up at Cephalonia end, gap filling between 2 boxes SW of Cephalonia.

15:35 Finish multibeam, setting up Deep Tow box SW of Cephalonia

19:20 Setting up deep tow and dropping Tracking arm

20:15 Deploy Deep Tow Area 1, Line 1-2

00:30 Finish Line 1-2

### 18.06.09 Thursday

Weather NW, F2, clear

Continue deep tow

11:00 Finish Line 7-8

12:00 Start Line 6-5

15:35 Finish Line 6-5 and hauling

16:20 CTD CF02, 1065 m

17:00 Heading SE to Area 4 box (NW Zakynthos)

18:30 CTD CF03, 1300 m.

19:20 Finish CTD 03, heading to NW corner of Area 4. Italian trawler working just out of the box.

19:55 Deploying Deep Tow Area 4, Line 9-10.

23:45 Start Line 11-12

### 19.06.09 Friday

Weather NW, F2-3, clear

03:34 Finish Line 11-12

06:21 Finish Line 13-14

07:23 Start Line 15-16

09:50 Finish Line 15-16 and hauling.  
 Area 4 general flat and featureless, small number of trawl marks seen. 2 Italian trawlers towing along the area from daylight. Started at approximately 4 nm off the coast out to 8/9 nm.  
 10:00 Planning survey Area 5  
 10:20 Heading SE to Area 5, with some multibeam collection and planning a CTD at SW corner of Area 5, then multibeam to fill in southern end of Area 5.  
 13:15 CTD CF04, 1262 m, SW Zakynthos.  
 14:10 Finish CTD 04, Heading E for multibeam extension.  
 14:20 Multibeam extension lines to SE of Area 5.  
 15:40 Finish Multibeam, heading for Deep Tow start  
 18:10 Deploying Deep Tow, Line 1-2  
 21:50 Start Line 3-4

### 20.06.09 Saturday

Weather NW, 1-2, clear

01:00 Finish Line 3-4  
 09:10 Finish Line 7-8  
 09:10 Start Line 9-10  
 12:40 Start Line 11-12  
 15:50 Finish Line 11-12  
 19:20 Finish Line 13-14, hauling Deep Tow  
 19:35 Deep Tow on board, heading for NW Cephalonia  
 21:30 Close to Italian Trawler towing 5.6 nm SSW of Cephalonia  
 Setting up Grid Lines for Area 3 – steep slopes and cliffs starting to slope less at 500 m.  
 11:50 Filling shallow multibeam gaps along the W coast of Cephalonia

### 21.06.09 Sunday

Weather NW, 3-4, clear

12:00 Deploy Deep Tow on Line 1-2  
 07:25 Finish line 5-6 and hauling clear to carefully put deep tow line on its winch.  
 08:05 Deep Tow on board  
 08:20 CTD05, NW Cephalonia  
 09:15 Finish CTD depart for Kilini around top of Cephalonia into the Ithaki channel.  
 13:45 Arrive port of Kilini, West Peleponese. Change over of scientific crew (disembark geologists, embark biologists and ROV crew).

Disembark	Embark
Sakellariou, D. (IO)	Mytilinaou, C. (IMBR)
Georgiou, P. (IO)	Pancucci, A. (IO)
Madopoulos, P. (IO)	Salomidi, M. (IO)
Pambides, I. (IO)	Kallergis, M. (HCMR)
Renieris, P. (IO)	Manousakis, L. (IMBR)
	Katsaros, K. (HCMR)
	Vavilis, P. (HCMR)
	Carlucci, R. (Univ. Bari)

15:30 Depart Kilini for SW Cephalonia  
 20:00 On station SW Cephalonia  
 21:21 Deploy Max Rover CFROV01, target CF1-5  
 21:57 On bottom, 825 m. Crusted pockmarks  
 22:58 Coming up  
 23:40 ROV on deck  
 23:50 Multibeam, filling gaps in SW Cephalonia area

### 22.06.09 Monday

Weather W, 4, rough swell

06:00 Multibeam erratic with swell  
 08:00 Rough swell, bad forecast for westerlies 4-6 for next 2 days, heading for shelter East of Zakynthos  
 10:35 Berth Aghios Nikolas, North east Zakynthos

### **23.06.09 Tuesday**

Weather forecast W 5, swell, but 3-4.

08:20 Depart for south west Cephalonia (running multibeam)

10:15 On station

10:58 Deploy ROV CFROV02, target CF1-L

11:26 On bottom 610 m, mostly muddy, one *Lophelia* and some *Isidella*

13:28 Coming up

14:00 ROV on deck, steaming north for other Area 1 targets

15:14 Deploy ROV CFROV03, targets CF1-11, 8, 1

15:49 On bottom, 750 m, heading east across targets.

18:45 Coming up from 410 m

19:10 ROV on deck, steaming north for Area 3

21:10 On site Area 3, west of target CF3-01

21:34 Deploy ROV CFROV04, target CF3-01

22:05 On bottom, 754 m transect up slope towards the East

23:05 Coming up from 468 m

23:30 On deck

23:50 Multibeam deep area west of Area 3

### **24.06.09 Wednesday**

Weather NW 5-6, swell,

03:00 Too rough for multibeam, head around the top of Cephalonia for West Cephalonia

08:00 SE Cephalonia Channel W6, 2 m swell, head into Cephalonia Bay

11:30 Anchor off Luxuri, Cephalonia bay.

16:00 Depart Cephalonia Bay

18:15 On station Area 1 target CF-L

18:30 Deploy ROV CFROV05,

18:55 On bottom 636, running parallel lines to Dive 1

21:55 Coming up

22:35 ROV on deck, finished with ROV. Coral recovered on small boulder. Samples taken for further analysis (alcohol, formalin, frozen) and main colony kept in fridge for return to Aquarium.

Preparing box corer

23:15 Box Core BC CF-1

23:55 Box Core BC CF-2

00:30 Depart for Corinth

### **25.06.09 Thursday**

12:15 Arrive Corinth

13:05 Passing through Corinth canal

16:30 Berth Piraeus

Depart Scientific Crew

### **26.06.09 Friday**

Unloading scientific equipment

## Activities Captured During the CoralFish 2009 HCMR Cruise



RV Aegaeo



Piloting through the Corinth Canal



Planning deployments



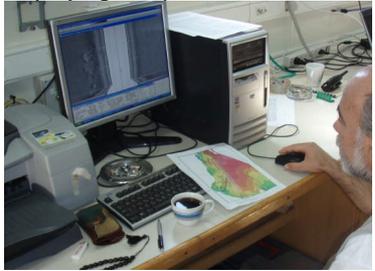
Deploying Deep Tow



Deploying CTD



Visitor in study area



Reviewing side scan targets



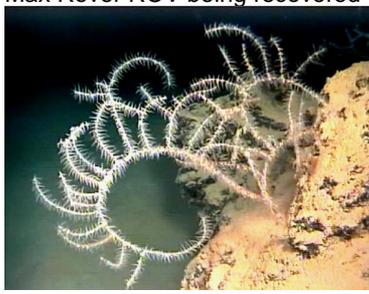
Max Rover ROV being recovered



ROV Pilots and Observers



Solitary *Lophelia pertusa* colony



Unknown cold water coral



Coral sampling



Sub-sampling box core



Sieving out box core



Cruise participants on the second leg (ROV transects and sampling)