Benthic Habitat Research for Marine Natura 2000 Site Designation

LIFE12 NAT/MT/000845

Executive Summary
Action A3: Marine Habitat Surveys

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Natura 2000 is the centrepiece of the Habitats Directive, functioning as a network of protected areas. In order to comply with the requirements of the Directive, Malta has already identified five marine Sites of Community Importance (SCIs) for benthic habitats for the inclusion in the Natura 2000 Network as Special Areas of Conservation (SAC). These five SCIs are located mostly around the coast of the Maltese Islands, covering roughly anarea of 190 km², and are mainly intended to protect *Posidonia oceanica* beds. Other key habitats and species listed in Annexes I and II of the Habitats Directive are underrepresented in Maltese sites, as identified through the EU Biogeographical Seminar held in 2010. In 2016, Malta identified three additional areas as proposed Sites of Community Importance (pSCIs) for Annex II species and eight areas as Special Protection Areas (SPAs)[1], through the LIFE+ Migrate and LIFE+ Malta Seabird projects respectively.

The Project LIFE BaℏAR for N2K - *Life+ Benthic Habitat Research for Marine Natura 2000 Site Designation* - is coordinated by the Environment and Resources Authority (ERA), in partnership with Fundación Oceana, the Ministry for Sustainable Development, Environment and Climate Change (MSDEC), the Department of Fisheries and Aquaculture (MSDEC-DFA), and the University of Malta's Department of Biology (UoM-DoB). The aim of the project is to identify areas containing marine habitats that are listed in Annex I of the Habitats Directive in Maltese waters, primarily: '*Reefs*', '*Submerged and partially submerged caves*', and '*Sandbanks which are slightly covered by sea water all the time*' and designate sites for their protection.

Under the project's **Action A1 (Desktop Data Collection)**, a review of existing data was carried out by DFA (MSDEC-DFA 2014; 2015)[2]. This information, together with data from marine habitat surveys carried out in 2015, was analysed by UoM-DoB as part of **Action A2 (Data Analysis and Interpretation)**. The areas to be studied during the 2nd marine habitat survey in 2016 were selected based on the outcomes of 1st **Action A3 (Marine Habitat Surveys)** expedition led by Fundación Oceana, in order to focus efforts on specific areas where knowledge gaps remained. Fourteen areas located within the 25 NM Fisheries Management Zone were recommended to be surveyed in the 2016 expedition; six of the areas were located in offshore waters and eight in inshore waters (Borg et al., 2016)[3]. Figure 1 shows the distribution of the 2016 sampling areas.

The second expedition undertaken as part of **Action A3 (Marine Habitat Surveys)** was carried out, like the 1st expedition, on board the vessel *Oceana Ranger*, a Ketch catamaran with up to fourteen crew members. Throughout the 67 days of the expedition (May-July 2016), underwater video footage was recorded from 112 transects along the Maltese seabed, down to a maximum depth of approximately 1000 m, and by carrying out 30 scuba dives in Malta's inshore waters.

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[1] Two of the identified areas are both pSCIs and SPAs
[2] Ministry for Sustainable Development, the Environment and Climate Change – Department of Fisheries and Agriculture (2015). Activity Report 2014. Deliverable: Action A1 – Desktop Data Collection; Activity Report 2015. Deliverable Action A1-Desktop Data Collection
[3] Borg J.A., Evans J., Knittweis L., Schembri P.J. (2016). Report on the second analysis following the first surveying phase carried out through Action A3. Action A2: Data Analysis and Interpretation. LIFE BaℏAR for N2K (LIFE12 NAT/MT/000845). 59 pp.
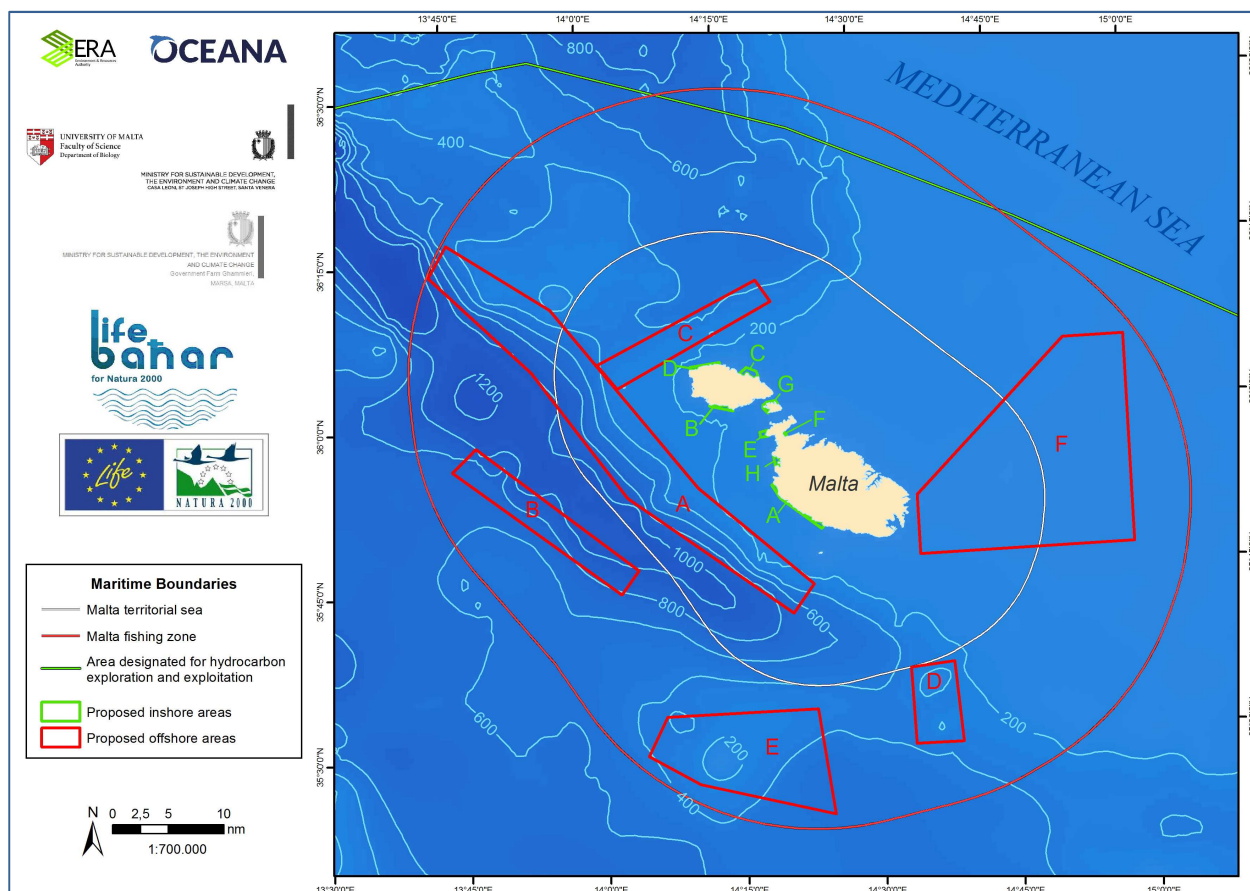
Figure 1. Areas surveyed during the 2016 expedition

A Saab Seaeye Falcon DR ROV, equipped with a High Definition Video (HDV) camera was used to record images in offshore areas. While carrying out the ROV transects, the *Oceana Ranger* sailed at an average speed of 0.2 knots, filming both in HD and in low resolution, and simultaneously recording position, depth, course and time. Considering the average speed and the wide angle of the camera (i.e. the fact that it was able to film transects of ca. 1.5 m width), the ROV allowed the observation of around 650 m^2 (±6 m^2) of seabed per hour of surveying.

Areas in which caves and potential sandbanks were expected were surveyed by a professional team of four scuba divers, two of which were equipped with underwater photo and video cameras, and two acted as security divers. Compared to the 2015 expedition, the number of scuba dives was increased from 12 to 30 in order to complete the surveys at the eight targeted inshore areas. The use of underwater scooters enabled the divers to survey close to 100% of the proposed inshore areas by increasing the distances covered during every dive.

Most of the taxonomic identification of observed species was done visually. Samples of key habitat-forming species were also collected for detailed analyses to confirm preliminary visual identification (by SCUBA divers in shallow waters, and by deploying the robotic arm of the ROV at the offshore sites). A total of 84 samples were collected in this manner and are currently being analysed by taxonomists.

All fourteen recommended areas (eight inshore, six offshore) were surveyed during the 2016 expedition, by recording:

- 200 hours of ROV footage
- 2,900 screenshots from ROV transects
- 1,500 scuba videos
- 1,500 scuba pictures

- Target habitats:
    - In order to document areas where **sandbanks** could be present, five out of a total of 30 scuba dives were undertaken over sandy bottoms in inshore Areas C, F, G and H. At three of these areas (inshore Areas F, G and H) sandy elevations were documented and measured. No sandbanks were found during the two surveys carried out at inshore Area C, but other interesting habitats such as a *Posidonia oceanica* meadow were documented.
    - **Reef** habitats were documented at offshore Areas A, B, C, E and F. The benthic habitats surveyed in Area D were mostly muddy bottoms, and no seabed elevations were registered by the catamaran sounder. Other habitats of interest were however documented, such as muddy and detritic bottoms with associated communities of cnidarians, sponges, a variety of other invertebrates and fish.
    - Up to 53 emergent and fully submerged marine **caves** of different shapes and sizes were found in inshore Areas A, B, D and E. Dozens of species, mainly invertebrates, were documented including protected species such as the predatory sea snail *Charonia lampas* and the stony cup coral *Astroides calycularis*, and rare species like the spider crab *Neomaja goltziana*.
    - Several **deep-sea caves** were located during the offshore surveys; a particularly large cave was found in Area A at 438m depth.

- Additional species and habitats of interest:

    - Rhodolith beds at offshore Area F;

    - Dead oyster bottoms (cf. *Neopycnodonte cochlear*) found on the east side of offshore Area F;

    - The long-spined sea urchin *Centrostephanus longispinus* highly abundant at offshore Area F;

    - *Isidella elongata* bamboo coral gardens at offshore Areas B and E;

    - Dense colonies of the large sea-pen *Funiculina quadrangularis* offshore Area E;

    - *Kophobelemnon stelliferum* sea-pen communities at offshore Areas A , B and E;

    - Dead brachiopod bottoms (species undetermined) at the western side of offshore Area A;

    - Aggregations of dead (possibly fossilised) shells of cf. *Acesta excavata* at offshore Area B.

- Threats and pressures:

    - Entangled lines and other fishing gear were the main threat documented in offshore waters, whilst predominantly domestic litter was found in inshore areas.