MARINE SCIENTIFIC SURVEYS AROUND FILFLA FOR ITS CONSERVATION

DESK STUDY REPORT

OCTOBER 2006

STRUCTURAL FUNDS PROGRAMME FOR MALTA 2004 – 2006

PROJECT PART-FINANCED BY THE EUROPEAN UNION

European Regional Development Fund

Co-Financing Rate 73%

Structural funds programme Malta
2004 - 2006

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This project is funded by the European Union

A project implemented by

ais environmental ltd.

MEPA
MALTA ENVIRONMENT & PLANNING AUTHORITY

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Appendix 1 Preliminary List of biotypes and species present in the sea around Filfla

1.0 Scope of the work

This report is in part fulfillment of the task given to the undersigned consultant that a comprehensive compendium of information of the site, its habitats and species should be drawn up in the form of a preliminary biotope and species list to enable recognition of classified habitats.This report is based solely on existing published information.

1.1 Preamble

During the compilation of this report, the undersigned noted the general paucity of exiting information on the marine species and biotopes recorded from the Filfla environs. This is partly confirmed by Borg et al. (1997) who state that 'In spite of its natural historic interest and its status as a protected area, no studies on the marine life have been made, possibly because access is difficult and fieldwork on the shore and underwater is only possible in very clam weather conditions, which are not frequent around Filfla'.

2.0 Published works consulted

The following is an overview of all the published works within which the islet of Filfla (or its immediate environs) is mentioned:

- Borg, J. & Schembri, P.J. (1996). Preliminary data on the occurrence and distribution of shallow water marine sponges (Porifera) around the Maltese Islands. Xjenza, Malta 1 (1): 24-28.

- Borg, J.A., Mallia, A., Pirotta, K., Schembri, P.J. & Vassallo, A. (1997). A preliminary report on the marine macrobenthos and the demersal fish fauna of the island of Filfla (Maltese Islands, Central Mediterranean). The Central Mediterranean Naturalist 2(4): 136-151 – **note**: this can be considered as the most comprehensive ecological work to date) on the macrobenthic and demersal fish assemblages around the island of Filfla, where a 'primary survey' (qualitative and semi-quantitative) was conducted. Prior to this study, four expeditions to Filfla were conducted between 1990 and 1994, mainly to glean preliminary information on the nature and distribution of the benthic habitats and assemblages around Filfla (three of these expeditions were reported upon by Borg & Schembri, 1996). During the 1997 survey, supralittoral, upper infralittoral and sublittoral assemblages were sampled semi-quantitatively (using, for example, two belt transects, with a length of 90m and 160m, for the sublittoral samples) and qualitatively using photography and ex situ identification and in situ observation and identification. A total of:
    1. 18 algal species
    2. 6 sponge (Porifera) species – the report gives an indication of the abundance of these 6 species, with *Agelas oroides* and *Crambe crambe* being the most abundant.
    3. 1 Cnidaria species
    4. 2 Annelida species
    5. 13 Mollusca species
    6. 6 Arthropoda species, of which 2 barnacles and 4 decapods
    7. 4 Echinodermata species
    8. 13 demersal fish species

Besides the individual species, the major biotopes were also recorded, and these included bare sand bottoms and the community of photophilic algae. The same authors take exception to the fact that sea-grass meadows, otherwise described as ubiquitous from the waters around the whole Maltese Islands, were absent from the waters around Filfla. This is also confirmed by the mapping of *Posidonia* meadows conducted in the study by Borg, J.A. & Schembri, P.J. (1995 – The state of *Posidonia oceanica* meadows in the Maltese Islands, Rapp. Comm. Int. Mer Medit 34: 123) and by G.A.S. (2003), which do not extend the meadow curtilage to the waters around Filfla.

Besides the general biotope classification and classified species list, the same work gives an insight as to the geomorphological characteristics of the Filfla environs, listing two

small rocks (Xiutu z-Zghir and Xiutu l-Kbir or il-Blata ta Santa Marija) lying to the southwest of Filfla, and Stork Rock lying 700m to the south of Filfla.

- Fergusson, I.K., Compagno, L.J.V. & Fowler, S.L., 1998. PROPOSAL TO CONSERVE THE GREAT WHITE SHARK *CARCHARODON CARCHARIAS* IN MALTESE WATERS. Formal Submission to the Environment Protection Department on behalf of Shark Trust, European Elasmobranch Association and Marine Life Care Group of Malta: 18pp.

In this proposal to conserve the great white shark (*Carcharodon carcharias*) in Maltese waters submitted to the Environment Protection Department in 1998 by Ian Ferguson, Leonard J.V. Compagno and Sarah L. Fowler, recorded sightings of the shark species around the Maltese Islands are mapped. The waters around Filfla feature prominently in such a map as a site with regular captures and reliable sightings/captures. The full text of the proposal is available on http://www.zoo.co.uk/~z9015043/malta_ws.html.

- Schembri, T., Fergusson, I.K. & Schembri, P.J. (2003). Revision of the records of shark and ray species – '*Hexanchus griseus* (seven-gilled shark) is not uncommonly caught in artisanal fisheries operating along the southern and southwestern Maltese coasts'; 'the last confirmed specimen (of *Carcharodon carcharias* – Great white shark) for which photographic proof is available is an adult female…….caught in April 1987 near Filfla'; 'the only Maltese record of this species (*Carcharhinus obscurus* – Dusty shark) is based on a mature male specimen collected some 4km ESE of Filfla.'

In addition to the studies quoted above, a preliminary survey of infralittoral marine communities was carried out during December 1989 by a joint team from the Universities of Durham (UK) and Malta over a six-week period in 1989 (Anderson & Schembri, 1989) as a collation to the impending Structure Plan. Filfla was the only offshore site considered by this survey which lists the area around Filfla as a candidate marine reserve. The same report, however, states that 'one of the most important criteria for the siting of marine parks and reserves is their contiguity with terrestrial protected areas and the two should be viewed, ideally, as extensions of each other'. As a result of this, the Coastal Zone Survey (1989) conducted by the same team did not identify Filfla as a natural landscape if national and international importance.

The Structure Plan for the Maltese Islands (Environment Protection Department, 1991) also designates a number of sites as candidate marine protected areas, acting on the recommendations made by Schembri (1991) and Role (1991). Filfla was one of the sites shortlisted by the Structure Plan (together with 13 other sites) which is allotted a four star rating on a one-four star index, as to its conservation value, by Schembri (1994). Despite this, within the ambit of biotic features, the same report states that 'the benthic communities are rather poor in diversity and richness when compared to other areas, which are equally remote and unpolluted. This may be due to the use of explosives'. Within the ambit of physical features, the same report reports the occurrence of 'large boulder fields leading to large stretches of sandy bottom'.

According to Borg & Sultana (2004), Filfla holds the largest colony in the Mediterranean of the European storm-petrel *Hydrobates pelagicus melitensis* (5000-8000 individuals) and a colony of Cory's shearwater *Calonectris diomedea*. Yellow-legged Gulls *Larus cachonnans* nests on top of the island. The Yelkouan Shearwater *Puffinus yelkouan* possibly breeds. For these reasons (i.e. in view of its important bird-nesting and rafting status), Filfla was included in the list of 11 IBA's (Important Bird Areas) submitted by BirdLife Malta to the EU in 2004.

The same authors also cite Filfla as a site of global importance, since it is a site which 'holds concentrations of a species threatened at European Union level' (Criteria C2 and C6 in the same report).

2.1 Ancillary works

The following is a list of published works, also with an inherent local marine bearing and which were also consulted during the drafting of this report but which make no mention of Filfla

- Structure Plan for the Maltese Islands (1991). Technical Report No 5.2. Report of Survey: Marine Parks and Reserves Potential. Report prepared by Avertano Role for the Environment Protection Department. Floriana, Malta: 33pp.

- G.A.S. [Geological Assistance & Services] (2003). *Baseline survey of the extent and character of* **Posidonia oceanica** *(L.) Delile meadows in the territorial waters of the Maltese islands. Final Report* [IDP GAS: PAM001]. Bologna, Italy: Geological Assistance & Services s.r.l. – no *Posidonia oceanica* is reported from the waters around Filfla

- Micallef, H. & Evans, E. (1968). The Marine Fauna of Malta. Malta University Press: 26pp. – **note**: this work lists 418 marine faunal species from local waters, with no indication of provenance

- Jaccarini, V., Agius, C. & Leger, G. (1978). A preliminary survey of the phytoplankton of inshore marine waters from Malta. Mem Biol. Marina e Oceanogr. 8(1): 1-12. **note:** the Filfla environs were not sampled in this study

- Schembri, P.J., Lanfranco, E., Farrugia, P., Schembri, S. & Sultana, J. (1987). Localities with conservation value in the Maltese Islands. Environment Division, Ministry of Education, Floriana: iii+27pp. **note**: although this publication does not include underwater marine sites, it states at one point that 'the area around Filfla would make an ideal site for a marine nature reserve due to its unpolluted waters and the diversity of marine habitats and associated biota.'

- Farrugia Randon, S., & Farrugia Randon, R. (1995). Comino, Filfla and St. Paul's Island, Malta: 40pp. **note**: this book ~~is currently out-of-print but it~~ contains no information on the marine aspects of the Filfla environs, and so is beyond the scope of this report (personal communication with the Farrugia Randon, S.).

- Borg, J.A., Micallef, S.A., Pirotta, K. & Schembri, P.J. (1997). Baseline marine benthic surveys in the Maltese Islands (Central Mediterranean). Proceedings of the Third International Conference on the Mediterranean Coastal Environment MEDCOAST 97. E. Ozhan (editor): 1-13. **note**: extensive baseline studies of the submarine geomorphology, infralittoral habitats, macrobenthic assemblages and demersal fish assemblages were conducted in 14 different sites around the Maltese Islands, but Filfla does not feature in the list of sites.

- Pirotta, K. & Schembri, P.J. (1997). Characterisation of the major marine biotopes of the soft substrata around the Maltese Islands. Proceedings of the Third International Conference on the Mediterranean Coastal Environment MEDCOAST 97. E. Ozhan (editor):25-37. **note**: a marine biotope characterization exercise was conducted for two local sites, none of which were Filfla.

- Borg, J.A., Howege, H.M., Lanfranco, E., Micallef, S.A., Mifsud, C., Schembri, P.J. (1998). The macrobenthic species of the infralittoral to circalittoral transition zone off the northeastern coast of Malta. Xjenza 3(1): 16-24. **note**: the Filfla environs were not sampled in this study
- Pirotta, K. & Schembri, P.J. (2003). A pilot study aimed at the establishment of Marine Protected Areas in the Maltese Islands. MARS Newsletter Autumn 2003: 8-9. **note**: this paper focuses on the operations of the CAMP program in Malta and on the marine biotopes present in the Rdum Majjiesa area in the NW area of Malta.

- Borg, J.A. & Schembri, P.J., 2002. *Alignment of Marine Habitat Data of the Maltese Islands to conform to the requirements of the EU Habitats Directive (Council Directive 92/43/EEC).* August 2002.

- Schembri, P.J., (1994). *Marine and coastal protected areas in the Maltese Islands: reviews, prospects and proposals.* Unpublished report; Regional Activity Centre for Specially Protected Areas (RAC/SPA). UNEP: 59pp. + Figs 1-5.

2.2 Other Filfla-related material

- GN 473 of 1987 and LN to Mariners 16 of 1987 prohibited the berthing or navigation of any craft within an area of one nautical mile radius off Filfla.
- Filfla Nature Reserve Act (i.e. Act XV of 1988) which declared Filfla as the only (at the time) Nature Reserve of the islands, under the aegis of the Secretariat for the Environment.
- GN 173 of 1990 subsequently permitted fishing vessels to enter the previously prohibited area.
- Bird Sanctuary Ln 150 of 1993
- Gov't Notice 257 of 2003
- Mediterranean Specially Protected Area (Barcelona Convention)

2.3 Sub-areas in need of updating

- A more extensive benthic biotope mapping exercise, for the purposes of producing a definite marine biotope map for the Filfla environs
- A more rigorous sampling protocol for the different marine species present, since surveys conducted to date in the Filfla environs were mainly semi-quantitative, with no hint being given of densities of the species recorded. This would involve the taking of a number of regular grab samples of benthic sediment for infaunal sampling, standardized observations and photographic surveys along pre-determined transects. Prior to the sampling being undertaken, representative levels of sampling effort must be pinpointed through the use of the appropriate statistical techniques.

2.4 Classified list of biotopes recorded to date from Filfla

- Boulder screes, with associated accumulations of cobbles and pebbles surrounding the larger boulders – could classify under EUNIS Habitat Classification 200308, 200202, 199910, 199811 Code: A1 (Littoral rock, which includes habitats of bedrock, boulders and cobbles which occur in the intertidal zone and the splash zone – locally, there is only a extremely compressed intertidal zone) and under Physis Classification Code 1:18 (Sea-cliffs and rocky shores)

- Bare sandy bottoms: could classify under RAC/SPA UNEP Habitat Classification as III.2 – Fine sands with more or less mud or as III.3 – Coarse sands with more or less mud (no hint is given of the sand particle sizes recorded from the waters around Filfla); EUNIS Habitat Classification 200308, 200202,199910, 199811 Code: A4 **(**Circalittoral rock and other hard substrata – broad in scope, described as being animal-dominated and which includes foliose red algae, which were recorded from around Filfla)**;** CORINE Biotopes Classification 1991 Code: 11.22, 11.23. Not listed in Physis system.

- Communities of photophilic algae – could classify under RAC/SPA UNEP Habitat Classification III.6.1– Biocenosis of Infralittoral Algae (such a category is very broad in scope, but includes *Cystoseira* spp. and *Sargassum vulgare*, both of which have been recorded from the waters around Filfla). Not listed under other classification systems.

Note: 'Could' is to denote the broadness of the above classifications. None of the above 3 biotopes are listed as such under Annex I of the Habitats Directive. The bare sand bottom community resembles in description (in certain aspects only) 'Mudflats and Sandflats Not Covered by Seawater at Low Tide' (EUR15/2 Code: 1140), but this habitat type does not occur locally, as reported by Borg et al (2002) in their habitat alignment reports.

2.5 Classified list of species recorded to date from Filfla

Note: Since to date, the only significant marine survey conducted for the environs of Filfla was the one by Borg et al. (1997), the classified species list recorded from this study is also reported here. One should note, however, that this list, as noted by the authors themselves, is not exhaustive, since it refers to the more abundant macrobenthic species only recorded during their survey at Filfla. Species recorded by Schembri et al. (2003) are also included in this appendix.

Algae, Porifera, Cnidaria, Crustacea, Annelida, Arthropoda, Mollusca and Echinodermata individuals were recorded using semi-quantitative sampling techniques along imaginary transects (with most species being identified in situ, whilst limited numbers of macroalgae were taken for laboratory analyses). Demersal fish species were recorded by direct observation only.

Appendix 1

Appendix 1 Preliminary List of biotypes and species present in the sea around Filfla

The semi-quantitative abundance measures reported in this table are reported from Borg et al. (1997).

N/A = Not available

Legend for 'Protection Afforded'

- A = UNEP(OCA)/MED WG 149/5 – LIST OF HABITAT TYPES AND SPECIES FOR THE SELECTION OF SITES TO BE INCLUDED IN THE NATIONAL INVENTORIES OF NATURAL SITES OF CONSERVATION INTEREST (RAC/SPA Classification)
- B = Annex II pf the SPA Protocol under the Barcelona Convention (including actions for the protection of marine vegetation and cetaceans in the Mediterranean, under the same protocol)
- C = Habitats Directive (92/43/EEC)
- D = Annex I and/or II of Berne Convention
- E = local legislation (LN 161 of 1999)

List of the macrobenthic species recorded from Filfla

TAXON	SPECIES	ABUNDANCE MEASURE	PROTECTION AFFORDED
Algae	*Amphiroa rigida* Lamouroux	N/A	
	Chondria sp.	Not abundant in upper infralittoral but very common in mediolittoral	*Chondria boryana* is listed in Red Data Book for the Maltese Islands – R, Rest (MED)
	Corallina elongata Ellis & Solander	Very common in mediolittoral	
	Dasya elegans (Mertens) C. Agardh	N/A	
	Jania rubens (L.)	Not abundant (upper	

	Lamouroux	infralittoral)	
	Laurencia obtusa (Hudson) Lamouroux	Not abundant (medium-upper infralittoral) but very common in mediolittoral – attained 'dwarf' morphologies compared to individuals of the same species collected from other parts of the islands	
	Peysonnelia squamaria (Gmelin) Decaisne	Found almost exclusively in shady patches (5-20m).	
	Liagora distenta (Mertens) C. Agardh	Not abundant (upper infralittoral) – first record for Maltese Islands in 1997.	
	Herposiphonia secunda (C. Agardh) Ambronn	Not abundant (medium-upper infralittoral)	
	Cystoseira spp.	One of most abundant macroalga at 3-6m – attained 'dwarf' morphologies compared to individuals of the same species collected from other parts of the islands	*Cystoseira spinosa* is protected under Annex II of A, B and D, Schedule I of E; *Cystoseira* species are listed in Red Data Book for the Maltese Islands
	Dictyopteris polypodiodes Lamouroux	One of most abundant macroalga at 3-6m, 6-20m	
	Dilophus (=*Dictyota*) sp.	One of most abundant macroalga at 2m; very common in mediolittoral	
	Halopteris scoparia (L.) Sauvageau	One of most abundant macroalga at 2m, 3-6m	
	Padina pavonica (L.) Lamouroux	One of most abundant macroalga at 6-20m	
	Sargassum vulgare C. Agardh	One of most abundant macroalga	*Sargassum* species are listed in Red Data

		at 6-20m	Book for the Maltese Islands
	Anadyomene stellata (Wulfen) C. Agardh	N/A	
	Codium bursa (L.) C. Agardh	One of most abundant macroalga at 6-20m	
	Flabellia (=*Udotea*) *petiolata* (Turra) Nizamuddin	N/A	
Porifera	*Agelas oroides* (Schmidt)	>0.02% percentage cover at 24-26m and at 29m; dominant sponge, along with *Crambe crambe,* along steeply sloping transect	
	Cacospongia scolaris (Schmidt) (L.)	N/A	
	Chondrosia reniformis (Nardo)	0.006-0.01% percentage cover at 13-14m	
	Crambe crambe (Schmidt)	0.006-0.01% percentage cover at 17m ; 0.011-0.02% percentage cover at 12m, 28-30m ; >0.02% percentage cover at 23-24m; dominant sponge, along with *Agelas oroides*, along steeply sloping transect	
	Ircinia variabilis (Schmidt)	<0.0011% percentage cover at 5m, 6m	
	Sarcotragus spinosula (Schmidt)	<0.0011% percentage cover at 5m, 8m and at 15m; dominant sponge along gently sloping transect	
	Petrosia ficiformis	0.006-0.01% percentage cover at 30m	

Cnidaria	*Astroides calycularis* (Pallas)	N/A	Protected under B, Annex IV of C and D, Schedule II of E
Annelida	*Hermodice carunculata* (Pallas)	N/A	
	Sabellidae spp.indet	N/A	
Arthropoda	*Chthamalus stellatus* (Poli)	Only occasional in lower mediolittoral	
	Balanus sp.	N/A	
	Calcinus ornatus (Roux)	N/A	
	Pagurus anachoretus Risso	N/A	
	Pisa tetraodon (Pennant)	N/A	
	Maja verrucosa H.Milne Edwards	N/A	
	Pachygrapsus marmoratus	Only occasional in lower mediolittoral	
Mollusca	*Lepidochitona corrugata* (Reeve)	Only occasional in lower mediolittoral	
	Patella caerulea L.	Amongst most abundant species in mediolittoral – attained larger sizes compared to individuals of the same species collected from other parts of the islands	
	Patella rustica L.	Amongst most abundant species in mediolittoral - – attained larger sizes compared to individuals of the same species collected from other parts of the islands	
	Patella ulyssiponensis Gmelin	Amongst most abundant species in	

		mediolittoral - – attained larger sizes compared to individuals of the same species collected from other parts of the islands	
	Gibbula spp.	Juveniles dominated macrofaunal assemblages of upper infralittoral	
	Monodonta turbinata (Von Born)	Amongst most abundant species in mediolittoral	
	Melarhaphe (= *Littorina) neritoides*	Found in the supralittoral-upper mediolittoral in lower abundances than in the rest of the island	
	Dendropoma petraeum	Formed less pronounced aggregations than in the rest of the island	Protected under schedule II of E
	Serpulorbis arenaria (L.)	N/A	
	Columbella rustica (L.)	N/A	
	Hexaplex trunculus (L.)	N/A	
	Stramonita (= *Thais) haemastoma*	N/A	
	Pinna rudis Chemnitz	N/A	Protected under B, Annex II of D; LISTED UNDER Appendix III of C (Species Code: 2580)
Echinodermata	*Echinaster sepositus* (Rotzius)	N/A	
	Ophidiaster ophidianus (Lamarck)	N/A	Protected under B and D, Schedule II of E
	Ophioderma longicaudum (Retzius)	N/A	
	Paracentrotus lividus (Lamarck)	N/A	Exploitation is regulated under B (Annex III)
		N/A	

Pisces	*Epinephelus marginatus* (Lowe) (=*guaza)*	N/A	
	Serranus scriba (L.)	N/A	
	Mullus surmuletus L.	N/A	
	Mullus sp.	N/A	
	Diplodus spp.	N/A	
	Dentex dentex (L.)	N/A	
	Labrus sp..	N/A	
	Coris julis (L.)	N/A	
	Crenilabrus (=*Symphodus)* spp.	N/A	
	Thalassoma pavo (L.)	N/A	
	Sparisoma cretense (L.)	N/A	
	Gobius sp.	N/A	
	Blennius sp.	Only occasional in lower mediolittoral	
	Hexanchus griseus		
	Carcharodon carcharias		Protected under schedule II of E
	Carcharhinus obscurus		

Note: Borg et al. (1997) also note that fish species such as grouper *Epinephelus marginatus*, brown meager *Sciaena umbra*, bearded umbrina *Umbrina cirrosa*, cardinal fish *Apogon imberbis* and bream *Diplodus* sp., which would normally abound in boulder fields off the mainland, were either rare or absent around Filfla.

This report has been written by Dr. Alan Deidun