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Yelkowan Shearwater

PROJECT



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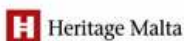
Marine Special Protection Areas

A report outlining national mechanisms being used to develop the Marine IBA / SPA programmes across Europe with recommendations for Malta

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Executive Summary

The European Commission requires that Member States designate Marine Special Protection Areas (SPAs) by 2008 or, where this is not possible, indicate what measures they will take to move towards future designation as rapidly as possible. This document outlines a “roadmap” for the Maltese government to undertake this work. Marine SPA designation is usually preceded by Marine Important Bird Area (IBA) identification. Currently, no Marine SPAs have been designated in Malta.

Designation is obligatory for qualifying sites within Maltese waters up to 25 nautical miles (NM). There are several key species in Malta for which Marine SPAs can be designated. Malta has internationally important breeding colonies of Yelkouan Shearwater (*Puffinus yelkouan*), Cory’s Shearwater (*Calonectris diomedea*) and European Storm-petrel (*Hydrobates pelagicus*), as well as internationally important numbers of migrating sea ducks (particularly through the Gozo channel). There is therefore a pressing need to identify Marine Important Bird Areas (IBAs) as a first step and to designate these as Marine SPAs.

Identification of Marine IBAs is challenging because of the paucity of existing data and the logistical difficulties of research at sea. Overcoming these challenges is possible (as has been demonstrated already in other EU countries, in particular Germany, Spain and Portugal) but requires the provision of sufficient funds to undertake surveys using costly but effective census techniques and the use of statistical models. **Therefore, a major, carefully planned and suitably financed project is necessary to ensure that Malta can meet its EU obligations in designating Marine SPAs.**

Some provisional data are available for the designation of Marine SPAs. For example, BirdLife Malta has been collecting bird data since the 1960s and some of this information can be used to identify Marine IBAs. The ongoing EU LIFE Yelkouan Shearwater Project is also collecting detailed data using a range of methods, which will assist in the identification of Marine IBAs for this species (although it should be stressed that this project alone will not be sufficient to complete this work). **There are however substantial data gaps which will require filling.** For example, almost nothing is known about marine habitat use by both Cory’s Shearwaters and European Storm-petrels away from their immediate breeding colonies. Even for Yelkouan Shearwater, little is known of the marine behaviour of birds from colonies beyond the Rđum tal-Madonna colony (which is the focus of the LIFE project). The use of the marine environment by migratory sea ducks also requires considerable study.

BirdLife Malta and the LIFE project partners (supported by the EU and the Government) are the only bodies which currently have the skills and experience to undertake Marine IBA identification and they are already carrying out considerable research in this area.

Key recommendations to the Government to meet its EU obligations include; (i) designate the Gozo Channel as a Marine SPA by end 2008 (data exist but require analysis by BirdLife Malta, which we hope to complete shortly); (ii) designate seaward extensions to coastal SPAs holding breeding colonies (additional data to that presented by Borg and Sultana (2004) exists, but requires analysis; in some cases, more research will also be required, but at key sites such

as Ta Cenc, Rđum tal-Madonna and Dwejra, the information is likely to be sufficient to warrant the designation of extensions by the end of 2008); (iii) based on this document, **plan a project to collect the missing data and complete a full Marine IBA inventory for the Maltese Islands with much of this work completed by 2010 and clear milestones laid out for the remainder**; and (iv) commence the research and identification process for Marine IBAs according to the findings of the plan suggested in point ii.

BirdLife Malta therefore expects that that the SPA designation process for sites where research has already been completed for Marine IBAs should commence by the end of 2008, in line with EU obligations. This is principally the Gozo Channel, but it should also be possible to designate some key nearshore shearwater rafting zones. In addition, BirdLife Malta expects that, by the end of 2008, the Maltese Government will develop a plan for Marine SPA designation research and begin to secure funding for this. BirdLife Malta and the LIFE project can assist in this process. This process should lead to a large-scale, fully-funded project to fill gaps in knowledge, develop an inventory of Marine IBAs in Malta and enable designation.

1.0 Introduction

Seabirds face a wide range of threats during their lifecycles and have undergone one of the most rapid declines of any bird group in the past 20 years (Lascelles 2007). This has been recognised by the European Union and consequently, all Member States have a duty to designate Marine Special Protection Areas (SPAs) under the Birds Directive by 2008 (European Commission 2004).

Malta is a particular hotspot for seabirds. The island of Filfla is home to the largest colony of breeding European Storm-petrels¹ in the Mediterranean. The Maltese Islands also host approximately 10% of the world's population of breeding Yelkouan Shearwaters and approximately 5% of the Mediterranean population of Cory's Shearwaters. This gives Malta a high global responsibility for the conservation of seabirds. Furthermore, the Gozo Channel is very important for Ferruginous Ducks (*Aythya nyroca*), with over 1% of the global population passing through the channel annually, as well as a range of other species of conservation concern (Coleiro, unpublished data). *Aythya nyroca* is classified as globally Near Threatened by BirdLife International, the official authority on birds for the IUCN Red List.

In order to assist the Government in the task of identifying and designating Marine SPAs, one of the primary outputs of the EU LIFE Yelkouan Shearwater Project is to produce a report outlining the mechanisms being used to develop Marine SPA programmes across Europe. The report will also propose a roadmap for the designation of Marine SPA sites in the Maltese Islands, in order to protect these critically important seabird populations. The following document presents this research. The scope of the report includes Marine SPAs only and does not address Marine Special Areas of Conservation (SACs).

¹ The European Storm-petrel (*Hydrobates pelagicus*) has recently been proposed as being two different species, namely *Hydrobates melitensis* and *Hydrobates pelagicus*. The most important colony of the former is located on Filfla (Editorial Notes (2008) *Taxa names in Dutch Birding*, Dutch Birding 30 (1)). However, as BirdLife International has not yet assessed the proposal to split the species, this report will refer to the former species name, *Hydrobates pelagicus*. Nonetheless, the likely importance of Filfla to the world population of *Hydrobates melitensis* cannot be overstated if the split is accepted.

2.0 What are Marine Important Bird Areas (IBAs) / Special Protection Areas (SPAs)?

2.1 Marine IBAs

For both marine and terrestrial IBAs, the function of the Important Bird Areas (IBAs) programme of BirdLife International is *'to identify and protect a network of sites, at a biogeographic scale, critical for the long-term viability of naturally occurring bird populations, across the range of those bird species for which a sites-based approach is appropriate'*.

IBAs are chosen using quantitative, standardised, globally agreed criteria (in the case of Marine IBAs this is still in the process of being agreed – see Annex One for a full description of current criteria). The selection of IBAs has been a particularly effective way of identifying terrestrial conservation priorities across Europe. Marine IBAs are intended to extend this protection to the marine environment. Marine IBAs will do one (or more) of three things:

- Hold significant numbers of one or more globally threatened species
- Be one of a set of sites that together hold a suite of restricted-range species or biome-restricted species
- Have exceptionally large numbers of migratory or congregatory species

(Lascelles & Fishpool 2007)

Malta already has 11 terrestrial IBAs of European importance (five of which are of international importance, namely Filfla, Ta'Cenc, Rdum tal-Madonna, Buskett and Comino), nine of which are identified for breeding seabirds. Marine IBAs are the next step and will provide protection for shearwaters, petrels and migratory seabirds in Maltese waters.

2.2 Marine SPAs

SPAs are areas of international importance for the conservation of wild birds, classified under the EU Directive on the Conservation of Wild Birds (the 'Birds Directive'). They are usually, but not always, based on IBAs. To date, only terrestrial SPAs have been designated in Malta. Marine SPAs will provide protection to marine birds in accordance with the provisions of the Birds Directive² in the inshore and offshore marine environment³

² Bird species listed in Annex I (article 4.1) and other migratory birds (article 4.2) will be covered. Marine SPAs cover both inshore and offshore marine environments throughout the marine area of application of the (79/409/EEC) Birds and (92/43/EEC) Habitats Directives. Once a site is designated as an SPA the legal protective requirements defined in Article 6 (2) (3) and (4) of the Habitats Directive apply to it. Member States must send to the Commission all relevant information so that it may take appropriate initiatives to ensure that the SPA network forms a coherent whole. (European Commission 2007)

³ - "inshore marine environment" is that which occurs in the internal waters and the territorial sea, as defined by UNCLOS3, of a coastal Member State;

- "offshore marine environment" is that which occurs in marine zones extending beyond territorial sea limits where Member States exercise some type of sovereignty rights (European Commission 2007), also known as "high seas" (BirdLife International 2007a)

2.3 Types of Marine IBA / SPA

The classification for Marine SPAs by BirdLife International currently focuses on four types of Marine IBAs:

- Seaward extensions of breeding colonies
- Non-breeding coastal concentrations
- Migratory bottlenecks
- Areas for pelagic species

(BirdLife International 2007c)

Annex One presents a full description of the current proposed Marine IBA criteria. These should form the basis of Marine SPA designation in Malta.

3.0 Why Marine IBAs/SPAs?

Seabirds are under pressure worldwide from human activity and consequently many species are now threatened with extinction. They face a multitude of threats both at sea and during their land-based breeding period (BirdLife International 2007a). As a group, seabirds have deteriorated in IUCN Red List status faster than other group of bird species (Figure 1).

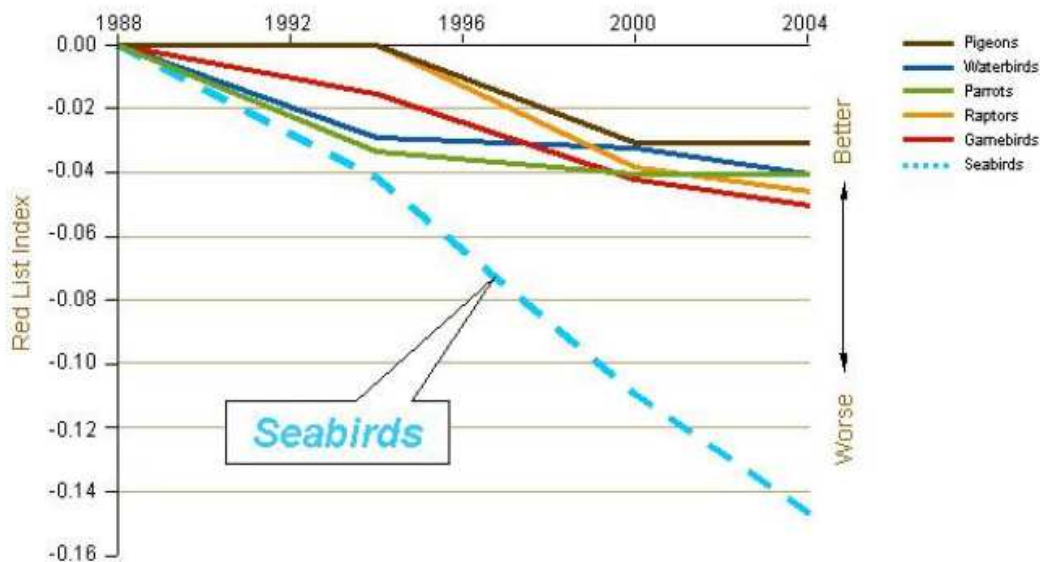


Figure 1: IUCN Red list indices for selected species groups, showing an increase in threatened status of seabird species (BirdLife International 2004a)

Until recently, seabird protection across Europe, as in Malta, has tended to focus principally on land-based threats such as habitat loss, introduced predators and disturbance, because these threats are easier to identify and address than issues in the wider marine environment.

However, while legal protection has been extended to some breeding seabird colonies on land through the terrestrial SPA network, birds using the marine environment have remained unprotected.

Since most seabirds spend the vast majority of their time away from breeding sites at sea, and with pressures increasing in the marine environment, there is an urgent need to move towards protecting areas of importance for birds at sea (SPEA 2007, Lascelles 2007).

One of the primary threats at sea is bycatch by long-line fisheries. There is insufficient data on levels of seabird bycatch in the Mediterranean, but preliminary results suggest that this could be a serious threat particularly for Cory's Shearwaters (Dimech et al 2008, Cooper et al 2003). However, this can be addressed relatively easily using existing technology if the political will to do so exists (Ardron & Burfield 2006). Marine IBAs/SPAs can contribute to solving this problem through the requirement of appropriate fisheries management within SPA boundaries.

The Regional Fisheries Management Organisations (RFMOs) have a role to play in the process of designating Marine SPAs. They are responsible for the management of fisheries on the high seas. BirdLife International is now working with all of the major RFMOs to help reduce bycatch of albatrosses and petrels. The identification of marine IBAs (inevitably, areas with highest risks of bycatch) and ultimately designation of marine SPAs can make a contribution to this aim, and so assist RFMOs in implementing management plans to reduce negative impacts on seabird populations (BirdLife International 2007a).

In addition, new threats are emerging from offshore wind farm developments, increased shipping traffic and the possible exploitation of at-sea mineral resources (Lascelles 2007). Seabirds utilising the marine environment adjacent to colonies face direct threats such as oil pollution and fishing gear entanglement. There are also indirect threats such as disturbance due to recreational activities (Harding & Riley 2000, Tasker & Leaper 1993, Borg & Cachia-Zammit 1998). In Malta in particular, hunting at sea is a serious threat (Sultana 1986, Armed Forces of Malta 2008). Unless action is taken to limit these threats, many seabird populations are likely to continue to seriously decline (Lascelles 2007). Again, Marine IBAs/SPAs will identify the key areas that require additional protection and will suggest which areas are inappropriate for heavy recreational use or offshore windfarms for example.

The identification of Marine IBAs will make a vital contribution to global initiatives to gain greater protection and sustainable management of the oceans, including towards the designation of Marine Protected Areas (MPAs) of which Marine SPAs will form a large part. The intention is that Marine IBAs will be the precursors for Marine sites of the Natura 2000 network (Lascelles 2007).

There is a clear obligation that EU Member States classify appropriate SPAs in the marine environment (see sections 4 & 5). In Malta, the identification of Marine SPAs is of particularly pressing importance because the limited land resources and high population density of the Maltese Islands have made the coastal zone and adjacent contiguous marine area a focal point for resource use conflicts (MEPA 2005). To ensure that these conflicts are resolved in a sustainable way, Marine SPAs and SACs will be an invaluable tool.

4.0 When do Marine SPAs need to be designated?

The European Commission (EC) communication “*Halting the Loss of Biodiversity By 2010 — And Beyond*” (European Commission 2006a) provided an EU Action Plan with clear prioritised objectives and actions to achieve the 2010 biodiversity target and outlined the respective responsibilities of EU institutions and Member States.

The European Commission expects Member States to propose the necessary sites to complete the marine component of Natura 2000 by 2008 (European Commission 2007b), or, where that is not yet possible, to indicate the measures that they intend to take to ensure that Marine Natura 2000 sites can be designated as soon as possible thereafter (BirdLife International 2007b).

The deadlines for the designation of Marine SPAs are as follows (European Commission 2006b):

- Mid 2007: completion of process of proposal/designation of sites which have already been scientifically identified as potential Natura 2000 sites
- Mid 2008: completion of further scientific investigation with a view to determining if other areas should be included in Natura 2000 and of the process of their proposal/designation (Murphy 2007)
- 2008: clear identification of additional scientific work that would be required for full completion of the Natura 2000 network if this is not possible by 2008, and a clear time frame for achieving this (European Commission, 2006b)

5.0 Marine SPAs – what are the Member States obligated to designate?

All EU states have an obligation to apply EU nature legislation in waters under their jurisdiction and, outwards, in waters where they exercise sovereign rights by designating Marine Special Protection Areas under the Birds Directive and the Habitats Directives. In the case of most Member States, this means the Exclusive Economic Zone (EEZ) (European Commission, 2007b). In the case of Malta, this includes all waters up to the 25NM zones (Silva et al, 2007, Dimech, pers comm.)

Beyond the 25NM zone, the EC states that, “the extension of the Marine IBA network further away from the seabird colonies and coastal areas will contribute to the establishment of a coherent network of international MPAs on those waters not included in any particular member state’s EEZ, but which could be managed through international maritime conventions such as OSPAR, HELCOM and the Barcelona Convention” (BirdLife International 2007c). In the case of Malta, it is likely that many of the important areas at sea for species such as Yelkouan Shearwater will fall beyond the 25NM zone, so an international effort will be required in order to protect these areas effectively. The EC has made clear that while the details of this are being worked out, Member States should use existing powers to stop destructive fishing practices, prevent pollution and establish protected areas (Lundin 2006)

In addition, Articles 4.1 and 4.2 of the Birds Directive require Member States to classify “the most suitable territories in number and size as special protection areas” for those bird species included in Annex I of the Directive and also for “regularly occurring migratory species of bird, taking account of their protection requirements at sea as well as on land”. Breeding colonies of seabirds and coastal, wintering or resting areas for waterbirds are among the ‘most suitable territories’, and are relatively easy to identify. However, a variety of Annex I and migratory birds use benthic and pelagic habitats near and distant from the coast, for a variety of purposes, including feeding, resting, and moulting. Such usage occurs throughout the year, and areas of particular importance need to be considered for inclusion in the Natura 2000 network as SPAs (European Commission 2007b).

The EC has further indicated that areas of importance to birds for survival or reproduction should be protected even if their use is transitory and sporadic, stating “If Annex I or migratory species occur in numbers that satisfy site selection criteria, then this should be sufficient to determine qualification of the site for SPA status, irrespective of whether the species are accorded special protection under any other international instrument” (European Commission 2007b).

Finally, Member States are obligated to ensure that the site designation process is exclusively based on scientific criteria. Future management challenges should not be a determining element in this process (European Commission 2007b).

Note: This document does not seek to deal with management of Marine SPAs once they are designated. However, it is important to note that some SPA management prescriptions might only need to apply to certain times of year, for example, the breeding season or the migratory season, allowing for more varied use of the area at other times of year

6.0 The Challenges of Identification

There are some serious logistical challenges in the identification of Marine SPAs in Malta and the rest of Europe, which will take careful project planning to overcome. Understanding these challenges will help to ensure that the right fieldwork is undertaken to collect information which can identify Marine IBAs/SPAs.

6.1 The habitat at sea is complex

Despite the apparent uniformity of the sea’s surface, different factors make the sea a varied, dynamic and complex environment. These include the influence of topography (e.g. seabed relief, the extent of the continental shelf, coastal profile) and oceanography (e.g. the physio-chemical features of the sea-water, presence of currents etc) (SPEA 2007). Marine habitats also have a greater three dimensional quality than terrestrial habitats.

To add to this complexity, oceanographic variables that could help define the boundaries of a marine IBA, or to predict their inter-annual variability, have yet to be compiled for many areas. These are neither easy nor cheap to download from satellites (BirdLife International 2007c). Future work will need to ensure that budget is available for regular updates of

oceanographic variables.⁴ As the costs of carrying out oceanographic and marine research are quite substantial, bridging this knowledge gap requires strong political commitment and significant resources (IUCN 2007).

6.2 Lack of boundaries and difficulties of defining size.

Habitat boundaries at sea may not always be obvious, may be very dynamic both spatially and temporally, and may extend across small to very large scales. The lack of clear boundaries makes it difficult to establish limits to the potential marine IBAs / SPAs (European Commission 2007b).

Since seabirds also tend to have a higher mobility than terrestrial birds, the size of Marine IBAs / SPAs is also an issue. Larger marine IBAs/ SPAs may favour the effective protection of seabirds. However, management of larger areas could be less effective or management measures less severe. On the other hand, the larger the area, the easier it will be to meet numerical criteria, and to include the favourable (and dynamic) features that attract the seabirds (European Commission 2007b).

This means that it can be difficult to define particular sites, to estimate bird numbers within them, and to assess their relative or absolute importance to the birds (European Commission 2007b). Birdlife International is trialling different methods to overcome these issues and much progress has been made through SPEA and SEO LIFE Projects on ways to analyse bird data which can surmount these difficulties (SPEA 2008).

6.3 Avian spatial use of the high seas.

The extent of the spatial use of the high seas varies among species but many are highly mobile. Seaducks, gulls and terns make shorter trips to and from the coast, while other birds such as Procellariiformes can travel hundreds of kilometres and can be widely distributed (BirdLife International 2007c). Indeed, initial results from the EU LIFE Yelkouan Shearwater Project indicate that the Yelkouan Shearwater regularly travels many hundreds of kilometres to offshore feeding grounds during the breeding season. It may be that Cory's Shearwaters and European Storm-petrels also follow this pattern, although considerable research is required to confirm this.

This complexity is also reflected in the patterns of distribution and behaviour of most seabirds which again vary between different species. Some, like shearwaters and petrels spend most of their life at sea and only come ashore to breed. Others, such as cormorants, gulls and terns, have more coastal habits and do not normally venture beyond the continental shelf (SPEA 2007). This will depend on the biology of the birds themselves as well as factors in the marine environment. For example, birds may form large, dense flocks or be more loosely aggregated in particular locations depending upon the conditions (European Commission 2007b).

⁴ In Malta, this data can be supplied by the IOI – International Ocean Institute, but there are cost implications for this.

Consequently, the scales at which seabird and other waterbird dispersion occur in the marine environment will vary from very small, tens of metres for example in some non-breeding concentrations of seaduck, to tens or even hundreds of kilometres, such as the dispersion of some procellariids. This means that methods to identify the important areas at sea have to take into account the vast distances that might be covered by the birds and the different behaviour between species (European Commission 2007b).

6.4 Paucity of existing marine data

Lack of data is a serious issue given the difficulties in obtaining scientific knowledge on abundance and distribution of species and habitat types at sea. Studies of seabirds at sea started late compared to most habitats and areas on land (BirdLife International 2007c). For terrestrial SPAs, long term data in some format was frequently available already, but data on the distribution of birds at sea, especially away from coastal areas, is generally sparse or completely non-existent. This is due to the difficulty of studying many of these species as they leave the shore.

BirdLife Partners' work to date has initially focused on the seaward extensions from breeding colonies. However, additional projects in some Partner countries have recently concentrated on determining what information is required to adequately identify Marine IBAs and subsequently SPAs beyond the coastal zone (European Commission 2007b). The results of these projects are already helping to guide current and future research. The EU LIFE Yelkouan Shearwater Project is undertaking research to address these issues and results from the project will similarly guide future research in Malta and across Europe.

6.5 Fieldwork at sea is challenging

There are several difficulties with obtaining data at sea (BirdLife International 2007c).

- **Cost;** surveys at sea of seabirds, whatever the methodology, are generally more costly to undertake than terrestrial surveys and are therefore likely to be done less frequently unless proper provision is made during the budgeting stage for boat based work, telemetry etc.
- **Weather conditions;** bad weather can limit the number of surveys done throughout the year. This could bias the final results as there could be more research in particular periods, especially during summer/breeding period when weather conditions are generally good, compared to spring or winter when weather conditions can be challenging.
- **Infrequent surveys;** in addition, some areas may be surveyed only once (usually for the above reasons), so it is difficult to determine if the identified priority areas are ephemeral or constant.
- **Techniques;** some census techniques, such as aerial census, will not identify all seabird species; therefore they need to be combined with boat-based observations and coastal counts as well as telemetry work.
- **Technological difficulties;** individual tracking is still far from being fully available for all species. Current tracking devices are often too heavy to be carried by small

birds such as the storm-petrels or small shearwaters (BirdLife International 2007c) and the devices which can be used provide more limited information. The EU LIFE Yelkouan Shearwater Project is currently working with the latest technology in light weight tags. However, trials with radio tracking on storm-petrels have had mixed results (Stephenson, pers comm.) and it remains to be seen whether telemetry work with storm-petrels will be possible under current technological constraints.

7.0 Overcoming these challenges

Despite these challenges of data collection, results from other projects (SEO, SPEA etc) clearly show that seabirds distribute themselves in a non-random way when at sea. They show strong associations with variables such as habitat features, physical and/or biological processes and features such as chlorophyll concentration and sea surface temperature. The distribution of other birds, marine mammals and other taxa also influence bird distribution and the distribution of prey is clearly a major determinant of the distribution of feeding birds (European Commission 2007b).

Since concentrations of wide-ranging species may have this relatively low spatial stability but strong associations with the variables seen above (European Commission 2007b), it has been essential to develop statistical models able to predict their presence. Evidence suggests that by using such models, concentrations of birds can be predicted to some extent using environmental factors (McSorley et al 2003, Wanless et al 1997, Begg and Reid 1997). Work done by SPEA and SEO is spearheading this research (SPEA 2008). The data analysis used by these projects has succeeded in finding correlations between multiple factors at sea and the presence of birds. This may make it possible to designate other areas with the same characteristics (European Commission 2007b).

Overcoming the challenges of counts at sea therefore relies upon using the right combination of methods, having sufficient funding to undertake more costly but effective census techniques (e.g boat based observations or telemetry) and the use of statistical models. **All these factors necessitate the development of a skills base in Malta using the techniques developed in other EU Member States in order to make the designation process as efficient as possible. BirdLife Malta is already developing such a skills base in conjunction with BirdLife International Partners.**

8.0 Criteria developed by BirdLife International

BirdLife International has proposed the following criteria for the identification of Marine IBAs and SPAs⁵. It is expected that these criteria will be applied in Malta.

1. Seaward extensions to breeding colonies.

These include coastal foraging and maintenance areas for both short ranging species (such as terns, gulls and cormorants), and longer ranging species (such as shearwaters, petrels and albatrosses which may travel hundreds of kilometres from the colony on a single trip during chick provisioning). These sites are contiguous with existing IBAs/SPAs, and therefore involve extending current IBA/SPA boundaries into the marine environment. Ideally, the seaward boundary would be colony and/or species-specific, based on known or estimated foraging and maintenance ranges (Lascelles 2007). This may include important inshore feeding areas in the breeding season, and species-specific seasonal concentrations, such as "rafting" shearwaters in the breeding season (European Commission 2007b).

To help Member States with this category, a Seabird Foraging Database has been developed by BirdLife International. It gives standard radii for seabird foraging and rafting zones. The aim of the database is to provide an authoritative global dataset that can be used as a key tool to help delimit the extent of marine IBAs/SPAs adjacent to major breeding colonies. It will also highlight gaps in the knowledge of foraging behaviour and help to identify key areas for future research (Lascelles 2007). More detail on the database is given in Section 9.

In Malta, in order to obtain data on coastal foraging and maintenance areas, BirdLife Malta and the EU LIFE Yelkouan Shearwater Project has been undertaking detailed coastal and boat based observations using the European Seabirds at Sea Methodology. Work is still ongoing to establish the exact recommended distance from shore that these foraging zones will need to be, but the preliminary results have highlighted a number of important rafting areas for both Yelkouan and Cory's Shearwaters, offshore from established colonies (thus confirming the work of Borg and Sultana, 2004). These include the Rdum tal-Madonna offshore area (including the Sikka al-Bajda area), Dwejra Bay to San Dimitri Point (Gozo), Ta Cenc (Gozo) off shore area, il-Kullana to ta'Gfien Cliffs (Dingli cliffs) offshore area and West of Wied Ix-Xaqqa to Wied Maqbul (Hal Far) cliffs offshore area.

In addition, BirdLife Malta through its publication *Important Bird Areas of EU: Importance in the Maltese Islands* (Borg & Sultana 2004) made Malta one of the first European countries to suggest offshore extensions to breeding colonies, principally Cory's Shearwaters. These extension areas have not been implemented by the Government.

2. Coastal congregations of non-breeding seabirds.

These include sites, usually in coastal areas, which hold feeding and moulting concentrations of waterbirds, such as divers, grebes and benthos feeding ducks, foraging and/or moulting sea-ducks (BirdLife International 2008b). Moulting shearwaters would also fall into this category

⁵ These may be subject to change as more information is gathered from pilot projects such as the SPEA LIFE project (SPEA 2008).

in the Maltese marine area. Although less common in Southern European waters, such areas are being identified by other BirdLife members (SEO/SPEA) and may prove important as feeding/resting areas for wintering (non-breeding) seabird species.

3. Migration bottlenecks.

These include places through or around which large numbers of seabirds pass regularly, such as straits, headlands, channels etc. This category will be particularly important for Malta as it will protect the internationally important numbers of seaducks that pass through the Gozo Channel on migration. Other marine areas around Malta may also prove important for seabirds following additional research, as most research to date has concentrated on this area.

4. Areas for pelagic species.

These cover foraging areas for pelagic species, such as shearwaters and petrels, often on highly productive shelf-break areas, eddies and upwellings, which are likely to be non-contiguous with breeding colonies, as they may lie hundreds of kilometres away (Lascelles et al, 2007)

Identifying and then effectively protecting IBAs on the high seas presents many challenges, due to knowledge limitations and practical issues. However, it remains a priority strategy for pelagic seabird conservation. Through the EU LIFE Yelkouan Shearwater project, BirdLife Malta is undertaking the first telemetry work in the Maltese Islands, fitting the birds with two types of data loggers during incubation, as well as geolocator leg tags and satellite tags for the post breeding and migration period. This work has been exceptionally important in terms of advancing the science of telemetry on smaller seabirds for Malta and Europe. It has also provided the very first data on the areas used at sea by the Yelkouan Shearwaters breeding at Rđum tal-Madonna in Malta. Some of the results are still pending and further analysis is required; there is no doubt that considerably more work remains to be done in terms of broadening the technology to other species and breeding sites, and the use of the technology is challenging. However, this groundbreaking work is providing the first results for the designation of high sea sites in Malta.

9.0 Seabird Foraging Database

All seabirds have a maximum foraging radius from the breeding colony after which the provisioning rate to the chick will be below the level required to keep it alive, or over which the energetic flight costs to the parent become prohibitive (BirdLife International, 2004a). Designating offshore extensions to breeding colonies is reliant upon defining this foraging radius for each breeding species. The radius will vary depending on factors such as flight dynamics, prey load carried and energy demands of the chick of any given species (BirdLife International, 2008a). These foraging areas are incredibly important to the birds and disturbance to them has the potential to seriously damage the breeding colonies.

To try to assist Member States with the difficulties of defining these foraging areas, given the lack of available data for seabird distribution at sea, BirdLife International has developed the “Seabird Foraging Database” (BirdLife International, 2004a). This is based on rigorous scientific studies which has brought together all the available data on each species. As can be

seen by Table 1, it gives standard radii which have been developed for foraging and maintenance activities of seabird species. This should prove extremely useful for the development of seaward extensions. Not all species are covered as yet, but the database will be extended as more information becomes available. Clearly, it will not be practical to protect the foraging range of some species, such as those foraging up to and beyond 40km but the data is already proving useful for guidance on species with a shorter range.

Lately, the Seabird Foraging Database has been tested by BirdLife Partners. Their experiences are being used to create a user manual, which provides guidelines of how the information contained in the database can be used most effectively for IBA boundary delimitation. The manual is currently in draft format and will be available shortly.

The excerpt from the database below only shows the seabird species which occur in Maltese waters (note that not all species listed here will qualify for Marine SPA designation –this is discussed further in section 11.5). This table is a brief summary with the mean foraging distances – for full information on the data used to collate the database, see Annex 3.

5km	15km	40km	still unknown
Slender billed gull - <i>Larus genei</i>	Cory's Shearwater - <i>Calonectris diomedea</i>	Herring gull - <i>Larus argentatus</i>	European / Mediterranean Storm-petrel - <i>Hydrobates pelagicus / melitensis</i>
Little tern - <i>Sterna albifrons</i>	Great Cormorant - <i>Phalacrocorax carbo</i>	Lesser Black-backed Gull - <i>Larus fuscus</i>	Yelkouan Shearwater - <i>Puffinus yelkouan</i> *
Black headed gull - <i>Larus ridibundus</i>		Audouin's Gull - <i>Larus audouinii</i>	
Mediterranean gull - <i>Larus melanocephalus</i>		Northern gannet - <i>Morus bassanus</i>	
Sandwich tern - <i>Sterna sandvicensis</i>			

Table 1: Proposed distances for boundaries of marine extensions to terrestrial breeding colonies of Maltese seabirds (in order to include main foraging areas), based on species-specific mean foraging distances * (BirdLife International, unpublished dataset)

* A radius of 15km is set for Manx Shearwater, a very close relation of the Yelkouan Shearwater (indeed, the two species were thought to be one until recently). However, the EU LIFE Yelkouan Shearwater Project is in the process of ascertaining a more accurate estimate for Yelkouan Shearwater.

It is expected that the Foraging Database can be used in the following ways:

- To provide guidance distances for marine extensions to seabird breeding colony IBA/SPAs
- To narrow search areas for further study

- To determine which species are most appropriate to study/track at an IBA/ SPA e.g. if all the foraging ranges identified fall within the boundary of one species, then conducting a tracking study on this species as opposed to all species may be appropriate
- To reduce the need for costly/time consuming tracking studies around colonies
- To help to design transect based surveys, so that these are focused in the most likely areas
- To highlight gaps in the existing knowledge of seabird foraging ecology
- To guide IBA/SPA management plans, and suggested zoning of activities within marine protected areas
- For maritime planning and management, e.g. with regards to likely effect of windfarms or oil spills etc

(BirdLife International, 2008b)

10.0 Hierarchy of approaches for Marine IBA/SPA identification

As we have seen, one of the principle difficulties with Marine IBA/SPA designation is a lack of direct data. The seabird foraging database is intended to assist Member States with the process of designation. To put the use of the foraging database in context, BirdLife International recommends the following hierarchy of approaches:

1. Site-specific data (either gathered from literature, or through current field based projects, e.g LIFE projects. In cases where multi-species colonies exist, the species with the largest foraging radius should be used to set the outer radius).
2. Species-specific data.
3. If data are not available to apply 1 or 2, use nearest neighbour or surrogate species (Lascelles 2007)

11.0 Progress to date on Marine IBAs/SPAs across Europe

It has been acknowledged that the designation of marine Natura 2000 sites has been slow and has fallen behind the initial proposed timeframes across Europe. In addition, most progress on the implementation of Marine SPAs under the Birds Directives has been made inshore and very little offshore (IUCN 2007).

In the majority of EU states, as with terrestrial IBAs, the process of Marine SPA designation commences with the identification of Marine Important Bird Areas (IBAs) by BirdLife (BirdLife International, 2007c). As we have seen, work is ongoing to refine the criteria for Marine IBA designation and many challenges remain.

Nonetheless IBA work is therefore progressing and providing the ground work for SPA designation. Member States continue to designate Marine SPAs. Table one shows the progress across the board for Member States. For a summary of progress, see Annex 2.

SPECIAL PROTECTION AREAS

Update of 17 December 2007

MS	MS Area (km ²)	Total Number	Total Area (ha)	Total Area (km ²)	Terrestrial Area (ha)	Terrestrial Area (km ²)	% Terrestrial	Nr of sites in which a marine part is noted	Marine Area (ha)	Marine Area (km ²)	MS
AT	83.859	98	974.425	9.744	974.425	9.744	11,6			-	AT
BE	30.528	234	328.162	3.282	296.622	2.966	9,7	4	31.540	315	BE
BG	110.910	88	1.255.070	12.551	1.254.189	12.542	11,3	3	880	9	BG
CY ⁽¹⁾	5.736	7	78.810	788	76.733	767	13,4	1	2.077	21	CY
CZ	78.866	38	693.619	6.936	693.619	6.936	8,8			-	CZ
DE	357.031	568	4.810.176	48.102	3.188.530	31.885	8,9	14	1.621.646	16.216	DE
DK	43.093	113	1.470.894	14.709	253.590	2.536	5,9	59	1.217.304	12.173	DK
EE	45.226	67	1.259.183	12.592	593.773	5.938	13,1	26	665.410	6.654	EE
ES	504.782	563	9.712.254	97.123	9.648.805	96.488	19,1	23	63.449	634	ES
FI	338.145	467	3.083.633	30.836	2.526.973	25.270	7,5	66	556.659	5.567	FI
FR	549.192	371	4.619.371	46.194	4.293.336	42.933	7,8	62	326.035	3.260	FR
GR	131.940	151	1.370.323	13.703	1.313.609	13.136	10,0	16	56.714	567	GR
HU	93.030	55	1.351.912	13.519	1.351.912	13.519	14,5			-	HU
IE	70.280	131	281.480	2.815	200.442	2.004	2,9	66	81.039	810	IE
IT	301.333	589	4.379.777	43.798	4.107.983	41.080	13,6	41	271.794	2.718	IT
LT	65.301	77	543.506	5.435	526.410	5.264	8,1	1	17.097	171	LT
LU	2.597	12	13.903	139	13.903	139	5,4			-	LU
LV	64.589	98	676.570	6.766	624.613	6.246	9,7	4	51.957	520	LV
MT	316	12	1.434	14	1.434	14	4,5	0	0	0	MT
NL	41.526	77	1.012.532	10.125	523.078	5.231	12,6	6	489.454	4.895	NL
PL ⁽²⁾	312.685	124	5.040.664	50.407	5.040.664	50.407	16,1	0	0	0	PL
PT	91.990	50	995.644	9.956	933.433	9.334	10,1	10	62.211	622	PT
RO	238.345										RO
SE	414.864	530	2.887.234	28.872	2.583.885	25.839	6,2	107	303.349	3.033	SE
SI	20.273	27	465.592	4.656	465.306	4.653	23,0	1	286	3	SI
SK	48.845	38	1.223.615	12.236	1.223.615	12.236	25,1			-	SK
UK	244.820	265	1.598.785	15.988	1.508.670	15.087	6,2	4	90.115	901	UK
EU	4.290.102	4.850	50.128.568	501.286	44.219.551	442.196	10,3	514	5.909.017	59.090	EU

(1) The area of the MS and the % corresponds to the area of Cyprus where the Community acquis applies at present, according to protocol 10 of the Accession Treaty of Cyprus
 (2) Several marine sites, but no information on marine areas provided in the database

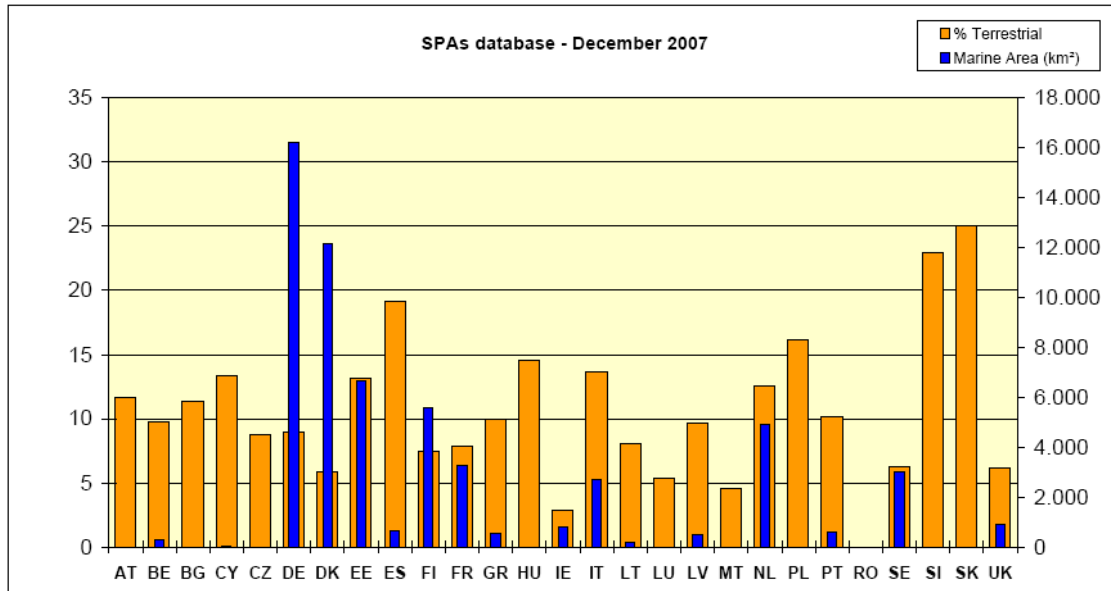


Figure 2: Progress in Member States' designation of MSPAs (European Commission 2007a)

As can be seen from Figure two, Member States vary greatly in their level of current seabird protection. Germany and Denmark have designated significant sites offshore in their EEZ, while other states have little or no seabird protection.

Information on protection measures is difficult to obtain. Ardron and Burfield carried out a review in mid 2006 which is shown in Annex 2 (Ardron and Burfield 2006). In addition, the below gives an overview of five case studies across Europe. This will need to be corrected as further information becomes available.

11.1 Portugal and Spain

BirdLife Partner Organisations in Spain (SEO/BirdLife) and Portugal (SPEA) have been using European Union LIFE funding to undertake a project to produce an inventory of marine IBAs for all seabird species listed in Annex I of the Birds Directive that breed in Spain or Portugal. The inventory will include seabird ranges at sea in the Mediterranean and the Atlantic, including those parts of the Atlantic used by species breeding in the European Macronesia (Azores, Madeira and Canary islands).

These two projects target all the seabirds included in Annex I of the Birds Directive and are currently implementing the following actions:

- 1) Aerial and marine census of seabirds;
- 2) Satellite and data-logger tracking of individual birds;
- 3) Radio-tracking of the smaller seabird species;
- 4) Oceanographic characterisation of the marine environment (salinity, chlorophyll, temperatures, currents etc);
- 5) Analysis of fishing activity and the presence of marine mammals.

All the data has been analysed and correlated in order to sketch out the potential distribution for both coastal and offshore distribution patterns of seabirds. Maps have been produced showing areas of interaction with human activities and correlations with ecological and oceanographic data. From this it has been possible to identify the most appropriate areas for designation as IBAs. Such pre-selected areas are being described in detail, threats to them identified and recommendations made for their conservation as Marine SPAs (European Commission 2007ba). A full inventory describing all Marine IBAs in Spain and Portugal will be published by SPEA and SEO in October 2008 (Ramirez, pers comm.). An example of the maps being produced for Portugal is shown below.

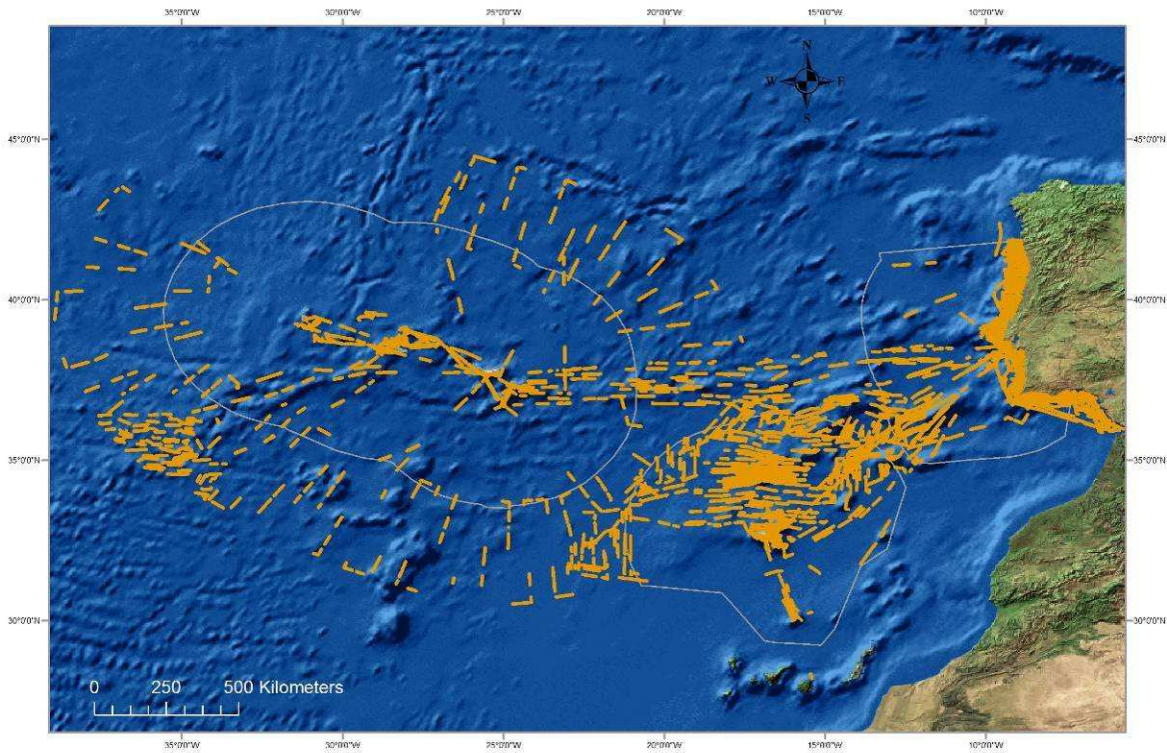


Figure 3: Seabird survey transects, 2004–2007

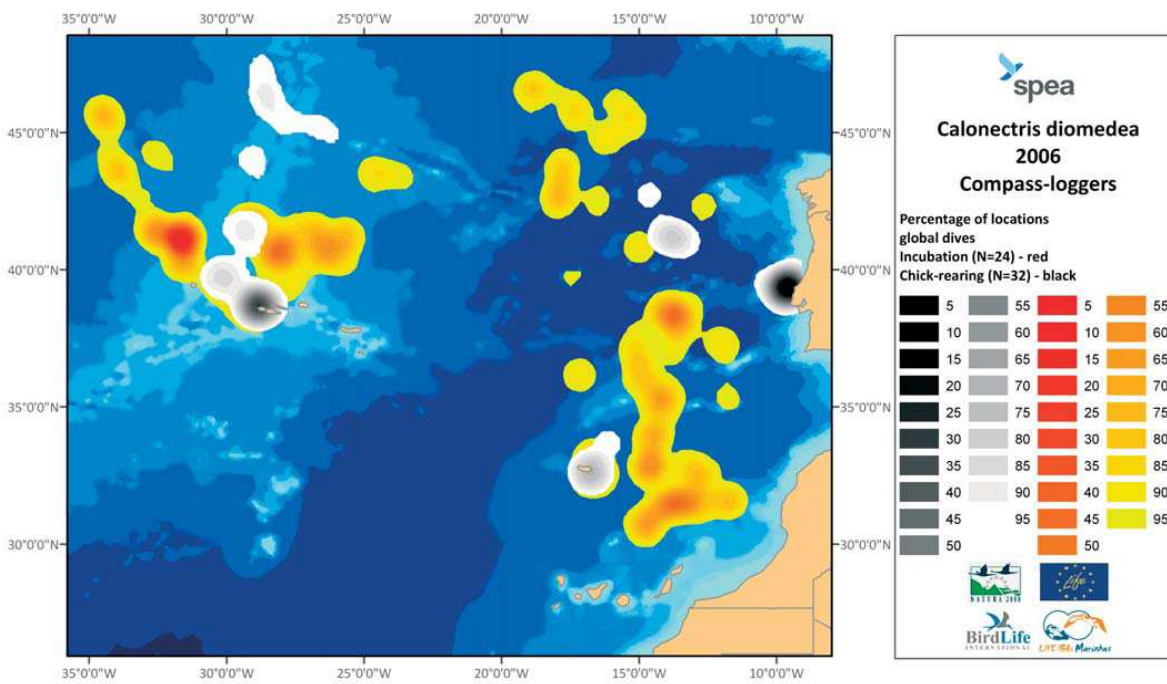


Figure 4: Distribution of tracked Cory's shearwaters (compass-loggers) during chick rearing and incubation, 2006

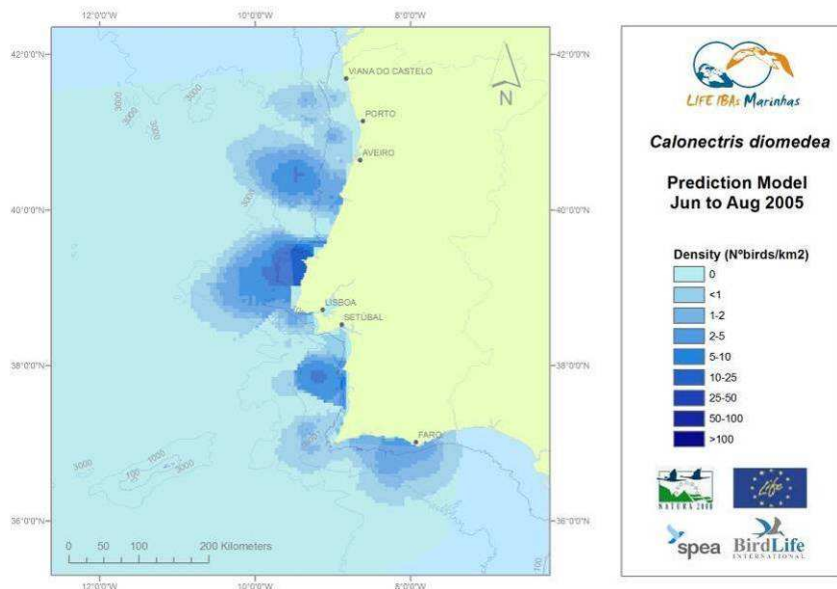


Figure 5: Model for *Calonectris diomedea* based on 2005 data

The national inventories produced by these projects will contain not only individual descriptions of each Marine IBA, but also annexes on methodology and steps followed. It is hoped that these can be used by other ongoing projects, such as the EU LIFE Yelkouan Shearwater Project, as guidelines for Marine IBA designation (Ramirez, pers comm.)

With regards to the national designation of the identified Marine IBAs into SPAs, governments in both Spain and Portugal have agreed to support and use the inventories as a major source for Marine SPA identification. In Portugal, all areas proposed are currently being reviewed by the National Authorities and will constitute an essential part of the government's SPA list. A similar approach has been followed in Spain (Ramirez, pers comm.)

(http://www.birdlife.org/action/science/sites/marine_ibas/index.html)

www.seo.org

www.spea.pt

11.2 Baltics

BirdLife Partners in Estonia (EOÜ) and Latvia (LOB), as well as BirdLife International are Partners to a large LIFE project funded by the European Union aiming at identifying and protecting marine areas (including IBAs) of the eastern Baltic Sea. Through this project it will be possible to refine the existing Marine IBA inventories for Estonia, Latvia and Lithuania, and to protect these sites effectively under Natura 2000. The project will also help to further develop and promote marine IBAs in other parts of Europe and the World.

www.balticseaportal.net
(http://www.birdlife.org/action/science/sites/marine_ibas/index.html)

11.3 Germany

In May 2004, Germany designated ten Natura 2000 areas in the offshore areas of its Exclusive Economic Zone (EEZ) in the North Sea and Baltic Sea, making it the first Member State to complete its marine designations (IUCN 2007). Two of these areas have been designated as SPAs. Furthermore, Germany is one of the few Member States to have designated offshore sites. The MPAs designated within the German EEZ account for about 31% of the total offshore German marine area (IUCN 2007).

The German experience has confirmed that difficulties in designating Marine SPAs do exist (as outlined in section 11.3), but that these can be overcome to select and nominate sites in offshore waters which fulfil the required quality objectives (Krause et al, 2007)



Figure 6: German Marine SPAs proposed, including in the EEZ

11.4 United Kingdom

The Joint Nature Conservation Council (JNCC) has undertaken a research project entitled '*The identification of offshore marine Special Areas of Conservation and Special Protections Areas*' in the offshore UK waters. This document contains a useful approach and rationale for the identification and future selection of Natura 2000 sites (European Commission 2007b), particularly coastal extensions.

In summary, the JNCC systematically surveyed seabirds in the water immediately adjacent (up to approx 5km from mean low water) to six seabird colonies hosting nationally and internationally important numbers of seabird species. These breeding season surveys were conducted from chartered vessels using a strip-transect method of counting. They then analysed the data for four seabird species engaged in active behaviour (ie preening, bathing, displaying) and modelled densities for them at different distances from the colonies to understand habitat use of the marine environment and to create distribution maps.

However, difficulties encountered included:

- the 5km research area may not have been sufficient, as some species do not use the water immediately adjacent to the colony for active behaviour.
- Others birds may form aggregations in the pre-breeding season or at night which are missed by the surveys.
- It is possible that use of the waters adjacent to the colonies is short lived with high daily turnover of individuals making the observed densities relatively low in the short snap shot of the study

Work to overcome these limitations is ongoing.

<http://www.jncc.gov.uk/page-2412>

In Scotland, the Scottish Government has asked Scottish Natural Heritage (SNH) to undertake a consultation on proposals to extend 31 existing seabird colonies SPAs into the marine environment. The proposal is to extend the boundary of these sites so that the birds' key ecological requirements in the marine environment are more fully represented in each site (Scottish Natural Heritage 2008).

11.5 Current situation in Malta

Malta currently has a total of ten terrestrial SPAs designated for breeding Cory's Shearwaters, Yelkouan Shearwaters and European Storm-petrels. All of these are also identified as Important Bird Areas (IBAs) (Figure 1). In some cases, the SPA protection has not adequately covered the IBA area (such as Ta Cenc and Hal Far) leading to infringement procedures from the European Commission.

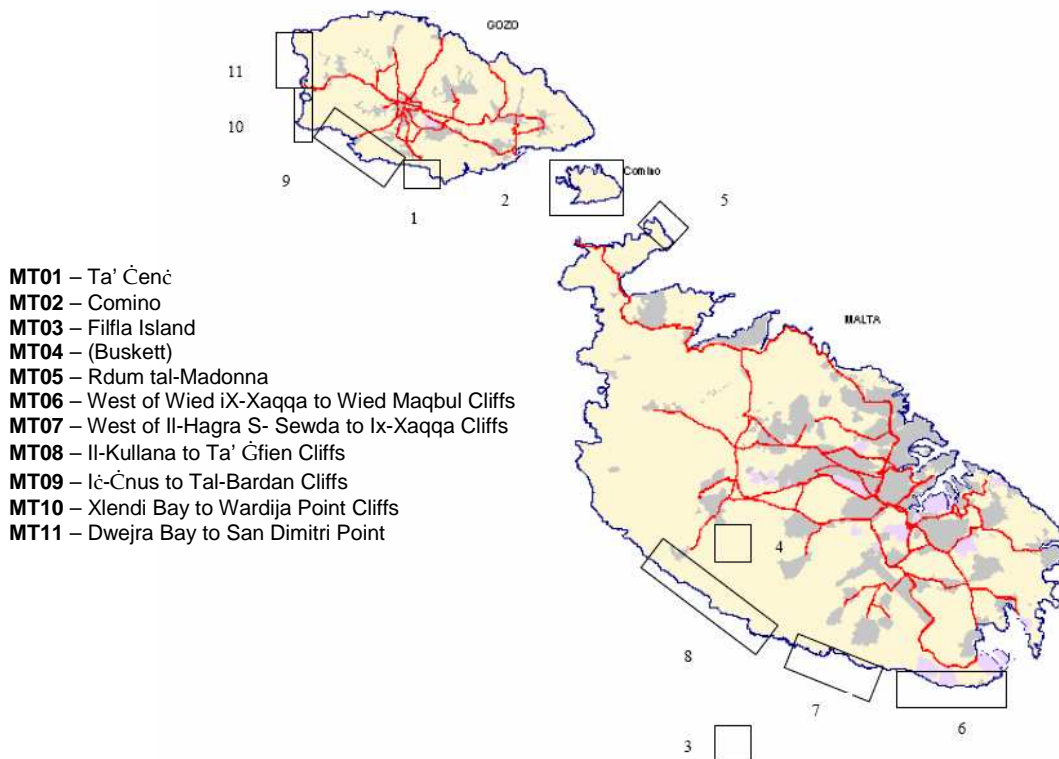


Figure 7. Map of the Maltese Islands highlighting Important Bird Areas (Borg & Sultana 2004)

As yet, no sites have been designated as Marine SPAs. As we have seen, Malta holds important numbers of shearwaters and storm-petrels. A number of other seabird and waterbird species also use Maltese waters in significant numbers. 16 of the seabird species using Maltese waters are Annex 1.

Table 2 lists the seabird species in Malta and suggests which will require protection through Marine IBAs/SPAs. It shows which species are highly likely, possibly or unlikely to allow a site to qualify for Marine IBA / SPA status. This is based on current bird data from records obtained over a number of years, particularly the data for the Gozo Channel and for the shearwater rafting zones. This table is meant as a rough guide only when considering whether to create a Marine IBA. It can also be used as a guide for which individual species and groupings should be targeted for more research.

Common Name	Latin Name	Status	On existing terrestrial SPA citation in Malta	Breeds in Malta?	Use the marine environment in Malta	Likely to qualify	Status in Malta
Little Grebe	<i>Tachybaptus ruficollis</i>		Yes	Yes	mainly freshwater	unlikely	Uncommon winter visitor & passage migrant - rare breeder
Great Crested Grebe	<i>Podiceps cristatus</i>		Yes		mainly freshwater	unlikely	Uncommon winter visitor & common passage migrant
Black-necked Grebe	<i>Podiceps nigricollis</i>		Yes		mainly freshwater	unlikely	Uncommon winter visitor & common passage migrant
Cory's Shearwater	<i>Calonectris diomedea</i>	Annex 1, Spec2, Europe (VU)	Yes	Yes	foraging / rafting	highly likely	Common passage migrant and common breeding species
Yelkouan Shearwater	<i>Puffinus yelkouan</i>	Annex 1, Spec3, Global NT	Yes	Yes	foraging / rafting	highly likely	Common breeding species
European Storm-petrel	<i>Hydrobates pelagicus (melitensis)</i>	Annex 1	Yes	Yes	foraging / rafting	highly likely	Common breeding species
Northern Gannet	<i>Morus bassanus</i>		No		mainly migration	unlikely	Uncommon winter visitor & passage migrant
Great Cormorant	<i>Phalacrocorax carbo</i>		Yes		mainly migration	unlikely	Uncommon winter visitor & common passage migrant
Glossy Ibis	<i>Plegadis falcinellus</i>	Annex 1, Spec3	Yes		mainly migration	possible	Uncommon passage migrant
Eurasian Spoonbill	<i>Platalea leucorodia</i>	Annex 1, Spec2	No		mainly migration	unlikely	Uncommon passage migrant
Greater Flamingo	<i>Phoenicopterus ruber</i>	Annex 1, Spec3	Yes		mainly migration	unlikely	Uncommon passage migrant
Greylag Goose	<i>Anser anser</i>		No		mainly migration	unlikely	Uncommon winter visitor & passage migrant
Shelduck	<i>Tadorna tadorna</i>		No		mainly migration	possible	Uncommon winter visitor & common passage migrant
Eurasian Wigeon	<i>Anas penelope</i>	Annex 2	No		mainly migration	possible	Uncommon winter visitor & common passage migrant
Gadwall	<i>Anas strepera</i>	Annex 2, Spec3	No		mainly migration	possible	Uncommon winter visitor & passage migrant
Teal	<i>Anas crecca</i>	Annex 2	yes		mainly migration	possible	Uncommon winter visitor & passage migrant
Mallard	<i>Anas platyrhynchos</i>	Annex 2	yes		mainly migration	possible	Uncommon winter visitor & passage migrant
Pintail	<i>Anas acuta</i>	Annex 2, Spec3	yes		mainly migration	possible	Uncommon winter visitor & common passage migrant
Gargany	<i>Anas querquedula</i>	Annex 2, Spec3	yes		mainly migration	highly likely	Common passage migrant
Northern Shoveler	<i>Anas clypeata</i>	Annex 2, Spec3	yes		mainly migration	possible	Uncommon winter visitor & common passage migrant
Pochard	<i>Aythya ferina</i>	Annex 2, Spec2	yes		mainly migration	possible	Uncommon winter visitor & passage migrant
Ferruginous Duck	<i>Aythya nyroca</i>	Annex 1, Spec1, Global NT, Europe VU	yes		mainly migration	highly likely	Uncommon passage migrant - but occasionally in large numbers
Red-Breasted Merganser	<i>Mergus serrator</i>	Annex 2	no		mainly migration	unlikely	Uncommon winter visitor & passage migrant
Pomarine Skua	<i>Stercorarius pomarinus</i>		no		mainly migration	unlikely	Uncommon passage migrant
Great Skua	<i>Stercorarius skua</i>		no		mainly migration	unlikely	Uncommon passage migrant
Mediterranean Gull	<i>Larus melanocephalus</i>	Annex 1, Spec3	yes		mainly migration	Possibly	Common winter visitor & passage migrant
Little Gull	<i>Larus minutus</i>	Annex 1	no		mainly migration	unlikely	Uncommon winter visitor & passage migrant
Black-headed Gull	<i>Larus ridibundus</i>	Annex 2	yes		mainly migration	unlikely	Common winter visitor & passage migrant
Slender-billed Gull	<i>Larus genei</i>	Annex 1, Spec3	no		mainly migration	unlikely	Uncommon passage migrant
Audoin's Gull	<i>Larus audouinii</i>	Annex 1, Spec1, Global NT	no		mainly migration	unlikely	Rare passage migrant
Lesser Black-backed Gull	<i>Larus fuscus</i>	Annex 2	no		mainly migration	unlikely	Uncommon winter visitor & common passage migrant
Herring Gull	<i>Larus argentatus</i>	Annex 2	no		mainly migration	unlikely	Uncommon passage migrant
Yellow-legged Gull	<i>Larus cachinnans</i>	Annex 2	Yes	Yes	mainly migration	unlikely	Resident breeder. Common winter visitor & passage migrant.
Gull-billed Tern	<i>Gelochelidon nilotica</i>	Annex 1, Spec3, Europe VU	no		mainly migration	Possibly	Common passage migrant
Caspian Tern	<i>Sterna caspia</i>	Annex 1, Spec3	no		mainly migration	Possibly	Common passage migrant
Sandwich Tern	<i>Sterna sandvicensis</i>	Annex 1, Spec2	no		mainly migration	Possibly	Uncommon winter visitor & common passage migrant
Little Tern	<i>Sterna albifrons</i>	Annex 1, Spec3	no		mainly migration	unlikely	Uncommon passage migrant
Whiskered Tern	<i>Chlidonias hybridus</i>	Annex 1, Spec3	no		mainly migration	unlikely	Uncommon passage migrant
Black Tern	<i>Chlidonias niger</i>	Annex 1, Spec3	no		mainly migration	possibly	Common passage migrant
White-winged Black Tern	<i>Chlidonias leucopterus</i>		no		mainly migration	unlikely	Uncommon passage migrant

Key

Spec1	European species of Global Conservation Concern
Spec2	Species whose global populations are concentrated in Europe and which have Unfavourable Conservation Status in Europe
Spec3	Species whose global populations are not concentrated in Europe, but which have Unfavourable Conservation Status in Europe

Table 2: List of seabird and waterfowl species occurring in Malta with their status for marine SPA consideration

12.0 Review of baseline data in Malta

Despite the difficulties of data collection, some data already exists to allow Malta to identify and then designate Marine IBAs/SPAs. The following section reviews the information available and indicates where additional work is required to fill the gaps.

12.1 Potential areas for designation in Malta for Marine IBA/SPAs (species / sites) in 2008.

i) Gozo Channel (all waters between Gozo and Malta)

The Gozo Channel is used by migrating waterfowl on their northward journey to European breeding grounds (Falzon 1994). Annex I species such as Ferruginous Duck *Aythya nyroca*, Garganey *Anas querquedula* and Northern Shoveler *Anas clypeata* pass in considerable numbers through this “bottleneck”. The Channel is highly likely to qualify on the basis of the number of Ferruginous Ducks alone (C2 – details below) and also possibly for concentrations of waterbirds, particularly other duck species on migration such as Garganey and Shoveler; data is currently being analysed by BirdLife Malta.

European Marine IBAs, criteria C2. Concentrations of a species threatened at the European Union level: The site is known to regularly hold at least 1% of a flyway population or of the EU population of a species threatened at the EU level (listed on Annex I and referred to in Article 4.1 of the EC Birds Directive).

From BirdLife Malta’s data, the average number of Ferruginous Duck from 2000 - 2005 (since data collection began to be collected systematically in the channel) is annually more than 1% of the European population, with a maximum of 2.2% of the European population. Data from 2006 and 2007 is still being collated. Ferruginous Duck is on Annex 1 of Birds Directive and is listed as globally Near Threatened by BirdLife International on the IUCN Red List.

(<http://www.birdlife.org/datazone/species/index.html?action=SpcHTMDetails.asp&sid=476&m=0>).

12.2 Areas where Marine Special Protection Area data exists but is not fully complete; additional resources are required.

12.2.1 Cory's Shearwaters

The foraging range of Cory's Shearwaters has already been identified in the Seabird Foraging Database as 15kms. In addition, BirdLife Malta highlighted the main rafting zones of the two shearwater species in Malta based on information compiled over 20 years of observations (Sultana & Borg 2000, Borg & Sultana 2004)

The species would also benefit from additional work to confirm rafting and foraging zones. Some of this work is ongoing by BirdLife Malta through the EU LIFE Yelkouan Shearwater Project and other voluntary work (including an MSc project with the University of Exeter). Preliminary results are expected in September 2008, and should confirm some key rafting areas including the Rđum tal-Madonna offshore area (including the Sikka al-Bajda area), Dwejra Bay to San Dimitri Point (Gozo), Ta Cenc (Gozo) off shore area, il-Kullana to ta'Gfien Cliffs (Dingli cliffs) offshore area and West of Wied Ix-Xaqqa to Wied Maqbul (Hal Far) cliffs offshore area. In addition, it appears that flight-paths to and from the breeding colonies, albeit conditioned by wind strength and direction, may be followed daily by the birds when returning from foraging towards their breeding sites for chick provisioning (Borg, pers comm., Wigmore, unpublished data).⁶

12.2.2 Yelkouan Shearwaters

As noted above, the work of Sultana and Borg has already identified rafting areas for Cory's and Yelkouan Shearwater in Malta, although the focus has been more on Cory's due to the higher incidence of sightings and the apparent proximity of their rafting areas to shore. Comino and Rđum tal-Madonna are thus thought to be the most important rafting zones for Yelkouan. This information now needs to be corroborated with a series of systematic visits from boat based observations and new observations from the main colonies. Data will also need to be analysed.

On behalf of the EU LIFE Yelkouan Shearwater Project, an MSc student from Exeter University is undertaking a study of rafting zones using boat based observations and observations from above the colonies. The results from this work will be available in September 2008.

The EU LIFE Yelkouan Shearwater Project is also fitting the Yelkouan Shearwaters at the Rđum tal-Madonna colony with a variety of telemetry (electronic tracking) devices to establish the most important areas at sea for the birds. The results of this work are expected in June 2010 but preliminary results of where birds are rafting will be

⁶ This data will be made available upon completion of Wigmore's MSc study, expected September 2008.

available earlier. The project expects to produce maps for the project similar to those produced for the SPEA project. An example map is attached below of the track of a single bird.

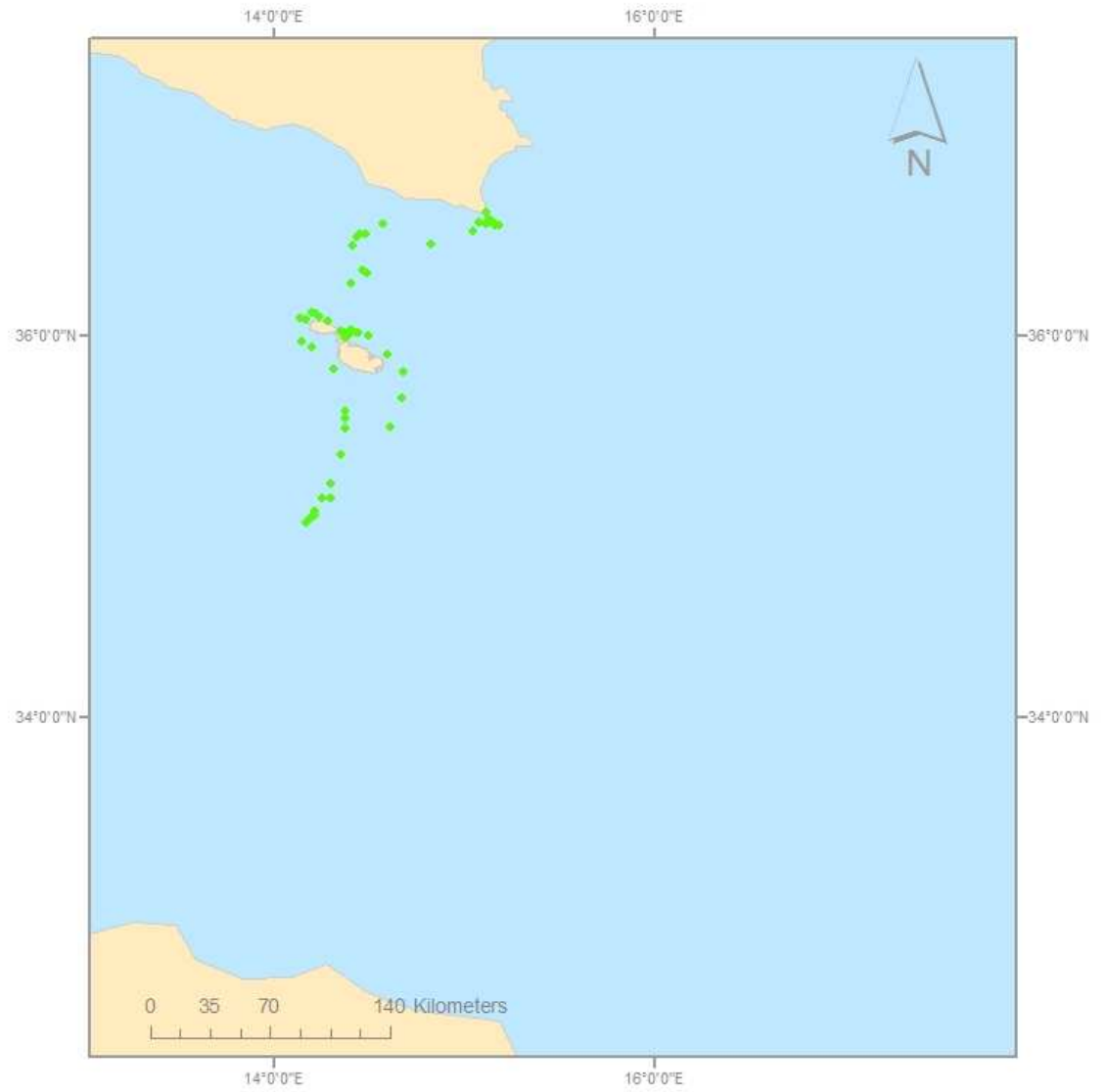


Figure 8: Track of a Yelkouan Shearwater tagged at Rdm tal-Madonna during the breeding season 2008.

Review of data collection planned by the LIFE project / BirdLife Malta

Species	Data currently available for Marine IBA designation	Data collection underway or planned	Data required that is not complete, underway or planned
Corys Shearwaters	<p>1) Seabird Foraging Database; initial guidelines</p> <p>2) Rafting Zone data (Sultana & Borg (2000) and Borg & Sultana (2004))</p>	<p>3) Rafting zone MSc project Sep 2008</p> <p>4) Boat based observations up to 6NM around Malta</p>	<p>5) Telemetry work to establish important foraging grounds at sea for all colonies</p> <p>6) Boat based observations beyond 6NM and beyond end of current LIFE Project. Data analysis for Corys Shearwater sightings.</p> <p>7) Predator control at colonies, of cats and dogs and appropriate management of land colonies. Terrestrial issue but essential to health of marine SPA breeding species.</p>
Yelkouan Shearwater		<p>1) Telemetry work to identify important bird areas (foraging, resting etc) for birds from the Rdum tal-Madonna colony</p> <p>2) Boat based observations up to 6NM around Malta and up to 25NM from Rdum tal-Madonna</p> <p>3) Rafting zone MSc project Sep 2008</p>	<p>4) Telemetry work to establish important foraging grounds at sea for all colonies except Rdum tal-Madonna. Additional work at Rdum tal-Madonna beyond the end of the LIFE project would also be beneficial as the project is not expected to provide a complete inventory of IBAs for Yelkouan Shearwater from Rdum tal-Madonna</p> <p>5) Boat based observations beyond 6NM and beyond end of current LIFE Project</p> <p>6) Additional coastal observations</p> <p>7) Predator control at colonies, esp of rats & appropriate management of land colonies</p>
European Storm-petrel			<p>1) Telemetry work to establish important foraging grounds at sea for all colonies</p> <p>2) Extensive Boat based observations</p> <p>3) Appropriate management of land colonies</p>
Migratory ducks and other migratory species	1) Data on migratory ducks use of the Gozo channel		2) Observations from land and sea at points other than the Gozo channel, particularly in the South.

Table 3: Review of data collection in Malta

12.3 Gap analysis for data on seabird use of the Marine environment in Malta

12.3.1 European Storm-petrels (*Hydrobates pelagicus*);

Status: Annex 1 species. Species of European Conservation Concern. The Maltese breeding population has been estimated at 5,025 – 8,025 breeding pairs (Borg & Sultana 2002). The main concentration is found on Filfla Island and a small colony of >25pairs inside a cave at Ta' Cenc, Gozo. According to the journal *Dutch Birding* (30) the European Storm-petrel has been split into two distinct and separate species; *Hydrobates pelagicus* (European Storm-petrel) and *Hydrobates melitensis* (Mediterranean Storm-petrel). This split, if confirmed by BirdLife International, will greatly increase the importance in terms of conservation of Malta's population of this bird. The Maltese Islands would hold approximately 53% of the world population of *H. melitensis*.

Terrestrial: The main colony for European Storm-petrel is the island of Filfla (SPA) and monitoring has been carried out there in the breeding season every year by BirdLife Malta since 1968 (Sultana & Gauci, 1970, Borg 1989, Borg & Sultana 2002, Borg et al 1992-94). Further, detailed monitoring work is required in order to fully understand the population trends in the colony and ensure that favourable condition status for the SPA is achieved and maintained. This is directly related to the designation of Marine SPAs because the designated interest features in these protected areas will be adversely affected by anything that affects the terrestrial breeding grounds.

The geological stability of the island needs to be constantly monitored as climatic agents (weathering, storms) are depleting the breeding areas of the Storm Petrels. Filfla will need careful monitoring to ensure that rats and other predators do not arrive on the island. Necessary activities will include:

- regular visits throughout the year to check the stability of the island and ensure that the available breeding habitat is not reducing, as well as checking for introduced predators
- Nesting attempts to be quantified to monitor nesting success
- Monitoring required for known nests to establish breeding success.
- Ringing work to continue to establish adult survivorship.
- Habitat restoration may be required, including artificial nest burrow installation to assist with monitoring work and increase breeding success.
- Wardening to ensure that boats do not attempt to moor on the island, thus permitting picnickers (and rats) to arrive onshore.

Coastal extension to breeding grounds:

Nothing is known about the use that the storm-petrels make of the waters surrounding the breeding colony. Research suggests that Storm-petrels do not raft in front of the colonies, but these species are secretive and could concentrate at night, where direct observations are difficult. A detailed study is required to fully understand their use of this habitat and what activities at sea in

the vicinity might disturb the colony, followed by long term monitoring. This is likely to take the form of boat based observations that should be carried out almost continuously over a significant number of weeks, ideally not involving fishing boats (to avoid bias). Night observations will also be required. Watches from shore (both from Filfla and the Malta mainland) will be required.

Offshore areas: Nothing is known about the use of the wider marine habitat by European Storm-petrels. Considerable further research is required which will involve a major project as well as ongoing monitoring. This work needs to begin as soon as possible in order to ensure that Marine SPAs can be designated as appropriate for these birds given their particular importance in terms of the world population. Some birds have been seen in flight during boat based observations for the Yelkouan Shearwater Project, but low numbers indicate that observations may need to go beyond the standard five nautical miles being employed for the project observations. A full methodology would need to be designed specifically for this species, but this will include extensive boat based observations to establish the birds' behaviour and geographical use of marine waters. Observations from Filfla and Ta' Cenc will also be required (and possibly Rđum tal-Madonna given that the Storm-petrels appear to be prospecting and possibly breeding there). Other European and international projects have encountered difficulties in using telemetry to track these birds so further research is required to establish whether this is an option. However, it is likely that boat based observations will need to be increased to compensate for the paucity of telemetry data.

12.3.2 Cory's Shearwaters (*Calonectris diomedea*)

Status: Annex 1. Population of 6090 – 7130 breeding pairs in Maltese islands, which is over 5% of the Mediterranean population. (World population is estimated at 270,000 - 290,000)

Terrestrial: The breeding range throughout the Maltese archipelago is well known and most of the main colonies have been designated as terrestrial SPAs, although Ta' Cenc and Hal Far still require additional areas designating, leading to infringement proceedings against the Maltese government. Cory's Shearwater is one of the most studied vertebrates in the Maltese islands with an ongoing study initiated in 1983 (Borg, pers comm.). Monitoring has been carried out during the breeding season every year by BirdLife Malta and this should continue to assess population trends. However, more detailed monitoring work is required in order to fully understand the population trends in the colonies, particularly at inaccessible sites. This is directly related to the designation of Marine SPAs because the designated interest feature of these protected areas will be adversely affected by anything that affects the terrestrial SPAs. In the case of Cory's Shearwaters, direct human disturbance, presence of predators like cats and dogs and urban encroachment on the colonies are the most serious threats. Uncontrolled fishing activities from cliff tops as well as illegal hunting

especially at sea are also threatening these birds, although the colonies are likely to also benefit from rat eradication.

Coastal extensions to breeding grounds:

Rafting birds have been monitored from land since 1983 and findings were included in two reports (Sultana & Borg 2000 and Borg & Sultana 2004). More detailed study is required to fully understand the use that the birds make of the marine waters around their colonies, followed by long term monitoring. This is likely to take the form of regular observations of birds and their behaviour near colonies from shore, boat based observations and telemetry work at selected colonies. The Foraging Database will also help to give guidelines in this area.

Offshore areas: The Yelkouan Shearwater Project will be providing some data on sightings of Cory's Shearwater at sea using boat based observations, but a species-specific survey on this species is required, as well as a full assessment of their behaviour in relation to the main marine variables. A full methodology would need to be designed specifically for this species but following the example of the Yelkouan Shearwater project, these birds will require extensive monitoring using telemetry (data loggers, satellite tags etc) at a variety of different colonies in order to fully understand their use of the marine habitat.

12.3.3 Yelkouan Shearwaters (*Puffinus yelkouan*)

It should be noted that the EU LIFE Yelkouan Shearwater Project is intended as a demonstration model and will not result in the identification of all Marine SPAs for the species. Nonetheless, the research being undertaken should result in the preliminary identification of some important feeding areas at sea as well as offshore extensions to terrestrial SPAs. The project will also trial methodologies which will prove useful for research on Cory's Shearwater and European Storm-petrel.

Status: Annex 1 species. Listed as Globally Near Threatened since 2008 (BirdLife International 2008, Bourgeois et al, 2008). Population of 1400 – 1560 pairs breeding in the Maltese Islands which is approximately 10% of the world's population.

Terrestrial: The main colonies for Yelkouan Shearwater are well known and designated as terrestrial SPAs, with the principle colony being Rđum tal-Madonna. Some monitoring has been carried out there in the breeding season every year by BirdLife Malta. Monitoring of colonies other than Rđum tal-Madonna has also been undertaken; one site in the south-west of Malta and two sites in Gozo have been regularly monitored for Yelkouan Shearwater since 1983. The EU LIFE Yelkouan Shearwater Project is studying the project site of Rđum tal-Madonna intensively, but resources also need to be directed to the other colonies in order to fully understand the population trends nationally (although fieldwork at other sites is likely to be challenging due to the inaccessible nature of the colonies; there are four other colonies which are relatively accessible after Rđum tal-

Madonna). This is directly related to the designation of Marine SPAs because the designated interest feature of these protected areas will be adversely affected by anything that affects the terrestrial SPAs. Rat eradication is urgently required at colonies beyond Rđum tal-Madonna in order to safeguard the national population. Consideration also needs to be given to how to ensure that rat eradication work continues after the end of the LIFE project at Rđum tal-Madonna.

Coastal extensions to breeding grounds:

A more detailed study is being carried out to understand the use that the birds make of the marine waters around their colonies, with the focus being at Rđum tal-Madonna. Preliminary results from telemetry show that birds appear to use the immediate waters just before dark and form mixed rafts with Cory's shearwaters at other times. A detailed analysis will be produced at the end of the study. However, long term monitoring is required at the end of the project and also at colonies other than Rđum tal-Madonna.

Offshore areas: The Yelkouan Shearwater Project will be providing data on sightings of Yelkouan Shearwater at sea using boat based observations. In addition, telemetry work is being carried out at Rđum tal-Madonna. This is likely to result in the identification of some areas at sea that are important for Yelkouan Shearwaters (predominantly during the breeding season). However this will be principally from the colony of Rđum tal-Madonna and consideration will need to be given to whether other colonies could also be studied in this way. More generally, telemetry is only a useful tool when carried out over a prolonged period of time. This is because it is essential to obtain data from a time-series of tracked birds to ensure that the behaviour of the birds is representative and consistent and not biased by particular factors. Longer term projects are also more likely to achieve sufficient tracks for statistical analysis.

12.3.4 Migrating ducks

Maltese waters are very important for migrating ducks, in particular the globally threatened Ferruginous Duck (*Aythya nyroca*) and Species of Conservation Concern such as Garganey (*Anas querquedula*) and Shoveler (*Anas clypeata*). It is known that these birds use the Gozo Channel but their use of the marine habitat elsewhere in Malta is not clear. Therefore, a full survey is required to understand the presence of these birds in Maltese waters. On shore observations and boat based observations will be required as well as long term monitoring of the Gozo Channel.

12.3.5 Other Migratory Species

Other species identified in table 3 (such as Glossy Ibis, Black Tern etc) as possibly qualifying within the Marine SPA network require more research work in order to obtain a fuller picture of their numbers and the importance of Maltese waters to these birds. It is likely that the boat

based observation work and on shore sea watches detailed above will serve to reveal whether other species are passing through Malta in sufficient numbers to qualify at particular sites.

12.3.6 Other areas of research

In order to ensure that the threats to proposed Marine SPAs are well understood, research is also required on the following areas:

- Assessment of routes and bunkering zones used by ships to ascertain whether they affect birds, particularly shearwaters, storm petrels and migrating ducks in Maltese waters.
- Assessment of likely impact of offshore and land based wind farms on shearwaters, storm petrels and migrating ducks (other species should also be considered such as raptors). It is also likely that any data collected during Environmental Impact Assessments for wind farms in Maltese waters will be of use in considering Marine SPAs.
- Establish what research is being carried out by industry (eg for wind farms, oil exploration) which could be used for the Marine SPA identification process.
- Fisheries by-catch mitigation; the EU LIFE Yelkouan Shearwater Project will be helping to establish the levels of by-catch, but considerable additional work and funds will be required to corroborate this work and begin mitigation work.
- Extent of the dependence of seabirds on fish discards by fisheries.
- Impact of bunkering zones on seabird rafting areas and on shore breeding colonies.
- Work on how international cooperation might achieve the designation of high seas MIBAS / SPAS. These would be managed through international maritime conventions such as OSPAR, HELCOM and the Barcelona Convention.
- Assessment of the impact of possible pollution incidents and how these will be dealt with. Marine IBAs/SPAs must be considered in this process.

13.0 Setting up a step-by-step protocol for identifying marine IBAs

Section 12.3 indicates the research needed to identify marine extensions to terrestrial IBAs, as well as providing some detail on identifying offshore IBAs. To supplement this, the following is an excerpt from a paper by Ramirez and Arcos (BirdLife International 2007c) which clearly lays out the steps to identifying Marine IBAs, with a focus on offshore areas. .

“Recognition of IBAs depends on identifying sites where birds occur and the numbers of birds associated with these sites, and this requires data. This chapter summarises the current steps being applied towards gathering these data, with a special emphasis on identifying offshore areas. Seabird species that will have a particular importance at these sites are those wide-ranging ones that can travel very long distances from/to the coast both during and outside their breeding season.

13.1 Bird data collection

As a first step towards the identification of marine IBAs, it is necessary to know where seabirds are. Such information can be obtained using two approaches that should be regarded as complementary: transect surveys and tracking individual birds.

- Transect surveys

Transect surveys by boat or plane are the more direct way of obtaining bird data. While open waters may be too extensive to allow total coverage in a short period, this remains our main long-term objective, and ideally specifically designed projects (such as LIFE-proposals) should be seen as only the starting point for a continuous survey-programme in a country's waters.

For those countries with a very large EEZ, collaboration with as many oceanographic and/or research vessels is a must. Although boat and/or plane surveys should be executed throughout the whole year, in order to reduce bias caused by data availability, local constraints could lead us to concentrate our survey effort at particular times of the year.

Counts can be made from ships or aircraft; an evaluation of the two platforms can be found in Garthe (2006). Aerial surveys allow rapid coverage of large survey areas and access to shallow areas or complex coastlines, whereas boat surveys are more suitable for offshore areas or restricted waters. Plane surveys will not be as useful for identifying all seabird species (see point 3).

Although global standardisation of methods has never been achieved, roughly similar census techniques have been applied worldwide in recent decades, particularly taking as a reference the Tasker et al (1984) paper. The publication of a standardised recording and coding for seabirds (Camphuysen et al, 2001) and the establishment of the European Seabirds At Sea (ESAS) database has been particularly useful and should be used as the standard methodology for all boat-based surveys. We also believe that if each country's data contributes to the existing ESAS database, this will help develop a major European database that could be freely used by all BirdLife partners and research bodies, improving networking and seabird monitoring at sea.

Although the best way of covering large areas by boat is using research vessels "opportunistically", some areas/species will require particular attention. Specifically designed censuses could be then necessary. Recent experience from SEO/BirdLife has brought about very good results applying such censuses in the Mediterranean, surveying randomly selected "squares" in candidate areas for IBAs.

Some seabird species are rarely seen at sea, even during very-exhaustive boat and/or plane campaigns, suggesting that they are very sparsely distributed. This is the case for many petrels and storm-petrels, as well as little shearwaters and others. The analysis of such data obtained, together with their spatial correlation with some oceanographic variables, could help to model their presence. However, it is still early to say whether such models would be powerful enough to identify offshore marine IBAs for these species.

- Tracking individual birds

While boat/plane surveys will help us to describe the broad picture of our future marine IBA network, individual tracking allows us to understand the species particular behaviour, during breeding, migration and wintering. This will give us information on whether the species leaves the country's EEZ or not (for example in the post breeding period). Most of the pilot marine IBA studies carried out in Europe have to be applied within EEZ, but individual tracking will also give information for other areas, improving international-coordination namely:

- It will help us to be as accurate as possible when identifying their migration corridors, and their preferred offshore areas to feed and/or rest
- It will provide data on the birds' movements at night, where no plane/boat surveys can be done
- It could pin-point to the researchers a particular marine area to concentrate future boat-based surveys or satellite-data gathering

13.2 Refining the boundaries of an already defined important area at sea:

This can be done by applying standard methods such as Kernel analysis (Wood et al. 2000), first-passage time analysis (Fauchald & Tveraa 2003, 2006), or through more elaborate predictive models (together with the boat/plane data; i.e. Huttman & Diamond 2001)"

14.0 Recommendations to government for conducting Marine IBA/SPA identification and designation

A Step by Step Action Plan to fulfil European Obligations under Natura 2000 with regards to Marine SPAs

BirdLife Malta expects that the Maltese Government will follow the criteria suggested by BirdLife International to designate Marine SPAs (section 2.3). This will be preceded by the designation of Marine IBAs as in the majority of countries in Europe. (In most countries, with some exceptions such as Germany where funds were provided directly for Marine SPA designation, countries have relied on data gathered for the designation of Marine IBAs to recommend their lists of candidate SPAs) (Ramirez, pers comm.).

The current situation in Malta is that the only work underway is being undertaken by BirdLife Malta either alone or with the support of the EU LIFE Yelkouan Shearwater Project. As we have seen, the initial deadlines for designation are already upon us (due in 2008) so a major effort is required by the government to move towards a situation where Marine SPA designation will be possible. Without data, it is not possible to undertake designations and the paucity of marine data in Malta on the key species that qualify for Marine IBA/SPA designation means that research is now very urgently required. Work needs to start immediately. BirdLife Malta is uniquely placed to assist with this work, having the in-house expertise already to undertake telemetry work, boat based observations, land based sea-watching as well as the complex analysis required to interpret the data.

The EU LIFE Yelkouan Shearwater Project and BirdLife Malta therefore recommend that action be taken as follows to commence and progress the designation process in Malta.

14.1 Designate the Gozo Channel

The data to designate the Gozo Channel already exists so the designation process for this area can proceed following analysis by BirdLife Malta and BirdLife International. This is expected to be complete by the end of 2008.

14.2 Plan projects to collect the missing data specified in section 12.3. - Completion of a full Marine IBA inventory for the Maltese Islands.

As we have seen, data collection is absolutely critical for the designation of Marine SPAs and is urgently needed for Cory's Shearwaters, Yelkouan Shearwaters (beyond the initial work done at Rđum tal-Madonna) and European Storm-petrels, as well as migratory ducks and other species. This work requires major funding and project management. BirdLife Malta therefore strongly recommends that the government works with the LIFE project to develop a full project for the identification and designation of Marine IBAs, complete with details on what funding will be required to undertake this and how the funding will be sought. A draft timetable should be included. BirdLife Malta and the EU LIFE Project have the expertise to help with the preparation of this important piece of work.

The current LIFE project will require action from the government even after completion as part of the "After LIFE" commitment. It is likely that the European Commission would greatly support initiatives that continue the work of the project and make a wider scale project (i.e. a larger LIFE+ proposal for the whole country would stand a good chance of being approved)

14.3 Designate extensions to terrestrial SPA colonies for Cory's and Yelkouan Shearwaters

The seabird foraging database already contains the foraging distance for Cory's Shearwaters at a European wide scale. In addition, data collected by BirdLife Malta exists to corroborate the rafting locations of the Cory's and Yelkouan specifically in Malta. The results of the MSc project to identify rafting zones in Malta from terrestrial colonies will also be available in September 2008.

Following the hierarchical approach (section 10), in the absence of other data, the seabird foraging database can be used to delineate the locations of Marine SPAs. However, we believe that the data collected by BirdLife Malta and the EU LIFE project should provide a useful starting point for designation. Again, the analysis of this data and further research is imperative.

Summary

A project is required to undertake a full survey of seabirds and their use of Maltese Waters in order to complete a full inventory of Maltese IBAs. As well as fulfilling EU obligations by enabling the future designation of Marine SPAs, this inventory would provide essential baseline information that could be used to assess projects such as offshore windfarm developments, port developments etc. This project will require considerable planning and funding which will take time. It should therefore be initiated as soon as possible.

14.4 Commence the process of research and designation

It is clear that there is major work to be done in Malta if we are to achieve all of the EU obligations with regards to the Birds Directive and Marine SPAs. Malta is already behind most EU countries in the designation process and research needs to commence as soon as possible to ensure that MSPA designation can commence. While offshore extensions to terrestrial breeding grounds may be relatively straightforward to research and designate, offshore areas are likely to be considerably more difficult and data collection cannot commence early enough. The project plan referred to in point 2 above will indicate how this work needs to be done and provide the budget. Funding will then be a critical issue and should be arranged as soon as possible.

15.0 Conclusion

The designation of Marine IBAs / SPAs is not an easy process and data collection will take time. However, in Malta some data does already exist to allow the designation process to commence. The collection of additional data, especially for species such as European Storm-petrels will take careful project planning. The experience of the SPEA and SEO LIFE project among others has shown that this is possible within the next few years.

It is clear that given the complexity of the marine ecosystem, there are many areas that we still do not understand. However, following the precautionary principle these knowledge gaps should not delay implementation of the Marine SPA/IBA network (Krause et al, 2007).

BirdLife Malta therefore expects that the designation process for sites where research has already been completed for Marine IBA/SPAs should commence by end 2008. This is principally the Gozo Channel. However, the government's support for the EU LIFE Yelkouan Shearwater Project has also resulted in the collection of critical data which means that the designation process for Marine IBAs /SPAs for Yelkouan Shearwaters can begin to move forward (although it should be noted that the remit of the project is not to undertake the designation process, but simply to begin the process of collecting the data). Equally, rafting zone data collected by Borg & Sultana of BirdLife Malta, Wigmore and other BirdLife Malta members means that marine extensions to terrestrial seabird colonies should be possible to undertake in the shorter term.

Equally, BirdLife Malta expects that by the end of 2008, the Maltese government will work with the LIFE project to develop a plan for Marine SPA designation research. This

will include a clear budget and timetable for research and designation to collect the data which we have identified as missing in section 12.3. This process should lead to a large scale project to fill in the gaps and improve the initial list of sites above.

BirdLife Malta has long experience of seabird monitoring. Additional support to Birdlife Malta will help to secure the creation and maintenance of the only Maltese seabird database. Support would also facilitate the integration of seabird-related data with the marine and fisheries data and help BirdLife Malta to continue and expand the research that will ultimately deliver Marine SPAs in Malta. Consideration needs to be given as to how the additional data requirements outlined above can be met.

Given the pressures on the Marine Ecosystem, the designation of Marine IBAs/SPAs is absolutely critical to the continued survival of the internationally important seabird colonies and migratory birds in Maltese waters. BirdLife Malta and the EU LIFE Yelkouan Shearwater Project looks forward to working with the government to achieve this necessary protection and further to beginning the process of management planning for the protected areas.

Acknowledgements

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ANNEX I

Current Marine IBA criteria from BirdLife International (draft)

Adapting the existing IBA criteria to the marine environment

Carlota Viada (under contract to SEO/BirdLife)

Checked by Ian Burfield (BirdLife International)

September 2007

This document has been compiled in accordance with the requirements of Action A.4 of the LIFE project *Important Bird Areas (IBAs) for seabirds in Spain* (LIFE04NAT/E/000049), carried out by SEO/BirdLife with co-funding from the EC and the Spanish Government. This project is closely linked to, and is executed in coordination with, a second LIFE project managed by SPEA (BirdLife in Portugal), *Marine IBAs – Important Bird Areas for seabirds in Portugal* (LIFE2004NAT/P/000213).

This document seeks to adapt the current IBA criteria for their implementation in the marine environment throughout Europe. BirdLife International (Global and European Secretariat and its EU Partners, through the Birds and Habitats Directives Task Force, BHDTF) is involved in the process of revision and internal approval of this proposal. This proposal has already been submitted to the BHDTF (May 2007) and it is expected to be approved at the next meeting in December 2007, although the modifications proposed for ‘A’ (Global) level criteria will need to be approved at the next Global Partnership Meeting in September 2008.

ADAPTATION OF IBA CRITERIA FOR THEIR IMPLEMENTATION IN THE MARINE ENVIRONMENT

In order to maintain the coherence of the BirdLife IBA Programme, this proposal tries to keep as closely as possible to the original formulation of the IBA criteria as used in the most recent European IBA inventory (Heath & Evans, 2000). This set of criteria was formulated such that they were applicable to as many habitat types and for as many birds as possible. However, their application in the open marine environment has not been tested, and it is therefore likely that some adaptation of them is necessary.

Twenty IBA criteria were used for the selection of IBAs in Europe (Heath & Evans, 2000). Using these criteria, sites are selected on the basis of:

Threatened species, according to IUCN and SPEC categories

Congregatory species

Assemblages of restricted-range species

Assemblages of biome-restricted species

The latter two categories, at least as currently defined, are not considered applicable to marine areas (BirdLife International, 2004).

The IBA criteria used until now in Europe (Heath & Evans, 2000) have been implemented for the identification of terrestrial and freshwater IBAs, with coastal and offshore areas therefore remaining the most obvious gap. Current initiatives to fill this gap should consider the overall marine environment, from the coastline and beyond. This recommendation follows the “Guidelines for the establishment of the Natura 2000 network in the marine environment: application of the Habitats and Birds Directives” (European Commission, 2007b).

In red: differences from the terrestrial criteria.

A Criteria: Global

A1. Globally threatened species. The site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern.

This category includes those species classified by the IUCN Red List as Critically Endangered, Endangered or Vulnerable. Also included are species classified as Near Threatened by IUCN. Although not globally threatened, these species are considered to be of sufficient global conservation concern to merit the identification of IBAs at the global level.

The words ‘regularly’ and ‘significant’ in the definition aim at excluding instances of vagrancy, marginal occurrence and ancient records. ‘Regularly’ includes seasonal presence and presence at longer intervals, if suitable conditions themselves occur only at extended intervals. This category applies at all stages of the annual cycle (i.e. breeding, wintering, moulting and on migration).

The regular presence of a Critically Endangered or Endangered species at a site, irrespective of its abundance, is considered sufficient to propose the site as an IBA. For Vulnerable and Near Threatened species, thresholds are defined according to the following ranges:

	European population (pairs)		
	< 1.000	1.000-10.000	> 10.000
Large sized and/or fairly dispersed species	2 p (6 ind)	5 p (15 ind)	10 p (30 ind)
Small sized and/or colonial nesting species	5 p (15 ind)	10 p (30 ind)	20 p (60 ind)

This criterion can be applied to the marine environment in the form that it is already defined.

A2. Restricted-range species. The site is known or thought to hold a significant component of the restricted-range species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA).

An EBA is defined as a region to which two or more restricted-range species are confined, with ‘restricted range’ defined as a world breeding distribution of less than 50,000 km² (Stattersfield *et al.*, 1998). The EBA analysis explicitly excluded seabirds as restricted-range

species, because their distributions are determined by different factors to those which affect landbirds and other terrestrial taxa, and they are therefore considered to be best treated as a separate group for conservation purposes (Stattersfield *et al.*, 1998). Consequently, this criterion does not apply to the identification of marine IBAs.

A3. Biome-restricted species. The site is known or thought to hold a significant assemblage of the species whose breeding distributions are largely or wholly confined to one biome.

In Europe, five groups of species were defined as having largely shared distributions, mostly occurring within a particular biome in Europe (Heath & Evans, 2000): Arctic/tundra; Boreal; Mediterranean; Eurasian high montane (alpine); and Eurasian steppe. Although some seabirds (such as divers, skuas and gulls) are included in the Arctic/tundra and the Eurasian steppe biomes, the application of this criterion is currently restricted to the terrestrial environment. In fact, most seabirds were excluded from these lists of species because their distributions are thought to be influenced by different factors to those affecting terrestrial species, and their conservation is covered through the application of other criteria categories (such as A4) (Heath & Evans, 2000). Thus, this criterion does not apply to the identification of marine IBAs.

A4. Globally important congregations.

The site is known or thought to hold simultaneously, on a regular basis, $\geq 1\%$ of the global population of a congregatory species.

The site is known or thought to be a focus of congregation at which $\geq 1\%$ of a global population of a species occurs on a regular basis within a short period of time, as a result of the rapid turnover of individuals.

The site is known or thought to hold, on a regular basis, $\geq 20,000$ waterbirds or seabirds or $\geq 10,000$ pairs of seabird of one or more species.

The site is known or thought to be a 'bottleneck' site where at least 20,000 storks (Ciconiidae), raptors (Accipitriformes and Falconiformes) or cranes (Gruidae), or significant numbers of seabirds (figure to be confirmed), pass regularly during spring or autumn migration.

This category is applied to those species that are considered vulnerable, at the population level, to the destruction or degradation of sites and also to direct persecution (such as hunting), by virtue of their congregatory behaviour while breeding, wintering or on passage. Many species are of course insufficiently congregatory ever to meet or exceed specific thresholds, and therefore do not qualify under this criterion.

The definitions above reflect modifications to the A4 criterion that BirdLife International intends to adopt globally in 2008. These modifications are needed in order to eliminate the current inconsistency between A4i (1% of *biogeographic* population for waterbirds) and A4ii

(1% of *global* population for seabirds and terrestrial species). The aim is to establish a 1% threshold based on global populations (rather than biogeographic ones) for *all* species, to reflect the fact that A4 is a global level criterion.

Criterion A4ii has been redefined to allow this category to be applied more effectively to the marine environment. Seabirds differ from waterbirds in their congregatory behaviour, such that it is often much more difficult to identify areas that regularly contain large numbers of seabirds. Instead, it may be more feasible to identify sites based on their regular use by a significant percentage of the seabird population. In such cases, the word ‘congregatory’ is inappropriate and the threshold should instead be applied to take into account the rapid turnover of birds that regularly use the site in an intensive way.

Criterion A4iii has been modified slightly to include *all* seabirds amongst the species to which the 20,000 individuals threshold applies, rather than just those seabirds considered to be waterbirds by the Ramsar Convention. In Europe, this involves shearwaters, petrels, gannets, skuas and auks.

Criterion A4iv is applied at the site level only, not to individual species. Many seabird species migrate across or through fairly narrow corridors, but this criterion is designed to be applied to the specific areas where bird passage is especially intense and where the birds may therefore be particularly vulnerable. It is not intended for use to identify stopover sites, where species may spend several days feeding and resting; these should be identified as IBAs by applying the other criteria, in the same way as for other congregatory species (e.g. waterfowl).

Migration ‘bottlenecks’ for seabirds are areas of sea where there are geographical constraints on seabird passage, such as areas created by two land masses in close proximity, which seabirds may funnel between, for example straits and/or the area of sea between continents and offshore islands. *The bottleneck threshold suggested needs further testing to determine its suitability.*

B Criteria: Europe

B1. Regionally important congregations

The site is known or thought to hold **simultaneously, on a regular basis, \geq 1% of a biogeographic (or other distinct) population of a congregatory species.**

The site is known or thought to be a focus of congregation at which **\geq 1% of a biogeographic (or other distinct) population of a species occurs on a regular basis within a short period of time, as a result of the rapid turnover of individuals.**

The site is known or thought to hold, **on a regular basis, \geq 1% of a biogeographic (or other distinct) population of a congregatory species other than a waterbird or seabird.**

The site is a ‘bottleneck’ site where over 5,000 storks (Ciconiidae), or over 3,000 raptors (Accipitriformes and Falconiformes) or cranes (Gruidae), or over **significant numbers of seabirds (figure to be confirmed)** pass regularly on spring or autumn migration.

The aim of this category is the same as that for the global A4 category: to identify important sites for species that are vulnerable at sites because of their congregatory nature. However, the B1 category sets lower numerical thresholds, based largely on 1% values of a distinct regional population of a congregatory species, and the thresholds for ‘bottleneck’ sites are also lower (*and the bottleneck threshold suggested needs further testing to determine its suitability*). For species without biogeographic (or other distinct) populations, the global and regional thresholds are the same.

Definition of biogeographic population (instead of flyway): To date, the term ‘flyway’ has most commonly been defined by Wetlands International to describe zones common to many waterbird species, based on the approximate separation of populations (Rose and Scott, 1997; Scott and Rose, 1996). In the most recent publication of Wetlands International (2006), biogeographic populations have been defined, as far as possible, on the basis of the biology of each species, although it has been necessary to present data using traditional ‘flyway’ boundaries where more precise information is lacking. These biogeographic areas vary from species to species, and the resulting 1% thresholds can be applied in different seasons. This new approach from Wetlands International has required a slight modification to the wording of the B1 criterion, substituting the word ‘flyway’ with ‘biogeographic’ where relevant.

Criteria B1i, B1ii and B1iv apply to the identification of marine IBAs, with an adaptation to the thresholds for B1iv for seabirds. B1iii applies only to terrestrial birds.

B2. Species with an unfavourable conservation status in Europe

B3. Species with a favourable conservation status but concentrated in Europe

These criteria are applied to those species of European conservation concern (SPEC 1,2,3 for criterion B2 and Non-SPEC^E for criterion B3) for which the site-protection approach is thought to be appropriate, and for the season in which the species qualifies as SPEC or Non-SPEC^E (based on BirdLife International, 2004b). Only a few species in Europe have been identified as SPEC on the basis of their non-breeding populations, and none of them is a seabird.

For seabirds, these criteria have already been applied in Europe to identify their breeding colonies as IBAs (Heath and Evans, 2000). Where appropriate, these IBAs will now be extended seawards to include the most important parts of the adjacent marine environment for the species for which the site meets B2 and/or B3. However, the B2 and B3 criteria will not be used to identify new marine IBAs (e.g. offshore feeding sites, remote from the coast) that could be better identified using other criteria.

C Criteria: European Union

This set of criteria is used for selecting sites in the European Union that should, under the EC Birds Directive, be classified as Special Protection Area (SPAs). These criteria apply to species, subspecies and populations listed in Annex I of the Birds Directive and to regularly occurring migratory species. At sea, these criteria apply to the geographical area where the Birds and Habitats Directives apply (i.e. where Member States claim sovereign rights, or an EEZ has been declared; or in territorial waters, up to 12 nm from the coast; BirdLife International, 2004a).

C1. Species of global conservation concern. The site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern.

This criterion is identical to the A1 criterion, and the same thresholds apply.

C2. Concentration of species threatened at the European Union level. The site is known to regularly hold at least 1% of the **biogeographic** or EU population of a species considered to be threatened in the EU.

‘Threatened species’ refers to species, subspecies and populations listed in Annex I of the EC Birds Directive, for which SPAs are designated under Article 4.1 of the Directive.

As for B1, the word ‘flyway’ has been substituted by ‘biogeographic’ in the wording of this criterion, following Wetlands International (2006). Thus, the definition of ‘biogeographic population’ is the same as that given for the B1 criterion. However for a small number of species where the European breeding population is significantly larger than the EU breeding population, lower numerical thresholds have been set (at 1% of the EU27 population).

C3. Migratory non-threatened species. The site is known to regularly hold at least 1% of a **biogeographic** population of a migratory species that is not considered to be threatened in the EU.

‘Migratory species not considered threatened’ refers to species considered under Article 4.2 of the Birds Directive (i.e. regularly occurring migratory species not included in Annex I). ‘Migration’ is defined as seasonal long-distance movements from and to breeding areas. The word ‘migratory’ therefore excludes populations that are largely sedentary or short-distance dispersive.

This criterion covers wetlands of international importance (Ramsar sites) identified under Ramsar criteria category 6, to which reference is made in Article 4.2 of the Birds Directive, but it is also relevant to seabirds, many species of which migrate regularly through EU waters.

C4. Large congregations. The site is known to regularly hold at least 20,000

migratory waterbirds or seabirds or at least 10,000 pairs of migratory seabird, of one or more species.

This criterion is the same as the A4iii criterion. The same adaptation to seabirds has been made.

C5. Large congregations-‘bottleneck’ sites. The site is a ‘bottleneck’ site where over 5,000 storks (Ciconiidae), and/or over 3,000 raptors (Accipitriformes and Falconiformes) and/or cranes (Gruidae), and/or significant numbers of seabirds (figure to be confirmed) pass regularly on spring or autumn migration.

This criterion is the same as the B1iv criterion. As most of the species concerned are listed in Annex I of the Birds Directive or are regularly occurring migratory species, this criterion refers to sites important in the context of Articles 4.1 and 4.2 of the Birds Directive. *The bottleneck thresholds suggested needs further testing to determine its suitability.*

C6. Species threatened in the European Union. The site is one of the five most important in the European region in question for a species or subspecies considered threatened in the European Union.

‘Threatened species’ refers to species, subspecies and populations listed in Annex I of the EC Birds Directive, for which SPAs are designated under Article 4.1 of the Directive.

This criterion has generally been applied to breeding populations, but may also be applied for non-breeding populations if these are not covered well by other criteria in the country concerned. Moreover, the application of this criterion relies on division of the territory into NUTS regions, which has not been done at sea. Taking into account that the breeding sites have been already identified under C6, and that the use seabirds make of the open sea should be well covered by criteria C2, C3 and C4, C6 does not apply to the marine environment. Where appropriate, however, IBAs will be extended seawards to include the most important parts of the adjacent marine environment for the species for which the site meets C6.

[In the coming months, after testing these criteria in the marine environment, SEO/BirdLife and SPEA may recommend adapting this criterion, or creating a new C criterion, if such changes are needed to ensure the effective protection of seabirds in the marine environment.]

C7. Other ornithological criteria. A site which has been designated as a Special Protection Area (SPA), or has been selected as a candidate SPA, based on ornithological criteria (similar to, but not equal to, C1-C6) in recognized use for identifying SPAs.

This criterion should be applied only to a minority of exceptional cases where it would be inadvisable to exclude the sites concerned from the IBA inventory.

8. Key Existing Documents

BirdLife

Candidate Marine IBAs and Global Status Report (Wallace Report) March 2007

BirdLife International Marine Policy and the Global Seabird Programme Science Policy Framework January 2007

Towards the identification of marine IBAs in the EU: an exploration by the BirdLife Birds and Habitats Directives Task Force 2004

BirdLife Response to EC Consultation on the EU Maritime Policy Green Paper “Towards a Future Maritime Policy for the Union: A European Vision for the Oceans & Seas” 2007

Seabird Conservation in Europe: Extending the IBA Programme at Sea Presentation Pep Arcos April 2007

Marine IBAs a Sea of Birds SEO/SPEA Brochure Spring 2007

Marine Bird Conservation in Europe Marine Conservation in Europe Presentation Jeff Ardon May 2006

Implementing N2000 in the marine environment Marine IBAs: Lisbon-Vilanova Conclusions Ivan Ramirez, Octavio Infante 2005

European Commission

Guidelines for the establishment of the Natura 2000 network in the marine environment Application of the Habitats and Birds Directives European Commission April 2007

LIFE Focus LIFE and the marine environment European Commission December 2006

Other

Natura 2000 designation and management in Marine Areas IUCN April 2007

Annex 2

Extract from Ardron and Burfield, 2006.

From our various Partners, we have assembled the following summaries of seabird protection in some European countries. States vary greatly in their level of current seabird protection, with both Germany and Denmark having significant sites further offshore in their EEZs. Other states have implemented little or no seabird protection. Information on protection measures is usually difficult to attain, and therefore these summaries should be considered provisional, incomplete, and subject to correction as further information becomes available. Those countries for which we have some information are arranged in alphabetical order below:

Belgium: 2005 saw the designation of three SPAs and two SACs in the Belgian part of the North Sea. The SPAs are designated for Sandwich Tern, Common Tern, Great Crested Grebe and Little Gull. The SACs are designated for a combination of seals and habitat type “sandbank”. They are nearshore (up to 6nm offshore).

Cyprus: Its waters are not generally rich in seabirds. There are no truly marine SPAs. One of the seven existing SPAs has a marine component – Capa Aspro, which includes an area of sea extending from the chalk sea cliffs used by *Falco eleonora*, *Falco peregrinus* and *Phalacrocorax aristotelis*.

Denmark: Two large marine SPAs (Kattegat & Waddensee); with one of these entirely offshore. These two sites total about half a million hectares. There are another 47 smaller ones with a marine component; in all, over one million hectares. Habitats Directive and Birds Directive sites often overlap, and together account for about 1.3 million hectares, or 12.3% of Denmark’s total marine area (Sorensen 2005).

Estonia: There have been twenty-four IBAs identified with a marine component, almost half of all Estonian IBAs by area. Mostly coastal, these IBAs appear to have been largely accepted by the government to be SPAs, but this is not yet officially confirmed (as of Jan. 2006). An EU LIFE project is ongoing to identify marine protected areas in the eastern Baltic.

Germany: Almost all of Germany’s North Sea coastline is protected in SPAs. A large portion of its Baltic coast is also protected with SPAs. In its EEZ, Germany also has two large SPAs, one in the North Sea and another in the Baltic. As such, it is one of the most advanced EU Member States in seabird protection. SPAs total about 581 thousand hectares in the Baltic, and over a million hectares in the North Sea. Some SACs, such as the Dogger Bank (170 000 ha) in the North Sea, also contain numerous bird values. [See also the talk by Christian Pusch on fisheries interactions in Natura 2000 sites.]

Italy: Coastal IBAs (Eleonora’s Falcon & Audouin’s Gull) have been identified. Pelagic IBAs not yet identified (e.g. feeding grounds for shearwaters).

Latvia: All seven coastal Natura sites have a marine component. Three are designated SPAs, but there is some question re qualifying bird concentrations. An EU LIFE project is ongoing to identify marine protected areas in the eastern Baltic.

Malta: Seabird colony IBAs have been extended 4 km out to sea. It is yet to be seen if the corresponding SPAs are likewise extended, though there have been some encouraging indications.

Netherlands: Two SPAs (& SACs), in shallow water nearshore. There are two or three more areas with bird values, further offshore, that are under review.

Portugal: Europe's largest EEZ. IBAs are currently being identified. [See talk by F. Ivan Ramirez.]

Spain: Some coastal SPAs (by regional governments), but none in EEZ (federal government). Species richness distributed over three biogeographic regions; e.g. Mediterranean contains the entire breeding population of the Balearic Shearwater, and 90% of Audouin's Gull. IBAs are being identified, including through the collection of new data as part of an EU LIFE project.

United Kingdom: Significant proportions of the global populations of some marine bird species are reliant on UK coastal and offshore waters for their survival, most notably Manx Shearwaters *Puffinus puffinus* (69%), Northern Gannet *Morus bassanus* (59%) and Great Skua *Stercorarius skua* (60%). Scotland alone has colonies holding c. 45% of all seabirds breeding in the EU. Only one truly marine SPA has been designated in the UK: Carmarthen Bay, Wales. It is likely that one or two more SPA proposals will come forward in 2006: Liverpool Bay (Common Scoter and Red-throated Diver) and the Outer Thames (Red-throated Diver). Recommendations for SPA colony extensions have been put forward for: Guillemot, Razorbill, Puffin (1 km extensions), Gannet and Fulmar (2 km), and Manx Shearwater (at least 4 km but greater if available data suggest that it should be). No marine extensions are recommended for existing breeding site SPAs for Great Cormorant, skuas, gulls, Black-throated Diver, Great Crested Grebe, Slavonian Grebe, Common Scoter, or Red-necked Phalarope. Extensions are being studied for possible SPAs for petrels, shag or terns. The UK has also submitted 56 of its coastal SPAs as OSPAR MPAs. New Marine Legislation is pending which it is hoped will strengthen the Marine Protected Areas.

Country / Territory	EU MS	Text info in Howgate & Lascelles (2007)	Info in ICES WGSE report	Seabird IBAs	Marine habitat IBAs	SPAs with marine component
Belgium	Yes		Yes	6	0	4
Bulgaria	Yes			10	4	3
Cyprus	Yes	Yes		4	0	1
Denmark	Yes		Yes	42	34	59
Estonia	Yes	Yes		18	7	26
Finland	Yes			28	1	66
France	Yes	Yes		56	17	62
Germany	Yes		Yes	39	0	14
Greece	Yes	Yes		50	38	16
Ireland	Yes	Yes		45	24	66
Italy	Yes	Yes		36	14	41
Latvia	Yes	Yes		7	0	4
Lithuania	Yes	Yes		5	0	1
Malta	Yes	Yes		10	0	9
Netherlands	Yes		Yes	21	1	7
Poland	Yes			10	0	0
Portugal	Yes	Yes	Yes	44	6	10
Romania	Yes			6	0	0
Slovenia	Yes			1	0	1
Spain	Yes	Yes	Yes	77	21	23
Sweden	Yes			30	5	107
United Kingdom	Yes	Yes	Yes	118	7	3

Table 4: Progress to Marine IBA/SPA Designation across Europe (BirdLife International 2008c). Note – this table has not been fully verified and may be subject to change.

Annex 3

Data to support the Seabird Foraging Database

See attached excel document

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