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Heritage and Climate Change

HM Government of Gibraltar

Rock of Gibraltar SPA/SAC

Conservation objectives & measures

Consultation Draft

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Version 2.

This document should be read in conjunction with the Gibraltar Nature Reserve Management Plan 2017.



WILDLIFE GIBRALTAR

Environmental Managers and Consultants

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1. Introduction

1.1 Summary

This document outlines the conservation objectives and measures required under the European Union Habitats¹ and Birds² Directives, in order to achieve a favourable conservation status³ in accordance with Article 6 of the Habitats Directive, which establishes conservation measures for Natura 2000 sites. The legal framework within which the site was designated is stipulated, for which the competent authority is the Ministry for the Environment, Heritage and Climate Change (MEHCC) of HM Government of Gibraltar (HMGOG). MEHCC is responsible for complying with the requirements of the Habitats and Birds Directives. The document also provides an analysis of key habitats and species. It provides references to documents that guide and assist the competent authority and other stakeholders in complying with the requirements of the Directives. The advice in this document is dynamic and subject to review, as new information may change the status, designation, conservation objectives and measures to be taken in the future.

1.2 Legal Framework

The Habitats and Wild Birds Directives were transposed into Gibraltar law under the Nature Protection Act 1991⁴. The Upper Rock, Great Sand Slopes, Talus Slope and Windmill Hill were incorporated as a single, terrestrial Site of Community Interest (SCI). Following the publication of a management and

¹ Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora.

² Council Directive 79/409/EEC on the conservation of wild birds.

³ A habitat or species is defined as being at favourable conservation status when its natural range and the areas it covers within that range are stable or increasing and the specific structure and functions which are necessary for its long term maintenance exist and are likely to continue to exist for the foreseeable future.

⁴ Nature Protection Act 1991. Act. No. 1991-11

action plan⁵ for the SCI, the site was designated a Special Area of Conservation on the 18th July 2012⁶.



Figure1: Rock of Gibraltar Special Area of Conservation

MEHCC must advise the member state, the United Kingdom, of

- (a) The conservation objectives for that site, and
- (b) Any operations that may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which the site has been designated.

On the 31st October 2013 the Upper Rock Nature Reserve's boundary was extended to create the Gibraltar Nature Reserve⁷. This incorporated the SAC

⁵ Upper Rock Nature Reserve: A Management and Action Plan. 2005: Perez & Bensusan.

⁶ Designation of Special Area of Conservation (Rock of Gibraltar) Order 2012. LN. 2012/118

and SPA and increased the area for nature protection and conservation in Gibraltar, so that the total area of nature reserve in Gibraltar now exceeds that of the terrestrial SAC. It included the provision of Wildlife Wardens⁸ who would monitor any breaches of environmental laws, and provide information and interpretation to the public.



Figure 2: The Gibraltar Nature Reserve.

1.3 The Precautionary Principle

The advice contained in this document is underpinned by the Precautionary Principle. This principle first adopted under the Rio Declaration, soon became

⁷ Nature Conservation (Designation of Gibraltar Nature Reserve) Order 2013. LN. 2013/147

⁸ Nature Protection Act (Powers and Duties of Wildlife Wardens) Regulations 2013. LN. 2013/183

integrated in other legally binding treaties and has become a statutory requirement of European Law.

The Precautionary Principle states that *"if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is not harmful, the burden of proof that it is not harmful falls on those taking the action"*⁹.

This implies that the precautionary principle should apply to all environmental risks, actions policies evaluated to determine that, where there are real risks to the environment, lack of scientific knowledge should not be the reason to defer measures that will prevent damage to the environment. It should also consider the economic factors of applying measures, including environmental costs and benefits.

1.4 Nature Conservancy Council

The role of the Nature Conservancy Council (NCC) is outlined in the Nature Protection Act. The current NCC was constituted on the 4th July 2013¹⁰. It is comprised of five suitably qualified or experienced persons who collectively provide advice to MEHCC on all matters of nature conservation, including the administration and management of habitats and other natural areas. It also advises HMGoG in connection with the issue of any permit or license that may affect the conservation status or management of the terrestrial or marine environment.

⁹ https://en.wikipedia.org/wiki/Precautionary_principle

¹⁰ Nature Protection (Nature Conservancy Council) Regulations 2013. LN. 2013/098

2. Conservation Objectives

2.1 Requirements of Conservation Objectives

The Habitats Directive requires, under Article 6.3, that in each area designated, the necessary measures with regard to conservation objectives be pursued. It also states that an appropriate assessment must be made of any plan or programme likely to have a significant effect on the conservation objectives of a site that has been designated.

Conservation Objectives means a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable conservation status.

According to Article 4(4) of Directive 92/43/EEC “*once a site of Community importance has been adopted in accordance with the procedure laid down in paragraph 2, the Member State concerned shall designate that site as a special area of conservation as soon as possible and within six years at most, establishing priorities in the light of the importance of the sites for the maintenance or restoration, at a favourable conservation status, of a natural habitat type in Annex I or a species in Annex II and for the coherence of Natura 2000, and in the light of the threats of degradation or destruction to which those sites are exposed*’.

This was attained by Gibraltar with the publication of the Upper Rock Management and Action Plan for the SCI, which set out a series of objectives and measures and provided recommendations and conservation measures specifically integrated into the Gibraltar Development Plan, and appropriate statutory, administrative and contractual measures which correspond to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the sites, as stipulated in Article 6.1. It also took into account appropriate steps to avoid the deterioration of natural habitats and species, as well as disturbance of the species in accordance with Article 6.2. It consolidated the requirements under the Birds Directive that sought to take into

account special measures in relation to specific species listed in Annex I of the Directive and regularly occurring migratory species that are subject to special conservation measures.

The conservation objectives at the site level must have full regard to:

- The ecological requirements of the species & habitat types listed in the Natura 2000 Standard Data Form (i.e. present on the site, except for those whose presence is non-significant according to the SDF)
- The local, regional and national conservation status of the habitats and species.
- The overall coherence of the Natura 2000 network.
- Higher-level conservation objectives at national/biogeographical level and the contribution of the site to them.

2.2 Favourable Conservation Status

Favourable Conservation Status (FCS) applies to habitats and species. *Conservation status* of natural habitats means the sum influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions, as well as the long-term survival of its typical species within the territory, referred to in Article 2.

The conservation status of a natural habitat is favourable when:

- Its natural range and the areas it covers within that range are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- Conservation status of typical species is favourable as defined in Article I.

Conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term natural distribution and abundance of its populations within the territory referred to in Article 2.

The conservation status of a species will be taken as ‘favourable’ when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

However, the general objective of achieving FCS for all species and habitat types listed in Annex I and II of the Habitats Directive needs to be translated into site-level conservation objectives that define the condition to be achieved by species and habitat types within the respective site, in order to maximise the contribution of the site to achieving FCS at national, biogeographical or European level.

Therefore, identifying the contribution of a particular site helps the Member State achieve FCS for the species and habitats present on the site and provides the basis for setting conservation objectives. In this respect, priorities must be established for the maintenance and restoration of a FCS of the species and habitat types of Community interest, in light of threats of degradation or destruction to which the site may be exposed.

2.3 Conservation Measures

Conservation measures are mechanisms and actions put in place for the Natura 2000 site, to achieve the site’s conservation objectives. These must respond to the ecological requirements of the natural habitat types in Annex I and species in Annex II present on the site. Measures may not be site specific

and can be applied within or outside the boundaries of a particular site, for example to maintain or enhance connectivity between sites.

3. Habitats

3.1 Qualifying Habitats for the Rock of Gibraltar SAC

Eight listed habitat types were identified for Gibraltar. Although some of these have a limited range, the significance of the habitat type to Gibraltar is nevertheless important enough to warrant inclusion. The designation of these habitat types has involved a certain flexibility of interpretation, as some are fragmented, of limited distribution, and may have been influenced by past human activities. These isolated habitat types may have a significant local, scientific and conservation value, and may contain species of national, European or global importance.

Table 1: Annex I Habitat Types

Code	
1240	Vegetated sea cliffs of the Mediterranean coast (with endemic <i>Limonium</i> spp.)
2220	Dunes with <i>Euphorbia terracina</i>
2230	Malcolmietalia dune grasslands
5230	Arborescent matorral with <i>Laurus nobilis</i>
5320	Low formations of <i>Euphorbia</i> close to cliffs
8210	Vegetated calcareous inland cliffs with chasmophytic vegetation
8310	Caves not open to the public
9320	<i>Olea</i> and <i>Ceratonia</i> forests

3.1.i 1240 Vegetated sea cliffs of the Mediterranean coast with endemic *Limonium* spp.

1. The qualifying plants listed in the Natura 2000 interpretation manual of the EU on Habitats¹¹ include *Crithmum maritimum*, *Plantago subulata*, *Silene sedoides*, *Sedum litoreum*, *Limonium* spp., *Armeria* spp., *Euphorbia* spp., *Daucus* spp. and *Asteriscus maritimus*. Many *Limonium* species are endemics

¹¹ Interpretation Manual of the European Union Habitats. EUR 27 July 2007.

of extremely local occurrence. Of these, *Crithmum maritimum*, *Daucus carota*, *Silene obtusifolia*, *Asteriscus maritimus*, and especially the regional endemic *Limonium emarginatum* are present in this habitat type. Other plant species characteristic of this habitat include *Frankenia laevis*, *Atriplex halimus*, *Euphorbia segetalis*, *Lavatera mauritanica*, *Sedum album*, *Mesembryanthemum crystallinum*, *Mesembryanthemum nodiflorum* and *Senecio leucanthemifolius*. The Gibraltar Sea Lavender *Limonium emarginatum* is endemic to the area of the Strait of Gibraltar, on both shores. Gibraltar is one of its main strongholds, where the species is common on sea cliffs of the southern Rock especially¹². 197 species of flowering plants have been identified from sea cliffs around Gibraltar.

2. The structure and function of this habitat are complex. The cliffs to the east side of the Rock rise to 30m above sea-level from Europa Point running north for several hundred metres, until they rise to the summit at 426m above sea-level. The lower cliffs are influenced by strong easterly winds that cover the vegetation with sea spray. Their vegetation is therefore strongly resistant to these conditions. The west-facing cliffs are less impacted by wave action, although westerly gales do ensure that salt spray affects the habitat. This is a determining factor for their plant species assemblage.

3. Nesting birds include the Peregrine *Falco peregrinus*, with nesting sites around Camp Bay and the east side cliffs, Yellow-legged Gulls *Larus michahellis*, Alpine Swifts *Tachyparmptis melba*, Pallid Swifts *Apus pallidus*, Blue Rock Thrush *Monticola solitarius* and Mediterranean Shag *Phalacrocorax aristotelis* ssp. *desmarestii*. There is also a large wintering population of Crag Martins *Ptyonoprogne rupestris*.

4. Bat monitoring along the top of these cliffs has recorded foraging by European Free-tailed Bats *Tadarida teniotis* and Schreiber's Bats *Miniopterus schreibersi*, among other bat species.

¹² The Flowers of Gibraltar. 1996. Linares, L., Harper, A., Cortes, J.

3.1.ii. 2220 Dunes with *Euphorbia terracina*

1. The qualifying plants listed in the Natura 2000 interpretation manual of the EU on Habitats in this habitat include *Euphorbia terracina*, *Silene nicaeensis*, *Ephedra distachya* and *Silene subconica*. Of these, the main species *Euphorbia terracina* is present as well as *Silene nicaeensis*, while other similar species such as *Ephedra fragilis*, *Silene colorata*, *Allium sphaerocephalon*, *Pancratinum maritimum* and *Dipcadi serotinum* are also present, among other species. Dunes with *Euphorbia terracina* were once a common habitat on the sandy isthmus between the Rock of Gibraltar and the town of La Linea de la Concepción in Spain. Most of that land was developed and the habitat type is now restricted to a narrow band on the Great Sand Slopes that survived the conversion of the rest of the slope into a water catchment in the early 1900s. The water catchments were eventually decommissioned in the early 1990s and the area was re-seeded by the Gibraltar Botanic Gardens and the Gibraltar Ornithological & Natural History Society (GONHS)¹³, using seeds of native plants found in similar habitat.

2. Bird species include Barbary Partridge *Alectoris barbara*, Sardinian Warbler *Sylvia melanocephala*, Blue Rock Thrush *Monticola solitarius* and wintering Black Redstarts *Phoenicurus ochruros*.

3. Other fauna include the Bedriaga's Skink *Chalcides bedriagai*, an Annex IV¹⁴ species, and the Three-toed Skink *Chalcides striatus*. *Euphorbia terracina* is the main food plant of the Spurge Hawkmoth *Hyles euphorbiae* in Gibraltar.

3.1.iii. 2230 *Malcolmietalia* dune grasslands

1. The qualifying plants listed in the Natura 2000 interpretation manual of the EU on Habitats include plants of deep sands in dry interdunal depressions of the coasts, such as *Malcolmia lacera*, *M. ramosissima*, *Evax astericiflora*, *E.*

¹³ GONHS Gibraltar Ornithological & Natural History Society.

¹⁴ Animal and plant species of community interest in need of strict protection

lusitanica, *Anthyllis hamosa* and *Linaria pedunculata*. A wide variety of flowering plants and grasses have colonised this habitat and they contribute to the abundant spring bloom referred to in the interpretation manual. Species characteristic of this habitat include *Malcolmia littorea*, *Anthyllis hamosa*, *Linaria pedunculata*, *Linaria amethystea*, *Linaria tristis*, *Lobularia maritima* and *Verbascum thapsus* subsp. *giganteum*. A total of 197 vascular plants have so far been identified in this habitat, including a specimen of the near-extinct endemic *Silene tomentosa*. This habitat is restricted to the east slopes of Gibraltar. It includes a large part of the Great Sand Slopes (which were once covered in corrugated iron sheets as a water catchment), the northern and southern Talus slopes. The habitat is composed of sandy, fossilised dunes that extend from 25m to over 300m above sea level, at an angle of over 40°.

2. Bird species include Barbary Partridge *Alectoris barbara*, Common Kestrel *Falco tinnunculus*, Yellow-legged Gull *Larus michahellis*, Blue Rock Thrush *Monticola solitarius* and wintering Black Redstarts *Phoenicurus ochruros*.

3. Other species of significance include the hoverfly *Meredon luteihumerus*, a scorpion *Buthus* sp., the endemic beetle *Buprestis sanguinea* ssp. *calpetana* and reptiles that include the Horseshoe Whip Snake *Hemorrhois hippocrepis*, Southern Smooth snake *Coronella girondica* and Montpellier's snake *Malpolon monspessulanus*, as well as Bedriaga's Skink *Chalcides bedriagai* and Three-toed Skink *Chalcides striatus*.

4. The east side of the Rock is sheltered from westerly winds and is a foraging habitat for bats, including Free-tailed Bats *Tadarida teniotis* and Schreiber's Bats *Miniopterus schreibersi*.

3.1.iv. 5320 Mattoral with *Laurus nobilis*

1. The qualifying plants for this habitat listed in the Natura 2000 interpretation manual of the EU on Habitats include *Arbutus unedo*, *Ceratonia siliqua*, *Fraxinus ornus*, *Laurus nobilis*, *Olea europaea* var. *sylvestris*, *Phillyrea latifolia*, *Quercus ilex*, *Rubia peregrina* ssp. *longifolia*, *Smilax aspera* var. *altissima* and

Viburnum tinus. The composition in Gibraltar of this, a priority habitat listed in Annex I of the Habitats Directive, includes *Ceratonia siliqua*, *Crataegus monogyna* ssp. *brevispina*, *Fraxinus angustifolia*, *Laurus nobilis*, *Olea europea* var. *sylvestris*, *Rubia peregrina* and *Smilax aspera*, among other species. The habitat is restricted to a narrow corridor that extends from North Gorge up towards the Gibraltar Nature Reserve along Jews' Gate, including the Mount gardens area, with smaller patches southwards towards the area of St. Michael's Cave area.

2. Migratory, resident and wintering passerines utilise this habitat. Bats also forage over this habitat. The Funnel-web Spider *Macrothele calpeiana*, a species protected under the Nature Protection Act 1991 and in Annex IV of the Habitats Directive, is common. The Horseshoe Whip Snake *Hemorrhois hippocrepsis* is also common.

3.1.v. 5320 Low formations of *Euphorbia* close to cliffs

1. The qualifying plants listed for this habitat in the Natura 2000 interpretation manual of the EU on Habitats include low formations of *Helichrysum* (*H. italicum* ssp. *microphyllum*, *H. italicum* ssp. *italicum*) with spurges (*Euphorbia pithyusa*), *Pistacia lentiscus*, *Camphorosma monspeliaca*, *Artemisia densiflora* or *Thymelaea passerina*, *T. hirsuta* or *T. tartonraira* in the immediate vicinity of sea cliffs, forming the transition between cliff vegetation or clifftop garrigue and thermo-Mediterranean scrub. The habitat in Gibraltar contains *Euphorbia squamigera*, *Smilax aspera*, *Asphodelus albus*, *Asphodelus ramosus*, *Drimia maritima*, *Scilla peruviana*, *Succowia balearica*, *Macrochloa tenacissima* and *Ephedra fragilis*, among other characteristic species. The main location for this habitat is along the margins of the cliffs at Windmill Hill Flats, the south-facing slopes along Mediterranean Steps and along the ridge of the Rock, from O'Hara's Battery to Middle Hill and Rock Gun.

2. Bird species include migratory, resident and wintering passerines such as the Blue Rock Thrush *Monticola solitarius*, Northern Wheatear *Oenanthe*

oenanthe and Black Redstart *Phoenicurus ochruros*, as well as Barbary Partridge *Alectoris barbara*.

3. Free-tailed Bats *Tadarida teniotis* and Schreiber's Bats *Miniopterus schreibersi* forage along the cliff habitat.

3.1.vi. 8210 Vegetated Calcareous inland cliffs with chasmophytic vegetation

This habitat contains vegetation of fissures of limestone cliffs in the Mediterranean region, which can vary substantially according to the region where these communities are found. They include ferns of the genera *Polypodium* and *Asplenium*, with populations of *Saxifraga* spp. The habitat type presents a great regional diversity, with many endemic plant species. This is true in Gibraltar, as most of Gibraltar's endemic and near-endemic species maintain a stronghold on limestone cliffs. The habitat in Gibraltar is extensive and includes the east side cliffs and the north face of the Rock, including the cliffs to the west to Princess Caroline's Battery. Cliffs on the western side of the Rock also contain elements of this vegetation type. The most important stands of Gibraltar Saxifrage *Saxifraga globulifera* var. *gibraltarica*, Gibraltar Chickweed *Cerastium gibraltaricum*, Gibraltar Candytuft *Iberis gibraltarica* and Gibraltar Thyme *Thymus willdenowii* are found in this habitat, where the Gibraltar Champion *Silene tomentosa* probably still survives. All these species are protected under the Nature Protection Act 1991.

2. Important bird species include the Peregrine *Falco peregrinus*, Lesser Kestrel *Falco naumanni*, Common Kestrel *Falco tinnunculus*, Little Owl *Athene noctua*, Alpine Swift *Tachymarptis melba* and Eagle Owl *Bubo bubo*. These species are included in Annex I of the Birds Directive¹⁵, except the Little Owl and the Common Kestrel.

¹⁵ Directive 2009/147/EC of the European parliament and of the Council of the 30th November 2009 on the conservation of wild birds.

3.1.vii. Caves not open to the public: 8310

1. Qualifying plants in this habitat are limited to those found in cave entrances and include mosses and algal carpets. Gibraltar has over two hundred caves, from sea-level to the summit of the Rock. Caves in Gibraltar can be classified as:

- Submerged sea caves that were formed during glacial periods.
- Sea caves with large entrances that have been formed by wave action.
- Small caverns with natural entrances.
- Fissure systems, including some extensive caves with caverns.
- Karstic systems, including some extensive caves that contain caverns and bodies of water.

2. Qualifying animals in the interpretation manual include very specialised and highly endemic cavernicolous fauna. This fauna is mainly composed of invertebrates that live exclusively in caves and underground waters. Notable among cavernicolous terrestrial invertebrates are Coleoptera, belonging to the Bathysciinae and Trechinae subfamilies in particular, which have a very limited distribution. Cavernicolous aquatic invertebrates constitute a highly endemic fauna, dominated by crustaceans (Isopoda, Amphipoda, Syncarida, Copepoda). Several species can coexist in the same cave. Monitoring of invertebrate fauna in caves is taking place in Gibraltar, in order to catalogue this specialised fauna. There are already records of Trechinae sp., Diplopoda spp., Chilopoda spp. and Opiliones sp., together with aquatic crustacean species. Some of these are new to science. The Gibraltar funnel-web Spider *Macrothele calpeiana* is found in the entrance chambers of some caves in Gibraltar.

3. With regard to vertebrates, caves constitute roosting sites for most European bat species, among which many are threatened (see Annex II). Bats were once numerous in several caves in Gibraltar, but in recent years their numbers have declined. One of the objectives for this habitat is to protect those caves that

were once bat roosts, with measures implemented to impede access by erecting fences and bat grilles. The Gib-Bats Group (formed by members from the Gibraltar Ornithological & Natural History Society (GONHS) and the Gibraltar Museum) has among its objectives the monitoring of bat species to determine how many species there are and monitoring the population of Schreiber's Bats *Miniopterus schreibersi* and their roosts. Measures so far implemented to achieve a FCS include the erection of bat grilles at the entrances of roosts, CCTV surveillance, monitoring bat activity throughout Gibraltar at different sites, and the capture, marking with rings and identification of bats on a regular basis.

3.1.viii. *Olea* and *Ceratonia* forests: 9320

1. This habitat is comprised of Wild Olive *Olea europaea* ssp. *sylvestris* woodland-dominated formations. In Gibraltar the habitat dominates the Gibraltar Nature Reserve, where the Wild Olive *Olea europaea* ssp. *sylvestris* is the dominant species. The habitat includes Carob *Ceratonia siliqua*, together with *Osyris quadripartite*, *Pistacia lentiscus*, *Pistacia terebinthus*, *Rhamnus alaternus*, *Rhamnus lycioides* and *Philyrea latifolia*, as well as many other species that are typical of southern Andalusia.

2. This habitat is the main foraging and breeding ground for many of Gibraltar's resident passerine species. It is also a stop-over and refuelling post for migratory passerines, as well as a wintering ground. Barbary Partridges *Alectoris barbara* are found here, together with Sardinian Warblers *Sylvia melanocephala*, Blackcaps *Sylvia atricapilla* and important concentrations of migratory birds during fall conditions, including large numbers of Black Redstarts *Phoenicurus ochruros*, Robins *Erithacus rubecula* and Blackcaps.

3. The habitat supports an interesting assemblage of invertebrates, including notable restricted-range and possibly endemic species of land snails (Mollusca: Gastropoda), beetles (Coleoptera) and ants (Hymenoptera: Formicidae).

4. Birds

4.1. Introduction

Gibraltar is located at the southwestern tip of Europe, separated from Africa by the Strait of Gibraltar, a 14km stretch of sea at its narrowest point. It is one of the major migratory routes across the Mediterranean. Hundreds of thousands of soaring birds and millions of passerines concentrate around the Strait during the migration periods. Most of the soaring raptors are classified under Annex I of the Birds Directive. Appendix I lists Annex I birds found in Gibraltar. A list of migratory birds not listed in Annex I can be found in Appendix II. This includes the approximate number of resident and breeding pairs, together with wintering population estimates and migratory population numbers.

5. Conservation Objectives and Measures

5.1 1240 Vegetated sea cliffs of the Mediterranean coasts with endemic *Limonium* spp.

- Maintain overall cover of the habitat type in Gibraltar.
- Update mapping with GIS of habitat type.
- Reduction in % cover of invasive plant species.
- GIS mapping of important areas for key nesting birds: Peregrine *Falco peregrinus*, Mediterranean Shag *Phalacrocorax aristotelis desmaresti*, Alpine Swift *Tachymarptis melba*, Pallid Swift *Apus pallidus*, Blue Rock Thrush *Monticola solitarius*.
- Maintain composition of notable plant species.
- Natural environmental quality and composition maintained.

5.2 2220 Dunes with *Euphorbia terracina*

- Increase overall cover of the habitat type in Gibraltar.
- Update mapping with GIS of habitat type.
- Mapping with GIS of the invasive ant species *Linepithema humile*, which is a negative indicator of habitat quality for other invertebrate species.
- Reduction in % cover of invasive plant species.
- Monitoring of Barbary Partridge *Alectoris barbara* numbers within the habitat.
- Maintain composition of notable plant species.
- Natural environmental quality and composition maintained.

5.3 2230 Malcolmietalia dune grasslands

- Maintain overall cover of the habitat type in Gibraltar.
- Reduction in % cover of invasive plant species, especially *Acacia* spp.
- Monitoring of Barbary Partridge *Alectoris barbara* numbers within the habitat.
- Update mapping with GIS of habitat type.
- Maintain composition of notable plant species.
- Natural environmental quality and composition maintained.

5.4 5230 Arborescent matorral with *Laurus nobilis*

- Extend overall cover of the habitat type in Gibraltar.
- Increase density of *Laurus nobilis* within the habitat type.
- Removal of exotic tree species in areas where these occur.
- Update mapping with GIS of habitat type.
- Survey all patches of habitat for presence and status of *Macrothele calpeiana*.
- Natural environmental quality and composition maintained.

5.5 5320 Low formations of *Euphorbia* close to cliffs

- Maintain overall cover of the habitat type in Gibraltar.

- Maintain cover of *Olea europaea* and other woody shrubs at no more than 15% of the overall cover of the habitat type, in order to prevent the development of maquis vegetation.
- Monitoring of Barbary Partridge *Alectoris barbara* numbers within the habitat.
- Update mapping with GIS of habitat type.
- Maintain composition of notable plant species.
- Natural environmental quality and composition maintained.

5.6 8210 Calcareous rocky slopes with chasmophytic vegetation

- Maintain overall cover of the habitat type in Gibraltar.
- Update mapping with GIS of habitat type.
- Reduction in % cover of invasive plant species.
- Reduction in number of Yellow-legged Gulls *Larus michahellis* in order to reduce impact on flora and avifauna.
- Mapping with GIS of nesting birds of prey.
- Maintain composition of notable plant species.
- Resume a *Silene tomentosa* reintroduction and monitoring programme.
- Natural environmental quality and composition maintained.

5.7 8310 Caves not open to the public

- Maintain overall cover of the habitat type in Gibraltar.
- Catalogue and monitor terrestrial and aquatic invertebrate species within caves.
- Monitor bats within caves.
- Monitor climatic conditions within key cave sites.
- Update mapping with GIS of habitat type.
- Natural environmental quality and composition maintained.

5.8 9320 *Olea* and *Ceratonia* Forests

- Maintain overall cover of the habitat type in Gibraltar.
- Increase density of *Ceratonia siliqua* within the habitat type.
- Update the vegetation survey in Perez & Bensusan (2005).
- Updated mapping with GIS of habitat type.
- Mapping with GIS of individual *Ceratonia siliqua* within habitat type.
- GIS mapping of presence of key invertebrate species within habitat, to include the globally rare ants *Technomyrmex vexatus* and *Temnothorax convexus*.
- Natural environmental quality and composition maintained.

6. Appendices

Appendix I: Birds listed in Annex I of Council Directive 79/409/EC that occur in Gibraltar

Code	Name	Population			Stage
		Resident	Breeding	Wintering	
A030	<i>Ciconia nigra</i>				101-250i
A031	<i>Ciconia ciconia</i>				501-1000i
A072	<i>Pernis apivorus</i>				>10000i
A073	<i>Milvus migrans</i>				>10000i
A074	<i>Milvus milvus</i>				1-5i
A077	<i>Neophron percnopterus</i>				101-250i
A078	<i>Gyps fulvus</i>				501-1000i
A079	<i>Aegypius monachus</i>				1-5i
A080	<i>Circaetus gallicus</i>				1001-10000i
A081	<i>Circus aeruginosus</i>				251-500i
A082	<i>Circus cyneus</i>				6-10i
A084	<i>Circus pygargus</i>				251-500i
A092	<i>Aquila pennata</i>			1-5i	1001-10000i
A094	<i>Pandion haliaetus</i>				51-100i
A095	<i>Falco naumanni</i>		6-10p		11-50i
A096	<i>Falco tinnunculus</i>	6-10p			51-100i
A098	<i>Falco columbarius</i>				1-5i
A100	<i>Falco eleonora</i>				11-50i
A103	<i>Falco peregrinus</i>	6-10p			1-5i
A111	<i>Alectoris barbara</i>	50p			
A215	<i>Bubo bubo</i>	1p			
A224	<i>Caprimulgus europaeus</i>				11-50i
A225	<i>Anthus campestris</i>				11-50i
A229	<i>Alcedo atthis</i>			1-5i	1-5i
A243	<i>Calandrella brachydactyla</i>				1-5i
A246	<i>Lullula arborea</i>				1-5i
A302	<i>Sylvia undata</i>				11-50i
A379	<i>Emberiza hortulana</i>				11-50i
A392	<i>Phalacrocorax aristotelis desmaresti</i>	6-11p			

Unit: i = individuals, p = pairs, p in Stage = passage.

Appendix II: Regularly occurring Migratory Birds not listed on Annex I of the Council Directive 79/409/EC

Code	Name	Population			Stage
		Resident	Breeding	Wintering	
A086	<i>Accipiter nisus</i>				1001-10000i
A087	<i>Buteo buteo</i>				6-10i
A099	<i>Falco subbuteo</i>				11-50i
A113	<i>Coturnix coturnix</i>				1-5i
A155	<i>Scolopax rusticola</i>			1-5i	
A210	<i>Streptopelia turtur</i>				6-10i
A211	<i>Clamator glandarius</i>				1-5i
A212	<i>Cuculus canorus</i>				1-5i
A214	<i>Otus scops</i>				11-50i
A225	<i>Caprimulgus ruficollis</i>				11-50i
A226	<i>Apus apus</i>		2000p		>10000i
A227	<i>Apus pallidus</i>		2000p		1001-10000i
A228	<i>Tachymarpis melba</i>		6-10p		101-250i
A230	<i>Merops apiaster</i>				1001-10000i
A232	<i>Upupa epops</i>				101-250i
A233	<i>Jynx torquilla</i>				11-50i
A245	<i>Galerida theklae</i>				1-5i
A247	<i>Alauda arvensis</i>			1-5i	6-10i
A249	<i>Riparia riparia</i>				51-100i
A250	<i>Ptyonoprogne rupestris</i>			101-250i	1001-10000i
A251	<i>Hirundo rustica</i>				1001-10000i
A252	<i>Hirundo daurica</i>				101-250i
A253	<i>Delichon urbicum</i>				1001-10000i
A256	<i>Anthus trivialis</i>				11-50i
A257	<i>Anthus pratensis</i>			51-100i	501-1000i
A260	<i>Motacilla flava</i>				101-250i
A261	<i>Motacilla cinerea</i>			6-10i	11-50i
A262	<i>Motacilla alba</i>			11-50i	101-250i
A266	<i>Prunella modularis</i>			1-5i	p
A267	<i>Prunella collaris</i>			1-5i	p
A268	<i>Cercotrichias galactotes</i>				1-5i
A269	<i>Erithacus rubecula</i>		1-5p	251-500i	1001-10000i
A271	<i>Luscinia megarhynchos</i>				251-500i
A273	<i>Phoenicurus ochrurus</i>			101-250i	1001-10000i
A274	<i>Phoenicurus phoenicurus</i>				101-250i
A275	<i>Saxicola rubetra</i>				51-100i
A276	<i>Saxicola torquata</i>			11-50i	101-250i
A277	<i>Oenanthe oenanthe</i>				101-250i
A278	<i>Oenanthe hispanica</i>				11-50i
A280	<i>Monticola saxatilis</i>				1-5i
A281	<i>Monticola solitarius</i>		20p		p
A282	<i>Turdus torquatus</i>				11-50i
A283	<i>Turdus merula</i>		51-100p		
A285	<i>Turdus philomelos</i>			11-50i	101-250i
A286	<i>Turdus iliacus</i>				11-50i
A289	<i>Cisticola juncidis</i>			6-10i	51-100i
A290	<i>Locustella naevia</i>				11-50i
A297	<i>Acrocephalus scirpaceus</i>				11-50i
A300	<i>Hippolais polyglotta</i>				251-500i
A303	<i>Sylvia conspiciolata</i>				6-10i

A304	<i>Sylvia cantillans</i>				101-250i
A305	<i>Sylvia melanocephala</i>	101-250p			p
A306	<i>Sylvia hortensis</i>				51-100i
A309	<i>Sylvia communis</i>				101-250i
A310	<i>Sylvia borin</i>				251-500i
A311	<i>Sturnus vulgaris</i>			1-5i	p
A311	<i>Sylvia atricapilla</i>	101-250p		501-1000i	1001-10000i
A313	<i>Phylloscopus bonelli</i>				501-1000i
A314	<i>Phylloscopus sibilatrix</i>				6-10i
A315	<i>Phylloscopus collybita</i>			101-250i	501-1000i
A316	<i>Phylloscopus trochilus</i>				1001-10000i
A618	<i>Phylloscopus ibericus</i>				101-250i
A318	<i>Regulus ignicapillus</i>			6-10i	11-50i
A319	<i>Muscicapa striata</i>				101-250i
A322	<i>Ficedula hypoleuca</i>				501-1000i
A335	<i>Certhia brachydactyla</i>				1-5i
A337	<i>Oriolus oriolus</i>				11-50i
A341	<i>Lanius senator</i>				101-250i
A359	<i>Fringilla coelebs</i>			51-100i	1001-10000i
A361	<i>Serinus serinus</i>	1-5p		11-50i	1001-10000i
A363	<i>Carduelis chloris</i>	11-50p			1001-10000i
A364	<i>Carduelis carduelis</i>			51-100i	1001-10000i
A365	<i>Carduelis spinus</i>			11-50i	101-250i
A366	<i>Carduelis cannabina</i>			6-10i	251-500i
A383	<i>Emberiza calandra</i>				51-100i
A438	<i>Iduna pallida</i>				1-5i

Unit: I = individuals, p = pairs, p in Stage = passage.

Appendix III: Terrestrial animals in Schedule 1 of the Nature Protection Act 1991

Mammals	
Insectivora	Insectivores
<i>Erinaceidae</i>	Hedgehogs
<i>Talpidae</i>	Moles
<i>Soricidae</i>	Shrews
Chiroptera	Bats
all species	All species
Primates	Monkeys
<i>Macaca sylvanus</i>	Barbary macaque
Carnivora	Carnivores
<i>Vulpes vulpes</i>	Red fox
Rodentia	Rodents
<i>Eliomys quercinus</i>	Garden dormouse
Lagomorpha	Rabbits & Hares
<i>Oryctolagus cuniculus</i>	Rabbit
Reptilia	Reptiles
All species	All species
Insects	
Lepidoptera	Butterflies & Moths
<i>Iphiclides podalirius</i>	Scarce Swallowtail
<i>Euchloe tagis</i>	Portuguese Dappled White
<i>Anthocharis belia</i>	Morocco Orange-tip
<i>Gonepteryx rhamni</i>	Brimstone
<i>Danaus chryssipus</i>	Plain Tiger
<i>Melanargia ines</i>	Spanish Marbled White
<i>Pryonia cecilia</i>	Southern Gatekeeper
<i>Strymonodia spini</i>	Blue-spot Hairstreak
<i>Tomares ballus</i>	Provence Hairstreak
<i>Zizeeria knysna</i>	African Grass Blue
<i>Carcharodes alceae</i>	Mallow Skipper
<i>Spilia sertorius</i>	Red Underwing Skipper
<i>Borbo borbonica</i>	Zeller's Skipper
<i>Zygaena fausta</i> ssp. <i>gibraltarica</i>	Gibraltar Burnet Moth
<i>Dictyoptera</i>	mantids
All species	All species

Other invertebrates	
Arachnida	Spiders
<i>Macrothele calpeiana</i>	Gibraltar Funnel-web Spider
Chilopoda	Centipedes & Millipedes
<i>Scolopendra cingulatus</i>	Scolopendra
Gastropoda	Gastropods
<i>Ceciliodes</i> spp.	<i>Ceciliodes</i> spp.
<i>Testacella maugei</i>	Mauge's Slug
<i>Vitrea contracta</i>	Glass Snail
<i>Oxychilus draparnaudi</i>	
<i>Oxychilus hudatinus</i>	
<i>Parmacella valencienii</i>	
<i>Milax nigricans</i>	
<i>Deroceras ponsonbyi</i>	Ponsonby's Slug
<i>Trichia hispida</i>	Hairy Snail
<i>Helicella apicina</i>	
<i>Helicella conspurcata</i>	
<i>Candidula intersecta</i>	Wrinkled Snail
<i>Cernuella virgata</i>	Striped Snail
<i>Cochlicella acuta</i>	Pointed Snail
<i>Caracollina lenticula</i>	
<i>Osteophora calpeana</i>	
<i>Cumbium olla</i>	