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CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

**Group of Experts
on European Islands Biological Diversity**

Galéria (Corsica, France), 9-11 June 2011

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REPORT

*Document
prepared by
the Directorate of Culture and Cultural and Natural Heritage*

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The Group of Experts on European Island Biological Diversity held its 3rd meeting in Galéria (Corsica, France) from 9 to 11 June 2011.

The Standing Committee is invited to:

1. Take note of the report of the meeting, in particular of the on-going work in different Contracting Parties and of the activities carried out by Observer Organisations;
2. Thank the French Conservation authorities and Regional Corsican authorities for the excellent preparation of the meeting;
3. Examine and, if appropriate, adopt the draft recommendation on the Charter on the Conservation and Sustainable Use of Biological Diversity on European Islands (appendix 4 to this document);
4. Take note of the proposals of the Group of Experts on priorities for conserving biodiversity on European islands.

WELCOME

A number of local, regional and governmental authorities welcomed participants to Galéria and Corsica, including the sub-Prefect, the Mayor of Galéria, the President of the Board of the Regional Park of Corsica, and representatives from conservation authorities at regional and central governments.

Many interventions pointed out to the importance of island biodiversity, especially in Corsica and noted the action of the Ministry of Ecology, Sustainable Development, Transport and Housing and local and regional governments in the protection of native biodiversity.

The Secretariat, in the name of the Council of Europe, thanked French authorities for the excellent organisation of the meeting, for their support and hospitality.

1. OPENING OF THE MEETING

The Chair, Mr Øystein Størkersen, welcomed participants (list in appendix 1) and noted the progress made since the last meeting of the Group and hoped this third meeting could conclude with the finalisation of a Charter on European Island Biodiversity and the proposals of some priorities for action.

Two presentations were made on the biological and conservation interest of Corsica, one by Mr A. Osnisi, focused on Corsican freshwater ecosystems and endemic species and another one by Mr Jean-Marie Dominici, presenting the Scandola Reserve that was to be visited at the end of the meeting. Both presentations provided participants with a good view of the extraordinary biological richness of Corsica and the Scandola Reserve.

2. ADOPTION OF THE AGENDA

The Agenda was adopted as it figures in appendix 2 to the report.

3. REPORTS FROM STATES AND INTERNATIONAL ORGANISATIONS

Written reports submitted by France, Ireland and United Kingdom can be found in appendix 3 to this document.

Ms Catherine Numa (IUCN – Centre for Mediterranean Co-operation) made a presentation on the priorities of the Centre. They are working on Mediterranean Red Lists (starting with plants, insects and coral species) and also on identification of areas of importance for biodiversity. They have organised a Forum on inhabited islands in the Mediterranean (Palma, 21-22 October 2011) aimed at networking Mediterranean work on biodiversity in small inhabited islands. Another project of the Centre intends to create an internet based clearing-house mechanism on Mediterranean biodiversity.

Mr Igor Boršić, from Croatia, made a short presentation on current biodiversity work on Croatian islands, of which there are 1,185, covering 5.8 % of the national territory. Plant biodiversity has been subject to a survey in 106 islands, finding 1,807 species including 89 Adriatic species and 35 narrow endemics. Two Hundred vertebrate species are found in Croatian islands, including 13 endemic taxa of the Dalmatian wall lizard. Invasive species is a particular problem, along other (tourism, illegal building, human pressure, abandonment of traditional activities, etc.). A project aims to set-up a network of marine areas for integration in Natura 2000 in view of the accession of Croatia to the European Union.

Mr Bernard Recorbet made a presentation on continental France, stressing the existence of a national strategy for biodiversity that aims, among other actions, to create a global national survey to record biodiversity, including island and coastline. In France coastal protection is helped by the acquisition by the State of coastal areas of biodiversity importance (*Conservatoire du Littoral*). Creation of more protected areas and ecological networks ("*Trame verte-bleu*") is on-going. Over 203 coastal areas have been designated including 33 marine reserves. Three Regional Parks exist on islands, in Cotentin, Brittany and Corsica, including all interesting mountain taxa. Three new marine parks are to be declared soon. Fifteen existing natural reserves are placed on islands. He explained in detail a number of mechanisms for action on threatened species and habitats.

Mr Mohamed Chaieb, representing Tunisia, made a presentation for his State. Six main islands are well studied for their biodiversity. They contain high biological values both on their terrestrial and marine parts. Some of them do need urgent protection because of the threats on them.

Ms Naomi Kingston, delegate of Ireland, presented some of the key species and conservation work in her country. Ireland has embarked in National Vegetation Database Project aimed at mapping biodiversity values. Threats on biodiversity are increasing and resources are not increasing. There is a new strategy on invasive alien species, an important threat. Action plans are being implemented for most threatened species, like the Roseate Tern. Some projects aim to preserve farmland of high biodiversity value.

Mr Ian Bainbridge, representing the United Kingdom, gave an update of the 2010 United Kingdom report with some action having been taken in Scotland. One is a special legislation in Scotland that gives conservation authorities many powers to control or eradicate invasive alien species. Geese are also a matter for special concern, efforts being focused in defining what “acceptable populations” may be, so as to limit undesired effects. Rat control is also progressing, especially as new scientific projects are trying to eradicate rodents from some islands.

Mr Paulo Vieira Borges, from the Azores (Portugal): Invasive species are one of the main threats. Each of the 9 islands in Azores is creating a nature park. Still knowledge on the very rich flora and fauna is not complete, a very good proportion of species are endemic. Deforestation has been strong in most islands. Only in a relatively small surface of the forests of Azores are native forest with native species. Disturbance of natural habitats reduces much the presence of native species.

Mr Øystein Størkersen, representing Norway, presented an update of the report of Norway [document T-PVS (2010) 12 appendix .6]. He informed the Group on the efforts of his country to control invasive alien fish and other freshwater species. Several methods were being used for control of introduced fish, some involving chemicals. New legislation was being passed on IAS. Trade will be forbidden for many species. Liability clauses will be included to deter new introductions. Work was being done to reduce the impact of electric lines on birds, including burying some lines. There was a plan to eradicate mink on islands and establish strong controls around main bird breeding sites in mainland Norway. Climate change remained a strong concern, with a measured rise of 2°C of sea water temperatures in Southern Norway. Raccoon dog was being controlled. Special conservation measures in Svalbard are being taken for some goose species (Pink-footed goose and other).

Flora of Corsica – Problems with invasive alien species: Ms Hugot, from the Conservatoire botanique de Corse, made a very full presentation on the richness of Corsican flora, its relation with other territories and its main endemic species and their threats. Concerning invasive alien species, work is being focused on prevention and on identifying species that are having impacts on natural habitats. A system of early warning has been put in place by botanists.

Biosphere Reserves and their importance on islands: Mr Miguel Clüsener-Godt (UNESCO) informed the Group that there are 563 Biosphere Reserves in 110 countries. In many European countries, Biosphere Reserves are protected areas and some of them are on islands. In all they apply a very full and complete conservation strategy, the “Madrid Action Plan for Biosphere Reserves (2008-2013). A network of Mediterranean Biospheres Reserves has been created, with specific actions and secretariat placed in the Biosphere Reserve in Minorca.

Mr Fabrice Bernard (*Conservatoire du Littoral*) presented a project on small islands in the Mediterranean (most of them uninhabited). There are 15,000 islands with less than 3,000 ha in the Mediterranean. The project aims to improve sustainability in small islands, promoting good practice and a sounder spatial planning. Five States take part in the project. A few pilot actions have been launched (also on cultural heritage, on energy use, on good biodiversity, on invasive alien species). Much of the work is done on-the-spot. Training is also an important aspect of the project, as well as data gathering.

4. EUROPEAN CHARTER ON ISLAND BIODIVERSITY

[Document T-PVS/Inf (2011) 8]

Mr Yves de Soye, Consultant, presented the new version of the Charter on the Conservation and Sustainable Use of Biological Diversity of European Islands, as modified by all the comments received from governments. He explained the reach and purpose of the Charter as both an incitative document and a statement of principles of good governance and conservation for islands.

The Group agreed that the geographical scope of the Charter would cover Macaronesian islands, Iceland, North-East Atlantic and the Mediterranean and Black Sea.

The Group discussed in detail the different points of the Charter and agreed that it be submitted to the Standing Committee to the Bern Convention attached to the draft recommendation in appendix 4 to this report.

5. INVASIVE ALIEN SPECIES ON ISLANDS: ON-GOING WORK IN THE FRAMEWORK OF THE CONVENTION

[Document T-PVS (2011) 6]

The Secretariat presented briefly the Convention's work on invasive alien species. The Bern Convention Group of Experts had recently met in Malta and had examined the implementation of the European Strategy on Invasive Alien Species and the Code of Conduct on Horticulture and IAS. New Codes of Conduct were in preparation on Hunting and IAS, on Companion Animals and IAS (both nearly finalised), on IAS in Zoos and Aquaria, and on IAS and Botanic Gardens. The Group was also working on IAS and protected areas.

This approach, focusing on voluntary instruments, was complementary of the new focus of the European Union on the preparation of a "dedicated legislative instrument on IAS", a process that was to start soon.

6. PRIORITIES FOR ACTION

[Document T-PVS/Inf (2011) 9]

In the absence of the Consultant (Mr Pete Robertson), Mr Ian Bainbridge – who had been providing ideas and proposals for this exercise – presented the report.

Such report contained a very full set of proposals for future action that might be implemented by governments. The report had also a good input from the Group at its previous meeting in Svalbard. As in all "priority-setting" exercise, some choices had been made but the nature of the document was neither to be comprehensive – so that many other actions on island biodiversity may be done – nor universal – for some islands not all the priorities mentioned need to be the most important. It was an "incitative" document in which governments and NGOs alike could find useful guidance for their island biodiversity work programmes.

Many comments were made by participants, among which:

- The document could mention waste management as a challenge in some small islands;
- The document could mention that islands will be of fundamental importance in the implementation of CBD commitment on coastal areas as they have a high share of the European coastline;
- It was noted that not all endemic species were threatened so that a particular emphasis should be accorded to threatened endemics;
- Fire could also be an element of threat, even if well-managed fire use could also contribute to creating high-value mosaics where biodiversity is rich;
- Ex-situ conservation might play a future important role in island species threatened by climate change;

- It would be appropriate to review the use of the term “EU” in the document, to see whether the word “European” could be more precise in some cases;
- The importance of awareness for biodiversity and the “ecosystem approach” for conservation may be mentioned;
- It could be appropriate to present the priorities for action as a support for governments wishing to meet the targets and obligation in CBD and the Bern Convention.

The Group showed a great support to the document and the proposals made and requested the Secretariat to submit it to CBD, after endorsement of the Charter by the Standing Committee to the Convention.

7. PROPOSALS TO THE STANDING COMMITTEE

The Group proposed that the Standing Committee, within the limits of its resources, continue to devote attention to island biodiversity. The Group thought it would be appropriate to meet in two or three years to monitor progress in the implementation of the Charter and of the priorities proposed.

8. IDEAS ON HOW TO NETWORK ISLAND WORK

Several participants suggested that, on top of each government carrying out its own conservation activities, it would be a good idea to network some island conservation work around a common project, to be proposed for finance as a LIFE project or other appropriate mechanism.

9. ELECTION OF CHAIR

Mr Giuseppe Brundu (Italy) was elected Chair.

Appendix 1

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Appendix 2



Bern Convention Group of Experts on European Island Biological Diversity 3rd meeting

Galéria, Corsica, France (9-11 June 2011)
9.30am – 6.00 pm

AGENDA

WELCOME BY NATIONAL, REGIONAL AND LOCAL AUTHORITIES

1. OPENING OF THE MEETING BY THE CHAIR

Short presentations on the biodiversity of Corsica and its main conservation challenges:

- Endemics species and ecosystem of fresh water
- Scandola terrestrial and Marine reserve

2. ADOPTION OF THE AGENDA

3. REPORTS BY STATES AND INTERNATIONAL ORGANISATIONS

[document T-PVS/Inf (2011) 10]

- Mediterranean and Black Sea
Presentation by IUCN Centre for Mediterranean Cooperation, France, Croatia
- North Atlantic and Baltic
Presentation by Ireland, United Kingdom, Norway
- Macaronesia
Presentation by Azores, Portugal
- Flora in Corsica and the problematic of IAS on islands
- Biosphere Reserves and their importance on islands
- Work on small uninhabited islands in the Mediterranean

4. EUROPEAN CHARTER ON ISLANDS

[document T-PVS/Inf (2011) 8]

5. IAS ON ISLANDS: ON-GOING WORK IN THE FRAMEWORK OF THE CONVENTION

[document T-PVS (2011) 6]

6. PRIORITIES FOR ACTION

7. PROPOSALS TO THE STANDING COMMITTEE OF THE BERN CONVENTION

8. IDEAS ON HOW TO NETWORK ISLAND WORK

9. ELECTION OF CHAIR

Appendix 3

COMPILATION OF NATIONAL REPORTS ON ACTIVITIES RELATED TO BIOLOGICAL DIVERSITY ON EUROPEAN ISLANDS

Contents / Sommaire

1. France / France
2. Ireland / Irlande
3. Italy / Italie
4. Malta / Malte
5. United Kingdom / Royaume-Uni

1. FRANCE / FRANCE

RESUME

La France métropolitaine compte un nombre très important d'îles et d'îlots (près de 1300) situés pour un part importante en Bretagne et en Méditerranée, la Corse représentant à elle seule plus de 90% des surfaces insulaires françaises de métropole.

La biodiversité de ces îles est particulièrement remarquable et est mise en évidence par de nombreux outils d'inventaires et de protections :

- l'inventaire de Zones Naturelles d'Intérêt Ecologique Faunistique et Floristique (ZNIEFF). 80% des îles françaises sont couvertes pour cet inventaire ;
- Natura 2000 : 10% des surfaces couvertes par ce dispositif sont des îles ;
- Les parcs naturels régionaux : la Corse et la Bretagnes sont concernées
- Les parcs nationaux : Port Cros
- Les parcs marins (l'Iroise)
- Les réserves naturelles : 15 concernent en tout ou partie des îles
- Les arrêtés préfectoraux de biotope : près de 70 concernent en tout ou partie des îles

Il faut souligner le rôle particulier joué par le Conservatoire des Espaces Littoraux et de Rivages Lacustres dont la vocation est d'acheter des terrains pour les soustraire aux aménagements et à la spéculation foncière. Cet organisme à acquis, depuis sa création en 1975, près de 21000 hectares sur des îles.

Le rôle des conservatoires botaniques nationaux est également très important et porte principalement sur des actions d'acquisition de la connaissance sur la flore, avec un point focal sur la flore remarquable, un travail de veille/sensibilisation sur les espèces exotiques envahissantes et enfin un travail de recensement et de cartographie des habitats.

D'autres outils tels que les réserves de biosphère du programme MAB, les zones humides « RAMSAR », le parc international des Bouches de Bonifacio en Corse, le sanctuaire PELAGOS pour les cétacés en Méditerranée.... viennent compléter le dispositif.

La biodiversité de ces îles est fragile et elle est menacée par différents facteurs dont deux font l'objet de développements particuliers :

- les espèces exotiques envahissantes. Ce problème est particulièrement inquiétant en milieu insulaire et le rapport fait la synthèse des actions de contrôle, d'éradication et de suivis qui sont actuellement mise en œuvre sur les îles françaises ;
- les impacts du réchauffement climatique.

Face à ces menaces le constat de la nécessité de renforcer la protection de la biodiversité insulaire est posé, en accord d'ailleurs avec les politiques issues du Grenelle de l'environnement : stratégies de création d'aires protégées, trame verte et bleue, atlas de la biodiversité communale ou ou plus anciennes tels que les plans nationaux d'action.

Pour les Bouches de Bonifacio, site écologique particulièrement riche, les ministres italien et français ont signé le en juin 2010 à Palau (Sardaigne) deux déclarations, l'une relative à la création du parc marin international des Bouches de Bonifacio et l'autre relative à une demande à l'ONU d'interdire le passage dans les Bouches de Bonifacio des navires transportant des marchandises dangereuses. Dans l'attente de cette interdiction, ils ont transmis à l' Organisation Maritime Internationale le 25 juin dernier une

demande de désignation des Bouches de Bonifacio comme Zone Maritime particulièrement Vulnérable (ZMPV).

A l'avenir plusieurs piste d'études et d'actions sont à mettre en œuvre telles que :

- l'étude des conséquences du développement du tourisme
- l'approfondissement des connaissances sur les invertébrés
- l'étude des conséquences des changements climatiques sur les espèces endémiques
- les conséquences du développement des énergies renouvelables sur la biodiversité insulaire.

Et un certain nombre de mesures spécifiques à la Corse qui concentre de nombreux enjeux du fait de son taux d'endémisme élevé :

- créer au moins deux réserves naturelles en montagne ; si le littoral constitue un espace particulièrement sensible et menacée par les activités touristiques, les zones de montagne insulaires soumises à une pression touristique croissante et jusque là épargnées sont à surveiller, en Corse en particulier.
- consolider le réseau des réserves sur le littoral, au Cap Corse et entre le golfe de Porto (aire du site du patrimoine mondial) et Calvi.
- délimiter de toute urgence le Domaine Public Maritime sur l'ensemble des plages et arrières plages, lieux d'enjeux de conservation très importants , afin de mettre en place une gestion réelle des formations végétales associées (*Anchusa crispa*, *Linaria flava*, *susp. Sardoia*, *Limonium strictissimum*, *Euphorbia peplis*, etc...)
- renforcer la réglementation et les contrôles sur l'introduction d'espèces exogènes à la Corse
- interdire l'introduction de Truites farios de souche atlantique dans les torrents d'altitude (>500 m)

poursuivre les partenariats entrepris entre le Conservatoire botanique national de Corse et les autorités des îles toscanes, sardes et Baléares et les étendre via les réseaux universitaires aux cortèges faunistiques

SUMMARY

There is an important number of Island and Islets in Metropolitan France (almost 1300), principally situated in Brittany and Mediterranean Sea. Corsica count for more than 90% of this superficy of French metropolitan island.

The island biodiversity is specially important and covered by numerous assessments and protection tools :

- Natural Areas of Ecological, Faunistical and Floristical Interest (ZNIIEFF) census. 80 of the French islands are covered by this assesement ;
- Natura 2000 : 10% of the French sites are situated on islands ;
- Regional Naturel Parks: Corsica and Brittany
- National Parks : Port Cros
- Marine Parks (l'Iroise)
- Natural Reserves : 15 are situated on islands
- Biotop Prefectoral : almost 70 are situated on islands

We should mention the particular task of the Costline Spaces Conservatory who buy in order to protect them from urbanisation plans. Since 1975, this institution have bought approximately 21000 hectares on islands.

The National Botanical Conservatoriesworkb is also very important. They manage botanical surveys with special interest on rare and threatened plants, monitoring on invasive species, and habitats mapping.

Other tools like Biosphere Reserves (MAB project), RAMSAR wetlands, International Park of Bonifacio Mouths in Corsica, PELAGOS cetacean sanctuary in Mediterranean sea are involved on island biodiversity protection.

Island biodiversity is sensitive and threatened by several factors including two which are specially discussed :

- Invasive species. This is a specially frightening problem for island ecosystems. This report make a synthesis on regulation, eradication and monitoring actions actually conducted in french islands ;
- Climate change impacts.

Facing these threats, it seems necessary to reinforces island biodiversity protection. Some plans are already in action, following the “Grenelle of environnement” like : protected areas creation strategy, Green and Blue framework, communal biodiversity atlas, and some more ancient like species national action plans.

- For the Mouths of Bonifacio, particularly rich ecological site, the ministers Italian and French signed in June 2010 in Palau (Sardinia) two declarations, the one relating one to the creation of the international marine park of the Mouths of Bonifacio and the other relative one to a request with UNO to prohibit the passage in the Mouths of Bonifacio the ships carrying dangerous goods. I studies on invertebrates ;
- Impact of climate change on endemics species
- Impact of « green energy » on island biodiversity

And specific measures in Corsica who concentrates many stakes because a rate of high endemism:

- to create at least 2 natural reserves in mountain; if the littoral constitutes a space particularly sensitive and threatened by the tourist activities, the insular mountainous areas subjected to an increasing tourist pressure and until saved there are to be supervised, in Corsica in particular.
- to consolidate the network of the reserves on the littoral, in the Corsica Cape and between the gulf of Porto (surface of the site of the world heritage) and Calvi .
- to urgently delimit the Maritime Domain Public on the whole of the beaches and back beaches, places of very important stakes of conservation, in order to set up a real management of the associated vegetation formations (*Anchusa crispera*, *Linaria flava*, *susp. Sardoia*, *Limonium strictissimum*, *Euphorbia peplis*, etc...)
- to reinforce the regulation and controls on the introduction of exogenic species to Corsica .
- to prohibit the introduction of Trouts farios of Atlantic stock into the torrents of altitude (> 500 m) .
- to continue the partnerships undertaken between the national botanical Academy of Corsica and the authorities of the Tuscan, Sardinian islands and Balearic Islands and to extend them via the university networks to the faunistic species

Some studies and actions could be explored for the future :

- impacts of tourism on biodiversity ;
- studies on invertebrates ;
- Impact of climate change on endemics species
- Impact of « green energy » on island biodiversity

2. IRELAND / IRLANDE

PREPARED BY

NATIONAL PARKS & WILDLIFE SERVICE, DEPARTMENT OF ARTS, HERITAGE AND LOCAL GOVERNMENT

General characteristics

Ireland’s biodiversity is a product of its glacial history, complex geology and oceanic climate coupled with a long history of human influence. Owing to geographic isolation, Ireland has a depauperate flora and fauna by European standards, with few endemics (table 1). However, the mild, wet climate and relatively unpolluted atmosphere mean that many of the habitats in Ireland are of international importance (e.g. machair, turloughs, raised bogs, limestone pavement) due to their scarcity and the unique species communities found on them (e.g. species characteristic of alpine and Mediterranean communities co-occurring in the Burren; species-rich Atlantic bryophyte communities in the south-west; hepatic mat communities in the uplands).

Ireland is an important staging post and destination for migratory birds of conservation importance (e.g. Greenland White-fronted Geese (*Anser albifrons flavirostris*), and holds significant populations of birds rare elsewhere in Europe as well as internationally important wetland bird communities.

Much of Ireland’s biodiversity is in the marine environment, with important cetacean populations, cold water coral communities and many species at the northern or southern limit of their distributional range.

Table 1 – Species diversity for major groups, in Ireland.

Taxonomic Group	Approx. number of species	Checklist?	Regional Red list?
Fungi	c. 9,000	No	No
Lichens	1,134	Yes	No
Algae	c. 1,000 (freshwater) 579 (marine)	No	No Yes [2011]
Bryophytes	797	Yes	Yes [2011]
Vascular plants	2,328	Yes	No [1988]
Non-insect invertebrates	c. 8,000	No	No Non-marine molluscs [2009]
Insects	c. 11,422	Yes	No Bees [2006] Water beetles [2009] Butterflies [2010] Dragonflies [2011]
Fish	29 (freshwater) 563 (marine)	Yes Yes	Yes [2011] No
Amphibians	3	Yes	Yes [2011]
Reptiles	7	Yes	Yes [2011]
Birds	457	Yes	Yes [2009]
Mammals	34 (terrestrial) 26 (marine)	Yes Yes	Yes [2009] No

The 'All-Island' approach to biodiversity conservation is important in Ireland, as species and habitats do not observe political boundaries. Many projects are run as a co-operation between the National Parks and Wildlife Service (of the Department of Arts, Heritage and the Gaeltacht) in the Republic of Ireland, and the Northern Ireland Environment Agency.

Biodiversity & endemism

Ireland would have been rendered almost sterile biologically during the last glacial maximum, and virtually all of the island's species have colonised since the ice retreated (c. 10,000BP). As a result Ireland has much lower rates of endemism than would be expected on an island. However, there is increasing genetic evidence that some species may have survived the last glaciation *in situ*, and it is in these species that we primarily see some endemism (e.g. Irish Hare (*Lepus timidus hibernicus*), Killarney Shad (*Alosa fallax killarnensis*), Arctic char species complex (*Salvelinus alpinus* agg.)). Endemic plant species are also found in the speciose Hawkweed (*Hieracium*), Dandelion (*Taraxacum*), Bramble (*Rubus*) and Whitebeam (*Sorbus*) genera. An endemic variety of Bumblebee (*Bombus muscorum* var. *allenellus*) is found on the offshore Aran Islands. The sea anemone (*Edwardsia delapii*) is an example of a marine endemic.

An unusual feature of some Irish species is the breadth of niche occupied here, the depauperate biota meaning that competition with con-generic species is often limited or even absent. For example the white-clawed crayfish (*Austropotamobius pallipes*), the only crayfish species in Ireland, occurs in both rivers and lakes here, but elsewhere in its range is limited to rivers. Similarly the common frog (*Rana temporaria*) is the only frog species in Ireland and occurs from sea-level to mountain tops. Elsewhere in its range, where this frog competes with several other frog species, this frog occupies a more confined niche.

Pressures and Threats

Ireland has experienced nearly a century of commercial afforestation, some 40 years of agricultural intensification and a decade of economic boom, which has put extreme pressure on its native biodiversity. The key threats to Ireland's biodiversity have been identified as:

- Direct damage, such as peat cutting, drainage and infilling; buildings and infrastructure; reclamation of wetlands such as bogs and fens; and removal of sand and gravel.
- Over-grazing and under-grazing of grasslands, peatlands, and coastal habitats.
- Pollution of both surface water and groundwater by nutrients or silt.
- Unsustainable exploitation of water, sand, peat, fish and other natural goods and services.
- Invasion by alien species of plants and animals.
- Recreational pressure in areas which were previously undisturbed.

Additional pressures on a number of species and habitats are likely to arise if Ireland undergoes climatic changes according to predictions.

Invasive species

Ireland is developing and implementing measures to tackle IAS in partnership with the Northern Ireland administration. Following a report which was published in 2004 both authorities agreed to work together and with others to tackle the invasive species problem. In response to the recommendations of this report the 'Invasive Species in Ireland' project started in May 2006 and ran until 2009. Both authorities decided to continue with the project and a new contract was signed for the project in 2010 for a further three years with the costs of shared equally between both administrations.

A risk assessment protocol has been developed and over 600 risk assessments have been carried out on established and potential invasive species to identify those species that pose the greatest threat to

biodiversity on the island of Ireland. Exclusion strategies, contingency plans and management strategies are being prepared for these species. The highest risk to biodiversity in Ireland is from freshwater invasive species, in particular ornamental pond plants and fish.

An Invasive Species Ireland Management Toolkit has recently been published which is intended to provide information to anyone wanting to learn more about how to manage invasive species. The tool kit contains information on management quick guide, Risk Assessment for non-native species recorded in Ireland and species that have not yet arrived, Invasive Species Action Plans for prioritised high impact invasive species and Best Practice Management of some widely establish invasive species.

Codes of Practice are also being developed in conjunction with relevant sectors. Following the publication of the Horticulture COP, COPs for the aquaculture sector, recreational water users and marina operators have been published.

An extensive stakeholder engagement programme has been underway, one element of which is the All-Ireland Invasive Species Forum. This forum meets annually and has over 100 organisations involved including central and local Government, state agencies, industry, academia and the NGO sector. The fifth Annual Forum was held in Belfast in April, 2011. There are four technical working groups on marine, freshwater, terrestrial invasive species and education and awareness.

The National Invasive Species Database contains up to date records on the distribution of invasive species on the island of Ireland which can be viewed as interactive maps. This Database has been developed as a resource to assist recording, monitoring and surveillance programmes, and provides the infrastructure for development of an early warning system for invasive species.

CAISIE (Control of Aquatic Invasive Species and Restoration of Natural Communities in Ireland) is an EU Life+ funded programme which will contribute to the understanding and control of aquatic invasive species in Ireland. CAISIE commenced in September 2009. The project is due for completion in the first quarter of 2013.

Objectives of the project include the protection of the native biodiversity in Lough Corrib in County Galway by eradicating, controlling or containing *Lagarosiphon major* and preventing the further spread of high impact aquatic invasive species by implementing control measures in a key dispersal corridor (i.e. the canals and Barrow Navigation).

The first evidence of the Asian Clam (*Corbicula fluminea*) in Ireland was recorded in April 2010. This species is considered extremely invasive and its presence in Ireland is a matter of considerable concern. The presence of dense and sustainable populations of *Corbicula* was confirmed in the River Barrow. The highest density recorded in this section of river was in excess of 9,000 individuals per sq metre.

Farming for conservation in the Burren (BurrenLIFE)

The Burren region (c.720km²) is a glaciated karst landscape located in the mid-west of Ireland. It boasts extensive areas of Natura 2000 priority habitats including limestone pavements, orchid rich grasslands and lakes known as turloughs. The Burren's limestone grasslands were always in demand by farmers whose unique pastoral activities – including the reverse transhumance tradition of winter grazing – have been proven to be central to the presence of such a rich biodiversity. However, a distortion of the 'balance' between farming and the Burren in recent decades has resulted in serious conservation concerns: agricultural intensification has impacted on water quality, while a reduction in farming on rough limestone grasslands has resulted in extensive scrub encroachment. Livelihoods in the farming and the tourism sector were also threatened as a result.

The BurrenLIFE Project 2005-2010 was a partnership involving government agencies and farmers associations. The objective of this 5 year project was to develop a new model for sustainable agriculture in the Burren in order to conserve the remarkable biodiversity and the habitats of the region designated

under the Habitats Directive, while ensuring farming remains profitable. The principal threats to the area are scrub invasion, under and overgrazing.

The Project focused on practical solutions, e.g. scrub removal, improving access, water provision, rebuilding internal walls and developing new feeding systems. Twenty farms covering over 3,097ha were selected using individual farm plans drawn up by the project team. A number of agreed actions were undertaken and the impact of these actions was monitored.

A follow on programme called The Burren Farming for Conservation Programme (BFCP), will run from 2010-2013. The programme is aimed at mainstreaming the findings of the BurrenLIFE Project. Massively oversubscribed, the BFCP now works with 120 Burren farmers managing 12,887ha within Natura 2000.

A range of diverse but complimentary Project Actions has been developed, including:

- Implementing best-known land management practices on 2,000ha of the Burren, including new feeding systems, redeployment of existing livestock and targeted scrub removal.
- Increasing understanding of the relationship between land management practices and the natural heritage of the Burren.
- Developing new support mechanisms for the sustainable management of the Burren habitats through research and advisory services, marketing initiatives, co-operative structures and the revision of existing agri-environmental schemes.
- Enhancing awareness and skills relating to the heritage of the Burren and its management through a range of practical initiatives aimed at empowering local communities.
- Disseminating information relating to the agricultural management of areas of high nature and cultural conservation value in Europe through literature and the media.

Expected Results

- The maintenance or enhancement of the conservation status of the habitats of Burren farmland and of the wetland habitats associated with the Project sites, now termed 'LIFE farms'
- The development and support of a new model for 'Conservation Agriculture' in the Burren
- Greater awareness and understanding of the heritage of the Burren and how to manage it
- Better understanding of issues relating to the management of areas of high nature value like the Burren

3. ITALY / ITALIE

OVERVIEW ON BIOLOGICAL DIVERSITY IN THE ITALIAN ISLANDS – Updating to the 2010 National Report -

By Brundu G.⁽¹⁾ & Cappelluti F.⁽²⁾

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⁽²⁾*(Ministero dell’Ambiente e della Tutela del Territorio e del Mare) Ministry of the Environment, Land and Sea, Directorate-general for nature and sea protection, II Division – Biodiversity, Via Capitan Bavastro 174, 00154 Roma – Italy [www.minambiente.it]*

Introduction

The present report updates the national report written for the Svalbard meeting (26-29 July 2010) and included in the general Report prepared by the Directorate of Culture and Cultural and Natural Heritage. It lists newly started or in progress activities. Furthermore, it gives a piece of information on environmental policy measures, adopted and implemented by Italy during 2010-2011, which could be applied to biodiversity conservation on islands, even if only some of them were specifically and explicitly addressed to biodiversity on islands. Nevertheless, a number of issues, data and trends remain worrying and need continuous and further efforts.

News and activities at international/national level (2010-2011)

In 2010, declared by the United Nations “International Year of Biodiversity”, the Italian Ministry for Environment Land and Sea (MATTM) launched the **National Strategy for Biodiversity**¹ which was officially illustrated during the National Conference on Biodiversity, held in Rome on May 2010, on the occasion of the International Day for Biological Diversity. The Strategy was agreed by the State-Region Conference² on 7th October 2010. The strategy confirms Italy’s commitment to stop the loss of biodiversity and is a basic tool for integrating the key issues of biodiversity into national politics. The document stresses the need to strengthen and restore the resilience of ecosystems in order to ensure a steady flow of ecosystem services, that are essential for human well-being, the relationship between biodiversity and climate, focusing particularly on the role of ecosystems in mitigating and adapting to climate change, and the economic value of the benefits arising from biodiversity and ecosystem services and the costs of their loss.

It is divided into 15 working areas (1. Species, habitat and landscape; 2. Protected areas; 3. Genetic Resources; 4. Agriculture; 5. Forests; 6. Inland waters; 7. Marine environment; 8. Infrastructures and transport; 9. Urban areas; 9 Health; 11. Energy; 12 Tourism; 13. Research and innovation; 14 Education, information, communication and participation; 15. Italy and biodiversity in the world).

In the seventh working area, several priority targets are identified with the aim of protecting and promoting a sustainable use of marine and costal habitats, in the framework of main national and international commitments and legislation (e.g., Dir. no. 2008/56/CE, 2002/413/CE), in particular by applying the principles of Integrated Coastal Zone Management, carrying out, for example, the Italy CAMP (Coastal Area Management Programme) Project or enforcing the marine protected areas system; from this point of view the implementation of the Strategy could have very good effects on conservation of island biodiversity, promoting at the same time sustainable development.

¹ Available at: http://www.minambiente.it/export/sites/default/archivio/allegati/biodiversita/Strategia_Nazionale_per_la_Biodiversita.pdf

² Intesa del 07/10/2010 in sede di Conferenza permanente per i rapporti tra lo Stato, le Regioni e le Province autonome di Trento e Bolzano (Rep. 181/CSR).

The Ministry of Agriculture and Forestry Politics (MIPAF) has elaborated the **National Plan on Agricultural Biodiversity** (PNBA) whose main objective is to supply guidelines for the conservation and valorization of genetic and biological resources in agriculture according to national and international commitments³. To this end, a Permanent Committee for genetic resources has been established and is coordinated by the Ministry of Agriculture and Forestry Politics. A significant portion of agrobiodiversity is stored in Italian islands⁴, yet no precise reference is found on the PNBA (e.g., production *Capparis spinosa* on Eolian islands⁵, conservation of *Brassica macrocarpa* on Egadi islands⁶).

A joint conservation plan for the protection of biodiversity is also contained in the National Strategic Plan (PSN) and in several⁷ **Rural Development Programs** (PSR), so that this could be applied at least to the main Italian islands of Sicily and Sardinia⁸ and surrounding islets. Furthermore, the office for biodiversity of the State Forestry Department (*Corpo Forestale dello Stato*, CFS) acts to promote new methodologies for a durable use of natural resources especially in natural reserves and in the biosphere reserves, that in some cases are island territories. Within this office a national network of germplasm and renaturalization has been created with the objective of safeguarding native plant species.

Since 2008⁹ the Italian ministry of Foreign Affairs has funded, through UNEP - Directorate General for Development Cooperation (DGCS), the **GID initiative (Global Island Database - <http://gid.unep-wcmc.org/>)**¹⁰, with strong links to the Global Islands Network (GIN), as well as IUCN's Species Survival Commission's (SSC) Invasive Species Specialist Group (ISSG) and the Pacific Ecosystems at Risk (PIER) project. The GID reflects five of the themes important for islands, as identified by the Island Biodiversity Programme of Work (IBPoW) of the Convention on Biological Diversity (CBD), namely biodiversity, climate change, invasive species, pollution and sustainability.

³ E.g., On 3 November 2001, the International Treaty on Plant Genetic Resources for Food and Agriculture (Treaty) was adopted by the FAO Conference at its 31st session in Rome, by Resolution 3/2001 (<http://www.planttreaty.org/>). The Treaty is a new, legally binding instrument which seeks to ensure the conservation and sustainable management of plant genetic resources for food and agriculture, as well as the fair and equitable sharing of the benefits arising from their use (art. 1.1). At the crossroads of agriculture, commerce and the environment, the Treaty also aims to promote synergy in these areas (preamble). (<http://www.fao.org/DOCREP/005/Y3872E/y3872e06.htm>). The Treaty was ratified by Italy with the law no. 101, dated 6 April 2004, n. 101. The Law gives peculiar responsibilities to the regions, and consequently to the islands of Sicily and Sardinia, for conservation of autochthonous germplasm. See also ISPRA Manual, "Piotto B., Giacanelli V., Ercole S. (eds.), 2010. La conservazione ex situ della biodiversità delle specie vegetali spontanee e coltivate in Italia. Stato dell'arte, criticità e azioni da compiere". Manuali e linee guida ISPRA 54/2010. Available at <http://www.isprambiente.it/site/_contentfiles/00004300/4305_MLG_54_2010.pdf>. Cfr also the draft proposal of the Sardinian regional law, PL n. 174 dated 16 June 2010, titled "Tutela, conservazione e valorizzazione dell'agrobiodiversità della Sardegna" Available at: <<http://www.consreg Sardegna.it/XIVLegislatura/Disegni%20e%20proposte%20di%20legge/propleg174.asp>>

⁴ E.g., Laghetti G, Hammer K, Perrino P. 1996. Plant genetic resources in Pantelleria and Pelagie archipelago, Italy: collecting and conservation of local crop germplasm. FAO/IBPGR Plant Genetic Resources Newsletter, 108:17–25; Laghetti G, Hammer K, Olita G, Perrino P. 1998. Crop genetic resources from Ustica island (Italy): collecting and safeguarding. Plant Genetic Resources Newsletter 116:12–17; Laghetti G, Perrino P, Hammer K. 1999a. Collecting landraces and wild relatives in Neapolitan islands, Italy. Plant Genetic Resources Newsletter, 119:14–18; Laghetti G, Perrino P, Cifarelli S, Bullitta S, Hammer K. 1999b. Collecting crop genetic resources in Sardinia, Italy and its islands, 1998. Plant Genetic Resources Newsletter, 120:30–36; Laghetti G, Perrino P, Olita G, Hammer K. 2001. Multicrop collecting expeditions in Aeolian archipelago (Italy). Plant Genetic Resources Newsletter, 128:26–34; Laghetti G, Perrino P, Cifarelli S, Spahillari M, Hammer K. 2002. Collecting of landraces and wild relatives of cultivated plants in Ponziene islands and Tuscan archipelago, Italy. Plant Genetic Resources Newsletter, 131:28–34.

⁵ Regione Sicilia, Assessorato Agricoltura e foreste, progetto "Caratterizzazione, miglioramento genetico-sanitario e difesa del Capperò delle isole minori della Sicilia". See also, e.g., Laghetti G.; Perrino P.; Hammer K. 1999. Collecting landraces and wild relatives in the Neapolitan islands, Italy. Plant Genetic Resources Newsletter (IPGRI/FAO), 119; Laghetti G.; Hammer K.; Olita G.; Perrino P. 1998. Crop genetic resources from Ustica island (Italy): collecting and safeguarding. Plant Genetic Resources Newsletter (IPGRI/FAO), 116: 12-17. See also: K. Hammer and G. Laghetti, 2006. Small Agricultural Islands and Plant Genetic Resources. *Le piccole isole rurali italiane*. Istituto di Genetica Vegetale (IGV), Consiglio Nazionale delle Ricerche (CNR), Bari, Italy, 244 pp.

⁶ *Brassica macrocarpa* Guss., is an endemic species present on Egadi islands, and a primary source of the gene pool of *Brassica oleracea* L. It is an endangered species, under monitoring to define *in situ* conservation strategies in the framework of the project EUGENRES 057 "AEGRO", cfr <<http://www.cbd.int/iyb/doc/celebrations/iyb-Italy-ISPRA-article-it.pdf>> (pag. 11).

⁷ E.g., Sardinia Island PRS at <<http://www.regione.sardegna.it/speciali/programmasvilupporurale/>>; Sicily islands at <<http://www.regione.sicilia.it/Agricolturaeforeste/Assessorato/index.htm>>.

⁸ E.g., see <http://www.regione.sardegna.it/documenti/14_43_20071121202527.pdf> and <<http://cbv.uniss.it/index.html>>.

⁹ Cfr, DIPCO n. 23/2008, p. 131, Atto n. 164/2008.

¹⁰ <http://www.cooperazioneallosviluppo.esteri.it/pdgcs/download/Global_Island_Strategy.pdf>

More recently, the Italian Minister of the Environment, has announced financial support for the **Global Invasive Species Database (GISD)**, the freely accessible online database of the ISSG. The GISD is acknowledged as the most authoritative and comprehensive database on alien species at the global scale. Following the appointment of Piero Genovesi as the new ISSG chair, GISD will be hosted at the Environmental Protection and Research Institute (ISPRA) in Rome, Italy. The Italian Ministry of Environment is committed to provide financial contributions to enhance the improvement of the GISD and, in particular, to integrate it with other information services, thus increasing support to decision makers. The commitment of the Italian Minister is a first implementation of the actions listed in the Syracuse Charter on Biodiversity, agreed at the last G8 Environment Ministers meeting, which calls for developing and strengthening actions to prevent and control the spread of invasive alien species, and support to global information systems. From this point of view this is an important step toward the mitigation of the menace of IAS against island ecosystems.

On the 12th April 2010, Italy and France signed an agreement to set in motion the procedure for the creation of a new protected area: the **Bocche di Bonifacio Transnational Marine Park**. Ministers for the Environment Stefania Prestigiacomo and Jean Louis Borloo also pledged to set up a European group for territorial cooperation, between the Maddalena Archipelago National Park and the Bocche di Bonifacio Natural Reserve¹¹, which are the two main areas of the new marine park¹².

The Pelagos Sanctuary¹³, founded on 21 February 2002, is now on the list of SPAMIs (Specially Protected Areas of Mediterranean Importance), as part of a protocol relating to the Barcelona Convention. This status gives Pelagos official recognition from Mediterranean countries as being part of a network whose aim is the efficient conservation of Mediterranean heritage. In November 2009 in Monaco, Pelagos' 4th Conference of the Parties (the decision-making body) voted for a resolution on maritime traffic, which involved the States promoting the Pelagos Sanctuary's recognition as a Particularly Sensitive Sea Area (PSSA) to the IMO, and contributing to the REPCET project (see above). This commitment was also made by ACCOBAMS during the last Scientific Committee meeting held in Casablanca in January 2010¹⁴.

Monk seal sightings (*Monachus monachus*), witnessed by third party observers (divers, fishermen, tourists) have been recorded in various Italian locations during the course of the last decade and are subjected to a validation procedure carried out by ISPRA (Rome) which entails specific interviews of the sighters so as to assess the credibility of each sighting event. Such events have often been reported in the coastal waters of several Italian islands, a phenomenon which is likely to be influenced by the pristine environmental marine conditions (lower anthropic pressure with respect to many coastal mainland locations) which characterize

¹¹ The *Office de l'Environnement de la Corse* (OEC), (Office for the Environment of Corsica), managing body of the Natural Reserve of the Straits of Bonifacio, as the project leader, and the Authority of the National Park of La Maddalena Archipelago, as the sole partner, presented in 2009 a new project for the second public notice of the European Territorial Cooperation Programme Italy-France "Maritime 2007-2013". The project, called "PMIBB" (Parc Marin International des Bouches de Bonifacio - International Marine Park of the Strait of Bonifacio), was admitted for funding after approval by the Steering Committee of the Programme. Consistent with the purpose of the program, which is to improve cooperation between the concerned border regions in terms of innovation and exploitation of natural and cultural resources, the proposals of the project, eligible for funding, aims to: (1) propose a model of joint management by the Community instrument of the EGTC (European Grouping of Territorial Cooperation). This under a structural, infrastructural, logistical, technical and economic point of view; (2) develop a management plan common to both partners, including:

- the extension of the SPAMI (Specially Protected Areas of Mediterranean Importance) recognition, as obtained recently by the French partner, including the Archipelago of La Maddalena; (3) adopt an innovative model of energy management. The project, which lasts three years, has a budget of € 1,860,378.00 (equally shared between the French and the Italian side) and focuses on the "Axis 3: Natural and cultural resources - Specific Objective 3: Promote the use of renewable and alternative energy sources and the dissemination of the culture of energy conservation, giving priority to beneficiaries as partners who have proven experience in the field of energy". The future sustainability, including the financing of the European Grouping of Territorial Cooperation (EGTC), will be ensured by the involvement of professional resources dedicated to the presentation and subsequent management of projects under the European, national and regional context. [<http://www.pmibb.org/>].

¹² Cfr < <http://www.cbd.int/iyb/doc/prints/iyb-report-2010-04-en.pdf>>

¹³ Cfr also GIONHA project (Governance and Integrated Observation of marine Natural Habitat). Project partners: ARPAT (Tuscany region), Office de l'Environnement de la Corse, Liguria Region, Sardegna Region, and *Provincia di Livorno*. The project is funded by the European Territorial Cooperation Programme Italy-France "Maritime 2007-2013". Aim of the project is to raise public awareness on importance of the protection of marine habitats.

¹⁴ Cfr < http://www.repset.com/docs/AF-07-008-PT_EN.pdf>

many islands as well as the fact that several of the sighting locations lie closer to the nearby north African coasts where populations of the species are still hypothesized to exist. During the last few years, there have been distinct reports of monk seal sightings on the island of Marettimo. A preliminary monitoring activity of the coastal habitat was therefore recently initiated (spring 2011) on the island of Marettimo with the aim to identify the number of seals and their temporal pattern of use of specific haul-out areas on the island. The activity is carried out within the framework of a collaborative framework between the Marine Protected Area of the Egadi islands and ISPRA.

The **Small Islands Project** (PPI, *Progetto Piccole Isole*) was launched in 1988 by the Italian Ringing Centre at ISPRA (formerly *Istituto Nazionale per la Fauna Selvatica*). The project represents the largest ornithological monitoring effort ever realized within the Mediterranean, thanks also to the support offered by the General Directorate of Nature Protection of the Italian Ministry of the Environment. The main aims of the project are to investigate spring migration across the Mediterranean through a network of ringing stations operating together on the basis of standardized field protocols. A second aim is to obtain sound scientific evidence of the conservation value of Mediterranean islands and coastal habitats for staging migrants during a particularly delicate phase of their annual cycle. This knowledge is needed in order to develop reliable policies for the conservation of migratory birds within the Mediterranean, with special concern to avian biodiversity on islands.

The network of Mediterranean islands and coastal sites where staging birds are monitored represents an important component of the migratory system of many species, linked to largely variable habitats, both on the breeding and wintering areas. The seasonality of passage, for instance, is a species-specific feature; the different species show a strong consistency in their migration timing in spring, and the inter-annual, within-species variability in the mean date of passage is significantly lower than the variation recorded among species¹⁵. The general seasonal pattern of passage of trans-Saharan migrants across the Mediterranean has been found to be influenced by factors acting on the wintering and breeding quarters. The importance of Africa is confirmed by the earlier spring movements within the Mediterranean of species wintering in more northern quarters; equally, species overcoming a complete wing moult on the wintering grounds show delayed northward movements. As for the influence of the breeding quarters, we found that early migration is related to cavity nesting, a strategy which implies direct competition for limited nesting opportunities, hence a selective advantage for an early arrival on the breeding grounds. The monitoring activities have also allowed to clarify different aspects of the relationships between climate and weather conditions and the inter- and intra-specific features of the calendar of return migration (see below).

The collection of biometrical data on all PPI stations allows also to infer on different populations of a same specie crossing different areas of the Mediterranean. A network of ringing stations also provides data on the daily distribution of catches at different stages of barrier crossing. In this case, by considering a general S-N pattern of movements across the Central Mediterranean, has been possible to confirm a progressive movement of fronts of migration, with a delayed arrival on islands at higher latitudes, as in the Garden Warbler¹⁶. In the same species, the observed values on the PPI stations also match the predicted pattern of progressive decrease in body mass as estimated using Pennycuick's model¹⁷. This suggests that in fact birds are able to cross the extended barrier represented by the Sahara and Mediterranean in spring without significantly refueling en route; however they also need to find available habitats and resources on key staging areas like those represented by Mediterranean islands. The network of Mediterranean islands is of crucial importance for birds regardless of physical conditions and including migrants still with very large energy reserves.

¹⁵ Rubolini D., Spina F., Saino N. 2005. Correlates of timing of spring migration in birds: a comparative study of trans-Saharan migrants. *Biol. Journal Linnean Society*, 85(2): 199-210.

¹⁶ Grattarola A., Spina F., Pilastro A. 1999. Spring migration of the Garder Warbler (*Sylvia borin*) across the Mediterranean. *J. Ornithol.*, 140: 419-430.

¹⁷ Pennycuick C. J. 1975. Mechanics of flight. In *Avian Biology*, vol. 5, chapter 1 (ed. D. S. Farner and J. R. King), pp. 1-75. New York: Academic Press; Pennycuick, C. J. 1999. *Measuring Birds' Wings for Flight Performance Calculations*. Second edition. Bristol: Boundary Layer Publications.

The most important variable in explaining the observed inter-specific differences in average physical conditions on Mediterranean islands, as found in a large sample of trans-Saharan migrants¹⁸, is the northernmost latitude of the preferred wintering habitat for each species in Africa. Hence, the crossing of the Sahara and the Mediterranean in spring is constrained by the distribution of preferred habitats south of the Sahara *i.e.* the overall width of the ecological barrier that the different species will cross without significantly refueling is not necessarily the same for all species, as not all species are reaching their departure physical conditions in the same geographical area in Africa. This stresses again how important Mediterranean islands are for the conservation of large numbers of birds and species which are challenged with the crossing of a barrier which becomes increasingly wide due to the ongoing desertification of the Sahel and the progressive reduction of equatorial forests in Africa.

Recoveries of ringed birds, together with specific field orientation experiments have allowed to identify areas of origin and destination of birds crossing the Mediterranean in spring^{19,20}, as well as to better understand their orientation mechanisms²¹.

The intense monitoring activities carried out within PPI have also allowed to investigate the ecological role of island habitats for staging migrants. The conservation value of a staging area is significantly determined also by the overall number of migrants making use of the site. It is particularly difficult to soundly estimate such numbers, especially when the population sampled through any census method (e.g. ringing in this case), is represented by a large fraction of transients (*i.e.* birds which quickly move through the study area, or island in this case). It is therefore important to find analytical tools allowing to estimate the stopover duration of single individuals. For this purpose, both the existing CMR (capture/mark/recapture) models and novel technologies have been used at the most intensively studied site within the PPI network, which is represented by the small island of *Ventotene* (Italy). The former, traditional models²² and an innovative “whole-island telemetry” approach²³ have confirmed an extremely fast turnover rate of staging migrants, offering new insights on the possibility to come to new analytical tools finally allowing to better describe the real conservation values of the network of most important stopover sites represented by Mediterranean islands.

The fact that each ringed birds is also described in terms of physical condition at first capture, as well as when it is possibly later retrapped, allows to understand the factors governing the decision by birds to stage or not; this is an important aspect again when wishing to properly define and measure the conservation value of staging sites. Data on physical conditions at arrival on an island and at departure are allow interesting applied analyses²⁴.

A key aspect to understand the value of islands for the conservation of the biodiversity of migratory birds is represented by the use of habitats by staging birds during their stopover. An interesting and original approach from this respect has been followed in analyzing the strong relationship between some of the Mediterranean plant species blooming in spring and the nectar uptake by migrants belonging primarily to the

¹⁸ Pilastro A., Spina F. 1997. Ecological and morphological correlates of residual fat reserves in passerine migrants at their spring arrival in southern Europe. *Journal of Avian Biology*, 28: 309-318.

¹⁹ Spina F., Volponi S. 2008. Atlante della Migrazione degli Uccelli in Italia. Vol. 1: non-Passeriformi. ISPRA – MATTM, Roma, pp. 800. Available at < http://www.isprambiente.it/site/_files/atlane/1vol-1-32.pdf>.

²⁰ Spina F., Volponi S. 2009. Atlante della Migrazione degli Uccelli in Italia. Vol. 2: Passeriformi. ISPRA – MATTM, Roma, pp. 629.

²¹ Gaggini V., Baldaccini E., Spina F., Giunchi D. 2010. Orientation of the pied flycatcher *Ficedula hypoleuca*: cue-conflict experiments during spring migration. *Behav. Ecol. Sociobiol.*, 64: 1333–1342.

²² Tenan S., Spina F. 2010. Timing and condition-related effects on recapture probability, mass change and stopover length of spring migrating songbirds on a small Mediterranean island. *Ardeola*, 57: 121-132. < [http://www.ardeola.org/pubs/57\(1\)/121-132](http://www.ardeola.org/pubs/57(1)/121-132)>.

²³ Goymann W., Spina F., Ferri A., Fusani L. 2010. Body fat influences departure from stopover sites in migratory birds: evidence from whole-island telemetry. *Biol. Lett.*, 6: 478-481.

²⁴ (Tenan & Spina 2010) *cfr* above.

genus *Sylvia*²⁵ and *Phylloscopus*^{26,27,28}. Large numbers of birds survive their spring migration thanks to their plasticity in taking advantage of nectar offered by plant species such as *Brassica* sp. or *Ferula* sp., again confirming the importance of Mediterranean plant communities for these birds and the positive outcome birds obtain while staging on the islands. The network of PPI sites has also allowed to better understand the ecological determinants, frequency and geographical distribution of this nectar feeding behavior²⁹. This is an important component of the scientific knowledge the PPI provides for large-scale coordinated conservation policies. This is particularly true within the larger context of the environmental effects of global change; data collected through the PPI have shown for the first time how the earlier arrivals of migrants at northern latitudes across Europe are related to an earlier departure from latitudes south of the Sahara^{30,31}. A strong influence of climate in Africa in influencing the seasonal passage of migrants across the Mediterranean has also been recently shown for the first time thanks to monitoring data collected through PPI³².

Last but not least, monitoring ringing activities represents unique opportunity for environmental education and public awareness on the importance of Mediterranean and Italian island for the conservation of European birds. From this respect one particularly interesting case is represented by the island of *Ventotene*, which has been listed as SPA based on data collected through the PPI and, for the same reason, has later been protected through a Nature Reserve. On that site, intense education campaigns involve large numbers of students and tourists, and the first **Migration Museum and Bird Observatory** in Italy has been created, attracting large numbers of visitors and representing now an important component for the local tourism economy³³.

In decision IX/21³⁴, the Conference of the Parties to the CBD requested the Subsidiary Body on Scientific, Technical and Technological Advice to undertake an in-depth review of the programme of work on island biodiversity at one of its meetings after the tenth meeting of the Conference of the Parties (Nagoya, Japan, October 2010), for final consideration by COP 11 in 2012. On the 15th February 2011 the Secretariat of the Convention on Biological Diversity (CBD) has invited island Parties and Parties with islands to provide information for the in-depth review of the implementation of the Programme of Work on island biodiversity. The review will be undertaken by the CBD's Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) at its 16th meeting, tentatively scheduled for May 2012. The review will

²⁵ Brambilla M., Vitulano S., Spina F., Baccetti N., Gargallo G., Fabbri E., Guidali F., Randi E. 2008. A molecular phylogeny of the *Sylvia cantillans* complex: Cryptic species within the Mediterranean basin. *Mol. Phylogenet. Evol.*, 48: 461-472.

²⁶ Jenni L., Jenni-Eiermann S., Spina F., Schwabl H. 2000. Regulation of protein breakdown and adrenocortical response to stress in birds during migratory flights. *Am. J. Physiol. Regulatory Integrative Comp. Physiol.*, 278: R1182-R1189 – *Cfr* also: Jenni L., Mueller S., Spina F., Kvist A., Lindstroem Å. 2006. Effect of endurance flight on haematocrit in migrating birds. *Journal of Ornithology*, 147: 531-542.

²⁷ Schwilch R., Mantovani R., Spina F., Jenni L. 2001- Nectar consumption of warblers after long-distance flights during spring migration. *Ibis*, 143: 24-32.

²⁸ Schwilch R., Grattarola A., Spina F., Jenni L. 2002. Protein loss during long-distance migratory flight in passerine birds: adaptation and constraint. *The Journal of Experimental Biology*: 205 687–695.

²⁹ Cecere J., Matricardi C., Frank B., Imperio S., Spina F., Gargallo G., Barboutis C., Boitani L. 2010. Nectar exploitation by songbirds at Mediterranean stopover sites. *Ardeola*, 57: 143-157.

³⁰ Jonzén N., Lindén A., Ergon T., Knudsen E., Vik J.O., Rubolini D., Piacentini D., Brinch C., Spina F., Karlsson L., Stervander M., Andersson A., Waldenström J., Lehtikoinen A., Edvardsen E., Solvano R., Stenseth N.C. 2006. Rapid Advance of Spring Arrival Dates in Long-Distance Migratory Birds. *Science*, 312: 1959-1961.

³¹ Jonzén N., Lindén A., Ergon T., Knudsen E., Vik J.O., Rubolini D., Piacentini D., Brinch C., Spina F., Karlsson L., Stervander M., Andersson A., Waldenström J., Lehtikoinen A., Edvardsen E., Solvano R., Stenseth N.C. 2007. Response to Comment on "Rapid Advance of Spring Arrival Dates in Long-Distance Migratory Birds". *Science*, 315: 598.

³² *Cfr*, e.g.: Rubolini D., Spina F., Saino N. 2004. Protandry and sexual dimorphism in trans-Saharan migratory birds. *Behavioral Ecology*, 15(4): 592–601; Rubolini D., Spina F., Saino N. 2005. Correlates of timing of spring migration in birds: a comparative study of trans-Saharan migrants. *Biol. Journal Linnean Society*, 85(2): 199-210; Saino N., Rubolini D., Jonzén N., Ergon T., Montemaggiore A., Stenseth N., Spina F., 2007. Temperature and rainfall anomalies in Africa predict timing of spring migration in trans-Saharan migratory birds. *Clim. Res.*, 35: 123-134; Saino N., Rubolini D., von Hardenberg J., Ambrosiani R., Provenzale A., Romano M., Spina F. 2009. Spring migration decisions in relation to weather are predicted by wing morphology among trans-Mediterranean migratory birds. *Functional Ecology*, 24: 658-669; Saino N., Rubolini D., Serra L., Caprioli M., Morganti M., Ambrosini R., Spina F. 2010. Sex-related variation in migration phenology in relation to sexual dimorphism: a test of competing hypotheses for the evolution of protandry. *J. Evolutionary Biology*, doi:10.1111/j.1420-9101.2010.02068.x.

³³ *Cfr* < http://www.riservaventotene.it/index.php?option=com_content&view=article&id=90&Itemid=79>.

³⁴ (see <http://www.cbd.int/doc/decisions/cop-09/cop-09-dec-21-en.pdf>)

measure progress in the implementation of the island biodiversity Programme of Work (annex to Decision VIII/1). It will focus on: the extent of implementation; status and trends of island biodiversity and drivers of change; constraints to implementation; activities and views of relevant organizations; and key responses and suggestions to maximize the contribution of the POW to the 2011-2020 Strategic Plan of the Convention and its goals and targets.

News and activities at national/regional/local level (2010-2011)

National activities for the conservation of **Audouin's Gull** – largely insular in its breeding distribution – are ongoing and have led to the complete national census of the breeding population also in 2010 and 2011, assessment of breeding success, marking of juveniles and control of marked breeders: actions carried out annually by ISPRA-CRA 16, with collaboration of MPAs and local authorities, as well as of a network of local experts.

In April 2010, the Ministry of the Environment established four new **Marine Protected Areas** in Italy, increasing the number of Marine Protected Areas in Italy to thirty. At present, Italy has 27 Marine Protected Areas and 11 of them concern islands or archipelagos, as to say that in almost all the remarkable Italian island systems there is today a kind of protection under national legislation.

Regarding the implementation of Natura 2000 in marine areas Italy has designated 287 Sites of Community Importance (SCIs) with a marine part, and 55 marine Special Protection Areas (SPAs) Other identifications and designations of new marine SCIs are carried out at a regional level to improve the conservation status of marine habitats and species close to the coast and the islands.

Concerning ongoing projects on **eradication of invasive alien species (IAS) from islands**³⁵, we highlight the **project LIFE+ “Montecristo 2010”**³⁶. The project aims to achieve the eradication of alien plants (e.g. *Ailanthus altissima*, *Carpobrotus sp.*, *Acacia sp.*) and alien rats (e.g. *Rattus rattus*) from the islands of *Montecristo* and *Pianosa* (Tuscany, Italy) and the **conservation of breeding *Procellariidae*** as a prosecution of two previous LIFE projects with similar purposes. It is noteworthy that *Montecristo* island would be the largest island in the world where rat eradication will take place.

Main achievements in 2009-2010 were also rat and mouse eradications on small islands in the *Tavolara* archipelago [protected marine area (AMP) of “Tavolara-Punta Coda Cavallo”³⁷ Sardinia, Italy], still being monitored in 2011, and analyses of data to evaluate/disseminate the results obtained with management and priorities for the future. Publications produced at this regard are listed further below³⁸. The activities are carried out mainly by ISPRA- CRA 16, NEMO³⁹ s.a.s., ARP Lazio (<http://www.arplazio.it/>), PN *Arcipelago Toscano* (<http://www.islepark.it/>) and *Tavolara* MPA.

On Sardinia island control activities against *Myocastor coypus* are going on at local level⁴⁰, but the species is still present⁴¹. Local removal of *Carpobrotus sp.* was part of the project *Providune*⁴² (in the

³⁵ Cfr also special session on “Management of allochthonous species” held at Fabriano (Ancona, Italy) on the 5-7 May 2010, during the “VII Congresso Italiano di Teriologia” < <http://gis.dipbsf.uninsubria.it/congressi/index.php/atit/atit2010> >

³⁶ See also: DECRETO 26 marzo 2010 - Cofinanziamento nazionale del progetto LIFE + «Montecristo 2010: eradicazione di componenti florofaunistiche aliene invasive e tutela di specie e habitat nell'Arcipelago Toscano», di cui al regolamento CE n. 614/2007, ai sensi della legge n. 183/1987. (Decreto n. 4/2010). (10A06826). < <http://www3.corpoforestale.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/1973> >.

³⁷ AMP Tavolara – Punta Coda Cavallo web site: < <http://www.amptavolara.it/> >

³⁸ Capizzi D., Baccetti N., Sposimo P. 2008. Rats et puffins sur les îles italiennes: stratégies de gestion et priorités. In : CEEP, Actes des ateliers de travail du programme LIFE Nature 2003-2007 Conservation des populations d'oiseaux marins des îles de Marseille, Commission européenne : 59-61; Baccetti N., Capizzi D., Corbi F., Massa B., Nissardi S., Spano G., Sposimo P. 2009. Breeding shearwaters on Italian islands: population size, island selection and co-existence with their main alien predator, the black rat. Riv. Ital. Orn., 78: 83-100; Ruffino L., Bourgeois K., Vidal E., Duhem C., Paracuellos M., Escribano Canova F., Sposimo P., Baccetti N., Pascal M., Oro D. 2009. Invasive rats and seabirds: a global review after 2,000 years of an unwanted coexistence on Mediterranean islands. Biological Invasions, 11: 1631-1651; Capizzi D., Baccetti N., Sposimo P. 2010. Prioritizing rat eradication on islands by cost and effectiveness to protect nesting seabirds. Biological Conservation, 143: 1716-1727.

³⁹ Web page at: < <http://www.nemoambiente.com/> >.

⁴⁰ E.g., Deliberazione della Giunta Provinciale di Oristano, n. 137 del 15/10/2009 “Accordo di programma tra la Provincia del Medio Campidano e le compagnie Barracellari in materia di tutela dell'Ambiente e della Fauna selvatica”, < http://www.provincia.mediocampidano.it/resources/cms/documents/20091015_DEL_GP_0137.pdf >.

southern coast of Sardinia) and at “Stintino” sand dunes in the NW coast⁴³. *Carpobrotus* sp.pl. (notably *Carpobrotus acinaciformis*, *C. edulis* and their hybrids⁴⁴) and other species of the *Aizoaceae* family, introduced from South Africa into almost all Mediterranean regions, are a serious threat for coastal and sand dunes ecosystems in Mediterranean islands. *Carpobrotus* sp.pl. grow very fast as a mat-forming plant. Competition for space and soil resources may be of greater importance to the local persistence of native plants⁴⁵ than competition for pollinators^{46,47} and have been recorded associated with an approximately 30–50% decrease in the diversity of native vegetation, with detrimental effect on soil properties and biological soil crust⁴⁸.

During 2010 the floating plant “**water hyacinth**” [*Eichhornia crassipes* (Mart.) Solms], a worldwide invasive species native to South America and of ornamental introduction, jammed more than 8 km of a river in the Central-West Sardinia, with tons of floating plant matter. The direct costs for the removal intervention were around Euro 175,000.00. The *Corpo Forestale e di Vigilanza Ambientale* of Sardinia will be involved in the monitoring and early warning to prevent and promptly tackle new outbreaks. Nevertheless, there are still gaps in the legislation framework for managing invasive aliens on island territories, and contradictory elements (e.g., how to treat plant residuals after removal with concern to EU and national waste legislation? How to manage this type of water invasions inside a “Natura 2000” site?).

During 2010 a new Mediterranean plant species, i.e. *Crocus ilvensis* sp. nov. (sect. *Crocus*, Iridaceae), endemic to Elba Island (Tuscan Archipelago, Italy) was described by Peruzzi & Carta⁴⁹. The known distribution range of *C. ilvensis* is completely included within the Tuscan Archipelago National Park and within the site of community importance (SIC) IT5150012. Its extent of occurrence (EOO) is 30.2 km², while its area of occupancy (AOO) is 16 km². Major threats are changes in native species dynamics and predation by wild *Sus scrofa*. In Italy, 15 *Crocus* species occur, 4 of them being endemic: *Crocus etruscus* Parl. (continental Tuscany), *C. imperati* Ten., *C. suaveolens* Bertol. (central–southern Italy) and *C. siculus* Tineo (Sicily).

The **Italian island biodiversity picture remains mixed**, with positive developments for some species and habitats, and some problems for other.

⁴¹ E.g., see < <http://www.sardegnaambiente.it/index.php?xsl=612&s=103934&v=2&c=4577&idsito=19>>.

⁴² Visit project home, PROVIDUNE (LIFE07NAT/IT/000519), “*Conservazione e ripristino di habitat dunali nei siti delle Province di Cagliari, Matera, Caserta*” web page at: < <http://www.providune.it/>>.

⁴³ Description of the project at: < http://www.apat.gov.it/site/files/Pubblicazioni/Rapporto_100_2009_cap_1_11.pdf> pp. 305-306.

⁴⁴ Suehs C.M., Affre L., Médail F. 2004. Invasion dynamics of two alien *Carpobrotus* taxa on a Mediterranean island. II. Reproductive strategies. *Heredity*, 92: 550–556.

⁴⁵ Vilà M., Tessier M., Suehs C.M., Brundu G., Manca L., Galanidis A., Lambdon P., Manca M., Médail F., Moragues E., Traveset A., Troumbis A.Y., Hulme P.E. 2006. Local and regional assessment of the impacts of plant invaders on vegetation structure and soil properties of Mediterranean islands. *Journal of Biogeography*, 33: 853-861.

⁴⁶ Bartolomeus I., Bosch J., Vilà M. 2008. High invasive pollen transfer, yet low deposition on native stigmas in a *Carpobrotus*-invaded community. *Annals of Botany* 102: 417–424.

⁴⁷ Moragues E., Traveset A. 2005. Effect of *Carpobrotus* spp. on the pollination success of native plant species of the Balearic Islands. *Biological Conservation*, 122: 611–619.

⁴⁸ E.g.: Lloret F., Médail F., Brundu G., Hulme P.E. 2004. Local and regional abundance of exotic plant species on Mediterranean islands: are species traits important? *Global Ecology & Biogeography*, 13(1): 37-45; Traveset A., Brundu G., Carta L., Mprezetou I., Lambdon P., Manca M., Médail F., Moragues E., Rodríguez-Pérez J., Siamantziouras A.-K.D., Suehs C.M., Troumbis A.Y., Vilà M., Hulme P.E. 2008. Consistent performance of invasive plant species within and among islands of the Mediterranean basin. *Biological Invasions*, 10(6): 847-858; Vilà M., Siamantziouras A.-K.D., Brundu G., Camarda I., Lambdon P., Médail F., Moragues E., Suehs C.M., Traveset A., Troumbis A.Y., Hulme P.E. 2008. Widespread resistance of Mediterranean island ecosystems to the establishment of three alien species. *Diversity and Distributions*, 14(5): 839-851; Celesti-Grapow L., Alessandrini A., Arrigoni P.V., Assini S., Banfi E., Barni E., M. Bovio M., Brundu G., Cagiotti M.R., Camarda I., Carli E., Conti F., Del Guacchio E., Domina G., Fascetti S., Galasso G., Gubellini L., Lucchese F., Medagli P., Passalacqua N.G., Peccenini S., Poldini L., Pretto F., Prosser F., Vidali M., Viegi L., Villani M.C., Wilhelm T., Blasi C. 2010. Non-native flora of Italy: Species distribution and threats, *Plant Biosystems*, 144 (1): 12–28; Zedda L., Cogoni A., Flore F., Brundu G. 2010. Impacts of Alien Plants and man-made disturbance on soil-growing bryophyte and lichen diversity in coastal areas of Sardinia (Italy). *Plant Biosystems*, 144, [in press].

⁴⁹ *Nordic Journal of Botany*, Volume 29, Issue 1, pages 6–13, February 2011.

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4. MALTA / MALTE

MALTA'S SHORT WRITTEN CONTRIBUTION ON ISLAND BIODIVERSITY

(3rd Meeting of the Expert Group on European Island Biodiversity, Corsica, June 2011)

The present contribution provides an update on the developments and the state of play on measures aimed at the conservation of biodiversity in Malta.

National Activities undertaken under the Biodiversity Information Campaign

Educational Tours

Malta has continued its national activities with regards to raising awareness on biodiversity and safeguarding Malta's natural heritage as part of the National Biodiversity Information Campaign, which was launched on 18 May 2010.

A number of monthly tours have been organised by the Malta Environment and Planning Authority (MEPA) between October 2010 and April 2011. The aim of these tours was to assist local and foreign participants appreciate and understand the particular flora and fauna and natural habitats found in various areas of ecological importance scattered around the Maltese Islands. During these tours, participants were shown various habitats and species present in Malta, some of which are endemic. Table 1 below provides a short overview of the organised tours:

October 2010	An education tour was held at Ta' Rapa, a Natura 2000 site, having one of the important old holm oak remnants of the Maltese Islands. On this visit, participants were shown bay laurel matorral, buckthorn and lentisk maquis communities, relict riparian woodlands with elms and poplars as well as small pine woodlands.
November 2010	This education tour was held at in-Nigret/Gebel San Pietru, an area in the central of the Islands, where participants were shown watercourse vegetation, maquis formations, phrygana and steppic communities. The area which is rich with cultural and natural heritage including important species which the visitors were able to may appreciate.
December 2010	During this tour participants visited the cliffs at Il-Hnejja/Wied il-Hoxt which holds important garigue communities and a number of unique and endemic species. In addition, they were shown interesting maquis and reed communities, as well as one of the oldest stands of Sandarac Gum trees at the locality known as Il-Maqluba.
January 2011	This tour was held at Wied il-Mizieb, in the North of Malta and falls within a Natura 2000 site. Participants were shown one of the islands largest population of Sandarac Gum tree (Malta's National tree), as well as endemic phrygana communities with the Maltese Spurge and the Maltese Shrubby kidney Vetch.
February 2011	This tour visited the valley system of Wied Has-Saptan, which includes some unique Mediterranean scrub and rock-pool communities. Of interest here are the pear formations which are one of the oldest found on the Maltese Islands.
March 2011	In this tour participants were taken to the sister island of Gozo at Il-Qortin tal-Magun. This Natura 2000 site has one of the richest garigue and scrub communities of the Islands, having many different and rare threatened and/or endemic species and habitats.
April 2011	The final education tour in this series was to Ta' Lippija in the North of the Islands. This site has a unique variety of Mediterranean grassland species and here the public were able to appreciate the clay slope habitats and their typical species.

Table 1 – Educational Tours organised by MEPA

Published Information

Additionally, awareness raising on biodiversity included the publishing of biodiversity-related articles written by the Malta Environment and Planning Authority (MEPA), amongst which those published under the section entitled “One World” in a local newspaper. The aim of these articles is to provide the general public with information related to biodiversity, such as on the various habitats and species present locally, invasive alien species and marine protected areas. Such articles are still being published to date.

In the running up of the 9th meeting of the Group of Experts on Invasive Alien Species, held in Malta (18-20 May 2011) MEPA produced a poster depicting examples of invasive alien species (IAS) in the Maltese islands, whilst providing general information on IAS. Moreover MEPA published a booklet which focuses on the Code of Conduct on Horticulture and Invasive Alien Plants which was adopted by EPPO and the Council of Europe. This booklet is an abridged version of the Code, and providing additional national information.

Moreover MEPA has drafted “Guidelines on managing non-native plant invaders and restoring native plant communities in terrestrial settings in the Maltese Islands”. These guidelines aim to assist in the planning and implementation of management programmes aimed at counteracting the spread of plant invaders found in important natural areas and rural areas where the removal of alien plants is desired as it would benefit neighbouring natural and semi-natural habitats and to serve of assistance when designing and implementing native species recovery programmes, aimed at reinstating native plant communities to a favourable conservation status in compliance with the relevant legislation in force at the time. Preliminary consultation has been undertaken with potential users of the guidelines – namely site managers – in order to further refine the document. Wider public consultation is envisaged later this year.

Other activities

On the 19th September 2010, the Malta Tourism Authority organised a Tourism and Biodiversity Fair. A number of non-government organisations participated, each displaying its own projects and promotional material related to the conservation of the environment. Additionally children could also take part in a biodiversity life-sized board game, similar to snakes-and-ladders, and quiz.

A diverse number of activities and initiatives have been organised by local NGO’s to mark the International Year of Biodiversity. These include a number of organised walks to Majjistral Nature and History Park. The Park to the north of the mainland encompasses clay slopes, water courses and boulder scree featuring a number of important and rare vegetation. Additionally a number of public guided walks to Ta’ Ċenċ, Gozo - an area which forms part of the EU Natura 2000 network of protected areas. These walks were introduced by a small presentation on the fauna and flora found there. The cliffs at Ta’ Ċenċ support a rich and unique floral assemblage characteristic of rupestral localities, including a number of endemics. The area is also of exceptional importance for birds, as it supports a large population of sea-birds, such as the Cory’s Shearwater.

In conjunction with the celebrations of the European Bat Night in 2010, MEPA organised the ‘Malta Bat Night’ which provided the participants with an illustrated talk, an exhibition and a bat detecting night walk.

Protected Areas

A project “Natura 2000 management planning for Malta and Gozo” proposed by MEPA, has been approved for co-financing by the European Agricultural Fund for Rural Development (EAFRD) under Measure 323 of the Rural Development Programme for Malta, 2007 – 2013. This project aims to establish management plans and legal provisions for all terrestrial Natura 2000 sites in the Maltese Islands and to increase awareness of Natura 2000 amongst the general public and stakeholders. This will pave the way for subsequent investment in the management of Natura 2000 sites in the Maltese Islands.

Lately, the Trees and Woodlands (Protection) Regulations, 2011, have been published under the Environment and Development Planning Act 2010. These regulations form part of a ‘better regulation’

process, and repeal the Trees and Woodlands Protection Regulations, 2001 (Legal Notice 12 of 2001), with the aim of simplifying the process for issuing of permits related to protected trees, while at the same time increasing the protection afforded to certain species of trees and shrubs and areas important for endangered and rare trees.

5. UNITED KINGDOM / ROYAUME-UNI

ISLAND BIODIVERSITY WORK IN THE UK – AN UPDATE.

*Prepared for the third meeting of the
Group of Experts on European Islands Biological Diversity
Galeria, Corsica 9 - 11 June 2011*

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1 BIODIVERSITY ON THE UK'S ISLANDS

The mainland of the United Kingdom is an island itself, although current UK biodiversity legislation and policy does not have a specific focus on islands; more it reflects the six main work programmes of the CBD. The UK also includes a large number of smaller islands (over 700 vegetated islands and around 70 populated islands), and there are four main archipelagos (Shetland, Orkney, the Outer and Inner Hebrides) and a number of other island groups across the UK, although the great majority of the islands are within Scotland. There are a large number of initiatives that work on the islands of the UK. Most of these are carried out by the devolved administrations.

A significant number of the UK's 257 Special Protection Areas (SPAs) are located on offshore islands⁵⁰, however listings are currently by site and country – the 'island' classification is not included.

1.1 Internationally-important populations

A review of UK SPAs⁵¹ highlights that the UK is of major international importance for several groups of birds. These include a number of groups that are especially reliant on the UK's islands: breeding seabirds, breeding and wintering waders and passage and wintering wildfowl.

UK is one of the richest areas in the world for seabirds. Just under 8 million seabirds of 25 species breed in Britain and Ireland, including 90% of the world's Manx shearwaters (*Puffinus puffinus*), 68% of Gannets (*Morus bassanus*) and 60% of Great Skuas (*Stercorarius skua*), as well as almost all of Europe's Leach's petrels (*Oceanodroma leucorhoa*). The UK SPA network holds over 4,946,000 breeding seabirds, and protection has recently been extended into inshore waters around the breeding colonies in many cases. 31 of the UK SPAs are on offshore islands. These protect some 3,788,000 breeding seabirds – a substantial proportion of all the seabirds breeding in the north-east Atlantic and North Sea areas.

The Scottish islands hold some of the densest populations of breeding waders in Europe. 30% of the biogeographic population of southern dunlin (*Calidris alpina schinzii*) breeds on the machairs and peatlands of the Outer Hebrides. There are important breeding populations of nine other species, including ringed plover (*Charadrius hiaticula*) redshank (*Tringa totanus*) and Snipe (*Gallinago gallinago*) on the grasslands and Golden plover (*Pluvialis apricaria*) and Greenshank (*Tringa nebularia*) on the peatlands. Internationally important wintering populations of Curlew (*Numenius arquata*), Sanderling (*Calidris alba*), Turnstone (*Arenaria interpres*) and Purple sandpiper (*Calidris maritima*) occur on the islands rocky and sandy shores. The habitat protection provided for these birds is a major contribution to their international conservation.

The UK's islands hold around 200,000 grey seals (*Halichoerus grypus*); 85% of Europe's and 45% of the world population (of which 90% are in Scotland). There are also 46,000 harbour seals (*Phoca vitulina*); representing 30% of Europe's population (of which 85% breed in Scotland).

⁵⁰ <http://www.jncc.gov.uk/page-2598>

⁵¹ <http://www.jncc.gov.uk/page-1415>

1.2 Grassland systems and species

Grassland systems and the species associated with them are also an important element of island biodiversity in the UK. Much island grassland is managed traditionally with little modern agricultural intensification, and hence it has a high wildlife value. Machair; a shell-enriched dune grassland, found extensively in western Scotland, is a classic UK habitat holding a wide range of threatened flora and fauna. Most of the UK's corncrake (*Crex crex*) population occurs on the Scottish islands, in the machair grassland. Breeding numbers have risen from 480 in 1993 to almost 1300 in 2008; due to direct intervention activities influencing island farming (crofting) management. It is likely that corncrakes will continue to be largely restricted to Scottish islands, but their recovery is a success story.

Machair also supports endangered insects such as the great yellow bumble bee (*Bombus distinguendus*); which is now restricted to the western and northern islands and the north Scottish coast. The slender Scotch burnet moth (*Zygaena loti scotica*) is found only on Mull on grazed coastal turf, though the nominate subspecies of this moth is found across mainland Europe.

Another widespread European bird species, the chough (*Pyrrhocorax pyrrhocorax*), is largely restricted to island grasslands in the UK, and requires special habitat management for its conservation.

1.3 Endemism

There is relatively little UK island endemism, but *Primula scotica* is a coastal heath and grassland species restricted to northern Scotland and Orkney; the Shetland mouse ear (*Cerastium nigrescens*) is endemic to north Shetland, and the Lundy cabbage (*Coincya wrightii*) is endemic to Lundy Island off south-west England, and also hosts an endemic flea beetle. Maintenance of grassland through appropriate grazing levels (and in the case of the Lundy cabbage, control of rhododendron (*R. ponticum*)) are vital for these species.

2 MANAGEMENT ISSUES THAT AFFECT BIODIVERSITY IN THE UK 'S ISLANDS

There are a number of important management issues affecting island biodiversity in the UK.

2.1 Farming management

The Scottish islands hold important populations of both breeding and wintering geese. For much of the twentieth century, breeding greylag geese (*Anser anser*) were confined to the Outer Hebrides, and the population declined to around 50 breeding pairs. A range of protection measures led to their recovery and there are now around 40,000 birds spread across the western and northern Scottish islands. These are seen as causing conflict with farming management and may have effects on traditional; framing which is beneficial to a range of other species.

In winter, the Scottish islands host large populations of Greenland white-fronted geese (*Anser albifrons flavirostris*) and Greenland barnacle geese (*Branta leucopsis*); around half of the world population of each species occur here. Almost all the Icelandic greylag goose population winters in Scotland; 80% (80,000) now winter on Orkney, having vacated the central Scotland mainland in the last decade. These also cause management conflict with farming interests, and several local goose management schemes have been in place on Scottish islands for the last ten years. The 2010 Scottish Government Goose Management Review concluded that recent goose management policy and in particular the system of Local Goose Management Schemes, had been successful in improving the fortunes of most goose species and reducing the conflicts with agriculture. The exception to this is the populations of Greenland White-fronted goose, whose populations are still declining. The Review also concluded that there was a lack of equity in how agricultural managers who were all facing pressure from expanding goose populations were treated. This is particularly notable in Orkney & Caithness where populations of grey geese are expanding rapidly and goose schemes are largely unavailable. The Review also noted the high costs which were unlikely to be sustainable with public sector cuts.

The Government has now committed to developing revised Schemes with a reduced budget, which can focus on enhanced protection for species of conservation concern (Greenland White-fronts), and supports a greater emphasis on adaptive management, where data and management controls allow effective monitoring of hunting effort. There was a general steer that local costs could be reduced with minimum impact on conservation targets by reducing the goose scaring and modifying monitoring efforts, within agreed limits. A decision has been made to enter into Interim Goose Management Schemes for the year 2011/12, which will require Local Schemes to reduce costs, following the general approach set out by the Scottish Government. Work will begin on tailoring the Schemes more significantly to address the revised policy direction during summer and autumn 2011. It is also recognised, however, that these goose populations also provide major tourism income from both birdwatching and shooting.

On a number of the UK's islands, there is overgrazing from deer and sheep, severely impacting habitat. As a consequence of difficulties in managing sheep on remote islands, a lack of grazing is also an issue on some islands. There are examples of how a lack of grazing has given rise to vegetation that is unsuitable habitat for threatened species: eg for Barnacle geese (*B. leucopsis*) which depend on short-cropped turf.

White-tailed sea eagles (*Haliaeetus albicilla*) have been reintroduced to Scotland over last 35 years (with grateful thanks to Norway for providing the birds). There are now around 52 breeding territories, mostly on Scottish islands. These are providing major tourism income to the islands of Mull and Skye. In the west there is however, some perceived conflict with sheep farming, which continues to require efforts to resolve, though two recent scientific studies suggest there is little predation of lambs. A third reintroduction on the east coast of Scotland is progressing well and is into its fifth year; the birds are using east coast seabird islands amongst other areas.

2.2 Marine renewables

The next substantial issue is likely to be the development of marine renewables around the UK coasts. Major developments of offshore wind, tidal and wave power devices are proposed. The latter two are likely to be largely around the Scottish islands where the largest natural wave and tidal resources occur. It will be vital to assess what effects these developments may have on the marine environment and to develop strategies and methods to minimise these effects.

2.3 Genetic conservation

Islands have an important role to play in genetic conservation; several Scottish islands hold endemic subspecies of mice (eg *Apodemus sylvaticus hirtensis* on St Kilda) and birds (eg *Troglodytes troglodytes zetlandicus* on Shetland). Some islands act as genetic refugia for widespread species. Several Scottish islands hold genetically-pure populations of red deer (*Cervus elaphus*). On the mainland, hybridisation with Sika deer (*C. nippon*) is widespread, and legislation is forthcoming to protect the island deer populations' genetic integrity. There has been a major study of red deer population genetics and demography on Rum for thirty years.

Machair management on the Scottish islands is partly-dependent on traditional local races of cereals, such as bere barley (*Hordeum vulgare*) and black oats (*Avena strigosa*); this represents important genetic conservation of farmed crop species.

In England, the Isle of Wight and in Wales, Anglesey act as refugia for populations of red squirrels (*Sciurus vulgaris*) threatened elsewhere by the spread of grey squirrels (*Sciurus carolinensis*) and the pox virus they carry.

2.4 Invasive non-native species

Invasive non-native species are a critical issue for the UK's island biodiversity, as is the case across much of the world. On the Outer Hebrides, hedgehogs (*Erinaceus eutropaeus*), which were introduced in the 1970s by misguided individuals wishing to control slugs (*Arion* spp) in gardens, are having major effects on the internationally-important breeding wader populations, by their predation of wader eggs. A

major removal programme is under way, and hedgehogs have now been almost cleared from North Uist⁵². The American mink (*Mustela vison*) also causes serious problems to ground-nesting terns, gulls and waders, and a major removal programme⁵³ is under way on Harris and Lewis.

The most widespread non-natives issue is that of rats on islands with important seabird populations. These are mostly brown rats (*Rattus norvegicus*) but there were also black rats (*Rattus rattus*) on Lundy Island in south west England. Predation of seabird eggs and chicks has been a widespread problem. Over the last 50 years, twelve islands around the UK have had rat eradication programmes. There have been some excellent results in terms of seabird responses: Manx shearwaters (*P. puffinus*) numbers have trebled on Ramsey and Lundy in the 5-10 years since rat eradication.

The rat eradication projects have become increasingly large and ambitious. The project on Canna (off west Scotland) has been the largest to date. Canna is a 1300 ha, farmed and populated island, owned by the National Trust for Scotland. A grid of thousands of poison bait tubes was set in 2005-06. The project needed to remove and maintain a population of Canna fieldmice (*Apodemus sylvaticus*), which were held and bred by the Zoological Society of Scotland for over twelve months, and reintroduced after the poisoning process was complete. The project was apparently effective but NTS continues a monitoring programme, of both the rat absence and seabird population responses.

Scottish Natural Heritage is also trialling brown rat control on Rum; an 11,000 ha island, which holds 61000 pairs, 25% of the world's Manx shearwaters (*P. puffinus*). These nest on mountain-top slopes. This project is considering whether all-island control is necessary and is being implemented by The Food and Environment Research Agency (FERA). It aims to investigate the impact of predation by introduced rats on breeding success of Manx Shearwaters on the island of Rum. Breeding success of Manx Shearwaters was compared in areas where rats were removed by the use of rodenticides and in untreated control areas. Results from this trial will help to determine what future action will be taken to safeguard the future of the breeding Manx Shearwater population on Rum.

Rat activity was monitored at key stages to evaluate the success of the rat control strategy used in the treated area, detect any subsequent reinvasion or population recovery, and monitor rodent activity levels at the control sites. Two main methods were used to monitor rat activity (tracking plates and chew sticks). The data indicate that the density of rats at the treatment site may have been reduced by the rodenticide treatment in May, but showed signs of partial recovery or reinvasion by late August. The density of rats was lower than expected at the study sites, and may be an indication of inter-year variation. The second phase of the rat control trial will begin in June 2011 when last year's treatment area will become a control area and one of last year's control areas will become the treatment area.

Quarantine vigilance is also needed in regards of rat invasions. A recent case of a shipwrecked Scottish fishing vessel on St Kilda brought the threat of rat introduction to the most important seabird islands in the UK. This resulted in a programme of rat monitoring work, both after the wreck and during the ship-breaking operations. A similar protocol is needed for all rat-free seabird islands.

New Scottish legislation, introduced in 2010, increases the protection of islands from introductions of non-native species, or species whose natural range within Scotland does not include island areas. It is now illegal, for example, to introduce mammals to islands where they are not native.

3 BIODIVERSITY IN THE UK CROWN DEPENDENCIES

The UK also has three Crown Dependencies; Jersey, Guernsey (and their archipelago of smaller islands) and the Isle of Man. These have many biogeographical similarities with mainland UK. The Channel islands are notable for holding a range of species whose range does not extend to mainland Britain; and insular forms of some species, such as the Guernsey form of the common vole *Microtus arvalis*) which also occurs on Orkney, its sole area in the UK. The Isle of Man holds important

⁵² <http://www.snh.gov.uk/land-and-sea/managing-wildlife/uist-wader-project/>

⁵³ <http://www.snh.gov.uk/land-and-sea/managing-wildlife/hebridean-mink-project/>

populations of breeding birds (e.g. seabirds, chough and hen harrier (*Circus cyaneus*); similar to some Scottish islands, and they hold a range of marine and terrestrial habitats which are significant in a UK and regional context.

4 CONCLUSIONS

A number of island biodiversity issues are very similar across islands, regardless of species, habitats, or geographical location. One of the key lessons learnt from experiences on inhabited UK islands is that the local people (local ownership and local involvement) are pivotal to the success of any conservation initiative. It is also important that conservation initiatives are appropriately scaled to the size of the populations of the islands to ensure long term sustainability and continuity.

Information-sharing across islands is important. For example, access to good quality scientific data about eradication or control of non-native invasive species on small islands (including costs, benefits, probability of success and how to maximise this) will help make the case for island-specific proposed actions.

Appendix 4



Convention on the Conservation of European Wildlife and Natural Habitats

Standing Committee

Draft Recommendation No. ... (2011) of the Standing Committee, adopted on ... December 2011, on the Charter on the Conservation and Sustainable Use of Biological Diversity on European Islands

The Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats, acting under the terms of Article 14 of the Convention;

Noting the adoption by the Council of the European Union, in March 2010, of a long-term Vision 2050 and Headline Target 2020 for biodiversity; and noting the European Commission's Communication in May 2011 of an EU Biodiversity Strategy to 2020;

Equally noting the adoption by the Convention on Biological Diversity (CBD), in March 2006, of a Programme of Work on Island Biodiversity; and that the in-depth review of the Programme of Work at the 11th meeting of the Conference of the Parties of the CBD in October 2012;

Recalling that Article 3 of the Bern Convention requires Parties to have regard to the conservation of wild fauna and flora in their planning and development policies, as well as to promote national policies for the conservation of wild flora, wild fauna and natural habitats, with particular attention to endangered and vulnerable species, especially endemic ones, and endangered habitats;

Recalling that Article 4 of the Bern Convention requires Parties to take appropriate and necessary legislative and administrative measures to ensure the conservation of the habitats of wild flora and fauna species, as well as of endangered natural habitats; and to give special attention to the protection of areas of importance for migratory species;

Recognising, in this context, the outstanding contribution of islands to global biodiversity largely resulting from their isolation and the high degree of endemism amongst their terrestrial, freshwater and marine animal and plant communities;

Recognising that the five principal proximate drivers of biodiversity loss – pollution, habitat change and disturbance, over-exploitation, climate change, invasive alien species – all have severe and cumulative impacts on the biological diversity of European islands.

Recognising moreover the extreme vulnerability of island biodiversity and that the majority of documented modern-time species extinctions have occurred on islands;

Equally recognising the high vulnerability of human cultures and communities on islands, as well as their economies that often hinge upon only a few sectors, most notably tourism, agriculture, fisheries and mining, and on external financial support; at the same time highlighting the particular resourcefulness of islanders;

Recognising that limitations in both scale and accessibility are fundamental characteristics of many islands and that any type of activity must commonly be conducted by fewer people than in mainland situations;

Noting that Europe has more than 50,000 islands, including around 500 islands larger than 20 km², ranging from polar to subtropical latitudes, and that several European countries are entirely situated on islands.

Recalling its Decision in 2008 to create a Group of Experts on European Island Biological Diversity having the following objectives: (i) improve Network conservation work on European islands; (ii) contribute positively to the island programme of work of the Convention on Biological Diversity by bringing the views, expertise and problems of European islands; (iii) assist Bern Convention governments on specific conservation issues of European islands; (iv) propose common guidelines and tools that may be used to improve conservation of European islands; (v) analyse threats to biodiversity that may present greater challenges on islands than on the continent; (vi) foster national conservation work on islands;

Acknowledging that the conservation and sustainable use of biodiversity in and around European islands is, further to the Bern Convention, subject to an array of sub-national and national policies, as well as of a range of international instruments, policies and initiatives, an non-exclusive list of which is provided in annex 1);

Referring to document T-PVS/Inf (2011) 8 rev “Draft Charter on the Conservation and Sustainable Use of Biological Diversity on European Islands”, by Yves de Soye;

Taking note with interest of the document T-PVS/Inf (2011) 9 on “Priorities for conserving Biodiversity on European Islands”;

Recommends that Contracting Parties:

1. take note of the appended Charter on the Conservation and Sustainable Use of Biological Diversity on European Islands as a source of inspiration for their policies and practice, promoting its use also with sub-national and regional authorities;
2. devote special attention to island biological diversity in the implementation of their international obligations and also in the achievements of the 2020 targets adopted in the framework of the Convention of Biological Diversity;
3. take note, in the elaboration of their workplans for island biological diversity of the priorities suggested in the document mentioned above;
4. inform the Standing Committee on the measures taken on the implementation of this recommendation;

Invites Observer States to implement as appropriate the recommendation.

Furthermore the Standing Committee decides to use the enclosed Charter and the priorities suggested in the document mentioned above as a useful framework for further Bern Convention work in the field.

Appendix to the recommendation

CHARTER ON THE CONSERVATION AND SUSTAINABLE USE OF BIOLOGICAL DIVERSITY ON EUROPEAN ISLANDS

Whilst the principles and recommendations captured hereunder could apply to most, if not all, islands worldwide, this Charter focuses specifically on the marine islands of the European and Mediterranean states which are parties to the Bern Convention⁵⁴. The Charter refers to all forms of biological diversity in the terrestrial, marine, coastal and freshwater realms, unless specified.

The Charter will be complemented by a separate plan of action detailing the corresponding recommendations and implementation means and measures.

1. The biological diversity of European islands is an important part of Europe's natural heritage and warrants protection for both its intrinsic value and because the services it provides are a fundamental pillar of local socio-economic development

Islands cover around 5% of the global land area but contribute significantly to global biodiversity and are host to a significant proportion of threatened species: 29% (10/34) of the world's terrestrial Biodiversity Hotspots are islands, and of 10 coral reef hotspots identified, 70% are on islands; 48% (104/218) of the world's Endemic Bird Areas are on islands; 25% of WWF's 200 priority Ecoregions wholly comprise islands; roughly 20% of all the world's vascular plant diversity is found only on islands; around one-third of the world's threatened mammals, birds and amphibians are found only on islands.

European islands harbour many of Europe's endemic species, host major breeding congregations of important species and may act as refuges for species threatened or extinct on the continent or 'mainland' islands. They also often represent vital wintering grounds, stopover points or bottlenecks for migrating birds, mammals, and possibly invertebrates.

The Mediterranean and Macaronesian Regions with their large numbers of islands stand out as a global Biodiversity Hotspot - despite significant historic losses of endemic species resulting from early human occupation. In the Canary Islands up to 70% of some taxa (e.g. beetles) are known to be endemic. On the Mediterranean islands of Corsica, Crete and Cyprus, endemic plants make up 12%, 10% and 7% of the respective floras. The islands in these regions are, in addition, highly vulnerable to climate change.

In contrast, the Northern European islands are characterised by a relatively impoverished biodiversity and a near complete absence of species-level endemism, due to their recent history of glaciation. However, a number of these islands are important feeding and breeding areas for birds and marine mammals, and are home to important marine living resources.

Finally, the economies and livelihoods of European islands often depend to a significant degree on the multi-faceted values of biodiversity and ecosystem services, with nature-based tourism including recreational diving, and the harvesting of marine living resources being the most obvious examples.

However, these values and services are often taken for granted, and their continuing deterioration is not noticed or heeded. The intrinsic, economic, social and cultural values of biodiversity and ecosystem services, should be increasingly recognised and reflected in public and private sector decision-making on islands.

⁵⁴ i.e. those located in the Black Sea, Mediterranean Sea, Baltic Sea, Arctic Sea, North Sea, and the north and east Atlantic Ocean. Those African and near eastern countries with islands in the Mediterranean Sea are also encouraged to collaborate in delivering this Charter.

2. Renewed targeted efforts are needed to conserve and manage sustainably both species and natural habitats on European islands, especially those with the greatest and most threatened endemic biodiversity, but also noting the significant conservation potential of small uninhabited islands

Past and current efforts have been insufficient to halt the loss of species and natural habitats on most European islands. Much to the contrary, pressures are mounting on various fronts including those resulting from continuing land use change, disturbance, over-exploitation, invasive species and climate change.

Renewed efforts are required to address the most urgent biodiversity conservation challenges, particularly on those islands which harbour an important share of European endemic and threatened biodiversity, particularly in the Mediterranean and Macaronesian regions. Additional efforts should equally be directed at protecting remote and/or uninhabited European islands, especially in the north-eastern Atlantic, where important wildlife populations and wilderness areas can be protected with relatively limited investment.

3. The conversion, modification and disturbance of natural habitats continues to be a significant threat to biodiversity on many European islands, wherefore spatial planning should give biodiversity full consideration

Historically the conversion of natural habitats by man has been the most widespread and significant cause for the reduction of animal and plant species populations. This trend continues on a number of European islands, especially the more densely populated ones where the demand for urbanisation and infrastructure development as well as for recreational and exploitative activities is highest.

Integrated spatial planning including Integrated Coastal Zone Management, and impact assessments should give biodiversity and ecosystem services full consideration and avoid, mitigate or compensate for any unavoidable impacts.

4. Invasive alien species represent one of the leading threats to island biodiversity; invasive species must be prevented from arriving on islands, detected, eradicated or controlled and measures be put in place to identify and manage pathways to prevent their introduction and establishment, particularly in priority sites and to safeguard highly threatened species

Besides habitat loss, invasive alien species (IAS) represent arguably the greatest immediate threat to European island biodiversity. This is largely due to the vulnerability of the large number of restricted-range endemic animal and plant taxa, but also to the scarcity or lack of natural factors, such as predators or pathogens, to control the expansion of harmful arrivals.

In addition, IAS cause significant damage to economic activities and human health: the costs related to IAS issues, in the EU alone, are estimated to be at least EUR 12.7 billion per year. Furthermore, both climate change and the expansion of international trade are prone to exacerbate IAS problems.

Tackling the IAS threat proactively is thus fundamental for safeguarding biological diversity on European islands. Important opportunities exist because both prevention and eradication are feasible on islands, where they are almost impossible to achieve in continental situations. Global and regional including EU policies pertaining to IAS should therefore give special consideration to islands.

5. Water resources on European islands should be managed so that negative impacts on freshwater biodiversity are minimised, especially in light of the growing impacts of climate change

Freshwater ecosystems are listed as the most threatened in Europe and globally, due to a number of key impacts including overexploitation, water pollution, flow modification including water abstraction, destruction or degradation of habitat, and invasion by invasive alien species.

Water is one of the most valuable resources on many European islands, particularly in the Mediterranean and Macaronesian Regions, home to the greatest share of European island biodiversity.

However, the maintenance of water resources on these islands is at risk due to losses of forests and wetlands and, most importantly, inadequate water management resulting in the over-exploitation of local resources. In addition pollution and inadequate water sanitation endanger water quality.

The predicted impacts of climate change provide additional reason for concern as they are expected to affect the rainfall patterns and freshwater regimes on European islands, with those in northern Europe experiencing an increase in annual precipitation but those in southern Europe suffering significant decreases. The widespread damming of rivers and streams for domestic and agricultural use exacerbates the problem as it profoundly affects natural freshwater ecosystems, and this is also liable to increase under a drier climate.

Special attention should therefore be given to reducing the existing, and preventing additional negative impacts of inadequate water management on freshwater biodiversity, such as through appropriate incentive and regulation schemes.

6. The direct and indirect impacts of climate change on the especially vulnerable biodiversity and living natural resources on European islands require concerted preventive action, including measures enhancing their resilience and facilitating their adaptation.

Climate change is widely expected to become the greatest threat to global biodiversity in the course of the 21st century and deserves special attention on islands. Island biotas are highly sensitive to climate change due to their isolation and ecological characteristics. While some changes may be mitigated by the buffering effect of the surrounding seas, others are likely to cause severe impacts.

In this context it is worth highlighting that biodiversity may be impacted by climate change both directly from the resulting changes in the physical and living natural environment, and indirectly through societal response measures, most notably those undertaken in the context of climate change adaptation and mitigation.

A four-part approach is therefore required for addressing climate change, by: (i) determining the vulnerabilities of island biotas and the anticipated direct impacts on species and habitats; (ii) minimising the negative direct impacts, by enhancing the resilience and adaptive capacity of island species and ecosystems, by enhancing ecosystem connectivity and other suitable interventions; (iii) determining and anticipating any potential indirect impacts from maladaptive measures; and (iv) minimising key negative indirect impacts. This reflects the increasingly accepted view that climate change and biodiversity loss are best addressed together in light of their degree of interdependency and the opportunities for synergies and co-benefits.

Within Europe, the islands in the Mediterranean and Macaronesian Regions appear as the leading priority, because they have the highest endemic biodiversity and can be expected to experience the most significant direct and indirect climate change impacts. Within these regions, sites hosting vulnerable or threatened endemic taxa should be given special consideration.

7. On many European islands the intensification of agricultural, pastoral and silvicultural practices and the abandonment of traditional low-intensity farming may have major effects on island species and habitats.

Agricultural, pastoral and silvicultural practices are critically important in the context of biodiversity management. Biodiversity may be negatively affected by both land-use intensification and the abandonment of farming. The former leads to enhanced pressures on biodiversity by removing important habitat elements from the agricultural landscape, and by increasing the chemical load of the environment. The latter will impact negatively on those species and habitats that have benefited from traditional human management practices and rely on the maintenance of those practices.

On European islands the switch from traditional biodiversity-friendly practices to more intensive methods gives reason for increasing concern. However special attention should also be paid to the

abandonment of remote and sparsely-inhabited islands that have retained traditional low-intensity management, as this may have major effects on island habitats and species.

Where possible, incentives should be directed to deliver public benefits including cultural and environmental values for example by preventing undesirable intensification measures on the one hand, and encouraging the maintenance of traditional practices and biodiversity-enhancing low impact farming practices on the other hand.

8. Recognising that many European islands offer important opportunities for renewable energy generation, the potentially serious effects of some forms of renewable energy make it imperative that impact assessments fully consider potential effects on island biodiversity.

Islands across the world are increasingly exploring means to exploit their local renewable energy resources, in order to achieve energy autonomy and export energy to consumers elsewhere. The renewable energies considered include especially solar, offshore and onshore wind, biomass, tidal stream and tidal impoundment, wave energy, geothermal and small and large-scale hydroelectric sources. Widely considered to be clean and green energies, the construction, operation and decommissioning of generation and transmission infrastructures may nevertheless have significant impacts on biodiversity, primarily through habitat loss and disturbance effects but also by favouring the establishment of invasive alien species.

Renewable energy initiatives should therefore undergo careful strategic environmental assessments and environmental impact assessments that fully integrate biodiversity considerations in order to avoid, mitigate or compensate for any important negative impacts.

9. The management of waste presents a real challenge to many European islands and requires concerted action to prevent harmful long-term effects on biodiversity, ecosystems and the wider environment.

On the more densely populated European islands, and especially those receiving large numbers of seasonal visitors, the problems of waste management and disposal may be far more acute than in mainland areas. Many islands have very limited areas for landfill and the development of island-specific approaches to maximise re-use and recycling should be a priority. There may need to be particular approaches for dealing with large waste items such as vehicles and machinery, and providing bulk storage solutions for smaller islands to enable the intermittent removal of inert waste to facilities on larger islands or the mainland

Failure to manage waste leads to social, economic and environmental problems on islands; the accumulation of waste on land, and especially along the coasts and in the surrounding waters is an ever-growing challenge as it pollutes the environment, poses real threats to biodiversity and is counterproductive to tourism development. Failure to manage both primary and processed plastic wastes presents particular problems to marine wildlife through entanglement and ingestion of plastics. A means of reducing this risk is to minimise the use of plastics and maximise the use of biodegradable plastics on islands.

10. The situation and characteristics of islands require the development and application of specially-adapted approaches and tools for problem analyses and response measures.

Islands and their biodiversity often offer some specific challenges linked to their small size and large distance from the continent. Scientific methods, tools for analysis and management and policies and legislative frameworks aimed at the conservation and sustainable use of biodiversity often originate from continental situations and may be inappropriate for island situations.

A better recognition of islands in national policy frameworks and the further development and adoption of island-specific approaches would be essential contributions in this regard. Such approaches should offer opportunities for problem analysis and solutions at appropriate scales, consider the resource and spatial constraints as well as ecological specificities inherent to most islands, and build ecological and

social networks between islands. They should furthermore integrate socio-economic factors with biodiversity and wider environmental considerations aiming at holistic improvements.

11. The knowledge and sharing of scientific data on the biodiversity and living natural resources of European islands, including on the threats they face and their conservation status, remain limited, and renewed efforts should be made to fill the priority gaps.

Many island biotas remain surprisingly understudied, even in Europe. This applies especially to remote uninhabited islands and to islands exhibiting a higher biodiversity, most importantly those in the Mediterranean and Macaronesian regions. In the Canary Islands for instance, over the past decade one new species was described on average every six days. The characterisation and distribution of island species, communities and ecological interactions, across all biomes, is still far from complete.

To increase and openly share the knowledge base on the species, habitats and ecosystems on European islands, determining and monitoring their conservation status, exploring their ecological interactions, and defining their relationship with human activities is therefore a cornerstone of all efforts to protect and manage the biodiversity of these islands.

12. Biodiversity conservation and natural resource management on European islands require adequate financial means and institutional capacities, recognising that by affording greater means to islands, more may be achieved for biodiversity than by analogous investments in continental settings in Europe.

Success in the conservation and management of biodiversity and natural resources relies on institutional capacities and financial resources in proportion to the issues at stake. However, on European islands, the public and private sectors, and civil society organisations tend to lack the resources to build and maintain the capacity to adequately assess and respond to their respective biodiversity challenges. Island stakeholders continue to be relatively isolated, and different islands tend to adopt different approaches to the challenges they face.

Compared to mainland situations, investing in initiatives on islands is expected to contribute more to the conservation of biodiversity in relative terms, given the higher proportion and density of endemic and threatened species and unique ecosystems, and noting that biodiversity pressures can often be more easily controlled on islands.

National governments, local authorities and other stakeholder organisations should therefore provide financial resources in proportion to the biodiversity on islands; mobilise locally available financial resources but also seek or source external funding in cases where local economies are not in the position to cover the needs alone; consider market-based and other innovative financial mechanisms; and develop and undertake targeted and effective initiatives to build capacity and reduce isolation, making best use of local resourcefulness.

13. To achieve the conservation and sustainable use of biodiversity on European islands it is fundamental to enhance local awareness and ownership.

Local people are pivotal to the success of any conservation and resource management initiative. The particular strength and nature of island communities emphasises the need for this across the islands of Europe. It is therefore essential to facilitate a better understanding of conservation objectives and build local ownership of related activities amongst islanders. Local support also helps secure the commitment from political leaders to consider the value and needs of biodiversity and ecosystem services in their decision-making.

Annex 1

Non-exclusive list of relevant sub-national and national policies, as well as international instruments, policies and initiatives:

- Convention on Biological Diversity with its Strategic Plan 2011-2020, Resource Mobilisation Strategy, and the Programme of Work on Island Biodiversity and the closely linked Global Island Partnership (GLISPA);
- Convention on Migratory Species;
- Convention on International Trade of Endangered Species;
- World Heritage Convention;
- Ramsar Convention on Wetlands of International Importance;
- UN Convention on the Law of the Sea;
- EU Birds and Habitats Directives;
- EU Water Framework Directive;
- EU Common Agricultural Policy;
- EU White Paper “Adapting to climate change: Towards a European framework for action”;
- EU Marine Strategy Framework Directive;
- EU Common Fisheries Policy and the various Regional Fisheries Management Organisations;
- Helsinki Commission on Baltic Marine Environment Protection (HELCOM);
- OSPAR Commission on the Protection and Conservation of the North-East Atlantic and its Resources;
- Barcelona Convention with its Mediterranean Action Plan;
- Convention and Action Plan for the Sustainable Development of the Smaller Islands of the Mediterranean;
- North European and Baltic Network on Invasive Alien Species (NOBANIS);
- European Small Island Network;
- European Islands Network on Energy and Environment (ISLENET) convened under the Islands Commission of the Conference of Peripheral and Maritime Regions