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

**- First Draft -**  
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## PREAMBLE

Noting the impending adoption, in October 2010, of a new Strategic Plan 2011-2020 and corresponding Vision and Target under the Convention on Biological Diversity [aimed at enhancing the implementation of the Convention in order to achieve its three objectives - the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising out of the utilization of genetic resources]. [The bracketed section could be deleted]

Recalling the adoption by the Council of the European Union, in March 2010, [of a long-term Vision 2050 and Headline Target 2020 for biodiversity;] [of a “long-term Vision that by 2050 European Union biodiversity and the ecosystem services it provides – its natural capital – are protected, valued and appropriately restored for biodiversity’s intrinsic value and for their essential contribution to human wellbeing and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided”; as well as of a Headline Target of “halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss”;] [chose one of the two bracketed options]

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; and that Article 4 requires Parties to take appropriate measures to ensure the conservation of the habitats of wild flora and fauna species as well as of endangered natural habitats; and give particular attention to the protection of areas of importance for migratory species;

Recognising, in this context, the outstanding contribution of islands to global biodiversity<sup>1,2</sup>, largely resulting from their isolation and the high degree of endemism amongst their terrestrial and marine animal and plant communities;

Recognising that the five principal proximate drivers of biodiversity loss – pollution, habitat loss, over-exploitation, climate change, invasive alien species – all have severe and cumulative impacts on islands; and that of these drivers, invasive alien species have been the most significant cause of population declines and modern-time species extinctions in island ecosystems worldwide<sup>3</sup>.

Recognising the extreme vulnerability of island biodiversity and that the majority of documented extinctions have occurred on islands<sup>4</sup>: 2000 of the world’s significant islands alone account for 35% of known modern-time plant extinctions, as well as 45% of insect, 61% of mammal, 81% of bird and 95% of reptile extinctions<sup>5</sup>;

Equally recognising the high vulnerability of human cultures and communities on islands, as well as of their economies that often hinge upon only a few sectors, most notably tourism, agriculture, fisheries and mining, and on external financial support; and that the economies and livelihoods on islands thus often depend on biodiversity and ecosystems for the attractions and services they provide;

<sup>1</sup> Fonseca, G.A.B. da, R.A. Mittermeier & C. G. Mittermeier (2006): Conservation of Island Biodiversity: Importance, Challenges, and Opportunities. Conservation International.

<sup>2</sup> Orueta, G. (2009): International efforts to conserve biological diversity in islands. Bern Convention on the Conservation of European Wildlife and Natural Habitats, Council of Europe, T-PVS/Inf (2009) 1.

<sup>3</sup> Carnevali, L. & P. Genovesi (2009): Toward a European Information System on Invasive Alien Species in European Islands. Bern Convention on the Conservation of European Wildlife and Natural Habitats, Council of Europe, T-PVS/Inf (2009) 13.

<sup>4</sup> Sax, D.F. & S.D. Gaines (2008): Species invasions and extinctions. The future of native biodiversity on islands. PNAS, 105, Suppl.1: 11490-11497.

<sup>5</sup> Baillie, J.M., S.N. Stuart & C. Hilton-Taylor (eds.): 2004 IUCN Red List of Threatened Species. A Global Species Assessment. Gland, Switzerland and Cambridge, UK: IUCN.

Recalling that Europe has more than 50,000 islands ranging from polar to subtropical latitudes, which include around 500 islands larger than 20 km<sup>2</sup> and altogether represent more than 7% (700,000 km<sup>2</sup>) of Europe's land area<sup>6</sup>; and that several European countries are entirely situated on islands.

Recalling its Decision [to be completed with decision basis] adopting the Bern Convention's Programme of Work on Island Biodiversity, as well as its Decision No. 2008 (XXX) to create an Expert Group on European Island Biological Diversity having the following objectives: (i) improve Network conservation work in 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 in islands than in the continent; (vi) foster national conservation work on islands;

Recalling its Decision [to be completed with decision basis] to look into the preparation and subsequent adoption of a Charter on the Conservation and Sustainable Use of Biological Diversity in European Islands, as proposed by the Expert Group on European Island Biological Diversity at its 1<sup>st</sup> meeting (Tenerife, 01 to 03 October 2009);

Having regard to other relevant Council of Europe's legal and policy frameworks such as the Florence Convention on European Landscapes<sup>7</sup>; the European and Mediterranean Major Hazards Agreement (EUR-OPA)<sup>8</sup>; the Conference of Ministers Responsible for Spatial/Regional Planning (CEMAT) with its Guiding Principles for Sustainable Spatial Development of the European Continent<sup>9</sup>; the 2001 European Charter on Water Resources; the 2007 European Charter on Hunting and Biodiversity; [and the 2010 European Charter on Angling and Biodiversity;]

Acknowledging that the conservation and sustainable use of marine and terrestrial 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, most notably the Convention on Biological Diversity with its Programme of Work on Island Biodiversity<sup>10</sup> and the closely linked Global Island Partnership (GLISPA)<sup>11</sup>; the Convention on Migratory Species<sup>12</sup>; the Convention on International Trade of Endangered Species<sup>13</sup>; the World Heritage Convention<sup>14</sup>; the Ramsar Convention on Wetlands of International Importance<sup>15</sup>; the UN Convention on the Law of the Sea<sup>16</sup>; the EU Birds and Habitats Directives<sup>17</sup>; the EU Water Framework Directive<sup>18</sup>; the EU Common Agricultural Policy<sup>19</sup>; the EU White Paper "Adapting to climate change: Towards a European framework for action"; the EU Marine Strategy Directive<sup>20</sup>; the EU Common Fisheries Policy<sup>21</sup> including the various Regional Fisheries Management Organisations<sup>22</sup>; the Helsinki Commission on Baltic Marine Environment

<sup>6</sup> Orueta, G. (2009).

<sup>7</sup> [http://www.coe.int/t/dg4/cultureheritage/heritage/Landscape/default\\_en.asp](http://www.coe.int/t/dg4/cultureheritage/heritage/Landscape/default_en.asp)

<sup>8</sup> [http://www.coe.int/T/DG4/MajorHazards/Default\\_en.asp](http://www.coe.int/T/DG4/MajorHazards/Default_en.asp)

<sup>9</sup> [http://www.coe.int/t/dg4/cultureheritage/heritage/CEMAT/Default\\_en.asp](http://www.coe.int/t/dg4/cultureheritage/heritage/CEMAT/Default_en.asp)

<sup>10</sup> [www.cbd.int/island](http://www.cbd.int/island)

<sup>11</sup> [www.cbd.int/island/glispa.shtml](http://www.cbd.int/island/glispa.shtml)

<sup>12</sup> [www.cms.int](http://www.cms.int)

<sup>13</sup> [www.cites.org](http://www.cites.org)

<sup>14</sup> <http://whc.unesco.org>

<sup>15</sup> [www.ramsar.org](http://www.ramsar.org)

<sup>16</sup> [www.un.org/Depts/los/convention\\_agreements/convention\\_overview\\_convention.htm](http://www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm)

<sup>17</sup> [http://ec.europa.eu/environment/nature/legislation/index\\_en.htm](http://ec.europa.eu/environment/nature/legislation/index_en.htm)

<sup>18</sup> [http://ec.europa.eu/environment/water/water-framework/index\\_en.html](http://ec.europa.eu/environment/water/water-framework/index_en.html)

<sup>19</sup> [http://ec.europa.eu/agriculture/index\\_en.htm](http://ec.europa.eu/agriculture/index_en.htm)

<sup>20</sup> [http://ec.europa.eu/environment/water/marine/index\\_en.htm](http://ec.europa.eu/environment/water/marine/index_en.htm)

<sup>21</sup> [http://ec.europa.eu/fisheries/cfp/index\\_en.htm](http://ec.europa.eu/fisheries/cfp/index_en.htm)

<sup>22</sup> [http://ec.europa.eu/fisheries/cfp/international/rfmo/index\\_en.htm](http://ec.europa.eu/fisheries/cfp/international/rfmo/index_en.htm)

Protection (HELCOM)<sup>23</sup>; the OSPAR Commission on the Protection and Conservation of the North-East Atlantic and its Resources<sup>24</sup>; the Barcelona Convention with its Mediterranean Action Plan<sup>25</sup>; the Convention and Action Plan for the Sustainable Development of the Smaller Islands of the Mediterranean<sup>26</sup>; the North European and Baltic Network on Invasive Alien Species (NOBANIS)<sup>27</sup>; the European Small Island Network<sup>28</sup>; and the European Islands Network on Energy and Environment (ISLENET)<sup>29</sup> convened under the Islands Commission of the Conference of Peripheral and Maritime Regions;

**Adopts the Charter on the Conservation and Sustainable Use of Biological Diversity in European Islands, set out below;**

**Recommends that Bern Convention member states take note of the Charter applying its principles and recommendations in the framework of their national policies and measures, where appropriate; and in addition promote the Charter's principles and recommendations also towards sub-national and regional authorities.**

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

While 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, primarily European, countries that are signatories of the Bern Convention, located in the Baltic Sea, North Sea, Mediterranean Sea, as well as in the northern and eastern Atlantic Ocean.

### **1. The biological diversity of European islands warrants protection for both its intrinsic value and because the services it provides are a fundamental pillar of local socio-economic development that might be recognised accordingly.**

The biological diversity on European islands warrants protection as an important part of Europe's natural heritage, the intrinsic value of which is appreciated by many of the continent's inhabitants.

In addition, the economies and livelihoods on 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 operations, and the harvesting of marine living resources being only the most obvious examples.

However, these values and services often continue to be taken for granted, and their continuing deterioration is not noticed or heeded. The ongoing international study on "The Economics of Biodiversity and Ecosystem Services" has estimated that under a business-as-usual scenario, i.e. a continuing degradation of the world's biodiversity and ecosystem services, by 2050 the annual economic damage would amount to 7% of global GDP<sup>30</sup>.

It would be desirable that the economic value of biodiversity and ecosystem services were increasingly recognised and reflected in public and private sector decision-making on islands. To this aim, appropriate elements of the TEEB study could be disseminated to key stakeholders on European islands; and the use could be extended of related, island-specific economic valuation tools (such as the UK Joint

<sup>23</sup> [www.helcom.fi](http://www.helcom.fi)

<sup>24</sup> [www.ospar.org](http://www.ospar.org)

<sup>25</sup> [www.unepmap.org/index.php?module=content2&catid=001001004](http://www.unepmap.org/index.php?module=content2&catid=001001004)

<sup>26</sup> [www.initiative-pim.org](http://www.initiative-pim.org)

<sup>27</sup> [www.nobanis.org](http://www.nobanis.org)

<sup>28</sup> [www.europeansmallislands.net](http://www.europeansmallislands.net)

<sup>29</sup> [www.europeanislands.net](http://www.europeanislands.net)

<sup>30</sup> [www.teebweb.org](http://www.teebweb.org)

Nature Conservation Committee's environmental economics toolkit "Valuing the Environment in Small Islands"<sup>31</sup>).

## **2. Island-specific approaches and tools are needed for both problem analyses and response measures.**

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

The further development and adoption of island-specific approaches, where required and appropriate, would be an essential contribution in this regard. Such approaches could offer opportunities for problem analysis and solutions at appropriate scales. They could furthermore integrate socio-economic factors with biodiversity and wider environmental considerations aiming at holistic improvements.

## **3. Conduct, compile and openly share the results of essential research on the biodiversity and living natural resources of European islands as well as on the threats they face and their conservation status.**

To the present day, 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<sup>32</sup>. Also the characterisation and distribution of terrestrial and marine species communities and of ecological interactions is still far from complete.

Increasing and completing 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 adequately.

To this aim, it is of primary importance to strengthen the research capacity on islands but also to welcome and proactively seek contributions from external researchers and scientific institutions. At the same time, it would be desirable that such external stakeholders, including donors of scientific research, afford island issues greater priority.

It is furthermore equally essential that research findings are compiled and made openly available for all interested stakeholders. This would be aided by the strengthening of existing and/or the creation of new biodiversity data centres at appropriate levels (sub-national, national, international). One of the first products of such efforts might be a complete inventory and gap analysis of protected areas on European islands that builds on existing information from both national and supra-national sources such as the World Protected Areas<sup>33</sup>, the Natura 2000<sup>34</sup> and the Emerald Network databases.

## **4. Regional, national and sub-national policies relevant for biodiversity might be adapted to better focus on and reflect the needs and importance of islands.**

Many of the issues relevant for the biodiversity and natural resources on islands are already recognised and included in regional, national and sub-national policies and legislative frameworks.

<sup>31</sup> [www.jncc.gov.uk/page-4065](http://www.jncc.gov.uk/page-4065)

<sup>32</sup> Martín Esquivel, J.L., M.C. Marrero Gómez, N. Zurita Pérez, M. Arechavaleta Hernández & I. Zamora Izquierdo (2005): La biodiversidad en datos 2005. Especies Silvestres de las islas Canarias. Gobierno de Canarias Consejería de Medio Ambiente y Política Territorial (CD-ROM).

<sup>33</sup> [www.wdpa.org](http://www.wdpa.org)

<sup>34</sup> [http://ec.europa.eu/environment/nature/natura2000/db\\_gis/index\\_en.htm](http://ec.europa.eu/environment/nature/natura2000/db_gis/index_en.htm)

In order to enhance their value, however, such policies and legislative frameworks might be amended, where appropriate, in order to afford islands an explicit priority status, especially where these have valuable biodiversity and natural resources, and/or where island inhabitants depend on such biodiversity and natural resources.

As an additional measure national guidance documents and databases could be produced that compile and offer guidance on the range of policies relevant for the conservation and sustainable use of biodiversity on the islands on the respective country's territory.

Where gaps remain, the development of new legislative tools specific for islands should be considered.

## **5. Step up targeted biodiversity conservation efforts, focusing on priority species, habitats and ecosystems in both the marine and terrestrial realms**

Islands contribute significantly to global biodiversity and are host to a significant portion of threatened species: 29% (10/34) of the world's terrestrial Biodiversity Hotspots<sup>35</sup> are islands, and of 10 coral reef hotspots identified, 70% are on islands<sup>36</sup>; 48% (104/218) of the world's Endemic Bird Areas<sup>37</sup> are on islands; 25% of WWF's 200 priority Ecoregions<sup>38</sup> wholly comprise islands; roughly 20% of all the world's vascular plant diversity are found only on islands<sup>39</sup>; covering around 5% of the global land area, around one-third of the world's threatened mammals, birds and amphibians are found only on islands<sup>40</sup>;

In the European context, the Mediterranean and Macaronesian Regions with their large numbers of islands still 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<sup>41</sup>. On the Mediterranean islands of Corsica, Crete and Cyprus, endemic plants make up 12%, 10% and 7% of the respective floras<sup>42</sup>. The islands in these regions are in addition highly vulnerable to climate change.

Northern European islands, in contrast, are rather characterised, due to their recent glaciation history, by a fairly depauperate biodiversity and a near complete absence of species-level endemisms. However many of these islands, especially in the northern Atlantic and Arctic, represent globally relevant feeding and breeding areas for birds and marine mammals, providing key refuges for threatened species, and in addition are home to important marine living resources<sup>43</sup>.

Following an assessment of priorities, renewed efforts are needed to conserve threatened species and habitats through well-targeted actions considering the full portfolio of options, including: in situ species protection measures; ex situ rescue efforts; translocations and reintroductions; the creation of new protected areas where indicated, especially in the marine realm, completing and complementing the Natura 2000 and Emerald Networks; and the development and implementation of appropriate management plans that include ecosystem restoration where required.

<sup>35</sup> [www.biodiversityhotspots.org](http://www.biodiversityhotspots.org)

<sup>36</sup> Roberts, C.M., C.J. McClean, J.E.N. Veron, J.P. Hawkins, G.R. Allen, D.E. McAllister, C.G. Mittermeier, F.W. Schueler, M. Spalding, F. Wells, C. Vynne & T.B. Werner (2002): Marine biodiversity hotspots and conservation priorities for tropical reefs. *Science* 295:1280–1284.

<sup>37</sup> [http://www.birdlife.org/action/science/endemic\\_bird\\_areas/index.html](http://www.birdlife.org/action/science/endemic_bird_areas/index.html)

<sup>38</sup> [http://en.wikipedia.org/wiki/Global\\_200](http://en.wikipedia.org/wiki/Global_200)

<sup>39</sup> Conservation International (2006): CI Facts - Island Biodiversity Hotspots.

<sup>40</sup> Fonseca, G.A.B. da, R.A. Mittermeier & C. G. Mittermeier (2006): Conservation of Island Biodiversity: Importance, Challenges, and Opportunities. Washington DC, Conservation International.

<sup>41</sup> Machado, A. (1998): Biodiversidad. Un paseo por el concepto y las Islas Canarias. Ed. Cabildo Insular de Tenerife.

<sup>42</sup> Orueta, G. (2009).

<sup>43</sup> EEA (2002-2008): Europe's biodiversity – biogeographical regions and seas. [www.eea.europa.eu/publications/report\\_2002\\_0524\\_154909](http://www.eea.europa.eu/publications/report_2002_0524_154909)

In addition to those islands with the greatest and most threatened biodiversity, the great conservation potential of small uninhabited European islands should be noted.

In cases where reintroductions and translocations of species are conducted to save species from extinction, it would be desirable to apply the most advanced guidelines, in order to prevent any negative impacts such as through the accidental introduction of diseases, parasites or invasive species.

**6. Invasive alien species are the greatest current threat to island biodiversity and need to be prevented, controlled and eradicated wherever feasible, particularly in priority sites and to safeguard highly threatened species**

IAS are, arguably, the greatest immediate threat to European island biodiversity in both the terrestrial and marine realms. 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<sup>44</sup>. Furthermore, both climate change and the expansion of international trade are prone to exacerbate IAS problems.

Tackling the impact of IAS is thus fundamental for safeguarding the biological diversity on European islands. Important opportunities exist because both prevention and eradication are feasible on islands, where they are almost impossible in continental situations. The following measures are recommended:

- a. Fully implement the Bern Convention's "European Strategy on Invasive Alien Species" adopted in 2003<sup>45</sup>, and its codes of conduct on "IAS and Horticulture" and "Companion Animals";
- b. Develop new approaches to IAS assessment and management that accommodate the necessary range shifts of species adapting to climate change ("potential native species"<sup>46</sup>);
- c. Recognising that domestic IAS laws across Europe continue to vary enormously, complete an EU Strategy on IAS leading to a dedicated, overarching and coherent legislative framework on IAS prevention and response in the EU<sup>47</sup>;
- d. Build a European IAS Island Information Service, in collaboration with appropriate partner organisations (e.g. ISSG, GISD, WCMC, GID, EEA, etc.), to comprise a European islands inventory; an inventory of presence/absence on European islands of both key IAS and native species affected by these IAS; a compilation and assessment of eradication or containment projects on European islands<sup>48</sup>.
- e. Complete the identification of priority IAS threats (including any from non-native game species), of priority species and sites affected by IAS impacts, as well as of priority actions (eradication, trade prohibition, etc.), and develop action plans for species and islands;
- f. Step up eradications in line with the priorities identified, removing existing legal obstacles and managing sectoral interests;

<sup>44</sup> [http://ec.europa.eu/environment/nature/pdf/council\\_concl\\_0609.pdf](http://ec.europa.eu/environment/nature/pdf/council_concl_0609.pdf)

<sup>45</sup> Genovesi, P. & C. Shine (2004): European strategy on invasive alien species. Bern Convention on the Conservation of European Wildlife and Natural Habitats, Council of Europe. Nature and Environment No. 137. <https://wcd.coe.int/com.instranet.InstraServlet?command=com.instranet.CmdBlobGet&InstranetImage=1322677&SecMode=1&DocId=1440418&Usage=2>

<sup>46</sup> Harley, M. & N. Hodgson (2008): Review of existing international and national guidance on adaptation to climate change: with a focus on biodiversity issues. Bern Convention on the Conservation of European Wildlife and Natural Habitats, Council of Europe, T-PVS/Inf (2008) 12.

<sup>47</sup> Following up on the June 2009 EU Environment Council Conclusions and the 2008 and 2006 EC Communications on IAS ([http://ec.europa.eu/environment/nature/pdf/council\\_concl\\_0609.pdf](http://ec.europa.eu/environment/nature/pdf/council_concl_0609.pdf), [http://ec.europa.eu/environment/nature/invasivealien/docs/1\\_EN\\_ACT\\_part1\\_v6.pdf](http://ec.europa.eu/environment/nature/invasivealien/docs/1_EN_ACT_part1_v6.pdf))

<sup>48</sup> Carnevali, L. & P. Genovesi (2009).

- g. Install prevention schemes reducing the risk of IAS (re-)introductions, by identifying IAS introduction pathways and developing adequate guidance; monitoring for IAS arrivals especially at prospective IAS entry points; collaboration with the shipping and trading (agriculture, horticulture, exotic pets) sectors;
- h. Build and participate in networks and partnerships on IAS, sharing experiences and case studies as well as coordinating work between islands in Europe.

## **7. Biodiversity conservation and natural resource management on European islands require adequate financial means that are best used in accordance with assessments of priority measures**

The conservation and management of biodiversity and natural resources on islands depend on the provision of adequate financial resources, in proportion to the issues at stake. This will require the mobilisation of locally available financial resources but also, importantly, of external funding in cases where local economies are not in the position to cover the needs alone. Island stakeholders might hence work towards an island-specific earmarking in existing funding mechanisms as well as the creation or strengthening of island-specific new funding mechanisms, at the regional, national and sub-national levels.

To guide the allocation of such financial means and maximise efficiency and effectiveness, it would be desirable to identify and focus on the measures of greatest priority and promise, from the local through the national to the European levels.

It is worth noting that allocating financial resources to priority measures on islands can be expected to achieve more for biodiversity than analogous investments in continental settings in Europe.

## **8. Strengthen the cross-sectoral integration of biodiversity and ecosystem services and develop new models of socio-economic development**

The biological diversity, living natural resources and ecosystem services on European islands cannot be safeguarded alone on the basis of targeted conservation actions focusing on specific priority sites and species. This holds true particularly in light of the projected effects from climate change, under which biodiversity will depend on permeable land and seascapes in order to adapt.

The terrestrial and marine ecosystems and natural resources on many European islands face significant pressures also at a broader scale, resulting from development models that may be considered maladapted. This applies especially to the coastal zones, where human activities and populations are concentrated and where natural ecosystems have often been largely extirpated. The most important sectoral activities in this regard tend to be land and sea transport with their related infrastructures, fisheries & aquaculture, agriculture, and – most importantly – tourism and urban development as the leading force of island transformation. Indeed, infrastructural projects that in a mainland setting would have only limited consequences may on islands entirely eliminate unique elements of biodiversity due to the often small range of island endemics<sup>49</sup>.

To strengthen cross-sectoral integration of biodiversity and ecosystem services and work towards a more sustainable use of living natural resources, the following measures could be considered:

- a. Develop, promote and increasingly adopt new models for socio-economic development on islands that integrate the value of biodiversity and ecosystem services and maintain the exploitation of living natural resources at sustainable levels;
- b. Install effective cross-sectoral integration mechanisms under local governments convening the public and private sectors as well as civil society;

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<sup>49</sup> Machado, A. (2009).

- c. Adopt an integrated approach to terrestrial, coastal and marine spatial planning and management, including through a centralised, comprehensive GIS database used in guiding and framing sectoral decision making;
- d. Integrate the conservation and sustainable use of biodiversity and ecosystem services into tourism master plans (e.g. regulating access to important breeding, feeding or wintering areas such as cliffs, wetlands and beaches);
- e. Adopt sustainable practices in the exploitation of living natural resources, including in the fisheries and aquaculture sectors;
- f. Resolve any conflicts between local, sub-national and national authorities related to the respective competencies over the planning and management of natural resources and land and seascapes on and around European islands.

It must be noted that the reduced complexity of island socio-economies offers interesting opportunities in the development and testing of any such new models, approaches and mechanisms.

**9. Carefully manage water resources to minimise negative impacts on freshwater biodiversity, especially in the Mediterranean and Macaronesian Regions and in light of impacts from climate change.**

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, water resources on these islands are at risk due to losses of forests and wetlands, pollution and, most importantly, inadequate water management resulting in the over-exploitation of local resources. The island of Cyprus, for instance, at the height of a 4-year century-drought in 2008, was forced to ship freshwater in tankers from Greece; now a pipeline is envisaged bringing water from Turkey<sup>50</sup>.

This situation gives reason for special concern given that freshwater biodiversity is already amongst the most threatened in Europe.

The anticipated impacts from climate change provide additional reason for concern as they are expected to affect the 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 creeks for domestic and agricultural use adds to the picture as it profoundly affects natural freshwater ecosystems, and is also prone to increase under a drier climate.

The following recommendations can be made:

- a. Implement the Bern Convention's 2001 European Charter on Water Resources.
- b. Carefully implement the EU Water Framework Directive, and adopt similar measures in countries outside the EU.
- c. Adopt integrated watershed management plans that integrate the conservation and restoration of ecosystems (e.g. forests, wetlands) where appropriate
- d. Avoid, mitigate or compensate biodiversity impacts of water dams (domestic, industry, agricultural, hydro-energy)
- e. Improve management and treatment of solid waste as well as of domestic and industrial waste water, and reduce the fertilizer and pesticide loads of agricultural effluents to reduce pollution impacts also on coastal and marine ecosystems

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<sup>50</sup> [www.globalpost.com/dispatch/global-green/100219/cyprus-water-pipeline](http://www.globalpost.com/dispatch/global-green/100219/cyprus-water-pipeline)

## **10. Minimise the direct and indirect impacts of climate change on the biodiversity and living natural resources on European islands and support their adaptation to climate change.**

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

In this context it is worth highlighting that biodiversity may be impacted both directly and indirectly from climate change:

- directly from the resulting changes in the physical and living natural environment [(e.g. average and extreme air and sea temperatures; precipitation; wind and weather patterns, including extreme events such as storms, floods and droughts; availability and seasonality of freshwater resources; land and polar sea ice melting, sea level rise and greater surge power, coastal erosion; ocean currents; fire frequencies; ecosystems and ecological communities and interactions; spread and abundance of IAS; ocean acidification)]; [could delete bracketed section if too detailed] and
- indirectly through societal response measures, most notably those undertaken in the context of climate change adaptation and mitigation [(e.g. building of water dams and changes in water regimes; building of coastal protections; eradication of human pathogens by pesticides and draining of wetlands; changes in agricultural practices such as irrigation and livestock grazing; relocation of coastal tourism infrastructures; new transport infrastructures; increase in onshore and offshore energy infrastructures; marine geo-engineering)]. [could delete bracketed section if too detailed]

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

Much work has been done on these issues under the Bern Convention<sup>51</sup>, but also elsewhere<sup>52</sup>, particularly on the questions of vulnerability of and direct impacts on European species groups and

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<sup>51</sup> Bern Convention on the Conservation of European Wildlife and Natural Habitats, Council of Europe: Usher, M. (2005): Conserving European Biodiversity in the Context of Climate Change. CO-DBP (2005) 3 rev. Huntley, B. (2007): Climatic change and the conservation of European biodiversity: Towards the development of adaptation strategies. T-PVS/Inf (2007) 3. Berry, P. (2008): Climate change and the vulnerability of Bern Convention species and habitats. T-PVS/Inf (2008) 6 rev. Ferrer, M., I. Newton & K. Bildstein (2008): Climatic change and the conservation of migratory birds in Europe: Identifying effects and conservation priorities. T-PVS/Inf (2008) 1 rev. Capdevila-Argüelles, L. & B. Zilletti (2008): A perspective on climate change and invasive alien species. T-PVS/Inf (2008) 5 rev. Henle K. D. Dick, A. Harpke, I. Kühn, O. Schweiger & J. Settele (2008): Climate Change Impacts on European Amphibians and Reptiles. T-PVS/Inf (2008) 11 rev. Harley, M. & N. Hodgson (2008): Review of existing international and national guidance on adaptation to climate change with a focus on biodiversity issues. T-PVS/Inf (2008) 12 rev. Wilson, R. (2009): Impacts of climate change on European invertebrates, with reference to the vulnerability of Bern Convention species. T-PVS/Inf (2009) 8 rev. Araújo, M. B. (2009): Protected areas and climate change in Europe. T-PVS/Inf (2009) 10 rev. Heywood V. (2009): The impacts of climate change on plant species in Europe. T-PVS/Inf (2009) 9. Directorate of Culture and Cultural and Natural Heritage (2009): Report of the 1<sup>st</sup> Meeting of the Group of Experts on European Islands Biological Diversity, T-PVS (2009) 13. Orueta, G. (2009).

<sup>52</sup> Bertzky M., B. Dickson, R. Galt, E. Glen, M. Harley, N. Hodgson, G. Keder, I. Lysenko, M. Pooley, C. Ravilious, T. Sajwaj, R. Schiopu, Y. de Soye & G. Tucker (2009): Impacts of climate change and selected renewable energy

protected areas, including on islands<sup>53</sup>; as well as on the strategies and best-practices supporting the adaptation of species and habitats to climate change.

The evidence for direct impacts of climate change on European island biodiversity is still relatively small and yet unequivocal: observations have shown population decreases in a range of taxa, as well as changes in plant phenology, in the timing of migration and breeding, and in species ranges<sup>54</sup>.

Within Europe, the islands in the Mediterranean and Macaronesian Regions appear as the leading priority, because they have the highest 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 could be given special consideration<sup>55</sup>.

Still, significant gaps and methodological challenges remain, mainly related to the limited knowledge on the vulnerability of European island species and the role of ecological interactions therein, as well as to the difficulties in modelling and projecting climatic changes and their impacts for specific islands. The latter is largely due to the small scale of islands and island ecosystems, their often complex microclimates, and the fact that they are surrounded by large water bodies, all of which cannot be captured in standard climate models with their too coarse resolution.

Moreover, the issue of indirect impacts has not yet been sufficiently addressed.

The following recommendations ensue:

- a. Refine the analysis identifying island biotas most threatened from direct climate change impacts and the according priority actions
- b. Where appropriate for European island settings, implement the Bern Convention's Standing Committee Recommendations Nos. 135 (2008) on addressing the impacts of climate change on biodiversity, and 143 (2009) on further guidance for Parties on biodiversity and climate change<sup>56</sup>;
- c. Where appropriate for European island settings, in addressing the above sub-items (i) and (ii) apply the guidance for policy and action provided in the "Review of existing international and national guidance on adaptation to climate change with a focus on biodiversity issues"<sup>57</sup>.
- d. Building on existing Bern Convention documents, but in addition considering further relevant sources, compile a specific guidance document detailing options for policy and action aimed at minimising the full range of direct and indirect climate change impacts on European islands, covering both the terrestrial and the marine realm, and paying due attention to indirect impacts.
- e. For critically endangered taxa exposed to severe climate impacts, targeted translocations to other islands might be envisaged.
- f. An increasing number of European islands have adopted ambitious renewable energy strategies<sup>58</sup>, turning them into role models. Such islands might be invited to integrate also broader environmental sustainability considerations and biodiversity safeguards into their development plans to lead the way also in this regard.
- g. In view of the still largely inadequate capacity on the above issues in many European islands, and the increasing demand for integrated solutions, consider the establishment or designation of one or

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infrastructures on EU biodiversity and the Natura 2000 network: an assessment of vulnerability with recommendations for EU policies and measures. European Commission / IUCN.

<sup>53</sup> Epple, C. (2010): Climate change and the biodiversity of European islands. Bern Convention on the Conservation of European Wildlife and Natural Habitats, Council of Europe, T-PVS/Inf (2010) 9.

<sup>54</sup> Epple, C. (2010). Bertzky, M. et al. (2009).

<sup>55</sup> Epple, C. (2010). Bertzky, M. et al. (2009).

<sup>56</sup> [www.coe.int/t/dg4/cultureheritage/nature/Bern/ClimateChange/default\\_en.asp](http://www.coe.int/t/dg4/cultureheritage/nature/Bern/ClimateChange/default_en.asp)

<sup>57</sup> Harley, M. & N. Hodgson (2008).

<sup>58</sup> see for example [www.europeanislands.net](http://www.europeanislands.net), [www.gerri.fr](http://www.gerri.fr), [www.insula-elhierro.com](http://www.insula-elhierro.com)

several centres of excellence on minimising the effects of direct and indirect climate change impacts on biodiversity and natural resources, to offer quality guidance and a coordinating platform to interested stakeholders.

### **11. Build technical capacities on European islands in order to enable the successful implementation of measures aimed at the conservation and sustainable use of biodiversity.**

On many European islands the public and private sectors as well as civil society organisations lack the human and technical capacities to understand and adequately address the biodiversity challenge. The complications and uncertainties surrounding climate change further increase this capacity gap.

Local stakeholder organisations, governments in particular, may seek to deploy additional human capacity in proportion to the fundamental importance of biodiversity to island development. They may equally provide training opportunities and experience sharing events in collaboration with their national governments, stakeholders from other islands as well as further external experts.

### **12. Build awareness and ownership of biodiversity conservation objectives in European islands**

Local people are pivotal to the success of any conservation initiative, also in the islands of Europe. Facilitating a better understanding of conservation objectives and building local ownership of related activities amongst local islanders are hence important milestones. Local support also helps secure the commitment from political leaders to consider the value and needs of biodiversity in their decision-making.

Targeted and sustained awareness campaigns could be promoted, especially those highlighting the value of different ecosystem services to island populations. In addition, well-designed educational centres on biodiversity and ecosystem services could be established that are targeted at the resident populations in each island. Finally, formal and informal educational activities are needed to build understanding over an extended process, such as through the integration of biodiversity and sustainable development into educational curricula.

### **13. Join and participate in a new network under the Bern Convention focusing on the protection of the natural heritage in European islands**

In Europe, like in many other places, island stakeholders continue to be relatively isolated, and different islands in different countries tend to adopt independent approaches to the challenges they face.

European island stakeholders are invited to join and actively participate in a new coordinating platform proposed under the Bern Convention, dedicated to the conservation and sustainable use of the natural heritage in European islands. Building on and expanding existing partnerships, its objective will be to communicate island challenges towards European policy-makers, exchange experiences, promote best practices as well as share information and data, in order to assist islands in addressing the development challenges they face in a consistent manner.