

Submission of the COHAB Initiative Secretariat on the revision of Ireland's National Biodiversity Plan

1. Introduction

1.1 The COHAB Initiative is an international programme of work established to address the gaps in awareness, policy and action on the importance of biological diversity to the health and well-being of human communities. The Initiative operates as an international, inter-disciplinary collaborative framework to support existing activities on international development, biodiversity conservation and population health, and to support the implementation of the biodiversity related multi-lateral environmental agreements and the U.N. Millennium Development Goals (MDGs).

1.2 Human health represents one of the most important indicators of sustainability – a healthy human population is dependent upon a healthy natural environment, upon biodiversity, and upon the ecosystem goods and services which biodiversity provides. The ecosystem approach to health recognises the intimate links between human and animal health, biological diversity, and social and economic development, and recognises the need for integrated public health policies and development programmes that view the protection of biodiversity as an important part of achieving their objectives. The development of the COHAB Initiative has come about through a growing awareness within the international community:

1. that the continuing loss of biodiversity, from local to global scales, threatens the health and well-being of all peoples worldwide,
2. that social, religious, moral, ethical and also economic arguments for biodiversity conservation have, in general, failed to capture the attention and commitment of decision makers and the general public,
3. that the issue of human health, including physical health and freedom from illness, psychological and spiritual health, social cohesion, and related aspects of livelihood security and sustainability, provide a compelling argument for biodiversity conservation, and represent a critically important point of entry for biodiversity into national economic and social planning and related decision making processes.

1.3 The COHAB Initiative was established in response to the outputs of the First International Conference on Health and Biodiversity (COHAB 2005), which was held in Galway, Ireland, during 2005; and the reports of the Millennium Ecosystem Assessment. The COHAB Initiative operates through Partnership arrangements with a growing network of organisations worldwide, representing government and multi-lateral agencies, academic institutes, NGOs, indigenous communities and the private sector. The Secretariat of the COHAB Initiative is based in Co. Galway, Ireland, and is guided by a Steering Committee comprising key United Nations agencies and NGOs. Major areas of focus include:

- Livelihood security and freedom from poverty
- Food security, nutrition and dietary health
- Emerging infectious diseases
- Natural products and medicinal resources
- Disaster prevention, relief and recovery
- Indigenous community traditions and health
- Climate change impacts and adaptation

1.4 The development of a National Biodiversity Strategy and Action Plan is required under Article 6 of the Convention on Biological Diversity (CBD). Article 6 states that each Contracting Party shall, in accordance with its particular conditions and capabilities:

- Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, *inter alia*, the measures set out in the Convention relevant to the Contracting Party concerned,
- Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

In addition, Article 10 (a) of the CBD encourages Parties to integrate consideration of the conservation and sustainable use of biological resources into national decision-making. These Articles create an obligation for national biodiversity planning, and require that the conservation and sustainable use of biological diversity be adopted across all sectors of the national economic and policy-making framework.

1.5 In line with the objectives of the COHAB Initiative (see www.cohabnet.org), and related programmes of work of COHAB Partner organisations, this submission aims to highlight key aspects of biodiversity conservation which relate to Ireland's social and economic development and to the health and well-being of Ireland's people, which should be addressed by Ireland's revised National Biodiversity Plan (herein referred to as "the National Biodiversity Plan" or "the Plan") in the interest of meeting Ireland's commitments under the CBD and European Union's biodiversity targets for the year 2010. The submission has been prepared by the COHAB Initiative Secretariat in communication with the COHAB Initiative Steering Committee and various Partner organisations. The submission includes recommendations and points for consideration under specific headings related to key aspects of the Convention on Biological Diversity, Ireland's current National Biodiversity Plan and other aspects of national development planning in Ireland. It incorporates many of the recommendations arising from the COHAB 2005 conference, and the Second International Conference on Health and Biodiversity (COHAB 2, which was held in Galway, Ireland in February 2008). This submission also includes recommendations on wider issues relating to ecosystem integrity, and the social and economic aspects of biodiversity in Ireland.

2. Consideration of the Ecosystem Approach

2.1 The Conference of Parties (COP) to the CBD has established that the "Ecosystem Approach" is the primary mechanism for the implementation of the convention. The COP defines the ecosystem approach as a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. In summary, the ecosystem approach recognises the critical importance of biodiversity to the functioning of ecosystems and to the security of ecosystem goods and services; it accounts for the importance of ecosystems to social and economic development and to human health and well-being; it recognises that people and human cultures are an integral part of ecosystems, and it accounts for the role of human society and cultures in maintaining ecosystems. In line with related Decisions of the COP (e.g. Decision V/6 and Decision VII/11), Ireland's National Biodiversity Plan should ensure that the ecosystem approach is appropriately integrated into all biodiversity conservation planning, including conservation management planning for protected / designated sites and species. This is not specifically addressed in the current National Biodiversity Plan, and should form a central focus of the revised Plan. Furthermore, the Plan should aim to ensure that the ecosystem approach is adopted for other aspects of national planning, and development strategies across all

sectors. Some of these such as the ecosystem approach to development planning, fisheries, agriculture, water quality and health, are addressed further below.

3. Consideration of the findings of the Millennium Ecosystem Assessment

3.1 The Millennium Ecosystem Assessment (MA) was called for by the United Nations Secretary-General Kofi Annan in 2000. Utilising an assessment framework based upon the ecosystem approach, the MA assessed the consequences of ecosystem change for human well-being, and identified the scientific basis for action needed to enhance the conservation and sustainable use of those systems and their contribution to human well-being. The findings of the MA (published in 2005) provide a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide (such as clean water, forest products, food, flood control, and health protection) and the options to restore, conserve or enhance the sustainable use of ecosystems.

3.2 The programme of work for the MA included a number of sub-global assessments, whereby individual countries conducted in-depth studies of the condition of ecosystems and their importance to human well-being, within their national territories. This included a review of the trends in these ecosystems (e.g. whether they were stable or being enhanced or degraded) and an assessment of the implications for economic and social development, along with recommendations for protecting ecosystems in line with national obligations under the CBD and in support of national development priorities. Following the publication of the MA reports, the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of the CBD has recommended (through SBSTTA Recommendation XII/3) that all parties to the CBD should consider the findings of the MA in preparing, revising and implementing National Biodiversity Strategies and Action Plans. SBSTTA has further recommended that the findings of the MA be considered in relevant national development plans and development co-operation planning, and that the Parties to the CBD (which include Ireland) should conduct their own sub-global assessments to facilitate the conservation and sustainable use of biodiversity.

3.3 Recognising the important implications of the MA for Ireland's national economic and social development, and in line with recommendations of SBSTTA, the National Biodiversity Plan should take into account the findings of the MA, and include a specific action to promote the findings of the MA to all sectors whose activities depend upon, or have the potential to impact upon, Ireland's biodiversity. In particular, the findings relating to economic growth, business development and human health are of importance to Ireland and should be highlighted to decision makers in relevant sectors.

3.4 We also recommend that the Plan should include a specific action to implement a cross-border project to conduct a sub-global assessment of ecosystems on the island of Ireland and outlying islands. This would involve collaboration between local, regional and national authorities for environment, heritage, tourism, agriculture, rural development and fisheries etc. in both jurisdictions. This would serve to enhance cross-border and cross-sectoral partnerships and collaboration on biodiversity conservation, and would be of significant benefit to the implementation of the CBD, throughout the island. In particular, this project would greatly support the appropriate consideration of biodiversity and ecosystems within the context of local, regional and national development planning, providing a key resource of significant benefit and value to Strategic Environmental Assessments of plans and programmes, and related decision making processes. (A sub-global assessment of ecosystems in Ireland could potentially be carried out in association with the second Millennium Ecosystem Assessment project, which is currently in planning. Following on from SBSTTA recommendation XII/3 (2007), mechanisms for supporting the costs associated with sub-global assessments at national level will be addressed at CBD COP9 in May 2008).

4. Biodiversity considerations in Planning and Development

4.1 In Ireland, consideration of biodiversity within development planning, and associated environmental assessments, tends to focus on a subset of species and habitat types, most particularly those habitats and species for which a legislative basis for protection has been established, such as those listed under Annexes to the EU Habitats Directive and the EU Birds Directive. This limited focus on legally protected habitats and species fails to recognise the true meaning and extent of biodiversity or to address the need to conserve its various components, and therefore cannot address the issue of biodiversity loss associated with physical development.

4.2 The European Union Strategic Environmental Assessment Directive, which came into force in 2004, is a potentially invaluable tool for progressing and facilitating the implementation of the Convention on Biological Diversity, as it requires that holistic, multi-sectoral approaches be taken for the assessment of potential environmental impacts arising from the implementation of public plans and programmes. However, a failure to adopt the ecosystem approach within the SEA process can significantly impede and obstruct the implementation of the CBD. This was discussed in detail at the Second International Conference on Health and Biodiversity in Galway, and has been highlighted by the International Association for Impact Assessment.

4.3 The National Biodiversity Plan should include a measure to promote the appropriate consideration of biological diversity, including consideration of ecosystem functioning and ecosystem goods and services, within environmental impact assessment processes in Ireland, including Environmental Impact Assessment and Strategic Environmental Assessment. It is widely recognised that physical development and land use change is a major driver of biodiversity loss in Ireland, and this has particularly been the case in the past 10 years of economic growth. The COHAB Initiative, in association with key international partners, is currently preparing a set of guidance notes on the appropriate consideration of biodiversity within the Strategic Environmental Assessment process in Ireland. As part of this project, a review was conducted on thirty-five Strategic Environmental Assessment (SEA) reports completed in Ireland between 2005 and 2008. This review determined that none of the reports (0%) appropriately addressed biodiversity or acknowledged its true meaning (i.e. the diversity of species and habitats, including between- and within-species diversity and genetic variability etc). Furthermore, none of the SEA reports addressed the critical issues of ecosystem functioning, ecosystem sustainability, or ecosystem services. Indeed, in many of the reports reviewed, the policies and measures adopted with the aim of conserving "biodiversity" would not decrease the risk of biodiversity loss, and could potentially lead to negative impacts on ecosystem goods and services, some of which were considered essential to economic development and human well-being within the geographic area under consideration. Many of these reports related to county-level development planning, and the shortfalls in dealing with biodiversity could negatively affect national and local efforts towards the 2010 target in Ireland. The guidance notes under preparation by the COHAB Initiative project aim to help to address this shortfall, and are due for publication in June 2009. We suggest that this project and other related guidance produced by the CBD, IAIA and others, be promoted to planning authorities and SEA practitioners through the National Biodiversity Plan.

4.4 Additionally, the Plan should include a measure to promote the consideration of biological diversity and ecosystems goods and services within strategies and planning for public health protection and social and economic development, including disease prevention and control (human, wildlife, livestock and crops), water resource management, waste management, food production, tourism, industrial development etc, through the use of biodiversity-inclusive health impact assessment (HIA), and biodiversity-inclusive economic cost-benefit analysis. Methodologies for these tools have been developed worldwide, and should be promoted through national workshops aimed at practitioners and

decision makers in the relevant sectors. (The COHAB Initiative has held one such workshop, on biodiversity in SEA and HIA, as part of the COHAB 2 meeting in February 2008, and a second workshop is planned for July 2008.)

4.5 A number of Ireland's local authorities, working with the Heritage Council, have initiated projects to develop county habitat maps, in support of County Heritage Plans and / or County Biodiversity Plans. While these are of great importance to nature conservation and local planning, these maps cannot account for ecosystem functioning or the important goods and services that are associated with specific sites or habitats, and in general local authorities do not have the capacity to assess these aspects. In the face of increasing development pressures and the growing threat of climate change, the sustainability of ecosystem functions will be a key factor in conserving biodiversity and sustaining those ecosystem services that are essential to public health and economic growth. In order to better facilitate biodiversity conservation and sustainable local development planning, a national project to map ecosystem services at the county level should be implemented. This could be carried out separately or in support of a sub-global assessment of the island of Ireland; the COHAB Initiative Secretariat recommends that as a minimum the National Biodiversity Plan should aim to integrate ecosystem service mapping into County Biodiversity Plans and county development planning through appropriate training and capacity building. This would facilitate biodiversity-inclusive Strategic Environmental Assessments, and would support a wider ecosystem approach to development, providing important information required for sustainable forward planning, long term biodiversity conservation plans, and climate change adaptation strategies. The results would also be of particular benefit to public health protection strategies, fisheries management, rural development, and agricultural development planning.

4.6 The National Biodiversity Plan should also seek to ensure that in future, all national economic planning in Ireland, including future revisions to the National Development Plan, the National Spatial Strategy, the National Transport Strategy etc., are subject to Strategic Environmental Assessments which address the issue of biodiversity and ecosystem sustainability, regardless of whether such assessments are required under legislation. Such assessments should particularly focus on the importance of biodiversity to health and economic growth. This would serve to promote good practice, protect natural resources, ensure sustainable economic development, and enhance the consideration of biodiversity in the national agenda. These assessments, and other SEAs at local and regional levels, would be greatly facilitated through the completion of an all-island sub-global assessment, as discussed at 3.4 above, and ecosystem service mapping as at 4.5 above.

5. Agricultural Biodiversity

5.1 The National Biodiversity Plan should specifically address the importance of agricultural biodiversity to Ireland's social and economic development and its value to public health. This should recognise both the managed agricultural biodiversity (e.g. crop and livestock varieties) and the unmanaged agricultural biodiversity (wild biodiversity associated with agriculture, including pollinators, hedgerows, soil microbes etc) that supports food production in Ireland.

5.2 The National Biodiversity Plan should seek to broaden the scope of the Rural Environmental Protection Scheme, to encourage the farming community not only to protect the natural environment associated with agricultural lands, but to conserve and enhance the biological diversity of commercial food species and other aspects of Ireland's managed agricultural biodiversity, including rare and indigenous breeds. As identified by the Conference of Parties to the CBD, UN FAO, the COHAB Initiative and others, this can have significant positive environmental, social and economic impacts. The fundamental importance of wild (unmanaged) biodiversity to agriculture, and the benefits which nature

conservation can provide in terms of enhanced yields and protection against pests and diseases, should also be broadly promoted, and specific measures to address the decline in key species such as pollinators and farmland birds should be adopted.

5.3 The value of agricultural biodiversity to public health is an issue of particular interest to the COHAB Initiative, and has been highlighted by the European Union, the United Nations Food and Agriculture Organisation, the Convention on Biological Diversity, and others. Scientific research worldwide has clearly demonstrated that diets based on a diversity of foodstuffs, particularly when supported by ecologically sound agricultural practices, can have significant protective effects on human health. The WHO, UN FAO and the CBD have recognised that the risk of several diseases that are increasingly common in developed countries, including obesity, diabetes, cardiovascular disorders and cancers, can be significantly reduced through the promotion of biodiverse diets, which are therefore of importance in countries such as Ireland where these diseases of affluence are on the rise. This represents a significant opportunity for bringing the message of biodiversity and its importance to a wider public audience, for enhancing consideration of biodiversity within the agriculture sector, and for promoting sustainable food production and local food enterprises including organic production and farmers markets. The National Biodiversity Plan should therefore incorporate actions dedicated to promoting the value of local food production systems and diets based on a diversity of food species. The Plan should aim to establish a programme of work, in conjunction with the Department of Health and Children and the Department of Agriculture, Fisheries and Food, to promote diversity in food production systems and diets. This could include promotion of community gardens and related local food initiatives and businesses.

6. Biodiversity, Fisheries and Aquaculture

6.1 The Millennium Ecosystem Assessment has reported that the majority of the world's commercial fisheries are being unsustainably exploited, with 25% of world fish stocks being over-harvested. Several major fisheries, including North West Atlantic cod and salmon stocks, have collapsed, some with no potential for future recovery. The loss of commercial fish species has significant impacts on ocean and coastal ecosystems, as well as the obvious impacts on human food resources, regional economies and livelihoods. Following discussions between the COHAB Initiative Secretariat and relevant authorities in Ireland (including the Marine Institute, the Department of Communications, Marine and Natural Resources, and the National Parks and Wildlife Service), it appears that to date, there has been no significant effort to implement the ecosystem approach to fisheries (EAF) in Ireland. This means that major risks to Ireland's indigenous fish species associated with unsustainable fishing practices are not being comprehensively addressed, and this threatens the sustainability of Ireland's fishing sector. The National Biodiversity Plan should aim to ensure that the EAF is implemented throughout the fishing sector in Ireland, in a co-ordinated manner involving co-operation between the Department of Agriculture, Fisheries and Food, the Marine Institute, the Central and Regional Fisheries Boards, the Fisheries Conservancy Board of Northern Ireland, the Department of the Environment Heritage and Local Government, and fishermen's organisations. This will be particularly important to build resilience in fish stocks and the fishing industry against the impacts of climate change, and facilitate progress towards halting the loss of biodiversity in Irish and international waters.

6.2 Certain vulnerable and endangered species such as the shad, pollan and Arctic charr were once locally important food species and have significant economic potential as commercial resources. The genetic character of indigenous stocks of some species (e.g. the Arctic charr and pollan) is also possibly unique to Ireland, increasing their importance in an international context. Enhancing the populations and maintaining the genetic stock of these species could have widespread ecological and economic advantages, including benefits to tourism, and may also assist in adaptation to climate change for ecosystems and

human communities along our inland waterways. The National Biodiversity Plan should therefore seek to reinforce cross-border projects to significantly enhance the populations of these species and the ecosystem services upon which they depend, to explore the possibility of returning stocks to commercially-viable levels, and to promote local community ownership and stewardship of these resources. This should include coordination between conservation management plans, River Basin District management plans, county development strategies etc.

6.3 Aquaculture can be a potentially significant driver of biodiversity loss and ecosystem change in aquatic and marine habitats, particularly through impacts on the health of ecosystems and wild species, as identified by the Convention on Biological Diversity and the Millennium Ecosystem Assessment, amongst others. For example, scientific research has determined that the collapse of the sea trout stocks in the West of Ireland in recent years was precipitated by aquaculture development, which resulted in the transfer of sea lice infestations from farmed salmon stock to wild trout populations. Although a number of voluntary schemes for environmentally sustainable aquaculture have been employed in Ireland for over a decade (e.g. Co-ordinated Local Aquaculture Management Systems, or CLAMS), to date none of these schemes adopt or enforce an ecosystem approach. A large body of guidance documents on the ecosystem approach to aquaculture has been published (e.g. through the Secretariat of the CBD, and the UN FAO). The National Biodiversity Plan should aim to promote this guidance and ensure that the ecosystem approach is implemented for all new and existing aquaculture activities. The Plan should also seek to ensure that an appropriate level of ecological impact assessment is conducted for all aquaculture licence applications in Ireland, to include assessments of the impacts on ecosystem goods and services. This is of particular importance where non-native and potentially invasive species are to be farmed.

7. Aquatic biodiversity and the EU Water Framework Directive

7.1 The programme of implementation of the European Union Water Framework Directive (WFD) on the island of Ireland is based upon eight River Basin District management plans. Although the WFD aims (*inter alia*) to improve the ecological status of watercourses and to protect the essential groundwater resources associated with watersheds and groundwater dependent habitats, the over-riding focus in ecological terms has tended to be on designated sites and protected habitats and species, and to date little consideration has been given to biological diversity in its true sense, or its importance to the functioning of aquatic ecosystems and associated economic and cultural concerns. The River Basin District management plans are of great importance to the implementation of the CBD in Ireland; however it is essential that a wider ecosystem approach is adopted to the WFD, and unless the importance of biodiversity and the goods and services it provides are recognised within the River Basin District management plans, many negative impacts on the biodiversity of our wetlands and inland waterways arising from land use change, pollution or development can not be properly addressed or avoided. Furthermore, the synergies between the programmes of implementation for the WFD, the CBD, and other instruments such as the EU Habitats and Birds Directives, must be developed if important opportunities for pooling resources and expertise are to be grasped. The National Biodiversity Plan should therefore include an action to initiate a review of progress on the implementation of the WFD, to develop synergies between the implementation of the WFD, the CBD and the EU Habitats and Birds Directives in Ireland, and to identify the specific importance of biodiversity to the sustainability of aquatic ecosystems in each of the River Basin Districts (including the three cross-border International RBDs). This should include identification of the key habitats and ecosystems within each RBD that are of importance to the regulation of water quality and water flows, to fisheries and angling, recreation, flood mitigation, agriculture etc. The National Biodiversity Plan should also seek to ensure that future management of the River Basin Districts adopts the ecosystem approach as a core

aspect of management planning. This could have multiple benefits, including enhanced waterways management and reduction in management costs in the medium to long term, increased public awareness of the importance of biodiversity and ecosystems, and enhanced implementation of the CBD and progress towards the 2010 target. This could also link with projects relating to a sub-global assessment as per paragraph 3.4 above.

7.2 Annual water quality reports from the Environmental Protection Agency have indicated that the quality of waters in Ireland's rivers and lakes has, in general terms, been increasing over the past decade. However, in the past 18 months, evidence of the significant public health problems and economic impacts that can arise from poor catchment management has been abundant in Ireland. In general, good quality potable water supplies in Ireland are provided through intensive treatment of raw waters. This "end of pipe" approach, which often relies on cleaning already contaminated water and which overlooks the importance of ecological integrity, has been reinforced in Galway City (as an example) following the cryptosporidiosis outbreaks of 2007. The World Health Organisation and others advocate a watershed-based approach to protecting potable water resources, based on the conservation and enhancement of the ecosystems which maintain water flows and water quality. This approach has widespread environmental and economic benefits. For example, the move to a watershed-based strategy for potable water has avoided or significantly reduced many of the costs associated with water purification for New York City, while also increasing revenues associated with water-based tourism activities, and enhancing biodiversity in associated wetlands, woodlands and waterways. The COHAB Initiative Secretariat recommends that the National Biodiversity Plan should include an action to explore opportunities for incorporating the watershed-based strategy to potable water supplies within each of the River Basin Districts, in conjunction with the local authorities. This approach has not been appropriately considered in the RBDs to date, but could have significant positive benefits for economic development, public health protection, and implementation of the Birds and Habitats Directives, the CBD and other conventions (e.g. the Ramsar Convention on wetlands). This approach will become of increasing importance in the face of climate change, which is expected to significantly affect aquatic ecosystems, water quality and water availability in Ireland, and in the face of a looming economic downturn.

8 Climate Change and biodiversity

8.1 Climate change is expected to have significant impacts on economies, human health and well-being, ecosystems and biodiversity over the coming century, with widespread significant changes predicted over the coming 4 or 5 decades. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (2007) highlighted a number of recorded impacts and trends in wildlife and ecosystems resulting from climate change at the global level, and highlighted the potential future impacts that may occur under a range of greenhouse gas emissions scenarios. The report also recognised that many of the potential impacts which climate change may have upon human health, economies and society, are likely to occur as a result or knock-on effect of impacts on biodiversity and ecosystems. This was also highlighted by the Health Synthesis report of the Millennium Ecosystem Assessment. Assessing the potential impacts of climate change on biodiversity and ecosystems is required not only for nature conservation planning, but also to future economic and social development planning, public health protection, agricultural development, tourism and infrastructure development etc. At the Second International Conference on Health and Biodiversity (COHAB 2, Galway, 2008), it was noted that, although there is a growing body of research into the potential impacts of climate change on Ireland's environment and economy, the value of research into biodiversity impacts of climate change in Ireland has been restricted due to a lack of guidance on appropriate methods and scales of research, and a lack of focus on an ecosystem approach (i.e. accounting for levels of organisation, ecosystem functioning, and the role of humans within

ecosystems). The National Biodiversity Plan should therefore include an action to develop guidance on assessing the impacts of climate change on Irish biodiversity and ecosystems. This guidance should be based on the work of the Intergovernmental Panel on Climate Change, and on related publications of the CBD (e.g. CBD Technical Series Volume 10). The guidance should address scientific concerns as well as providing support for planning authorities, environmental practitioners, and public bodies, including health authorities, who must consider the potential impacts of climate change within their own areas of work.

8.2 The National Biodiversity Plan should specifically address the importance of biodiversity conservation to climate change adaptation strategies, and seek to promote the development of such strategies at local authority level that recognise the importance of biodiversity conservation to the adaptation process. This will be of particular importance in those counties where climate change may increase the risks of flooding, or damage from storm surges, and where local economic and cultural activities are most dependent upon ecosystem services (e.g. food production and fisheries, water quality etc). The Plan should also seek to reinforce the global importance of Ireland's wetlands (including peatlands), forests and grasslands as carbon sinks.

8.3 The demand for biofuels and related products is expected to increase significantly in Ireland over the coming decade. This is expected to lead to the increased conversion of areas of agricultural land from food production to biofuel production. The potential negative impacts of biofuel production on biodiversity are widely recognised and have been noted by the CBD and the European Union. The National Biodiversity Plan should therefore include an action to develop a strategy for the appropriate consideration of biodiversity and ecosystems in biofuel production in Ireland, and should seek to promote the development of an EU-wide certification scheme for biofuels that addresses ecological considerations in line with the objectives of the CBD and other biodiversity conventions.

9. Capacity Building for biodiversity within Public Bodies

9.1 The complexity of the issues surrounding the conservation of biological diversity in Ireland and the international context within which these issues must be addressed, demand a high level of scientific and technical competence within state agencies and public authorities. The success of efforts towards the 2010 target, and Ireland's ability to sustain ecological services into the future, will be dependent upon the development and maintenance of capacity within these bodies, and therefore the implementation of the National Biodiversity Plan should be supported by a training programme for public authorities, aimed at (i) explaining the importance of ecosystem goods and services to human social and economic development, and to public and animal health and well-being; (ii) outlining the national and international significance of Ireland's biodiversity in terms of the security of ecosystem goods and services upon which the economy and Irish society depends; (iii) providing tools to decision makers for addressing biodiversity issues within the relevant spheres of activity of these bodies. The role and involvement of all public bodies should be covered. This should move beyond local and national government departments to include all relevant state and semi-state bodies, including *inter alia* An Garda Síochána, the Health Service Executive, Vocational Education Committees, higher education institutions, regional fisheries boards, harbour authorities, county enterprise boards, state sponsored bodies and related organisations. This approach has been successfully adopted in the U.K., through implementation of the "biodiversity duty" under the 2006 Natural Environment and Rural Communities Act.

10. Private Sector involvement in biodiversity conservation

10.1 The involvement of the private sector in addressing the issue of biodiversity loss must also be strengthened. Work by the CBD, the Millennium Ecosystem Assessment, the World Resources Institute (USA) and the Natural Edge Project (Australia), amongst others, has highlighted the importance of biodiversity conservation to economic growth and the opportunities for business development based on the protection of ecosystem services. The work of the Notice Nature campaign through 2007 has been noteworthy in increasing the awareness of biodiversity and its general values amongst certain businesses, and providing guidance on how specific sectors such as construction and tourism can engage in nature conservation. However, this has not yet promoted the fundamental importance of biodiversity to Ireland's economy or future economic development. The majority of decisions taken by business and industry are directed first and foremost by financial considerations, and secondly by regulatory concerns. This may perhaps be particularly true in a time of economic slowdown and uncertainty in financial markets. A biodiversity strategy for the business sector that relies on a degree of philanthropy or which aims to insert biodiversity considerations as part of Corporate and Social Responsibility (CSR) agendas will not achieve the level of commitment from the private sector which is required in order to promote biodiversity conservation within the business community in Ireland. Therefore, the National Biodiversity Plan should aim to build on the work of the Notice Nature campaign, to communicate the many risks that biodiversity loss represents to economic sustainability, and the significant economic benefits associated with biodiversity conservation. The National Biodiversity Plan should include specific actions to promote and facilitate research into new business models supported by biodiversity conservation, and new markets and business opportunities based on the protection and enhancement of ecosystem goods and services. This should involve a transdisciplinary approach, working with business and industry bodies (e.g. Enterprise Ireland, IBEC, ISME, BITC etc) to increase awareness within the private sector on the need to integrate biodiversity into a variety of business management areas, such as procurement, design, manufacturing, energy consumption, waste management etc. This is particularly important in the current economic climate.

10.2 In terms of public health, companies producing pharmaceuticals and personal care products, as well as other companies involved in delivering healthcare (including private hospitals and health consultancies, Research & Development laboratories, health insurers etc) should be targeted, as the benefits associated with biodiversity conservation, and the risks associated with biodiversity loss, are particularly significant for these sectors.

10.3 From a wider economic perspective, the National Biodiversity Plan should allow for a multi-disciplinary research programme into the feasibility of payments for ecosystem goods and services, and for the development of economic models which account for ecological footprints and associated social and economic dimensions of resource consumption. Sectors for particular attention would include agriculture, fisheries, energy and construction. The value of this research would be: to identify and categorise the supporting services which biodiversity provides to Irish business and industry, and attribute an economic value to them; to highlight and account for the wider biodiversity impacts, and resulting but overlooked economic impacts, associated with resource consumption, manufacture and supply of products and services, and waste disposal; and to identify avenues for enhancing business productivity and sustainability through new economic models that support biodiversity conservation.

10.4 The National Biodiversity Plan should include an action to commission a detailed research programme into the "Root Causes" of biodiversity loss in Ireland. While the direct or proximate causes of biodiversity loss include land use change (e.g. wetland drainage, land reclamation, physical development etc), pollution, overexploitation, invasive species etc, the root causes are most often due to specific social, political and economic drivers which must be understood in their entirety, in order to ensure success in halting the loss of

biodiversity up to and beyond 2010. Some of these drivers are domestic; some are related to international market forces, globalisation or other overseas political concerns. When the impacts which biodiversity loss can have on economic and social development and human well-being are considered, it is clear that identifying these root causes is invaluable to addressing wider economic risks and societal issues, including risks to public health and well-being. Standard methodologies for assessing the root causes of biodiversity loss have been developed by many organisations, most notably by the Macroeconomics Programme Office of the World Wide Fund for Nature (WWF). The COHAB Initiative Secretariat recommends that the Plan should establish a multi-disciplinary research programme to identify the root causes of biodiversity loss in Ireland, to determine the potential for additional “knock-on” impacts on Irish economy and society, and to develop strategies for addressing these root causes up to and beyond 2010.

11. Biodiversity, Society and Public Education

11.1 The COHAB Initiative Secretariat notes the considerable achievement of the award-winning Notice Nature campaign during 2007. However, it is important that this campaign is sustained over the coming years, beyond 2010, and that the fundamental importance of ecosystems to human health and well-being is particularly highlighted. We also recommend that the impact of the Notice Nature campaign on the general public and on industry should be assessed regularly.

11.2 Addressing the problem of biodiversity loss, and ensuring the sustainability of ecosystem goods and services into the future, requires that all sectors of society and all areas of economic activity are appropriately appraised of the importance of conservation and sustainable development. It is of critical importance that efforts are made to integrate ecosystem goods and services into national educational curricula at all levels and in all relevant sectors. The NBP should therefore include a programme of work to develop modules on biodiversity and ecosystems for each target discipline and associated educational programmes. These modules should address the specific importance of ecosystems to each discipline, and to wider social and economic concerns, and the importance of biodiversity to ecosystem functioning and sustainability. At third and second levels of education, this should include specific programmes aimed at students in the following areas: catering and tourism, agriculture and food production, engineering, medicine and healthcare, business and economics, social studies and human sciences. This project, which could be conducted through Notice Nature, should be carried out in collaboration with the Department of Education and Science, and with the support of other Government Departments and public bodies as appropriate to each sector.

11.3 The Delos Initiative is an international project under the World Commission on Protected Areas of the World Conservation Union (IUCN), which works to promote and conserve the biodiversity of sacred sites in developed countries, helping to maintain the sanctity and the biodiversity of these sites through the understanding of the complex relationship between spiritual / cultural and natural values. The Delos Initiative provides important opportunities for increasing awareness of local and national biodiversity amongst citizens and tourists, for building partnerships for biodiversity with religious communities, and highlighting the relevance of biodiversity to spiritual well-being and cultural heritage. The COHAB Initiative Secretariat recommends that the National Biodiversity Plan should aim to integrate some of Ireland's important pilgrimage sites into the list of Delos Initiative sites, to promote the important biodiversity of these sites to visitors, and to engage religious leaders in protecting and promoting biodiversity at these sites. Sites for potential inclusion in Ireland include Clonmacnoise, the Skellig Islands, Croagh Patrick and Clew Bay, Lough Derg, and Glendalough, each of which is associated with a European (SAC or SPA) or national (NHA) protected site, a national park, or nature reserve.

12. Specific Considerations on Public Health

12.1 The fundamental importance of biodiversity to human communities is increasingly recognised worldwide. In as much as the loss of biodiversity can threaten human health, conservation and sustainable use of biological resources can have significant positive impacts on health and well-being. The reports of the Millennium Ecosystem Assessment and the Intergovernmental Panel on Climate Change, and Decisions and technical documents of the CBD, have highlighted the need to integrate biodiversity conservation into national and local public health planning. Some of the links between health and biodiversity have been raised in this submission. In order to further promote the importance of biodiversity conservation to public health, to enhance public health protection through biodiversity conservation, and to facilitate movements towards the 2010 target, we recommend that the National Biodiversity Plan should establish a programme of research on the links between biodiversity and public health in Ireland. This could be implemented in collaboration with the Health Research Board and the Environmental Protection Agency, and in many cases could include collaborations with the private sector. Examples of specific projects that could be addressed through this programme include the following:

- Assessment of risks of infectious disease emergence and / or spread in humans, wildlife and livestock in Ireland, as a result of ecosystem change. (The risks associated with a number of diseases which occur in Ireland may be associated with ecosystem integrity, including: leptospirosis, cryptosporidiosis, hanta virus disease, avian influenza (highly-pathogenic and low-pathogenic strains), toxoplasmosis, bovine tuberculosis, lyme disease, *E. coli* and other enteric pathogens, etc.)
- Compilation and recording of Irish traditional knowledge and cultural heritage based on the use of wild species of flora and fauna for food and medicine.
- Assessment of opportunities for enhancing community health (tackling obesity, cancer, diabetes, heart disease, depression etc) through development of urban greenspace and promoting access to the countryside.
- Assessment of opportunities for improving dietary health in low-income families through urban market gardens utilising diversity in food plants.
- Exploring opportunities for addressing problems of anti-social behaviour and social cohesion through urban biodiversity projects.
- Assessment of the potential impacts of climate change on human, animal and plant health (including agriculture) in Ireland associated with biodiversity. (This should include assessments of risks associated with invasive alien species and pathogens such as avian influenza.)

12.2 The COHAB Initiative Secretariat would also like to recommend that the National Biodiversity Plan should seek to promote and support the work of the COHAB Initiative and other global initiatives addressing the importance of biodiversity to human health and well-being through available national and international mechanisms.
