



# National Biodiversity Strategy *in Italy*



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Siena countryside. Photo Ilaria Anzellotti

Back cover:

MATTM-Panda Photo. Photo S. Meyer



# Foreword

Biodiversity conservation and sustainable use guarantee the correct functioning of ecosystems as well as the provision of their services, which constitute the essential basis for human economy and life.

The loss of biodiversity and the reduced efficiency of ecosystem-related services have high social and economic costs as regards not only environmental sustainability, but also attempts made to reduce poverty, hunger and disease throughout the world.

Indeed, the direct and indirect benefits of biodiversity are reflected in services regarding supplies (food, pharmaceutical drugs, raw materials, water), regulation (climate control, protection against extreme events), support (oxygen production, soil formation) and cultural interest (increased knowledge, aesthetic value, social relations).

Modern society and economy are strongly linked to natural resources and productive ecosystems use. In particular, this dependence is expressed through agriculture and forest activities. It is evident that this dependency is also linked to other human activities related to transports, tourism and urban growth.

The achievement of the optimum balance between biodiversity conservation, natural resources valorization and economic development mean the pursuing of sustainable development.

Italy is a country that, thanks to its environmental and historical characteristics, holds a high degree of biodiversity at all levels of biological and territorial organization. This is testified by several studies and research activities, which provide for the basic assumption in environmental sustainability of future actions and choices.

To work out a National Biodiversity Strategy by 2010, the Ministry for the Environment and Land and Sea realized the volume "*Biodiversity in Italy. Contribution to the National Biodiversity Strategy*" with the cooperation of over 100 researchers.

In the same year, the CD-Rom "GIS Natura", which contains cartographies and databases of national importance, has been produced with the contribution of the national university system and the scientific coordination of the Sapienza University of Rome.

To realize those objectives, Italy has started an institutional path in line with the ongoing federalism process, which assigns the government of territory to Regions and the conservation of biodiversity to the State. Within this process, the State-Region Conference is the institutional body in charge of approving the National Biodiversity Strategy by 2009.

The National Strategy will be officially presented during the First National Conference on Biodiversity in 2010, the world Biodiversity year.



*Stefania Prestigiacomo*

Minister of Environment, Land and Sea Protection



# National Biodiversity Strategy by 2010 and beyond



Photo L. Rosati



Photo E. Del Vico



Photo S. Burrascano



Photo S. Burrascano

In 2005 the Ministry for the Environment and Land and Sea, *National Focal Point* of the Convention on Biological Diversity (CBD), realized the volume "*Biodiversity in Italy. Contribution to the National Biodiversity Strategy*" with the coordination of the Italian Botanical Society and the cooperation of over 100 researchers (botanists, zoologists, forest ecologists, ecc.). In the same year, the database CD-Rom "GIS Natura" was produced, containing the results of a decade of naturalistic researches.

In the following years, further to the European Communication (2006) 216, "Halting the loss of biodiversity by 2010 and beyond, Sustaining ecosystem services for human well-being" and to the related Action Plan, initiatives and actions concerning biodiversity have been developed and studies and taxonomic and ecologic research projects, useful in preparing the National Biodiversity Strategy, have been completed.

COM 216(2006) underlines the importance of an intersectorial Community policy for Biodiversity, based on the awareness of goods and services it offers for human well-being and life survival on Earth. The Communication also affirms the leader role of Europe at international level in strengthen CBD implementation.

The Communication is accompanied by the Action Plan that identifies 4 strategic areas, 10 priority objectives and 47 operational objectives set out in 157 concrete actions.

## THE EU BIODIVERSITY ACTION PLAN

### Strategic area I: Biodiversity in the EU

- OB. A1: To safeguard the EU's most important habitats and species
- OB. A2: To conserve and restore biodiversity and ecosystem services in the wider EU countryside
- OB. A3: To conserve and restore biodiversity and ecosystem services in the wider EU marine environment
- OB. A4: To reinforce compatibility of regional and territorial development with biodiversity in the EU
- OB. A5: To substantially reduce the impact on EU biodiversity of invasive alien species and alien genotypes

### Strategic area 2: the EU and global biodiversity

- OB. A6: To substantially strengthen effectiveness of international governance for biodiversity and ecosystem services
- OB. A7: To substantially strengthen support for biodiversity and ecosystem services in EU external assistance
- OB. A8: To substantially reduce the impact of international trade on global biodiversity and ecosystem services

### Strategic area 3: Biodiversity and climate change

- OB. A9: To support biodiversity adaptation to climate change

### Strategic area 4: the knowledge base

- OB. A10: To substantially strengthen the knowledge base for conservation and sustainable use of biodiversity in the EU and globally

Starting from the Community Action Plan, the IV National Report for the CBD, drafted by the IMELS in 2009, presents the results achieved at national and regional level and identifies the way to define the national strategy beyond 2010.



Enhancement of the base knowledge, integration of economic policies with the importance of ecosystem services, and the involvement with regional governments represent the cultural, scientific and political reference for the National Biodiversity Strategy.

Further to the 2010 target (reduce biodiversity loss by 2010), other goals are assumed to be prioritized beyond 2010: the balance between conservation and development; the balance between economy and ecosystem services; the need to realize a “communication” network able to inform all levels of society (from regional governments to single citizens) on innovative knowledge and new opportunities that biodiversity causes in terms of technology advance and natural resources improvement (VI Community Environment Action Program 2007-2013).



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Conti F., Abbate G., Alessandrini A., Blasi C., 2005 – *An Annotated Checklist of the Italian Vascular Flora*. Palombi Editori, Roma.  
*The European Union's Biodiversity Action Plan "Halting the loss of Biodiversity by 2010 - and beyond. Sustaining ecosystem services for human well-being"*.  
[http://ec.europa.eu/environment/nature/biodiversity/comm2006/index\\_en.htm](http://ec.europa.eu/environment/nature/biodiversity/comm2006/index_en.htm)  
*Fourth National Report to the CDB*. <http://www.cbd.int/reports/>  
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*The Sixth Environment Action Programme of the European Community 2002-2012*.  
<http://ec.europa.eu/environment/newprg/index.htm>

Photo S. Bonacquisti



Photo L. Rosati

Environment complexity (climate, lithology, morphology, flora, fauna) and long human history produced a high landscape diversity in Italy.

Recently the Ministry for the Environment and Land and Sea and the Interuniversity Research Centre "Biodiversity, Phytosociology and Landscape Ecology" developed a new cartography of systems and subsystems of the territory, which emphasizes the extraordinary Italian land and landscape heterogeneity:

3 Land Regions

24 Land Systems (plus glaciers, lakes, and lagoons)

149 Land Facets.

This territorial classification becomes *ecoregional* with the addition of information of the Map of Vegetation Series and

landscape with the addition of information on land use and on history of human settlement.

## Focus on

- Provide for diachronic analyses to monitor use changes in landscape.
- Enhance landscape diversity, with particular reference to cultural landscapes.
- Promote forest restoration, including reforestation and afforestation, also in urban areas, through valorization and use of species related to the indigenous habitat.
- Promote the use of an ecological network at landscape level as framework for cities, new general planning and new design.



Map of Italian landscapes (1:1.000.000)



Map of Italian phytoclimate (1:500.000)



Map of Italian Vegetation Series (1:500.000)



Photo I. Anzellotti

Blasi C., 2007 - *Valutazione dello stato di conservazione dei Parchi Nazionali e dei paesaggi d'Italia*. Convenzione tra il MATTM-DPN e il CIRBFEP. Roma.  
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The Italian fauna is the richest among those of European countries (56,000 species).

Of the approximately 42,000 land terrestrial animal species identified so far in the Italian territory, more than 4,000, equal to about 10% of the total, are endemic.

Among Vertebrates, threatened species vary from 47% to 68%.

Taking into account only threatened species, we estimate a high level of danger for 14% of amphibians, 5% of reptilians, 23% of birds and 15% of mammals.

Here below the situation of some significant groups is reported:

**Fresh water fishes:** 60% of Italian species are allochthonous and its status of conservation is extremely critic.

**Coleopterans:** about 18% of Italian Coleopteran species are endemic (more than 2,100 out of 12,300). The areas at greatest risk are the relic alluvial forests and the wetlands.

**Butterflies:** Italian Lepidopteran fauna includes 5,127 species, which is equivalent to 60% of the entire European Lepidopteran fauna.

**Birds:** The 473 bird species are passing through a phase of great change. The need to strengthen national monitoring programmes has been reported.

**Big carnivorous animals:** These species have a strong impact on public opinion and relevant management problems. Efforts in their conservation and management allowed wolf expansion and reappearance of bear and lynx on the Alps.



Photo MATTM-Panda Photo (M. Campora)



Photo MATTM-Panda Photo (M. Lanini)

## Focus on

- Improve monitoring protocols at regional level to be coherent with the national ones.
- Encourage the integration of fauna conservation measures with sustainable agro-silvo-pastoral management strategies.
- Mitigate damages of wild fauna to enhance public opinion consensus.
- Promote a sustainable hunting strategy.
- Promote management plans (eradication and control) coherent with alien species invasion.
- Activate plans to restore the relic alluvial forests, the wetlands throughout the country, the springs and small watercourses in the main islands.
- Assign a central role to protected areas in the conservation of one or more species.

*Fourth National Report to the CDB.* [5](http://www.cbd.int/reports/AA.VV., 2007 - Fauna. In: Blasi C., Boitani L., La Posta S., Manes F., Marchetti M. (eds) Biodiversity in Italy. Contribution to the National Biodiversity Strategy. Palombi Editori, Roma. Pp. 239-360.</a></p><p>Minelli A., Chemini C., Argano R., Ruffo S. (a cura di), 2002 – La Fauna in Italia. Touring Editore, Milano, e Ministero dell'Ambiente e della Tutela del Territorio, Roma. 448 pp.</p><p>Minelli A., Ruffo S., La Posta S. (a cura di), 1993-1995 – Checklist delle specie della fauna italiana. Fascicoli 1-110. Calderini, Bologna.</p><p>Ministero dell'Ambiente e Tutela del Territorio e del Mare / DPN, 2008 – <i>La fauna italiana dalla conoscenza alla conservazione. The italian fauna from knowledge to conservation.</i> Palombi & Partner, Roma. Pp 1-38.</p><p>Ministero dell'Ambiente e Tutela del Territorio e del Mare, Istituto Nazionale per la Fauna Selvatica, Collana Quaderni di conservazione 28 volumi</p></div><div data-bbox=)

Italian vascular flora includes 6,711 species, 7,634 entities (species and subspecies) shared in 196 families and 1,267 genus. Endemic plant species in Italy represents 15.26% of total flora. These data not only place Italy first in Europe for the number of species, but also highlight the elevated diversity of taxonomical types (*taxa* richness of superior order).

Regarding vascular plants, 18.8% of Pteridophytes, 17.9% of Gymnosperms and 15.1% of Angiosperms are threatened (IUCN 1994). In Italy, vascular flora at risk comprehends 1,020 species, representing 15.2% of Italian flora.

In 2006 the Italian Botanical Society promoted the "Initiative for the implementation of the IUCN categories and criteria for the redaction of the new Red Lists". Experts involved in this initiative have recently published the first results of the application of the

IUCN criteria (version 3.1 of 2001) to 40 target species of Italian flora.

	n° entity	n° endemic
Valle d'Aosta	2,174	6
Piemonte	3,521	40
Lombardia	3,220	61
Trentino-Alto Adige	2,985	59
Veneto	3,295	53
Friuli-Venezia Giulia	3,335	28
Liguria	3,131	55
Emilia-Romagna	2,726	61
Toscana	3,435	155
Marche	2,571	106
Umbria	2,360	95
Lazio	3,228	166
Abruzzo	3,232	180
Molise	2,412	117
Campania	2,844	154
Puglia	2,287	96
Basilicata	2,636	159
Calabria	2,630	206
Sicilia	3,011	322
Sardegna	2,408	256
<b>Italia</b>	<b>7,634</b>	<b>1,024</b>

## Focus on

- compile the mapping of flora on a regional scale and identify the territorial habitats with elevated diversity to insert in the future revision stages of the Natura 2000 Network.
- involve the protected areas in the identification of one or more *in situ* conservation objectives.
- involve the museums, and in particular, the Botanical Gardens throughout the territory in planning coherent policies with *ex situ* conservation.
- Monitoring the evolution in structural and qualitative terms of the *Important Plant Areas*.



Photo R. Frondoni



Photo R. Frondoni

Conti F., Abbate G., Alessandrini A. e Blasi C. (Eds), 2005 - *An annotated Checklist of the Italian Vascular Flora*. Università di Roma "La Sapienza", Dip.to di Biologia Vegetale - Ministero dell'Ambiente e della Tutela del Territorio, Direzione Protezione della Natura. Palombi Editori, Roma.

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## Bryophytes

Bryologic flora is one of the richest in Europe with 1,130 species (851 Mosses and 279 Hepatics). Richness of Bryologic Italian flora also results from the analysis of chorology types, with the prevalence of the boreal element (24% in Mosses; 20.9% in Hepatics), the sub oceanic element particularly between Hepatics (15.4%), *taxon* dependent on humidity, and the subartic-subalpine element (Mosses 15.3%; Hepatics 10.2%).



Photo S. Bonacquisti

Photo S. Bonacquisti



regression throughout the country. Suboceanic epiphyt lichens are the more threatened: they have their ecologic optimum in forest vegetation of seminatural type, and they are the more sensible to air pollution. After them, there are the terricole lichens of Mediterranean area and coastal lichens, threatened by general degradation of coastal areas.

## Fungi

In Italy there are about 20,000 species of **Macromycetes e Mixomycetes** (visible mushrooms), but in reality every year at least 20 new species are published for the Italian territory.

On the basis of the preliminary data of the checklist of the Italian fungi, 56 species are endemic while there could be 87 species which are rare, endangered or critically endangered.



Photo S. Bonacquisti

## Lichens

The checklist of Italian lichens accounts for 2,323 taxa and places Italy among the richest European countries in terms of lichens (14% of the world lichens flora). The most abundant are the crustose lichens (69.2%), followed by *fogliose* (13.8%), *fruticose* (10.9%), *squamulose* (5%) and *leprose* (1.1%).

The red list of Italian lichens accounts for 276 species that result rare and/or in

Photo M. Cormaci



communities where they were formerly present, and significant changes to biodiversity as well as vegetation.

## Focus on

- draw up an updated list of Italian fungus species, maps of their distribution and data on their ecology, as well as red lists of fungus species.
- promote a correct forestry management (naturalistic and systematic selviculture).
- draw up a national and regional red list and action plan for the species considered endangered according to the IUCN categories.
- compile the mapping of alga flora on a regional scale and identify the territorial habitats with elevated diversity to insert in the future revision phases of the Natura 2000 Network.
- carry out an inventory of freshwater species at a national and regional level.
- realize a monitoring network of sites of lichens monitoring within old growth forests.
- realize lichens monitoring in term of biomonitoring of air quality.

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# Marine environment

Mediterranean sea is characterized by a high biological diversity, with an estimate percentage of endemism around 25%.

Benthos zoning in Mediterranean waters presents 162 populations (biocenosis, *facies*, associations), and 61 of them are interesting for conservation.

Habitat Directive includes 9 marine habitats (2 priority habitats: *Posidonia beds* and *Coastal lagoons*), all presents in Italy.

The macrophytobenthos registered in Italian waters is characterized by 924 taxa, but marine fauna accounts for 9,194 species (by which 1,047 Protozoans). Of the 10 species of cetaceans present in Mediterranean Sea, 8 are regularly found in Italian water.

## Focus on

- define action plans to assess the degree of biological invasion phenomenon within marine and coastal areas.
- carry out the network "naturalness island" along coastal areas and delocalize some of the human activities that trigger a significant environmental impact (tourism, cities and unsustainable agriculture).
- define environmental policies to oppose climate change effects and to conserve the ecological role of the "small islands" at global and local level.
- regulate fishery and touristic activities along coasts.

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Photo MATTM-Panda Photo (B. Manunza)





## European Directive 92/43/CEE

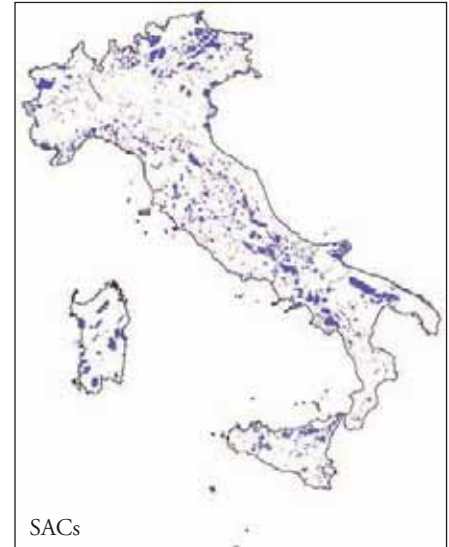
In Italy, thanks to a high environmental heterogeneity and the richness of animal and plant species, there are 124 habitats (27 priority habitats) of the 218 listed for Europe. As the definitions contained in the Interpretation European Manual are not always proper to Italian situation, the Italian Botanical Society is drafting a National manual for habitats interpretation, aimed at describing the different typologies and giving advice for a more homogeneous interpretation at national level.



Photo R. Frondoni



Photo R. Frondoni



SACs



SPAs

### Habitat for biogeographic region, divided in macrocategories

	Alpine	Continental	Mediterranean
1 - Coastal and halophytic habitats	-	13	13
2 - Coastal sand dunes and inland dunes	-	10	9
3 - Freshwater habitats	11	11	12
4 - Temperate heath and scrub	4	4	3
5 - Sclerophyllous scrub (matorral)	3	6	11
6 - Natural and semi-natural grassland formations	11	11	10
7 - Raised bogs and mires and fens	8	6	5
8 - Rocky habitats and caves	10	9	11
9 - Forests	23	19	28
<b>Total</b>	<b>70</b>	<b>89</b>	<b>102</b>

## Natura 2000 Network

In Italy identification and management of Nature 2000 sites is committed to the Regions and Autonomous Provinces. Within the framework of the application of the 43/92/CEE Habitat Directive and the 79/409/CEE Birds Directive, 2.284 Special Areas of Conservation (SACs) and 591 Special Protection Areas (SPAs) have been identified. Among them, 316 SACs are coincident with SPAs; therefore, the areas included in Nature 2000 Network are 2.559 and cover a surface of 61.891 km<sup>2</sup> (20,5% of national surface).



Photo M. Iberite



Blasi C., D'Antoni S., Duprè E., La Posta A., 2004 – *Atti del Convegno "La conoscenza botanica e zoologica in Italia: dagli inventari al monitoraggio"*. Quad. Cons. Natura, 18. Min. Ambiente – Ist. Naz. Fauna Selvatica.

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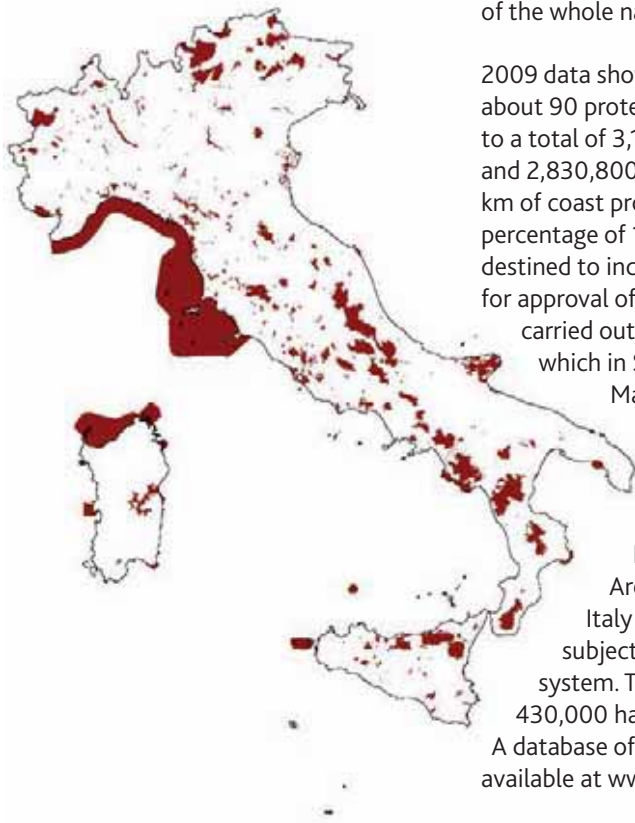
Italian Ministry for the Environment and the Territory and Sea Protection - Friuli Museum of Natural History - *Italian habitats*.

[http://www.minambiente.it/index.php?id\\_sezione=814](http://www.minambiente.it/index.php?id_sezione=814), 21 voll.

Photo M. Iberite

# Protected areas

The national *Framework law on protected areas* (L. 394/91) and the Law for sea defense (L. 979/82) represent the main legislative references respectively



for terrestrial and marine protected areas.

In 2003, in Italy there were 772 protected areas on 2,911,582 hectares of land surface and 2,820,673 hectares on sea surface, corresponding to the 9.66% of the whole national territory.

2009 data show an improvement of about 90 protected areas, corresponding to a total of 3,100,000 hectares of land and 2,830,800 hectares of sea, with 658 km of coast protected and a national percentage of 10.6%. This value is destined to increase because procedures for approval of other parks are being carried out (5 National Parks, 4 of which in Sicily, and 5 Protected Marine Areas)

In addition to the protected areas contained in the Official List of National Protected Areas under L. 394/91, in Italy there are 400 more areas subject to a particular protection system. They cover around 430,000 ha of national territory. A database of Italian protected areas is available at [www.parks.it](http://www.parks.it).

## Focus on

- Evaluate efficiency of protected areas in terms of ecological network.
- Verify relationships between national ecologic network, Nature 2000 network, territorial ecological network and ecological network at species, groups of species and communities level.
- Encourage land management around protected areas in line with their objectives and characteristics, thus promoting the maintenance of naturalness in the whole territory and not only in corridor areas.
- Increase the system of marine protected areas, presently incomplete and not enough developed in relation to the need of protection of marine and coastal environments.
- Verify through gap analysis the coherence between protected areas and environmental heterogeneity at landscape level.
- Verify efficiency of management tools.



Photo M. Azzella

## Surfaces of single categories of protected areas

Protected Areas	No.	Land Area (km <sup>2</sup> )	Sea Area (km <sup>2</sup> )	% of Prot. Areas at Nat'l level	% national area (land)
National Parks	22 (+2)*	14,105.51*	718.12	25.56*	4.68*
Aree Marine Protette**	20**	0.00	1,900.82**	3.28**	0.00**
Riserva Naturale Statale	146	1,227.53	0.00	2.12	0.41
Altre Aree Nat. Protette Naz.	3	0.00	25,574.77	44.09	0.00
Parco Naturale Regionale	105	11,751.11	0.00	20.26	3.90
Riserva Naturale Regionale	335	2,142.21	12.84	3.72	0.71
Altre Aree Naturali protette regionali	141	572.49	0.18	0.99	0.19
<b>Total</b>	<b>772*</b>	<b>29,798.85*</b>	<b>28,206.73</b>	<b>100.00</b>	<b>9.89*</b>

\* 2 national parks have been recently established, but the extension of one of them is not yet available.

\*\* In addition to the PMA, there also are 2 underwater archeological Parks and the Pelagos Sanctuary.

Ministero dell'ambiente e della tutela del territorio e del mare "Attuazione della Direttiva Habitat e stato di conservazione di habitat e specie in Italia" [http://www.minambiente.it/index.php?id\\_sezione=2933](http://www.minambiente.it/index.php?id_sezione=2933)

Rosati L., Marignani M., Blasi C. 2008 - *A Gap analysis comparing Natura 2000 vs National Protected Area network with potential natural vegetation*. Community Ecology 9(2):147-154

Ministero dell'ambiente e della tutela del territorio e del mare Elenco Ufficiale delle aree protette [http://www.minambiente.it/index.php?id\\_sezione=1346](http://www.minambiente.it/index.php?id_sezione=1346)

Ministero dell'ambiente e della tutela del territorio e del mare Fauna italiana inclusa nella Direttiva Habitat [http://www.minambiente.it/index.php?id\\_sezione=717](http://www.minambiente.it/index.php?id_sezione=717)



## To project the Strategy into the future (post 2010)

Biodiversity conservation and sustainable use guarantee the correct functioning of ecosystems as well as the provision of their services, which constitute the essential basis for human economy and life. The G8 countries in Potsdam and in Kobe have already acknowledged different aspects of biological diversity economic significance. Approaching the 2015 target, by which the Millennium Development Goals are supposed to be attained, the importance of ecosystems services for achieving sustainable development and human well-being needs to be emphasized.

### **Italy is making up for lost time in developing, implementing and revising its National Biodiversity Strategy.**

Taking into account the targets contained in the European Action Plan, and responding to the 2010 Target, the National Biodiversity Strategy defines the basis for farseeing actions (post 2010), also through the development of the following issues that will be discussed during the G8 Siracusa meeting.

Photo L. Rosati



### **Framing the "post 2010" biodiversity strategy**

Adapting to Climate Change and mitigating its effects

Biodiversity, Economics and Business

Enhancing biodiversity and ecosystem services in human modified ecosystems

Science, Research and Policy

In the following pages the content of the issues that will be discussed in the G8 in Siracusa, now under construction

### **Framing the "post 2010" biodiversity strategy**

The present crises is an ineluctable indication that our way to manage biodiversity and natural resources can no longer be maintained as the earth has gone beyond its carrying capacity and the resilience of its natural systems is being jeopardised.

The imperative need to avoid further nature destruction, to ensure the continuous and sound flow of the ecosystem services needed to sustain human life and to initiate the recovery of lost or degraded ecosystem, to cope with climate change negative effects, require setting up goals that are both ambitious and achievable, within an affordable timeframe; Notwithstanding the efforts and

commitments to achieve the "2010 target", the unsustainable use of biological resources, overexploitation of marine ecosystems, land use change and soil degradation, as well as invasive alien species threat, still continue to be the main drivers of biodiversity loss, aggravated by climate change. Furthermore, the world has been changing rapidly since the adoption of the 2010 target. All these drivers of biodiversity loss and this change must be addressed by the post 2010 strategy. A global, scientific approach that considers these priorities in a coherent framework must form the conceptual basis for understanding how a biodiversity post 2010 strategy should be constructed.



Photo L. Rosati



## Adapting to Climate Change and mitigating its effects

Biological diversity and climate change are closely linked. Climate change is the major threat that will confront biodiversity this century. Although biodiversity is threatened by climate change, it can mitigate the impacts of climate change on humans and the environment.

The “adaptation” is an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Adaptation of natural and managed ecosystems is considered to be insufficient to halt the impact of climate change on biodiversity.

Adaptation actions, which include the management of ecosystems and of “natural infrastructures” as well as the use of new and improved management technologies, are essential in priority areas such as water management, forestry, agriculture, so as to minimize biodiversity loss at all levels.

Biodiversity and ecosystem services underpin human well being and are critical for regulating our climate. There is need, therefore, to consider the contribution that biodiversity and ecosystems play for climate change adaptation and mitigation at national and global levels.

Biodiversity policy, at national and international level, can significantly contribute to climate change adaptation and mitigation without negatively impacting the conservation of biodiversity nor opportunities for its sustainable use.

Actions for the adaptation of natural and managed ecosystems should be put in place proactively since autonomous adaptation is expected to be insufficient to halt the impact of climate change on biodiversity.

There is a need to stress the key role of fighting illegal logging in order to preserve biodiversity with evident positive results also in terms of carbon storage and sequestration, enabling adaptation of livelihood and securing human well-being.

Adaptation actions, which include the use of new and improved technologies, are necessary in priority areas such as water management, forestry, agriculture, and infrastructure development so as to minimize biodiversity loss at all levels, and to protect ecosystem function that we all depend upon.

Forest-based climate mitigation options, such as Reduced of Emissions from Deforestation and Degradation (REDD), should be considered to integrate the future climate mitigation regime in such a way as to complement rather than substitute or weaken, the ambitious global targets that will be necessary to deliver deep reductions in fossil fuel emissions, ensuring that REDD actively supports biodiversity

A proper transfer of best practices, as well as soft and hard technologies, through cooperation programmes, will be essential to achieve a coordinated response and the cost-effective use of resources in coping with climate change.

Photo MATTM-Panda Photo (R. Ragno)

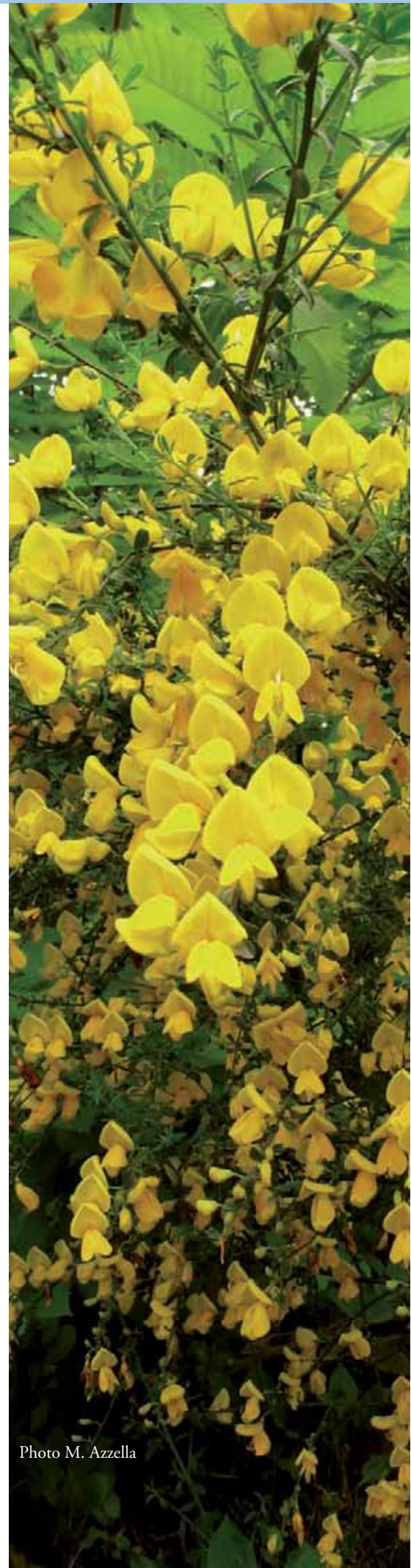


Photo M. Azzella



## Biodiversity, Economics and Business

Natural ecosystems provide for goods and services, and thus constitute the essential basis for human economy and life. Taking into account that genetic resources are used by different types of users, in different sectors, for different purposes, the commercial use and the economic value of biodiversity need to be considered.

Processes to assess the value of biodiversity and ecosystem services will prove that investment in nature conservation, in particular in times of a financial crisis, is not rivalling growth and economic development, but, on the contrary, that investment in nature conservation and climate protection will contribute to a global economic rebound, to a positive and sustainable labour market trend and to poverty alleviation and will help all acting players in making decisions with respect to their responsibilities in safeguarding biodiversity.

The access to and equitable sharing of the benefits arising out from the utilization of genetic resources is an essential goal in order to achieve the sustainable development and the integration of biodiversity values into economics and trade. It is therefore crucial to support the urgent completion of the international process on this matter to allow its integration within the vision/strategy for the "post 2010".

The improvement, the enlargement and the efficient management of a worldwide system/network of protected areas, on land and sea, considered as "natural infrastructures", can create



Photo L. Rosati



Photo E. Del Vico

economic advantages and employment opportunities. The restoration and maintenance of individual protected areas and their ecological connectivity is essential for the continuous flow of ecosystem services and to allow adaptation to climate change.

There is the imperative need to avoid or minimize any further nature destruction in the implementation of infrastructural programmes, as well as to consider how such programmes a percentage of the amounts foreseen for to be invested in 'Green/greening Infrastructure'.

While business can play an innovative

role in promoting ecosystem values, it is to be recognized and promoted the role of governments in setting up policies, incentives, and resources for incorporating ecosystem values into commercial decision-making.

In both the environmental and business communities, there is a growing recognition of the potential to conserve biodiversity on a commercial basis. Even with a small proportion of private capital, international trade and national economic output could be linked to biodiversity related business and the resulting contribution to conservation would be enormous.



Photo L. Massaro



## Enhancing biodiversity and ecosystem services in human modified ecosystems

Like in rural areas, sound management of biodiversity and ecosystem services in human modified ecosystems is becoming essential since, according to the World Bank, more than 50% of the world's population now live in urban and periurban areas, and about 3.4 billion people are concentrated within 60 kilometers from the coastlines. Sound management of biodiversity in human modified ecosystems is thus becoming essential.

Developing and implementing specific biodiversity related policies and incentives in all relevant sectors, such as promoting markets for biodiversity-friendly and traditional products, can and should create the conditions to advance food security and poverty reduction (MDG 1), environmental sustainability (MDG 7) and improved health (MDGs 4, 5 and 6).

There is an urgent need to implement the conservation of the coastal zones, applying the principles of Integrated Coastal Zone Management schemes as already foreseen by the UNEP Regional Seas Programme.

In order to protect rare, threatened and representative habitats and species from the impacts of human activities in marine and coastal areas, there is a need to establish ecologically coherent networks of marine protected areas, according to regional network design principles.

Acknowledging the high costs and the severe impact of invasive alien species to biodiversity and ecosystem services, often exceeding the cost and impact of their control and eradication, we need to urgently develop and strengthen prevention actions including early warning and rapid response, implement improved procedures for information exchange among existing databases, develop global indicators and predictive models for new invasions and identify best practices for risk assessment procedures.

A new approach to urban planning which integrates ecosystem services, such as air



Photo S. Bonacquisti

and water cleaning, noise reduction, carbon sink and sequestration, control of urban heat islands, should be promoted as well as the promotion of ecologically friendly buildings, infrastructures and transport systems.

Dialogues between researchers, planners, policy makers and citizens, as well as bridging mechanisms among decision makers and stakeholders, will be essential to achieve such an objective.



## Science, Research and Policy

Modern research has shifted from a classical analytical approach based on "cause-effect" relations, to the analysis of "complex systems". Cross-sectoral integration and multidisciplinary are the basis in such a new approach.

Notwithstanding the importance of basic scientific work such as taxonomy, ecology, wildlife management, research need to focus to the integration of knowledges from different disciplines.

A comprehensive and common understanding of biodiversity and ecosystem services functioning is the basis for timely and sound political decision-making. Achieving this understanding is the scientific greatest challenge we are facing. There is a critical need to strengthen our capacity to develop, establish and maintain a global science-policy interface that can ensure our international environmental cooperation. Coherent and integrated scientific research is a fundamental pillar to achieve this goal.

Therefore, it is urgent to complete the process to establish a mechanisms for an effective science-policy interface for biodiversity and ecosystem services for

conservation and sustainable use of biodiversity, long term human well-being and sustainable development, taking into account the special need to develop and maintain the technical and scientific capacity of developing countries in biodiversity-related issues, as stated by the 25th UNEP Session of the Governing Council and the 10th Global Ministerial Environment Forum;

Monitoring and assessments of biodiversity by networking of exiting monitoring schemes is crucial. Therefore, is essential to set up and implement strong actions to promote the cooperation among countries, relevant international organizations, research institutes and NGOs to develop a global monitoring scheme on biodiversity.

A global network, based on the existing organizations, centres and mechanisms, aimed to exchange scientific knowledge, best practices, technologies and innovation, and testing policy models to improve the science-policy interface for biodiversity and ecosystem services and for human well-being, is required to achieve biodiversity data reliability and harmonization, including appropriate human well-being indicators, cooperating



Photo L. Rosati

in a sound process, aimed to the full compatibility and interoperability of these systems.

Comprehensive and focused research at all level should be fostered and capacity building as well as exchange of knowledge and technologies should be encouraged and developed, taking into account the different capability of the countries.

It's as well important to improve the development and the use of advanced technologies (such as sensors for satellite remote sensing) to carry out monitoring of change of biodiversity and global environmental assessment.

The importance of ensuring permanent and timely communication on the status and trend of biodiversity to appropriate publics in proper ways should be emphasized and consequent shared actions should be set and implemented.



Photo MATTM-Panda Photo (V- Loi - S. Pisano)



## The necessity to adopt an institutional and participative approach

Preparing, updating and implementing national biodiversity strategy require a multi-disciplinary approach involving strong cooperation between political decision-makers, administrations, agencies, academic world and stakeholders to thereby achieve social, cultural and economic objective that reciprocally contribute towards improving the quality of life of citizens over the next few years and for generations to come.

In order to achieve these objectives Italy has undertaken a direction in line with the federalism process underway, whereby Regional councils are responsible for governing their territories and the State is responsible for Biodiversity. The State-Regions Conference is the institutional office in which the National Biodiversity Strategy will be approved by 2009 and officially presented during the First National Biodiversity Conference, an important opportunity to raise awareness of the year 2010 – The World Biodiversity Year. There is a strong awareness of the fact that training, information, communication and sensitizing public opinion are essential ways to involve

local communities and all stakeholders in programmes and political actions. Citizens should be informed of what Biodiversity is and how ecosystem services at the basis of survival must no longer be threatened by human actions. In order to implement a virtuous mechanisms to involve all citizens and make them conscious participants in national commitment to conserving Biodiversity, a substantial part of National Strategy shall be based on including Biodiversity-related topics in wide-scale training, information and communication programmes.



Photo R. Frondoni



Photo M. Azzella



Photo S. Burrascano



Photo L. Rosati







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