MINISTRY OF THE ENVIRONMENT

NATURE CONSERVATION SERVICE

Italian
National Report on the Implementation Status
of the
Convention on Biological Diversity

1998

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Edited by ENEA - Environment Department

CONTENTS

A. Introduction

The Convention on Biodiversity, signed in Rio de Janeiro in June 1992, was ratified Italy under Law n. 124 of 14 February 1994.

The Ministry of the Environment, Nature Conservation Service (responsible for the implementation of the Convention on Biodiversity in Italy), drew up the *Strategic guidelines and preliminary programme for the implementation of the Convention on Biodiversity in Italy,* approved by the Inter-Ministry Committee for Economic Planning (CIPE) in the session of 14 March 1994.

This document identifies the guidelines for drawing up the *National Biodiversity Plan*, pursuant to Art. 6, para. *a)*, of the above-mentioned Convention, which calls upon each contracting party to "*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 this Convention relevant to the Contracting Party concerned*".

The following activities are called for in the *strategic guidelines*:

- Knowledge about the Italian biodiversity resources by setting up a national information network;
- Monitoring the biodiversity status by setting up an "Observatory" at the Ministry of the Environment;
- Education and public awareness on the topic of biodiversity;
- *In situ* conservation, through the completion of the National System of Protected Areas and identification of protective measures also outside of the latter;
- Promotion of sustainable activities in protected and non-protected areas;
- Containment of risk factors (in accordance with Community strategies);
- *Ex situ* conservation and creation of an integrated network of conservation centres;
- Regulation and control of biotechnologies;
- International co-operation (in particular with the developing countries) for the conservation and sustainable use of biodiversity.

In relation to these activities, this report describes the actions undertaken, with reference to the goals identified by the strategic guidelines, distinguishing between medium and long-term measures.

B. Activities

1. Knowledge of the Italian biodiversity resources.

1.1. Fauna resources

Italy has one of the richest biodiversity resources in the Mediterranean basin. Through joint action with the scientific community, a complete catalogue of the animal species present in Italy has been drawn up.

Italian fauna consists of 57,344 species, with 56,168 invertebrates and 1,176 vertebrates, of which 5 agnata, 73 cartilaginous fish, 489 bony fish, 38 amphibians, 58 reptiles, 473 birds, 118 mammals.

The figures referring to some groups of invertebrate animals show that Italy has 2,139 species of Mollusca, 1,149 of Anellida, 4,573 of Arachnida, 3,236 of Crustacea and 37,315 species of insects (including 11,989 Coleoptera, 6,615 Diptera, 5,083 Lepidoptera, 7,526 Hymenoptera).

As a whole, though with considerable differences from group to group, Italian fauna represents over one third of all European fauna.

In some important groups such as Orthoptera and Coleoptera, Carabyds and Curculionyds, the endemic component reaches the significant level of 25-30%.

Acquisition of knowledge provides the first check-list of Italian fauna. To draw up this list the Ministry of the Environment has employed about 250 specialists from 14 different countries, who have produced material on about 50,000 species. This check - list provides a complete and updated inventory of Italian fauna.

The list is divided into sections showing:

a) The list of the species identified by a number code referring to the section, genus and species;

b) The ascertained geographical distribution limited to Italian territory in the geographical and administrative sense (Northern, South-Central and the Islands);

c) The endemic and should the case be, risk status of the species.

Italian regulations (Law n. 157/92) and Community and international conventions (Bern, Bonn, Paris, Washington) protect about 690 specie at different levels.

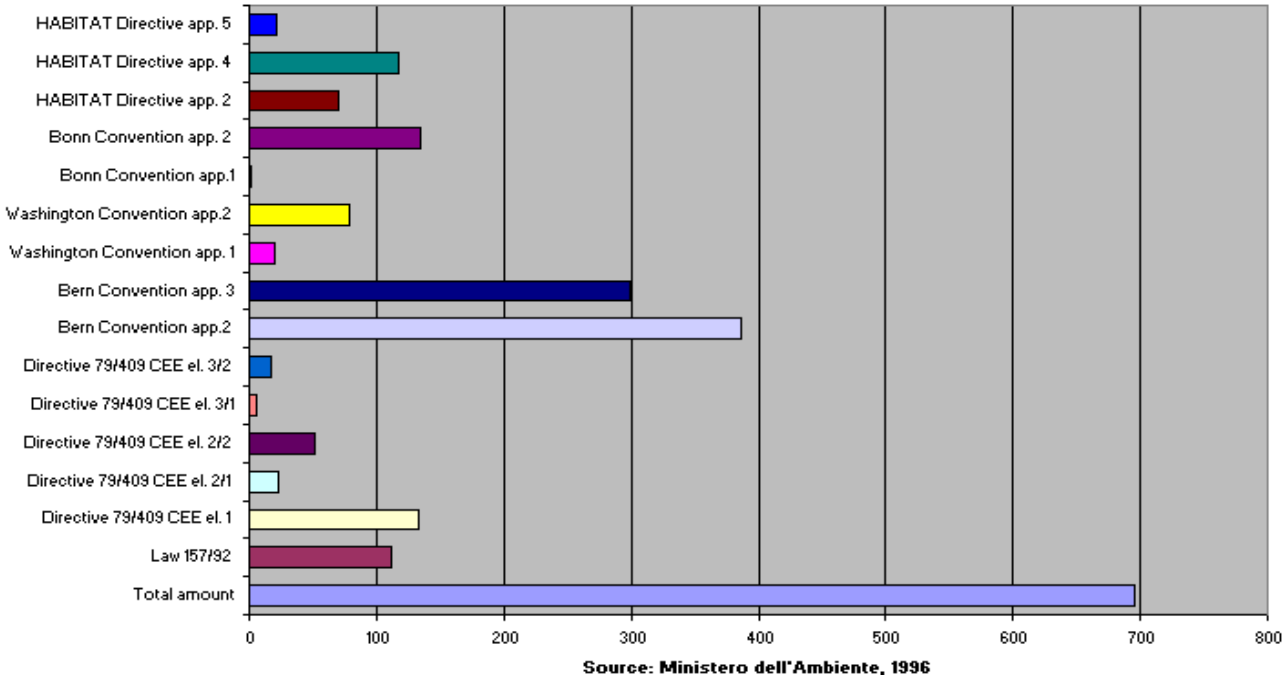
Among the endangered species there is less protection for invertebrate fauna (see Fig.1, Tab. 1 and 2).

Law 157/92, which regulates hunting in Italy while also protecting omothermic fauna, introduced a number of innovations for the protection and management of wildlife resources. The latter are now considered to be a *non-alienable patrimony of the State and are protected in the interests of the national and international community.* The regional authorities are delegated to issue regulations on the management and protection of all wildlife species. Since the law has come into force, many animals available for hunting under the old law (Law n. 968 of 27/12/77) are now protected by criminal law penalties against killing, capturing or selling them. Any form of bird traps, the capture of birds and mammals and the removal of eggs and young is prohibited throughout Italy. Hunting is prohibited in protected areas.

Law 157/92 states that Italian agricultural, forest and pasture land is subject to wildlife hunting planning.

It likewise states that 20 to 30% of all Italian agricultural, forest and pasture land should be devoted to fauna protection.

Fig. 1: Vertebrate animal species protected by Laws, Conventions and Directives



Source: Ministero dell'Ambiente, 1996

Tab. 1: PROTECTED FAUNA SPECIES (31/12/95)

SPECIES	NUMBER OF SPECIES	NUMBER OF PROTECTED SPECIES
INVERTEBRATES		
Echinoderms	118	1
Coelentarata	461	1
Anellids	1149	1
Molluscs	2139	8
Crustaceans	3236	3
Insects	37315	40
Aracnids	4573	0
Ohter groups	7177	0
Total	56168	54
VERTEBRATES		
Agnatha	5	4
Chondroychtes	73	0
Osteoycthes	489	35
Amphibians	38	38
Reptiles	58	58
Birds	473	468
Mammals	118	93
Total	1254	696
Overall total	57422	750

Source: Ministry of the Environment, 1996

Tab. 2: MENACED INVERTEBRATE SPECIES

SPECIES	N.	%
rare	638	26,20
endemic	620	25,46
rare, endemic	252	10,35
very rare	211	8,67
very rare, endemic, vulnerable	107	4,39
menaced	95	3,90
rare, vulnerable	92	3,78
endemic, menaced	72	2,96
very rare, endemic	63	2,59
vulnerable	61	2,51
rare, menaced	57	2,34
partially menaced	52	2,14
endemic, vulnerable	33	1,36
very rare, endemic, menaced	22	0,90
rare, endemic, vulnerable	18	0,74
very rare, vulnerable	17	0,70
very rare, menaced	15	0,62
rare, endemic, menaced	6	0,25
extinct	4	0,16
Total	2435	100,00

Source: Institute of Entomology – University of Parma, 1992

1.2. Flora resources

With regard to flora resources, we can recall that a *Red List* (WWF - Italia Nostra) has been drawn up in which 8.2% of all the Italian flora species (about 450) have been surveyed and described; they are categorised on the basis of the criteria adopted by the World Conservation Union (IUCN) with 14 extinct species, 97 endangered, 186 vulnerable and 166 rare species.

The *Red List* also contains the list of Lichens, of which 276 species are endangered, (that is to say 9% of the total), and the list of the Bryophyta, of which there are 185 species of moss listed, i.e. 23% of the total, and 92 specie of Hepaticae, i.e. 34% of the total.

Conservation instruments derive from the implementation of the following international conventions and Community directives:

- The Washington Convention on the international trade of endangered species of wild flora and fauna (CITES);
- The Bern Convention on wildlife in Europe;
- The “Habitat” Directive 92/43/EEC.

CITES calls for the protection of 90 species of plants present in Italian territory; the “Habitat” Directive protects 22 while the Bern Convention protects 75.

Other conservation instruments are to be found in local legislation.

1.3 Forestry resources

Our country has very rich plant and forestry resources, often with widely differing characteristics. The Italian peninsula is a bridge between various Central European habitats, including the continental type, with Mediterranean habitats.

This diversification can be seen in forestry resources with the shift from resinous and Alpine forests typical of Central and Northern Europe, to mixed broadleaf woods and Mediterranean woods and vegetation typical of warm, arid climates such as those found in the North African countries.

Italy have about 9 million of hectares of “poor woods”, with a woody coefficient (forestry surface related to the whole national surface) of about 30%, not very long by the EU mean (33,9%).

Italian woods, by the point of view of management, can be classified as follow:

- high forests (28%);
- coppices (42%);
- Mediterranean scrub (23%);
- woody plantations (7%).

There are also about 50 mountain sites with ancient woods and semi-natural (about 160.000 hectares).

Woods are mainly private property (more than 60%), while municipal woods cover about 27% of the whole woody surface; regional and state woods cover about 7%, woods of other bodies the remaining 6%.

With regard to the protected natural areas, they are more than 700, and their protection systems are at different levels: state, regional, local.

They occupy a surface of more than 2,500,000 hectares (8% of the national territory). 470 of them were been established by the regions, on a surface of more than 1,700,000 hectares (more than 6% of the national territory and 68% of the whole surface of the protected natural areas of the Country).

It is necessary highlight that Italian Flora is the richest in Europe: vascular plant are 5.463, 712 of which are endemic.

The present conditions of mountain areas (population exodus, increase of the costs for clearing of trees, behaviour diversification and changes of the systems utilised for energy purpose) and the deep innovations in plain and hilly agricultural activities, on the one hand have allowed the conservation of a heritage of forestry biomasse of strategic value for the future, on the other hand claim new criteria and an up-to-date forestry sensitivity.

During the last twenty years the utilisation of wood is considerably diminished, passing by 4,106,600 cubic metres of total worked wood and 7,725,300 cubic metres of utilised wood in 1969 (cut surfaces of 144.069 hectares) to 3,299,400 cubic metres of total worked wood and 7,957,400 cubic metres of total utilised wood (cut surfaces of 124.326 hectares) in 1992. Consequently, the forestry mass cumulated could be estimated in about 80 million cubic metres, that represent, at the calculated medium annual rate of cut, a strategic reserve of woody biomasse for at least 10 years.

The first National Forestry Inventory (IFN), conducted in 1985 by the State Forestry Corps in accordance with standards adopted in Europe and North America, identified forestry resources totalling 8.7 million ha (Tab.3), including both actual forests and areas with a certain amount of trees, rock and shore vegetation. On the basis of this value, the percentage of Italian territory with forest cover or forestry rate is quite significant (28%) and not very different from the Community average (33.9%).

Tab. 3

NATIONAL SURFACE ALLOTMENT ACCORDING TO THE NATIONAL FORESTRY INVENTORY (1996)

SURFACE AREAS TYPOLOGY	QUANTITY (ha x 1000)
High forest	2.178,90
Coppice	3.673,80
Specialised populations	288,90
Particular formations	2.160,90
Surfaces temporarily deprived of topsoil	99,00
Enclosed surfaces	273,60
TOTAL	**8.675,10**

Source: Ministry for Agricultural Policies, 1996

The Italian National Statistics Institute (ISTAT), on the basis of a different classification system based on 1994 values which does not consider minor forest cover estimated by the IFN at about 2 million hectares, has recorded a value of over 6.7 million ha, distributed by altitude categories as shown in Table 4.

Tab. 4

FORESTRY SURFACE SHARED OUT IN ALTIMETRICAL ZONES (1996)

YEAR	SURFACE QUANTITY (HA X 1000)				% on territorial surface
	mountain	hill	plan	total	
1990	4.048,1	2.376,4	335,6	6.760,1	22,4
1991	4.049,9	2.378,2	335,8	6.763,9	22,4
1992	4.052,1	2.383,3	336,2	6.771,6	22,5
1993	4.052,9	2.384,9	336,5	6.774,3	22,5
1994	4.058,5	2.384,2	336,5	6779,2	22,5

Source: ISTAT, 1996

For purposes of general analysis, the following elements emerge:

- over 70% of the forests are situated in mountain and high hill areas, while less than 25% of forests are in the plains, mainly specialised poplar groves (Tab. 5);

- most of the forests consist of trees to be cut periodically, which despite the numerous conversions to tall varieties made in publicly owned areas are still typical of the Italian habitat.

In 1992, the State Forestry Corps started up a project for the creation of a first experimental prototype of the Forestry Charter, applied just to a part of the country, the Liguria region, and completed in 1995.

The main goals of the project are to draw up a map of real forest coverage and vegetation, and the economic assessment of the various functions of forestry systems.

Tab.5

WOODLAND EXTENSION REPORTED FROM THE LATEST AGRICULTURAL CENSUSES (1990)

TIPOLOGY	SURFACE QUANTITY (ha x 1000)		
	1970	1982	1990
Woods	5.260,3	5.637,6	5.510,0
Poplar Woods	25,3	136,6	105,6
TOTAL	**5.285,6**	**5.774,2**	**5.615,6**

Source: ISTAT – IV General Agricultural Census, 1990

To achieve these goals, it was necessary to set up a Forestry Geographical System designed to collect and process geographical data on the various ecological and environmental aspects.

In particular, the Information System has correlated and processed basic geographical data regarding: climate; lithology; morphology; topography; hydrography; pedology; vegetation; natural habitats.

These basic data, together with the information deriving from the National Forestry Inventory, detailed survey campaigns and the use of remote sensing instruments, such as Landsat TM satellite images and infrared and false colour aerial photography, have led to the creation of the *Forestry Map*, with a legend stratifying the country according to various hierarchical levels, such as forestry formation, density and structure.

To create this Map, an expert system designed to optimise satellite information has also been created.

The detailed survey campaigns consisted in the creation of a Multi-Resource Forestry Inventory, consisting of data on 3,064 sample areas, on a kilometric grid.

In the context of this inventory, data regarding forestry, ecological, flora, pedology, plant health and biomass factors has been acquired.

All this information, input in the Information System, has been used for the development of analytical models which contributed to establishing the geographical framework for the *Liguria prototype*.

These modules especially concerned: plant health status; forest-atmosphere relationship; fire risk; hydrogeological protection; habitat and wildlife; forest evolution trends; forestry goals.

The processed geographical data, together with socio-economic surveys, have been used to define the economic values of the forest.

Therefore, the project consists of the above-mentioned modules for physical and geographical analysis and the following economic modules: value of underbrush; value of protective function; tourism and recreational value; ecological and conservation value.

Objective 1.1	Arrangement of available knowledge.
Objective 1.2	Completion of the knowledge by:
	- starting up a programme for the completion of the investigation and studies in the protected areas by the involvement of institutions, park authorities and NGO's.
	- the preparation of a methodology and programmes for the completion of the data outside the protected areas.

2. Monitoring of the status of biodiversity.

2.1 Nature Map

In order to ensure the conservation and the improvement of natural and local resources, the Italian government has issued a specific instrument: the “Framework Law for protected natural areas” (Law n. 394/91), which sets forth procedures and responsibilities for the setting up and management of protected natural areas.

In Art. 3 the law calls for the creation of an instrument to define the basic outlines for land management with reference to natural and environmental resources, highlighting geographical vulnerability factors: the *Nature Map.*

This instrument is conceived as the product of an information system designed to:

- supply an overall assessment, representative and updated, of the entire natural heritage on a *national scale*, both of the protected areas listed in the *Register of protected areas*, and of the areas to be set up, listed in the *List of protected areas*, as well as the *natural resources;*

- provide support to the identification and assessment of *Areas subject to natural and environmental decline* and *Areas characterised by immediate or imminent vulnerability;*

- represent, through the processing of data and information, the information base for the *Annual Report to Parliament on the Status of Implementation of Framework Law 394/91* drawn up by the Ministry of the Environment.

After preliminary research and experimental activity a practical course of action has been defined, the first stages of which led to the identification of 48 major systems present in Italy, called landscape systems. The main natural habitats within these systems have been described (with mapping on scale 1:50.000) through the use of the manual *Corine Biotopes* published by the European community (Fig.2).

The two basic aspects summing up the characteristics and scopes of the *Nature Map* are the natural value of the environment and environmental vulnerability profiles.

The Map, conceived as an integrated system of knowledge, will be carried out at appropriate scale, as a first step for 1 million hectares (December 1998), and as second step for the remained 6 million hectares (1999). This instrument, that will cover ¼ of the national territory with bigger naturalistic value, allows to know and up-to-date the ecological-environmental quality and vulnerability of the main homogeneous systems (Alps, Apennines, Padana Plan, large and minor islands). The remaining part of the territory will be ultimate to the same scale. The systemic characteristic of the Map consist in the characterisation of the significant areas and of their biotic connections (ecological corridors). The Map will be the main instrument for the knowledge of the natural heritage and of the biodiversity of the Country, and will comprise and complete all others instruments of knowledge in this sector (Nature 2000 Network, biodiversity monitoring system, etc.). The Map will be also utilised for the realisation of the national system of natural protected areas (*in situ* conservation).

To identify a methodology for the comprehension of the evolutionary trends in a specific environment as defined by the relationships of its individual structural factors (climate, soil, flora, fauna), a pilot project has been set up on the island of Salina, (Aeolean Archipelago). The project studies the interaction between natural and environmental factors and human activity.

Both these aspects have been mapped, through the processing of sets of indicators deemed to be important for the features being investigated.

After identifying all the individual environmental units, using the *Corine Biotopes* manual for their description, information sheets were drawn up with the attribution of values to the individual characteristics studied.

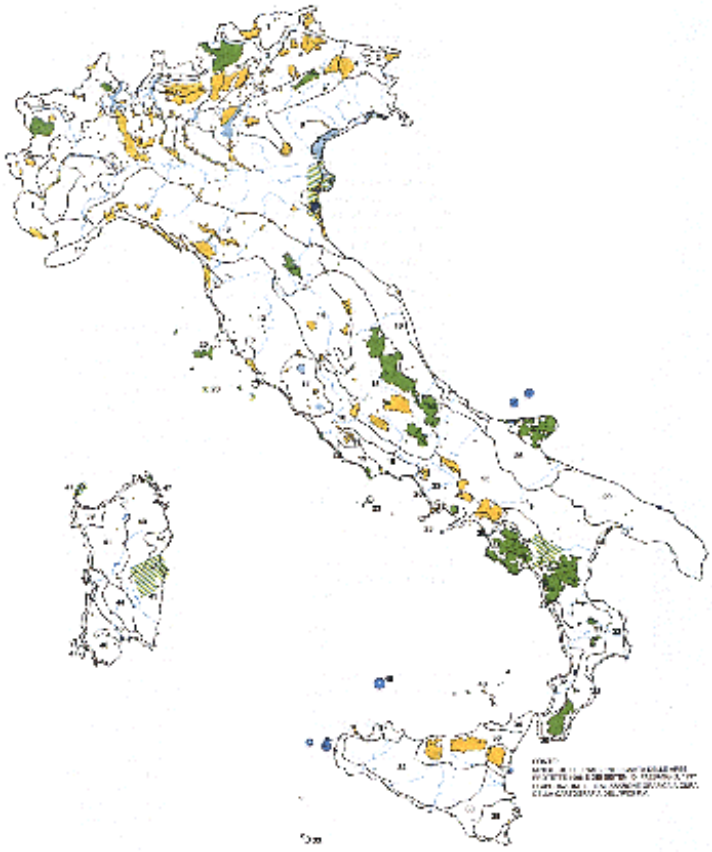
Mapping was then completed for the identification of the natural and environmental quality and the sensitivity and vulnerability of the natural environments.

The preliminary and final mapping are defined as:

- Ecological sensitivity map;
- Map of the ecological – environmental importance;
- Map of the natural and environmental value;

Landscape System Ripartition

1 Alpico
2 Valli del pino silvestre
3 Dolomitico
4 Carnico
5 Insubrico
6 Prealpino
7 Carsico
8 Padano
9 Langhe e Monferrato
10 Lagunare
11 Ligure
12 Appennino settentrionale
13 Toscano
14 Umbro
15 Appennino centrale
16 Colline Marchigiano-Abruzzesi
17 Tuscia
18 Campagna romana
19 Agro pontino
20 Litorale tirrenico
21 Litorale adriatico
22 Campano
23 Vulcani della Campania
24 Appennino meridionale
25 Sannitico-Lucano
26 Tavoliere delle Puglie
27 Garganico
28 Piane e conche campane
29 Murge e Salento
30 Costiero ionico
31 Calabro montano
32 Colline interne calabro-siciliane
33 Coste calabro-siciliane
34 Monti Peloritani
35 Etneo
36 Monti Nebrodi
37 Coste della Sicilia NW
38 Monte Iblei
39 Colline e pianure calcaree della Sassarese
40 Granitico sardo
41 Tavolati basaltici e trachitici della Sardegna
42 Monti calcareo-dolomitici sardi
43 Monti e colline della Sardegna SE
44 Colline mioceniche e giare basaltiche sarde
45 Pianura alluvionale del Campidano
46 Monti della Sardegna SW
47 Paesaggio costiero sardo
48 Isole vulcaniche Siciliane



Protected Areas and Landscape System map

1:5.000.000

Parchi nazionali istituiti
Parchi nazionali in corso di perimetrazione
Riserve naturali statali terrestri
Riserve naturali statali marine
Parchi interregionali
Parchi e Riserve naturali regionali
Zone umide di importanza internazionale
Altre aree naturali protette
Aree di estensione inferiore ai 1.500 ettari

- Map of structural decline;
- Map of anthropic impact;
- Vulnerability map.

A methodological prototype on the regional scale is currently being set up.

2.2. Bioitaly Project

The methodology described above for the *Nature Map* has also proved compatible for implementing the *Bioitaly Project* which, in implementation of Community Directive 92/43 ("Habitat"), has tried to identify the areas of Italy to be included in *Nature 2000*, the ecological network of the EU member states.

The project is the instrument for co-ordination, verification and integration of the many initiatives started at national level for the implementation of Community directives, regional or national laws, and international conventions for the identification, restoration and conservation of areas variously defined as being of conservation interest.

The Bioitaly project has the following aims:

- identification and definition in Italy of the Sites of Community Importance (SIC) according to the annexes to Directive 92/43, with reference to the information requested in the standard EU form *Nature 2000 Network*;
- completion of the information on the sites from both the administrative and ecological viewpoint, and integration of the list of sites with the identification of habitats and species.

The project has led to the completion of the information on the sites (by the filling in of a standard form, the Bioitaly form) in relation to the administrative and ecological aspects. Bioitaly has also created an integration of the list of sites with habitats and species which, though not shown in the annexes to the Habitat Directive, are in any case considered to be of ecological interest at national level.

In June 1995, with reference to the first deadline set by the directive, the Ministry of the Environment transmitted to the European Union an initial list of Sites of Community Importance for Italy (about 2,800 sites).

The extreme exiguousness of the number of the marine habitats foreseen for the Mediterranean by EU Directive 92/43/CEE, is one of the most worrying aspects, because of only the habitats established by this Directive could be protected and to take on notable naturalistic value in every type of impact assessment evaluation.

The list of sites and the related information (ecological and mapping) were supplied to the Ministry by the Regions and Autonomous Provinces, with the support of the major scientific associations and institutions (Tab. 6).

The list of sites subsequently updated by the Regions has been reduced to 2,316 sites, of which 1,020 are outside protected areas.

Tab 6

EXPECIALLY PROTECTED AREAS IN ITALY

Region/Province	Expecially protected area
PIEMONTE	
Novara	R. N. Monte Mottac e Val Grande
Torino/Aosta	P. N. del Gran Paradiso
LOMBARDIA	
Mantova	R. N. del Bosco Fontana
Mantova/Brescia	Valli del Mincio, Paludi di Ostiglia, Torbiere d'Iseo, Palude Brabbia
Sondrio/Bergamo/Brescia	P. N. dello Stelvio
Sondrio/Como	Lago di Mezzola e Pian di Spagna
TRENTINO	
Trento	Lago di Tovel
VENETO	
Belluno	R.N. delle Dolomiti Bellunesi, Vinchieto di Cellarda
Venezia	R. N. Bosco Nordio, Valle Averto
FRIULI VENEZIA GIULIA	
Udine	Valle Cavanata, Marano Lagunare e Foci dello Stella
EMILIA ROMAGNA	
Ferrara	R. N. Bassa dei Frassini, Balanzetta e Bosco della Mesola; R. N. Dune e isole della Sacca di Gorino; R. N. Po di Volano, Valle Santa e Valle di Campotto
Ferrara/Ravenna	R. N. Sacca di Bellocchio, Foce Fiume Reno, Valle Gorino and neighbouring areas, Valle Bertuzzi and neighbouring sheets of water, residual valleys including Comacchio, Fattibello, Fossa di Porto, Ortazzo and neighbouring areas, Piallassa della Baiona and neighbouring areas
Forlì	R. N. di sasso Fratino
Ravenna	R. N. Salina di Cervia; R. N. Torrente Bevano Punte Alberete e Valle della Canna
TOSCANA	
Arezzo/Forlì	R. N. di Camaldoli, Scodella, Campigna Badia Prataglia
Grosseto	R. N. Foreste di protezione Duna, Feniglia, Laguna di Orbetello, Lago di Burano and neighbouring areas, R. N. integrale Poggio Tre Cancelli, Palude di Diaccia Botrona
Livorno	R. N. Isola di Montecristo, Stagno di Bolgheri and neighbouring areas, R. N. Biogenetica Tombolo di Cecina

Livorno/Grosseto	Isola di Capraia
Lucca	R. N. Orrido di Botri
Pisa	R. N. Biogenetica Montefalcona
Lucca	Lago e palude di Massacciuccoli
Pistoia	R. N. Orientata Campolino; R. N. Abetone; R. N. Pian degli Ontani
UMBRIA	
Perugia	Palude di colfiorito
LAZIO	
Latina	P. N. del Circeo
Roma	Oasi di Nazzano
Region/Province	Expecially protected area
Viterbo	R. N. Saline di Tarquinia
CAMPANIA	
Salerno	R. N. Orientata Valle delle Ferriere, Gole del Fiume Calore
ABRUZZO	
L'Aquila	R. N. di Monte Velino
L'Aquila/Isernia/Frosinone	P. N. d'Abruzzo, R. N. Colle di Licco e Feudo Intramonti
Pescara/L'Aquila	R. N. Orientata di Monte Rotondo
Pescara/L'Aquila/Chieti	R. N. della Maiella enclosed the R. N. Quarto S. Chiara
MOLISE	
Isernia	R. N. Orientata Comelluccio and R. N. Biogenetica Comelluccio, R. N. Orientata Montedimezzo
PUGLIA	
Brindisi	Torre Guaceto and neighbouring areas and opposite sea
Foggia	R. N. Biogenetica Foresta Umbra, R. N. Biogenetica Ischitella e Carpino, R. N. Biogenetica Monte Barone, R. N. Orientata Falascone, R. N. Integrale Sfilzi, R. N. Lago di Lesina, R. N. Palude di Frattarolo, R. N. Salina di Margherita di Savoia
Lecce	R. N. Le Cesine
BASILICATA	
Potenza	R. N. Orientata Rubbio
CALABRIA	
Cosenza	R. N. Gole di Taganello, R. N. del Fiume Lao, R.N. Valle del Fiume Argentino
Catanzaro/Cosenza/Reggio Calabria	P. N. della Calabria
SICILIA	
Siracusa	R. N. Pantani di Vendicari

Trapani	Zona di Campo Feto
SARDEGNA	
Cagliari	Stagno di Montelargius and neighbouring areas, Stagno di Cagliari, Foresta di Monte Arcosu
Oristano	Stagno di S. Ena Arrubbia and neighbouring areas, Stagno di Cabras, Stagno di Corru s'Ittiri, Stagno di Pauli maiori, Stagno di Sale Porcus, Stagno di Mistras

Source: Ministry of the Environment, 1996

Objective 2.1	Monitoring the status of biodiversity identifying a system of indicators by the: - setting up of an "Observatory" on Biodiversity; - setting up an integrated monitoring network referring to the "Observatory".

3. Education and public awareness

Information and knowledge are the basic instruments for providing incentives and support, with the widest possible consensus, to sometimes radical changes in individual and collective behaviour in use and management of natural resources. These have an important role in combining development and environmental protection, as stated in *Agenda 21.*

3.1. Training

With regard to the initiatives promoted by the Ministry of the Environment, a publication entitled "Biodiversity and Protection of Nature" containing a map of the protected areas was published in the 1994-95 school year and distributed to about 15,000 first and second level schools.

This publication is a response to the commitment contained in the Convention on Biodiversity and is a didactic initiative for the non-specialist reader, mainly for schools, and aimed at stimulating knowledge of aspects of the conservation of the natural resources and sustainable development in the new generations.

In the implementation of Framework Law 394/91, 18 projects on environmental education in protected areas have been promoted (Tab.7), with various interventions falling into four basic categories:

a. The organisation of guided tours, production of informative material on the areas visited and update courses to prepare the teachers of the schools involved for these visits;

b. Expansion of the facilities usable for courses and lessons aimed at the improvement and enjoyment of the protected areas;

c. Production of didactic material;

d. Conducting information and introductory vocational training courses on topics regarding the management of protected areas.

Tab.7

ENVIRONMENTAL EDUCATION PROJECTS
(Law 349/91 art. 4 comma B)

RESPONSIBLE SUBJECT	INTERESTED PARKS	CONTENTS
ACLI ANNI VERDI	P. N. d'Abruzzo, P. N. del Gran Sasso – Monti della Laga	Guided visits to National Parks for Rome and province high and junior high school pupils
AGRITURIST	P.N. del Gargano, P. N. del Circeo, P. N. d'Abruzzo, P. Reg.le Maremma, Oasi di Pian S. Angelo, Oasi di Ninfa	Activities finalised to natural and rural heritage, knowledge and exploitation, particularly directed to young people formation
AMICI DELLA TERRA	P. Reg.le dei Colli Euganei	Butterfly house. Environmental education for elementary and high school pupils
AZIENDA REGIONALE FORESTE DEL VENETO	P. Reg.le del Cansiglio	Environmental formation and education
CONSORZIO REGIONALE ALPI APUANE	P. Reg.le delle Alpi Apuane	Educational expositive system near Alpi Apuane Park
COOP. SILVA	P. N. del Pollino	Education to Nature
CTS	P. N. del Circeo, P. N. d'Abruzzo	Guided visits programme

ECES-EUROPEAN CENTER OF ENVIRONMENTAL STUDIES	P. N. del Gran Paradiso	Wide open eyes nature
ISTITUTO ITALIANO PER LA QUALITA' DEL VIVERE	P. N. del Pollino	Construction and management of an ecological yard on Pollino's National Park
ISTITUTO PANGEA	P. N. del Circeo	PICO project. Information Parks – Occupation Agreement
ITALIA NOSTRA	Riserva Naturale del Litorale Romano	The roman coastal Park: environmental good for the city
LEGA AMBIENTE LIPU	P. N. dei Monti Sibillini, Oasi di Fove Isonzo, Crava Morozzo, Torrile, Carloforte, Massaciuccoli, Boscoforte, Gaggio, Isola Boscone, Bosco Negri, Campocatino	Protected areas and biodiversity. Italian biodiversity and protected areas function for conservation
MAREVIVO	P. N. dell'Arcipelago Toscano	Blueweek Program
PARCO NAZIONALE DEL CIRCEO	P. N. del Circeo	The park's wings
SITE – SOCIETA' ITALIANA DI ECOLOGIA SOCIETA' GEOGRAFICA ITALIANA	P. Reg.le della Val Braganza	Construction and management of a river park. Searching for life
WWF ITALIA	Parchi Nazionali, Oasi del WWF	Environmental education to promote Nationals Parks.

Source: Ministry of the Environment, 1996

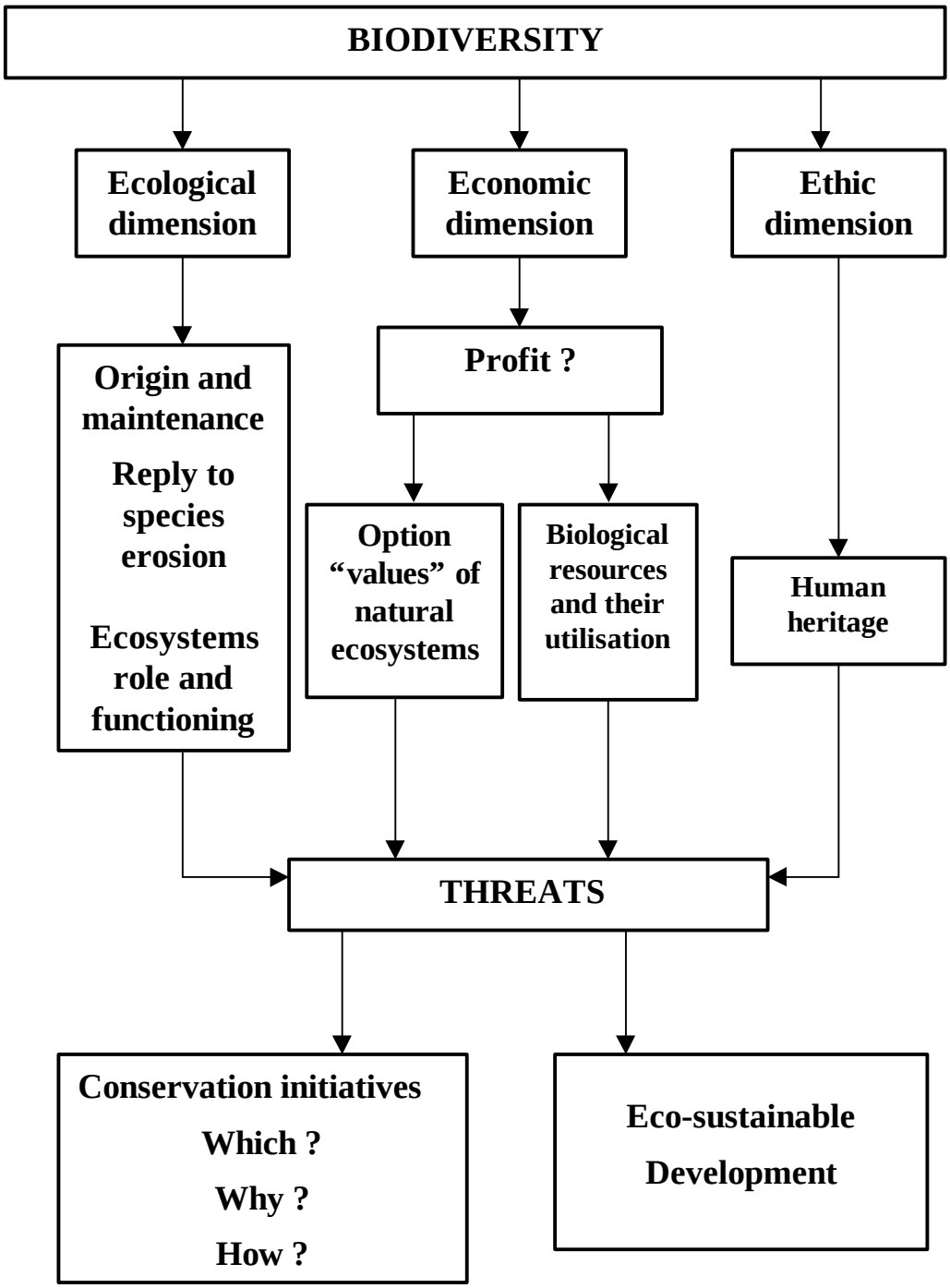
3.2 Education

The main purpose of the environmental education programme undertaken by the Italian Authorities has been to provide knowledge on the interdependence between ecology and the economy, and the relationship between biological, physical, anthropological, scientific, technological, social, and cultural problems (see Fig. 3)

Co-operation between the Ministry of the Environment, the Ministry of Education and the National Research Council (CNR) led to the setting up of the National Archive on Documentation and Research for environmental education (ANDREA) which in the current version contains data on 83 organisations which have produced 420 items (books, videocassettes, multimedia etc...), information sheets on 107 initiatives and projects now under way and 8 information sheets on finished projects. The material is stored at the Department of Psycopaedagogy of the CNR in Rome. Database updating is organised through a system of decentralised documentation at the local laboratories.

Objective 3.1	Inclusion of the topic of biodiversity (knowledge, importance, conservation etc.) in school curricula. This objective will be easier to achieve if better related to local environmental and cultural situations.
Objective 3.2	Training of technicians specialised in conservation and the sustainable use of biodiversity in Italy and abroad.
Objective 3.3	Providing information to the various components of society on the importance of biodiversity in order to change consumption and behaviour: Action 3.3.1: Bolstering the information campaign on protected areas; Action 3.3.2: Creating new information campaigns throughout the Country on biodiversity-related topics, with the help of NGOs and local organisations.

Fig. 3


BIODIVERSITY
Ecological dimension
Economic dimension
Ethic dimension
Origin and maintenance
Reply to species erosion
Ecosystems role and functioning
Profit ?
Option "values" of natural ecosystems
Biological resources and their utilisation
Human heritage
THREATS
Conservation initiatives
Which ?
Why ?
How ?
Eco-sustainable Development

4. *In situ* conservation (protected areas, unprotected areas, environmental recovery).

The models for the management and sustainable use of biodiversity are of major importance for the conservation of biological resources.

Art. 2 of the Convention on Biodiversity (use of terms) defines the expression "*protected area*" as "*a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives*".

In Italy, Framework Law n. 394/91 on protected areas, previously mentioned, identifies three types of protected areas:

National Parks: consisting of land, river, lake or marine areas containing one or more ecosystems which are intact or partially altered by human intervention;

Regional Nature Parks: these have the same characteristics as the national parks, which within one or more adjacent regions form a homogeneous system defined by the local natural, landscape and artistic resources and the cultural traditions of the local population;

Nature reserves: consisting of land, river, lake or marine areas containing one or more important species of flora and fauna, or having one or more ecosystems significant from the viewpoint of biological diversity or for the conservation of genetic resources.

Law 394/91 also calls for the setting up of the Official List of protected areas (the first list was approved on 21 December 1993). With the Resolution dated 2 December 1996, the Committee for Protected Areas approved the second official list of protected areas (data summarised in Tab.8 and following).

The summary contains the classification of the protected areas, classified as:

a. National Park;

b. State Nature Reserve;

c. Inter-Regional Nature Park;

d. Regional Nature Park;

e. Regional Nature Reserve;

f. Marine protected areas;

g. Marsh areas of international importance pursuant to the Ramsar Convention;

h. Other protected natural areas.

The latter category includes all the protected areas having a classification which, under the law setting them up, does not come within the other categories. In this regard two sub-classes have been created, with further publicly managed protected areas set up under regional laws or equivalent measures. This sub-class includes biological habitats, natural monuments, area systems, equipped areas, suburban and urban parks. Finally, there are other nature reserves in Italy managed by private parties.

The second *3-year Plan for Protected Areas* includes regulations aimed at:

- the official definition – using standard criteria - of the national system of protected natural areas;

- promotion of a more effective nature conservation policy designed to implement a rigorous policy of social and economic promotion for the populations concerned in all the zones with protected areas;

- sharing of the financial resources and procedures for the their use.

The objectives and actions stated are based on Government legislation and specifically reflect the Italian situation.

With the second “3-Year Programme” Italy has allocated funds for the environmental resource protection policy totalling 154,616 billion lire (85 billion in the previous 3-Year Programme) (Tab. 9 and 10).

Tab.9

FINANCIAL RESOURCES AWARDED WITH TRIENNAL PLAN FOR PROTECTED AREAS (1991-1993)

ASSIGNED LOANS	QUANTITY (Million of liras)
	NATIONAL PARKS
Abruzzo	4.000,00
Arcipelago Toscano	1.505,60
Aspromonte	5.999,30
Cilento	27.707,20
Circeo	2.000,00
Dolomiti Bellunesi	2.185,30
Foreste Casentinesi	2.622,80
Gargano	16.561,00
Gran Paradiso	2.000,00
Gran Sasso	15.233,30
Maiella	7.813,90
Monti Sibillini	4.777,40
Pollino	14.174,80
Stelvio	3.000,00
Val Grande	2.457,10
Vesuvio	2.732,30
Total National Parks	**114.770,00**
	MARINE RESERVES
Capo Rizzuto	1.000,00
Isole Ciclopi	
Isole Egadi	
Isole Tremiti	4.034,00
Miramare	2.000,00
Torre Guaceto	1.300,00
Ustica	1.666,00
Total	**10.000,00**
REGIONAL PARKS	
Piemonte	14.347,00
Val d’Aosta	1.340,00
Lombardia	13.560,00
Prov. Aut. Bolzano	901,00
Prov. Aut. Trento	2.481,00
Veneto	3.950,00
Friuli Venezia Giulia	774,00

Liguria	1.102,00
Emilia Romagna	6.868,00
Toscana	5.074,00
Umbria	757,00
Marche	1.163,00
Lazio	7.675,00
Abruzzo	4.614,00
Molise	677,00
Campania	1.134,00
Puglia	1.130,00
Basilicata	891,00
Calabria	1.007,00
Sicilia	14.552,00
Sardegna	1.003,00
Total	**85.000,00**

Source: Ministry of the Environment, 1996

Tab. 10

SECOND TRIENNIAL PLAN FOR PROTECTED AREAS 1994-1996

INVESTMENT	%	Billion of liras
Terrestrial protected areas	3,20	4,188
Marine protected areas	3,30	5,000
Protected areas of regional interest	31,00	48,784
Protected areas of national interest	56,10	86,644
Institution of new National Parks	6,40	10,000
	100	**154,616**

Source: Ministry of the Environment, 1996

Objective 4.1 Completion of the national system of protected areas

5. Promotion of sustainable activities.

With regard to the implementation principles of environmental policy, and specifically to the measures in Law n. 394/91, forms of integrated management in protected areas have been undertaken to ensure both the protection and the improvement of the ecosystems and the development of sustainable economies with a positive impact on employment.

The projects call for the involvement of the local population by launching initiatives that create sustainable employment and activities in compliance with Italian legislation on protected areas.

5.1 Intervention in protected areas of national interest

The Ministry of the Environment, by the signing of an agreement with category representatives, has identified the system of artisan and small enterprises as protagonists who should become involved, with other parties, in the search for the integration of the social and economic activities contributing to the implementation of a policy of environmental protection and improvement.

The system of artisan and small enterprises provides the optimal economic dimensions for promoting social and economic development, with particular reference to:

a) recovery, conservation and improvement of natural resources;

b) defence and growth of employment;

c) improvement of the activities related to typical products in the protected areas;

d) integration of the income and socio-economic development of the areas included in the parks.

These goals can be achieved by implementing initiatives such as:

1) Artisan and business activities related to tourist services, the creation and management of fauna reserves, the recovery of gastronomic traditions, the development of farm holidays buildings, and the revival of town centres, also for residential purposes;

2) Interventions for youth employment;

3) Vocational training, updating and qualification.

Another agreement having similar aims has been signed between the Ministry of the Environment and the national park management bodies, the mountain communities, the smallholders category association and the artisans. The initiative has the following aims:

1) Creation and management of fauna reserves, farm holidays and rural tourism, also by the recovery of farm, forest and pasture production;

2) Providing services for the management and use of the park by the planning of the forestry and agricultural activities, protection of fauna and flora, maintaining paths, services for mapping, defining and registering boundaries of the park, consultancy services for drawing up the park plan, tourist facilities, lodging and hospitality, activities of maintenance, recovery, monitoring, scientific research, surveying, fire watch, installation and signs, management stopping points, management visitor centres, forestry management and any other activities related to the social and economic development of nature parks and protected areas;

3) Services designed for the handicapped;

4) Measures for youth employment;

5) Activities of vocational training, updating and qualification.

The two agreements are mainly aimed at the growth of income of the local populations, the creation of additional employment, the creation of innovative jobs in the field of environmental

economy management, the increase of the added value of local agriculture, the definition of reference models for the management of the protected areas and the national parks.

Using the instruments provided by Italian legislation, with regard to “socially useful work”, the Ministry of the Environment has drawn up a programme of activities in the recently created national parks: Cilento and Vallo di Diano, Gargano, Gran Sasso and Monti della Laga, Maiella, Vesuvius.

About 2,300 workers benefiting from laid-off worker treatment in branches of the government administration have been assigned to the activities identified, which involve the collection of data, environmental recovery, data input and processing, monitoring and recovery of areas hit by fire, consultancy services for drawing up the park plan, the creation of documentation and information centres on the protected areas.

5.2 Implementation of regulation EEC 2078/92.

The basic objective of Regulation 2078/92 is to provide incentives for farm production methods compatible with environmental protection requirements and care for nature.

This regulation calls for contributions to farmers who, among other things, accept the following commitments:

a) use of production methods compatible with environment protection needs, care for nature and the landscape, the breeding of local animals threatened with extinction;

b) care of abandoned farmland and forests;

c) setting aside farmland for a 20-year period for use for environmental purposes, for the creation of biotope reserves or nature parks, or for the safeguarding of hydrogeological systems;

d) management of land for public access and recreational use.

The support system also includes support for actions involving training and information to persuade farmers to adopt environmentally compatible farming methods.

The agro-environmental measures can be applied throughout the territory of each Member State, through long-term zone programmes.

With regard to the national implementation status of Regulation EEC 2078/92, in April 1994 the European Union granted Italy funds totalling 641 million ECU which, considering the national co-financing percentage, implies total funds of about 2,041 billion lire.

The zone programmes drawn up by each region favour the areas with high environmental risk (Art.7 of Law n. 349/86), protection zones for the environment and for surface and groundwater (watershed basins, vulnerable groundwater etc.) and zones falling within the protected areas (parks, reserves, nature oases etc.).

In this regard we should highlight the signing of a Programme Agreement (1993) between the Ministries of the Environment and of Agricultural, Food and Forestry Resources, in which the two Ministries agreed on achieving the objectives stated by recent Community policies in the agricultural and environmental fields, ensuring that the farm enterprises included in the national park system have additional income to compensate the fall in production accruing from the use of less intensive methods or due to the undertaking of activities for the conservation of the natural resources and the landscape.

5.3 Implementation of Regulation EEC 2080/92

Regulation CEE 2080/92, which provides support for reforestation of agricultural land and for the improvement of the forest areas, calls for aid to cover 100% of the installation and maintenance expenses, as well as premiums to compensate the loss of income or to sustain improvement measures for forests already existing in the farming enterprises.

This regulation has the following aims:

a) development and improvement of forestry resources;

b) setting aside arable land for conversion to forestry;

c) containment of the greenhouse effect;

d) management of natural areas through the adoption of productions model compatible with the ecological balance, and the containment of depopulation of rural and mountain areas;

e) development of forestry activities to satisfy domestic wood demand;

f) encouragement of the development of related forestry activities.

Similarly to Regulation 2078/92, the regional authorities in this case should identify zone programmes and intervention priority.

The Commission has assigned total funding to Italy equal to 300 million ECU for the period 94/97; considering the national co-financing rates this implies total funds of about 1,000 billion lire.

With regard to the implementation status of Regulation EEC 2080/92, by April 1996 approximately 15,000 applications had been accepted by the regional authorities, 9,300 of which had already been approved for the forestation of 50.000 ha of agricultural land.

The payment of grants at the above date totalled about 62 billion lire, of which 47 billion allocated for reimbursing installation expenses, 7.3 billion for maintenance of plantations and another 7.6 billion to compensate for income losses. With regard to the improvement of existing forest areas, approximately 3.700 applications have been submitted, of which approximately 2.050 authorised, and 351 have been implemented and financed for an amount of approximately 14.6 billion lire.

Objective 5.1	Development of compatible activities inside and outside protected areas by the promotion of the traditional production activities with acknowledged compatibility and through the introduction of possible innovative elements or new activities directly related to biodiversity conservation goals.

6. Control of risk factors.

Human action generally leads to a simplification of ecological systems and a reduction of biodiversity. In the past, the measures for biodiversity conservation therefore postulated the separation of ecosystems, species and genetic resources from most human activities by the setting up of protected areas, the prohibition to collect certain species, conservation in protected areas, conservation in gene banks etc. It has been realised that it is not only unfeasible but that is often undesirable to protect all the genes, specie and ecosystems from man's influence.

Human activities are an integral part of the processes of nature. Indeed, some components of biodiversity, e.g. cultivated plants and domesticated animals, owe their extension and very existence to human influence. It is estimated that only 5% of the earth's surface, temperate and tropical, is totally uninhabited and not used.

Another factor too often underestimated is that the vast majority of land species live on land which is agricultural, forest or in any case influenced by man. Only one third of the indigenous species are found in protected areas. Similarly, biodiversity in marine and coastal areas is mainly found where fishing and other human activities take place with intensity and frequency rates similar to those on land.

It is therefore of prime importance to recall that the conservation of biodiversity basically depends on measures aimed at promoting the sustainable use of its components and managing natural resources in such a way as to minimise any negative impact on them.

These concepts can be summed up in the sentence: "safeguarding biodiversity without compromising the primary objectives of the area". **This means above all ascertaining the value and the properties of each area or system and their real capacity to tolerate a given level of use, rather then assessing the damage that any action could cause.**

Very often, these properties and capacities cannot be defined in absolute terms: they vary dynamically according to the quality of the type of management. Once these properties and capacities have been ascertained, their use must be kept within a sustainable threshold, and suitable measures should be provided in case these thresholds are exceeded.

The principle can be applied to many aspects of resource management, e.g. the volume of recreation an area can bear without damage to the biophysical resources, or the amount of water that can extracted from rivers or groundwater etc..

The premise for the definition of the environmental properties and capacity of an area is knowledge of the local area and of its resources, (this is the purpose of the "*Nature Map*") and the knowledge of the extent of the changes caused by a given action, in order to monitor the latter. The management of demand for natural resources is one of the basic measures by which society can act.

Since development can influence biodiversity, we should assess its costs and regulate the human needs with appropriate market mechanisms, with the issue of specific laws and regulations.

An incisive policy of public information is also required to provide proper orientation for consumer behaviour.

Environmental impact must be taken into account in any decision and particularly during the cost and benefits assessment stage of new projects. The activities implying "costs" to society, stemming from environmental damage or an excessive consumption of resources, should be weighed by the duty to minimise costs and/or to compensate them through environmental improvement.

Over the past ten years, a Community policy based on the creation of rules has been developed for the assessment of environmental impact, according to a concept of re-balancing the relationship between planning and the environment. The insertion of a building or other works in the landscape involves the systematic verification of the possible direct and indirect effects on environmental components and factors.

Directive 337/85 has introduced basic principles such as:

- the projects that can have a significant effect on the environment must be subjected to environmental impact assessment before the issue of authorisations integrating the existing procedures;

- environmental impact assessment must be used to identify, describe and assess the environmental effects of the work planned;

- the procedures involved must provide for an adequate process of public information and consultation;

- the training and consultation processes must be extended to all the institutions concerned and the decisions taken must be made available to the public and the authorities concerned.

In the 5-year report on the implementation of the Directive, the Services of the Commission have reported a certain amount of difficulty due to:

- the field of application for the various categories of works for which, despite the requirement to apply the procedure, criteria and size thresholds can be introduced for the selection of projects;

- contents of the environmental impact studies;

- design changes.

With regard to these factors, the EU Council adopted Directive 11/97 (amending Directive 337/85) allowing for harmonisation between the member States to link environmental impact assessment with control, integrated pollution prevention and the commitments of the European Union and the member States under the Espoo Convention (already ratified by Italy) in a cross-border context.

Objective 6.1	Adjustment of regulations on environmental impact assessment with regard to projects which may have significant negative impact on Biodiversity, also in accordance with Community directives.
Objective 6.2	Drawing up of adequate regulations and the analysis the environmental impact of programmes and of policies of sectors with negative effects on Biodiversity
Objective 6.3	Promotion of measures for emergency intervention in sectors or activities which involve serious and imminent danger for biodiversity, encouraging international co-operation in the case of cross-border impact.

7. *Ex situ* conservation

In addition to what has been stated in the section on sustainable activities, the principle of *ex situ* conservation plays an important role in overcoming particularly critical moments when the biological resources are irreversibly threatened.

In operational terms, the identification of an optimal policy in this sector is complicated by various sorts of problems.

In particular, it has been observed that the economic assessment of factors favourable and detrimental to the conservation of a species or a population can end up as a sophisticated mathematical analysis of a problem which under current conditions cannot be solved because the reference parameters are incomplete.

The current high degree of uncertainty as to the extent to which genetic resources to be preserved can actually be managed, in order to guarantee a stable ecosystem favourable to man, suggests the adoption of a conservation policy, implemented by seeking market mechanisms suited to promoting conservation, in view of the status of the option value.

More in particular, the *ex situ* conservation methods are useful for:

- accompanying *in situ* conservation when the species are seriously threatened or their numbers are low;
- providing material for identification, training and research;
- providing reserve or stock populations to be used to help the survival of the species during the stages of re-introduction and re-population, or to help the recovery and rehabilitation of the habitat;
- maintaining the existing genetic resources and developing new ones during the genetic improvement programmes;
- ensuring, through long terms stocks, material for future needs;
- providing material for the formation of environmental awareness.

These principles are accompanied by a number of different conservation strategies, classifiable according to a “biospace hierarchy of interlocking series”, that calls for five levels. These range from the whole ecosystem to individual genes, through the communities, species and populations (Fig. 4). Each of these procedures is based on the *in situ* or *ex situ* conservation of living organisms or single genes.

Combining the objectives of the conservation programmes or the resources to be protected (habitat, population, some individuals, germ plasma) with the conservation systems, we can see the functions to which the various strategies correspond.

With reference to germ plasma of farming and economic interest, strategies must be diversified according to the state of conservation or erosion, the current level of use, the intrinsic characteristics (physiology and ecology of the specie), of the level of knowledge reached in conservation techniques.

In situ conservation methodologies (and the systems classifiable as “inter-site” including “extraction reserves”) are based on the preservation of entire ecosystems hosting the genetic resources to be protected.

Ex situ conservation is identified with the gene bank and is important above all for germ plasma of farming interest or for closely related species. The off-site conservation methods have a number of disadvantages: the halting of selection processes, genetic drift and the selective pressure, which accelerate genetic erosion processes.

While the principles and strategies used as the basis for implementing the programmes for the conservation of genetic resources seem clear enough, the implementation of protection policies and the regulation of use seem to be more complex. Among the various factors affecting the application of the policies we can mention:

- the lack of uniformity in the distribution of the genetic resources among the various geopolitical areas of the world;

- the lack of reliable information on the status of genetic resources;

- the increasing importance, on the basis of the growing rate of genetic erosion, of *ex situ* conservation techniques, and in particular gene banks;

- the increase of the value of biodiversity in relation to the possible and future uses by means of advanced technologies (biotechnologies);

- the creation of new legal persons, especially regarding international relations and those between the parties involved in *in situ* and *ex situ* conservation (right of ownership).

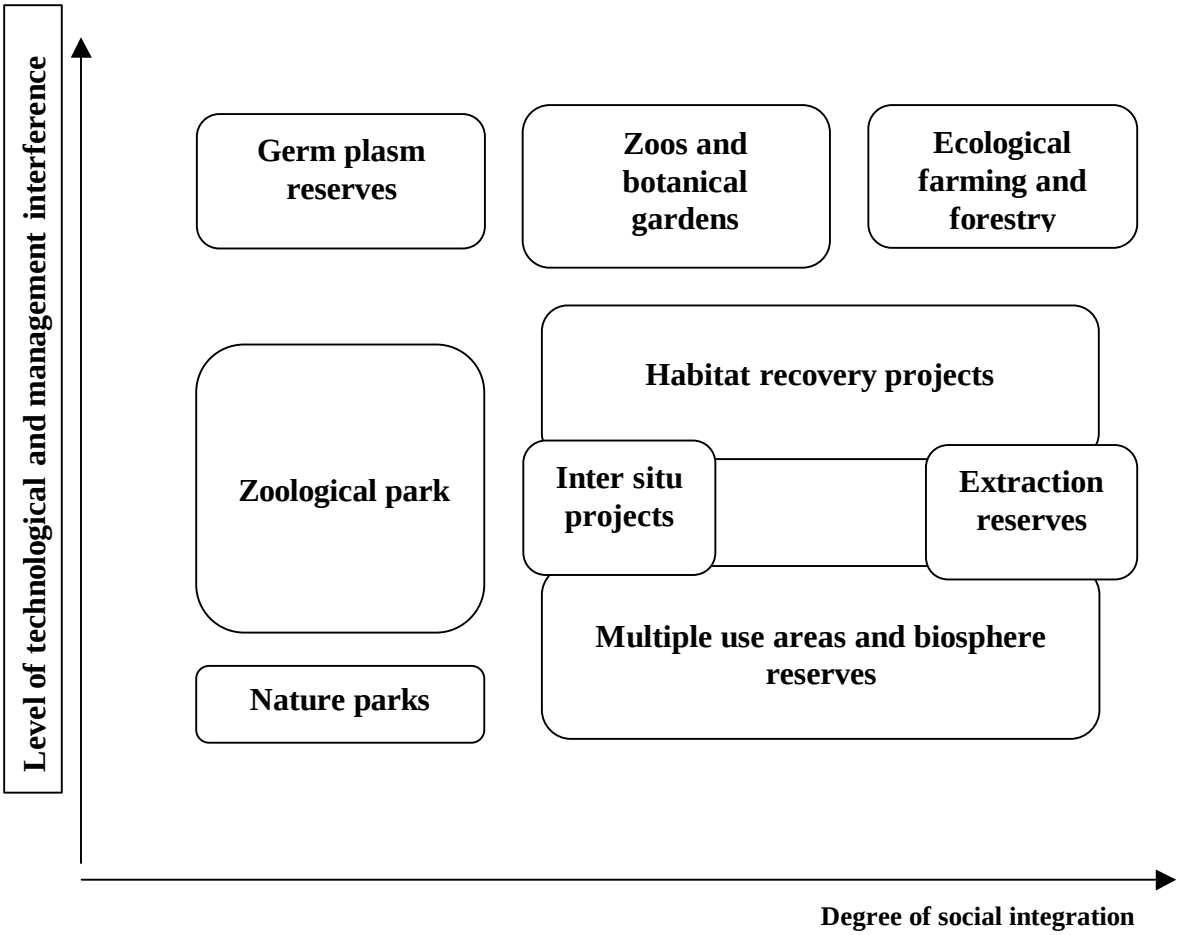


Fig. 3

Source: Soulè (1993)

Descriptive distribution of conservation strategies according the degree of social integration and to the degree of technological inputs or the intensity of monitoring. The positions in which the various methodologies are placed indicate the centre of the likely area of action of the strategy.

7.1 Plant genetic resources

Many State institutions have major collections of native or exotic species such as cereals, cultivated vegetable species, fruit trees and wild species. There follows a list of some of these institutions:

- Istituto del Germoplasma of the CNR of Bari (the only public institution specifically operating in the conservation and assessment of plant genetic resources);
- Istituto Sperimentale di Frutticoltura of Rome, co-ordinating the scientific institutions which are collaborating to set up a Centre for the conservation and the assessment of the genetic resources of fruit trees and related plants;
- Istituto Sperimentale per le Colture Industriali of Bologna;
- Istituto Sperimentale per l'Orticoltura of Pontecagnano;
- University of Basilicata: it has founded an "Inter-University Centre for Research on the Use and Conservation of Mediterranean vegetable germ plasma";
- Istituto Sperimentale per la Floricoltura of Sanremo;
- The Minoprio School;
- Istituto di miglioramento genetico vegetale of the University of Perugia;
- Istituto Sperimentale per le Colture Foraggere of Lodi;
- Istituto Sperimentale per la Selvicoltura of Arezzo;
- Centro per i Pascoli Mediterranei of the CNR of Sassari;

The botanical gardens have a special role, not only for the *ex situ* conservation of exotic plants, but also for the development *ex situ* and *in situ* techniques.

They also have the role of convincing public opinion of the need to preserve biodiversity resources, through many activities such as: training, museum design, scientific and technical advice and research applied to development programmes.

7.2. Animal genetic resources

In Italy, zoos and aquariums have gained significant experience in the maintenance and management of a wide range of animal species.

The collections have mainly been created for large vertebrates, although attention has recently been focused on lower vertebrates (amphibians and reptiles) and land invertebrates (insects and molluscs).

Most of these collections are part of wider European programmes supported by the *European Association of Zoos and Aquaria* (EAZA). Some species (mainly threatened exotic species) are part of international programmes.

Despite the considerable wealth of species, there are few programmes for the *ex situ* conservation of invertebrates. Some zoos and many aquariums have living displays of invertebrates, mainly formed by non-native species; but none of these organisations have actual gene banks.

Some interesting initiatives have been undertaken in the animal breeding sector, since sheep, pig and cattle species are a valuable part of Italian agriculture and agro-food industry.

In particular, the Consorzio Zootecnico (Animal Breeding Consortium) of Circello, for examples, plays an important role in assuring the preservation of domestic animal breeds that have been of major importance in the past and could be so in the future.

With regard to *ex situ* protection, there is a programme for cattle semen stocks managed by the *Associazione Italiana Allevatori* (AIA). The material stored is still insufficient, with regard both to the number of breeds and sampling within these breeds.

In 1998, a storage program for pig semen has been started through a pilot programme of the Consortium, for a sample of the breeds of which there are only a few dozen members.

The goal is the reproduction of the animals in order to put them back into the production cycle.

Objective 7.1	Creation of an integrated network of germ plasma conservation centres
Objective 7.2	Creation of a network of *ex situ* conservation centres for wildlife species

8. Biotechnology and safety

Genetic resources are indispensable in agriculture and for domesticated animals, and can be used according to the various aims:

- assisted improvement;
- selection of resistance to various factors;
- increase of the possibility of crossbreeding.

In order to ensure that biotechnology has a crucial role in the conservation of biodiversity, the correct and timely implementation of Directives 90/219/EEC (confined use of genetically modified micro-organisms - MGM) and 90/220/EEC (deliberate release of MGM) is among Italy's priority commitments.

The positive laboratory tests started since the 1970s have confirmed the possibility of transferring parts of genome between unrelated living species.

The use of biotechnology enables us to define:

- the characteristics of the individual biological units to be maintained and managed;
- the uniqueness of the various evolutionary lines of which the relative conservation value can be estimated;
- the relationships between cultivated plants or domesticated animals and their wild relatives that can be used as a practical source of genes.

The two Community directives mentioned above have been implemented by Italy under Legislative Decree N. 91 of 3 March 1993, n. 91 (Directive 90/219/EEC) and Legislative Decree N. 92 of 3 March 1993, n. 92 (Directive 90/220/EEC).

Italy focuses particularly on the positive conclusion of the negotiation for the drawing up of the "Bio-safety" protocol in relation to the convention on Biodiversity.

The protocol, besides preventing the negative effects that could derive from the transfer of biotechnology, has the purpose of enabling developing countries (DCs) to acquire know-how.

Objective 8.1	Regulation of the manipulation and use under safe conditions of any organism;
Objective 8.2	Access to biotechnology by the DCs
Objective 8.3	Preventing the negative effects of the transfer of biotechnology, especially to the DCs.

9) **International co-operation**

Biodiversity as a factor of global importance is acknowledged by the Convention, which calls upon the signatory countries to provide for global protection programmes in their national plans.

These programmes must provide for initiatives designed to facilitate fair and equitable sharing of benefits between the countries holding biodiversity resources and the ones using them.

A joint approach is therefore required to ensure that optimal solutions are found for the various cross-border problems.

Since 1988, the Cross-Border Conference between the Italian, French and Swiss Ministries of the Environment has been working for the creation of an **International Park for Mont Blanc.**

In 1991, Italy signed the **Convention for the protection of the Alps,** a framework agreement setting the objectives for a correct environmental policy, and aimed at the long-term safeguarding of the Alpine ecosystem as well as the protection of the economic interests of the resident populations.

This framework agreement lays down the principles which should inspire the co-operation between the Alpine area countries (Austria, Switzerland, France, Germany, Italy, Slovenia, Liechtenstein, Principality of Monaco and the European Union) in some priority sectors (population and culture, local planning, safeguarding the quality of the air, protection of the soil, water management, protection of nature and the landscape, mountain agriculture, mountain forestry, tourism and recreation, transport, energy, waste economy and management).

In 1996 Italy signed some multilateral co-operation protocols under the **Bonn Convention** (*ACOBAMS Protocol*, for the protection of whales in the Mediterranean and the Black Sea) and under the **Barcelona Convention** *(ASPIM Protocol* for the setting up of a system of specially protected marine areas in the Mediterranean).

Italy is currently committed to other international cross-border initiatives including:

- the setting up of the **International Marine Reserve in the upper Ligurean-Provencal Sea**, for the protection of whales, with the participation of France and the Principality of Monaco;

- the setting up of the **International Park of the Bocche di Bonifacio** (Italy - France) with the aim of regulating the various activities such as fishing, merchant shipping of petroleum, gas and chemical tankers, the protection of the marine and coastal ecosystems, the monitoring of human activity with potentially negative impact (tourism, various recreational activities) and cross-border co-operation activities in the scientific environmental field.

- The mixed Italian-Croat-Slovenian Commission for the safeguarding of the Adriatic Sea water and of the coastal zones by the marine pollution (l. n.426, 28 December 1984, the Osimo agreement).

Objective 9.1	co-operation with the developing countries through bilateral initiatives to be implemented with the help of other ministries having jurisdiction for the various sectors (Foreign Affairs, Industry etc.)
Objective 9.2	strengthening of Italian participation in multilateral co-operation programmes (UNEP, UNDP, World Bank, GEF)
Objective 9.3	adoption at the national and international level of codes of behaviour and other measures for protection against the negative environmental and socio-economic impact related to the use of biotechnology.

C. Conclusions

The overall situation described in this Report enables us to draw the following conclusions on the implementation status of the Convention in Italy.

1. A first reconnaissance stage aimed at acquiring in-depth knowledge on the biological resources, taking into account the specific characteristics of the Italian geographical context, already started several years ago in compliance with national legislation in the sector and with other previous Conventions related to the Convention on Biodiversity (Bern, Bonn, Ramsar) signed by Italy on the international level, is continuing according to strategic and planning guidelines also contained in EU regulations (Habitat Directive 92/43) and the guidelines laid down by the Minister of the Environment pursuant to the plans adopted by the Italian Government.
2. The setting up of the Protected Area System at various levels (National Parks, land and marine Nature Reserves, Regional Parks and Reserves), started since the 1980s, now makes it possible to start up actions aimed at monitoring the biological resources present in these areas, corresponding to about 10% of Italian territory.
3. The system of protected areas covers developed areas with different types of use, subjected to local planning regulations. These areas are therefore experimental models for conservation and sustainable development. On the local level, inside protected areas, goals and actions of the Convention have been implemented, e.g.:
    - Containment of risk factors, through the regulation of the activities within the areas;
    - Incentives to traditional activities;
    - International co-operation and exchange under international Conventions.
4. The national and international regulation framework has led to the practical implementation of some of the actions indicated in the National Action Plan (the drawing up of which is now being completed).
5. After formal adoption by the Italian Government, the implementation of the actions provided in the plan will follow, after co-ordination in the overall European context.
6. The subsequent actions to be undertaken in the next 5 years will be mainly in the Mediterranean biological habitat, in relation to Community policy in the following sectors:
    - *ex situ* conservation (see objectives 7.1 and 7.2)
    - promotion of sustainable conservation and development activities under international co-operation (see objectives 9.1, 9.2, 9.3)

This Report must be considered as *open*, since it can subsequently be expanded and completed for all the activities related with the implementation of the Convention on Biodiversity, undertaken in Italy by the local authorities, scientific and research institutes, universities etc. This will occur after the completion of the actions for achieving *Objective 1.1*. (Organisation of the knowledge already available), with the setting up of a national network for information and research that must first of all join and organise existing local networks, especially those regarding knowledge of the genotypes of the varieties used.

Institutions, non-institutional bodies and NGOs active in the sector must form part of the network.

The network will utilise the support of the exiting databases, including international ones.

SUMMARY

NATIONAL PARKS	PROVISIONS		CARTOGRAPHY			TER
	D.P.R.	G.U.	SCALE	IGMI	SURFACE	REGIONS
P. N. GRAN PARADISO	R.D.31.12.1922 N.1584	13.12.1922 N. 291	1:200.000	1	HA 70.286	PIEMONTE-VAL D'A
P. N. d'ABRUZZO	R.D. 11.01.1923 N.257	22.02.1923 N. 44	1:25.000	25	HA 43.900	LAZIO-ABRUZZO-MO
P. N. DEL CIRCEO	L. 25.01.1934 N. 285	05.03.1934 N. 54	1:25.000	8	HA 8.400	LAZIO
P. N. DELLO STELVIO	L. 24.04.1935 N. 740	03.06.1935 N. 129	1:25.000	27	HA 134.620	LOMBARDIA- TREN. ADIGE
P. N. DELLA CALABRIA	L. 02.04.1968	04.05.1968 N. 112	1:25.000	6	HA 12.690	CALABRIA
P. N. DOLOMITI BELLUNESI	N. 503	07.08. 1993 N. 184	1:100.000	2	HA 31.512	VENETO
P. N. FORESTE CASENTINESI	12.07.1993	10. 08. 1993 N. 186	1:100.000	3	HA 38.118	E.ROMAGNA-TOSC
P. N. DEI MONTI SIBILLINI	06.08.1993	25.08. 1993 N. 199	1:100.000	2	HA 71.437	MARCHE-UMBRI
P. N. DEL POLLINO	15.11.1993	13.01.1994 N. 9	1:50.000	9	HA 192.565	BASILICATA-CALA
P. N. DELL'ASPROMONTE	14.01.1994	29.03. 1994 N. 73	1:50.000	6	HA 78.517	CALABRIA
P. N. DELL'ARCIPELAGO TOSCANO	22.07.1996	11.12.1996 N. 290	1:25.000	10	HA 74.653	TOSCANA
P. N. DELLA MADDALENA	17.05.1996	13.09.1996 N. 215	1:25.000	8	HA 20.180	SARDEGNA
P. N. DELLA VAL GRANDE	23.11.1993	19.02.1994 N. 41	1:25.000	6	HA 12.210	PIEMONTE
P. N. DEL GRAN SASSO	05.06.1995	04.08. 1995 N. 181	1:100.000	5	HA 148.935	ABRUZZO-LAZIO-MA
P. N. DELLA MAIELLA	05.06.1995	04.08. 1995 N. 181	1:100.000	3	HA 74.095	ABRUZZO
P. N. DEL VESUVIO	05.06.1995	04.08. 1995 N. 181	1:50.000	2	HA 8.482	CAMPANIA
P. N. DEL GARGANO	05.06.1995	04.08. 1995 N. 181	1:50.000	8	HA 121.118	PUGLIA
P. N. DEL CILENTO	05.06.1995	04.08. 1995 N. 181	1:50.000	7+2	HA 181.048	CAMPANIA