6.1. The situation in Spain

The Spanish concept of network has, at this moment in time, a more administrative character than a territorial or functional one. The possibility of establishing a national conservation network was outlined within the EECONET framework (Pineda et al, 1991b), the principles and proposals being laid down for the case of the Madrid self-governing region (Múgica et al, 1996b). Although to a different extent, the principles of connectivity against the fragmentation of the territory, have recently started to be incorporated into the conservation policies of different self-governing regions. Several circumstances have been conducive to this new situation. On the one hand, the majority of regions (with the exception of Madrid, La Rioja and Cantabria) have developed their own natural-area legislation in the last ten years.

There are already some interesting initiatives in which we find legal support for the protection of linear structures, as is the case in Extremadura, whose Act 8/1998 for the conservation of nature and natural areas does establish the ecological corridors and the biodiversity as protection concepts. Article 22.1 of the said Act defines as such *"landscape elements of a variable area whose arrangement and degree of general conservation are basically important for the wild fauna and flora, for they enable the spatial continuity of enclaves having a unique relevance for the said fauna and flora …"*.

Article 22.2 states that *"the linear and continuous structure of these elements or their role as linkage points are essential for the migration, the geographical distribution and the genetic exchange of wild species. Accordingly, it will be possible to declare Ecological and Biodiversity Corridors, among others, the water courses, the masses of water and their bank zones; the mountain ranges, the masses of vegetation, the plain areas and the traditional field demarcation systems, as well as the ponds or the groves, when by means of such declaration a more coherent vertebration would be allowed and a more consolidated establishment of the Extremaduran Natural Protected Area Network and of its biodiversity"*. In addition, these areas have to have a Guiding Use and Management Plan, as laid dawn in article 49.2. For the time being, only one area has been declared pursuant to this concept: the river Alcarrache by virtue of the 105/2001 Decree, and the river Tiétar is in the processing stage.

The same act does acknowledge other interesting concept, the eco-cultural corridors, acknowledging in particular the role of cattle tracks and other livestock ways as cultural structures of interest for the conservation of nature (Article 26). For the time being, no space has been designated as fitting this concept.

Another opportunity to review the current situation has been the preparation of the appropriate Biodiversity Strategies. The case of Navarre illustrates the recent integration of the protected area system into a Biodiversity Conservation Strategy. In the said Strategy, approved in 1999, major relevance has been given to the structuring of the protected areas as a fundamental element to guarantee the *in situ* conservation of biological diversity. The Strategy sets a series of objectives, plans, programmes and actions aimed at providing Navarre with a coherent, structured and functional system of protected areas.

Finally, the selection process of sites of community importance with a view to their being incorporated into the Natura 2000 Network has generated a potential, of which some regions such as Navarre have taken full advantage, to incorporate the principles into a coherent and functional ecological network.

The design and implementation of the infant area or network systems is being dealt with from different approaches. From the development of planning instruments aimed at their integration into the territorial and urban planning, to the use of the Plan for the Regulation of Natural Resources, or the development of specific territorial linkage projects, such as the "L`Anella Verda" project promoted by the Barcelona Provincial Council for the creation of a green belt around the metropolitan area of Barcelona, and which is trying to consolidate the protection of a continuum encompassing more than 150.000 hectares (Maza and Castell, 2000).

It is taken fro granted that the prerequisite for the proper operation of a protected area system is its integration into the territorial prerequisite, although such integration must not entail the loss of its own characteristics as fundamental parts to the conservation of the natural resources. The Plans for the Regulation of Natural Resources, included for the first time in the Act 4/89 for the Conservation of Natural Areas and that of the Wild Flora and Fauna as a powerful planning instrument used for the regulation of activities outside the administrative boundaries of the protected areas, could have been good opportunities to design a system of

protected areas by using the existing planning instruments. However, the have been very seldom used to regulate the natural resources in general, being, instead, restricted to the limits of the protected areas.

The most consolidated case of integration of natural area planning into territorial planning is to be found in Catalonia. The PEIN, or Natural Interest Area Plan, was approved in 1992 and it establishes a structured system aimed at guaranteeing the operation of the area network.

It can be foreseen that over the coming years other regions join this process. Andalusia, a territory of more than 8.700 hectares where almost 20% of it is legally protected and where a large part of the management plans have been developed in the last few years, is currently preparing the Network Strategy as a reflection of the need to guarantee ecological coherence. The work outline being followed is summarised in Figure 6.1

The case of Navarr e

The preparation of the Strategy has made it possible to assess the deficiencies of the current conservation network, three key aspects having been, accordingly, detected:

- No representative sample is included of all the habitats and wild species existing in Navarre and being relevant to conservation.
- The network includes numerous areas of very small dimensions, which makes their management difficult and, in turn, makes them highly vulnerable to the surrounding activities.
- Not being interconnected, they act as islands.

Advantage has been taken of the selection process of the Sites of Community Importance as an opportunity to make progress in the establishment of a natural structure being coherent, sustainable and representative of Navarre's natural heritage.

The future network will have to be made up of:

- *Priority conservation areas*, those areas included in the proposal concerning sites of community importance. It is foreseeable that they become part of the European Nature 2000 Network
- *Peripheral protection areas* for those small-sized areas not having been included in larger areas and that can become affected by activities in the surrounding areas.
- *Nodes or conservation*-sensitive areas. These areas have one or several of the following characteristics: low degree of humanization; located between priority conservation areas or in grounds adjacent to them, thus creating buffer zones; they provide space for extensive agricultural or

forest exploitation systems which are not competitive market - wise, but which generate important environmental goods and services; they are transit, stopover and refuge zones for the flora and fauna; they configure widenings arranged throughout ecological corridors; they have a high conservation potential with low restoration costs; they are located on privately or communally - owned land. Conservation measures, of a voluntary nature, are being devised for these areas which can be financed by means of the Rural Development Plan including, among others, environmental measures or grants for the reforestation or agricultural lands or for forestry.

- *Biological corridors* linking the conservation areas. They are landscape structures showing a clear natural directionality and enhancing connectivity among other areas in the network. They are systems for the intensive exploitation of natural resources which include habitats similar to these existing in the conservation areas being linked by the corridors and which, in many cases, run through public property. Their function is that of favouring the movements of the species and the communication among areas in the network, thus preventing the isolation of their populations. They also perform an important function as complementary habitats or refuges in areas being highly altered by human activity. Their structure is highly variable there being no reason why it has to be unbroken. Accordingly, some corridors have a reticular or staggered structure.
- *Red points*, natural, small-sized, relevant and isolated elements left outside the network which, none the less, are important to the keeping of ecological processes (for instance aquifers' fill and discharge points), the development of specific stages of the vital cycles of some species (for instance, spawning places for fish and amphibians) or because they are home to natural habitats or communities whose small extent is an inherent characteristic (halophilous vegetation linked to seasonal water courses or to grounds likely to become waterlogged). It also includes unique spots of a scientific or palaeontological value.

Such a structure will make it possible to move from what it used to be a catalogue of protected areas to an interconnected system having internal coherence. This entails that each site does play a part in the equilibrium and functionality of the whole natural weft. Likewise, this network must be provided with external coherence, in other words, it has become integrated into the rest of the territory, what, among other things, entails its necessary compatibility with other general system networks, such as the road and railway network, irrigation networks or other infrastructure networks.

Information sources: García-Fernández Velilla, 2001, Navarrese Government, 2001.

The case of Catalonia

The PEIN constitutes a territorial sectorial plan being a part of the Catalonia Territorial Plan, approved in 1995, and becoming a development instrument thereof, in such a way that its decisions have a binding character for all other physical planning instruments. Included in the PEIN also are the special - protection natural areas (Natural Parks, Reserves, etcetera), thus guaranteeing the integration of all protected areas.

The PEIN's inspiring criteria include the international recommendations of the Rio de Janeiro Conference as far as the representativeness of the diversity of natural systems is concerned. But, besides, it explicitly states the goal of establishing a biologically coherent and technically operational area network, by articulating it with the rest of planning instruments, be it territorial, sectorial or related to urban development. It likewise includes the need to integrate sustainable agricultural and traditional activities and the divulgement of environmentally appropriate practices to contribute to rural improvement and to avoid depopulation.

In the first stage of area selection and demarcation, the habitat diversity and representativeness were taken as basic criteria, fragility and singularity being adopted as complementary criteria. With regard to species, the threat, vulnerability and rarity criteria were taken into consideration. All these criteria were systematically applied to the previously defined physiographical regions. In a second stage the individualised treatment of each area was dealt with, achieving a diagnosis not only of the naturalistic and social and economic aspects of interest, but also of the impacts or risk factors, be they current or foreseeable. Taking such diagnosis as a starting point, the actions are identified which can take the form of specific regulations or pre - emptive actions to be included in the plan development programme.

One of the Plan's documents is the Development Programme, where the necessary actions are specified for each area, both individually and within the general context, as well as the necessary annual resources to put the measures into effect. This Programme must be reviewed every four years. In the Plan's Regulations the constitution is established of a commission responsible for the monitoring of the PEIN whose goal it will be to coordinate implementation and monitoring actions as well as to prepare the reviews of the Programme.

The PEIN does identify a total of 144 areas whose combined surface amounts to almost 655.000 hectares, which represents nearly 21% of the surface of Catalonia. The protected natural areas are associated with a special protection plan, by means of which rules and regulations are established for the protection and the regulation of the territory. In 2001, 112 of the said areas already have plans (in 12 of the cases they are plans previous to the PEIN's date of approval; 51 have been finally approved and the processing of 49 is at an advanced stage).

The methodological quality of the PEIN's design and launch process does provide a very interesting framework for other regions around us. The challenges to be overcome so that it can be efficaciously implemented, related, to a great extent, to the necessary political and social backing and to the provision of human and material resources, were made clear in a symposium organised in 1998 to reflect on how the PEIN was working five years after its approval. Since this is not a end - oriented plan aimed at a particular objective, but the start of a process which develops in the context of environmental management and territorial organization, it is necessary to assume that conflicts will appear with other sectorial policies and that coordination mechanisms are to be prepared to help to solve these problems.

Information sources: Catalonian Government, 1996; Pintó and Vila, 1998; Mallarach, 1998b.

6.2. The situation in Andalusia

The Andalusian region has a natural heritage of great relative importance in the national and in the European context. Its geographical situation between the Mediterranean Sea and the Atlantic Ocean, and between the continents of Europe and Africa, has contributed to create a rural culture which, up to very recent times, has known how to keep a high biological and landscape diversity in the territory.

This rural culture, based on a balanced exploitation of the resources, has given rise to a heterogeneous landscape in the Andalusian territory, where mixed systems of forestry and pasture and traditional agricultural practices have made it possible for a remarkable wealth of species, biological communities and