

NATIONAL REPORT SPAIN

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SoBio

MOBILISING THE EUROPEAN SOCIAL RESEARCH POTENTIAL IN SUPPORT OF
BIODIVERSITY AND ECOSYSTEM MANAGEMENT

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1. OBJECTIVES OF THE REPORT

The objective of this report is to collect the results of the research performed in Spain within the frame of the SoBio project.

The report is structured in seven chapters, following the guidelines of the document titled “Content List/Structure for national reports”, and it has deepened into those aspects needed to better reflect the Spanish situation, such as socioeconomic aspects.

The first chapter outlines the main goals of the report.

In the second chapter, an introduction on the Spanish situation is given from different points of view: political, socioeconomic and environmental situation. It also includes a review on research on biodiversity and social research regarding biodiversity.

The third chapter details the material and methods used in the research.

The fourth chapter gathers the main results of the research; who performs SoBio research; and the analysis according to the stages of the policy cycle is given in chapter five. All SoBio references found are listed in annex I.

The sixth chapter covers the analysis of the experts’ interviews.

The final chapter makes an overview and a general assessment of the research.

2. INTRODUCTION

2.1 National overview of the political and environmental situation

2.1.1 Political situation

After 40 years of dictatorship, Spain changes in 1978 into a parliamentary monarchy in which the King acts as the Head of State.

The 1978 Constitution marked the transition from a centrally organised country to a decentralised model with 17 autonomous communities. The transfer of competences from state to regional level has taken place gradually ever since and, as a consequence, Spain is one of the most decentralised countries in Europe.

The national government holds the competences related to foreign affairs; defence; justice; labour, criminal and trade law; international trade and taxes; economic planning; finances and public safety. The autonomous communities (to be referred as regions in this report) have full control over education and culture; public health; environment; agriculture; industry; employment policies and the infrastructures of their territory. Each region has a capital city and its own political structure, based on a Legislative Assembly and a regional government. They may organise their public administration as they wish.

There are different forms of cooperation between the Spanish state and the regions. The solution of conflicts between the parts is a jurisdiction of the Constitutional Court.

2.1.2 Socioeconomic situation

Today, Spain has 40,8 million inhabitants and over 50% of them are concentrated in Madrid and the coastal provinces. About 50,6% of the population lives in towns of over 50.000 inhabitants (see Fig. 1). In most parts of the country urban areas are well separated from rural ones, allowing an easy distinction between them. However, in the last years, urban sprawl phenomena have occurred around larger cities and vacation areas (Mediterranean coast and islands). Precisely in these areas, the environmental pressure is higher.

Between 1951 and 1975, Spain experienced a massive rural exodus from the countryside to industrial areas in Spain and Europe. This internal migration has had a great influence on the spatial distribution of the population, which from being mainly rural became primarily urban (Fig. 1).

It also had important consequences in rural areas: it caused a progressive abandonment of agricultural and livestock raising activities in the less productive lands, whereas in the more profitable ones agriculture intensified. In the last years, the Common Agriculture Policy has contributed to maintain and accelerate these trends, and even today some provinces of central and north-western Spain keep losing important parts of their population (between 1991 and 2001 over 5% loss in six provinces, INE 2004).

Inhabitants per settlement size

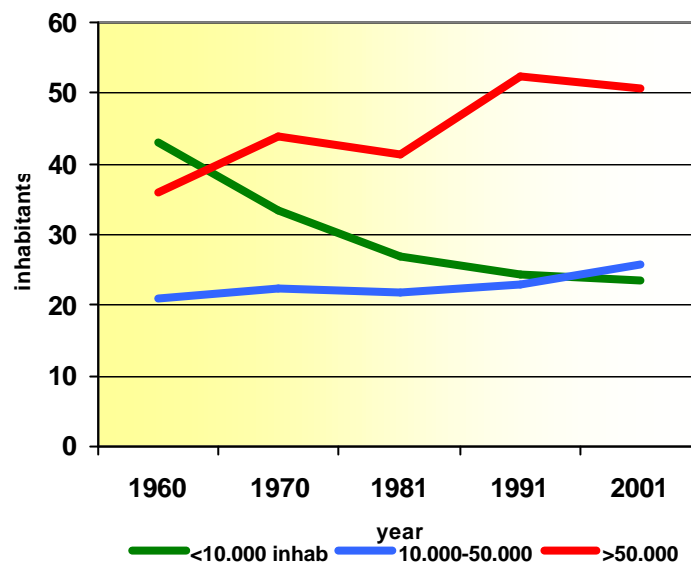


Figure 1: Number of inhabitants per size of settlement in Spain

As a result, a total of 2,000 villages are now uninhabited, a great percentage of rural dwellings have become second homes and vast expanses of the country have a population density lower than 2 inhabitants per square kilometre. Also the importance of the primary sector has dramatically decreased, and continues to do so in favour of the tertiary sector. In 2000, the percentage of population working in the primary sector was 5,8%, whereas in 1990 it was 9,8% (see Table 1).

Sector	% in 1992	% in 2002
Agriculture	9,8	5,9
Industry	22,7	19,5
Construction	9,8	11,7
Services	57,7	62,9

Table 1: Percentage of active population per activity sector (INE, 2004)

In the past years, Spain has made a great effort to approach the mean income level of the European Union (EU15). The per capita GDP has grown from 70,5% of the EU15 in 1983 to 87,4% in 2003, being 17,200 € in 2002 (INE, 2004). A good thrust for this have been the different EU funds, of which Spain has been an important beneficiary.

2.1.3 Environmental situation

Geography and climate

Spain, with a surface of 504,750 sq. km is one of the largest countries of Europe. Its territory includes the Balearic Islands, in the Mediterranean sea, and the Canary Islands, in the Atlantic Ocean, facing the Saharan coasts.

The relief, together with the country's geographical position, gives a high diversity of climates. The prevailing winds leave most of the precipitations in the northern fringe of the country, with a diminishing gradient towards the southwest. Thus, the mean precipitation in the northwest is 1,000 mm/yr, going over 2,000 in many areas, whereas in the southeast precipitation hardly reaches 300 mm (Europe's driest meteorological station is found here, 113 mm/yr in Gata).

In the iberian-balearic area, three large biogeographical regions are found. The wet northern fringe belongs to the Atlantic region; part of the Pyrenees to the alpine region and most of the peninsula, including the Balearic Islands, to the Mediterranean region (85,5% of the country, see Fig. 2).



Figure 2: Biogeographic regions of Spain
(Alpine in dark purple, Atlantic in light purple and Mediterranean in orange)

The Canary Islands are a case apart. The archipelago is formed by seven large islands, with a total area of 7,242 km². They are oceanic islands of volcanic origin which have never been joined to the continent, the most easterly island is situated at only 115 km from the African coast. Because of their extremely rugged relief and strong climatic contrasts, it is possible to pass, in just a few kilometres and on the same island, from desert to rain forest, and further up to high mountains. Together with the Madeira and Azores Islands (Portugal) they belong to the Macaronesian biogeographical region.

Biodiversity

Spain is one of the European countries with a wider species and habitats diversity. Several factors cause this:

Climate and topography. There is great variety of climates, relief and geological substrates.

Geographical position. Its location, between Europe and Africa, together with the paleobiographic events (Glaciations).

Human activity. The Iberian peninsula has been moulded by human activity since millennia, creating new habitats of high ecological value such as the cereal steppes or the dehesas. On the other hand, the low population density, the rural abandonment and the persistence of low intensive agricultural systems have allowed that still 34% of the

Utilized Agriculture Area are occupied by high nature value farmland (Hoogeveen *et al.*, 2004).

The special features of the Canaries have created a favourable setting for evolutionary processes. This has given rise to a great number of endemic species, unique to the Canaries, which make this archipelago one of the biodiversity hotspots of the planet.

2.2 History and structure of the national biodiversity policy

2.2.1 Policy making

At state level, biodiversity conservation is managed from a Directorate General of the Ministry of the Environment. Its competences include the design of basic legislation related to biodiversity conservation; the representation of the Spanish state in European and international forums and the coordination and planning with the regions. The network of national parks is managed by an autonomous body of the Ministry of the Environment, covering 13 national parks which sum 323,365 hectares and count on an important yearly budget.

The state also regulates the river and maritime public domains, from two other directorates-general of the Ministry of the Environment.

The competence on nature and biodiversity conservation, as was said before, has been transferred to the regions. They may develop their own legislation and their own strategies, which creates great differences between the regions. For instance, some regions have well developed policies and strategies, while others are lagging behind.

2.2.2 History

The figure of national park was introduced early in Spain, with the publication of the National Parks Law in 1916. As a result, the first two national parks were created in 1918. In 1931, a commission of national parks is created and a protected area classification system is started. This conservation policy gets truncated after the Civil War (1936-39).

During the Franco dictatorship (1939-1975), conservation policies were virtually inexistent. In 1940, the Parks Commission is substituted by the Forests, Hunting and Continental Fisheries Commissariat. In other words, policies shifted from a conservationist point of view to a productivist one, which had important implications on nature management.

In 1971, the Institute of Nature Conservation (ICONA) was created, mainly oriented towards the management of forestry, hunting and fishing activities, including the management of protected areas. Somewhat later, in 1973, certain key species became finally protected (Brown bear *Ursus arctos*, Pardel lynx *Lynx pardina*, etc) and in 1975 a Protected Area Law is passed. At the end of the dictatorship, there were only 28 protected areas, most of which had been declared before this period, and there was still no clear conservation policy.

In the eighties, with the transfer of nature conservation competences to the regions, the impulse of the political change and the adhesion to the European Community in 1986, the regions started to strongly develop their own conservation policies. Another important milestone was the approval of the Nature Conservation Basic State Law 4/89 in 1989, in which species conservation is regulated, as well as the categories and management of protected areas.

As a consequence, between 1987 and 1991 the rate of declaration of protected areas steeply increased. About 44% of the protected areas existing in 2001 were declared in this period (see Fig. 3). By that year there were 832 protected areas, covering 4 million hectares, that is 7,8% of the territory (Mugica *et al.* 2003).

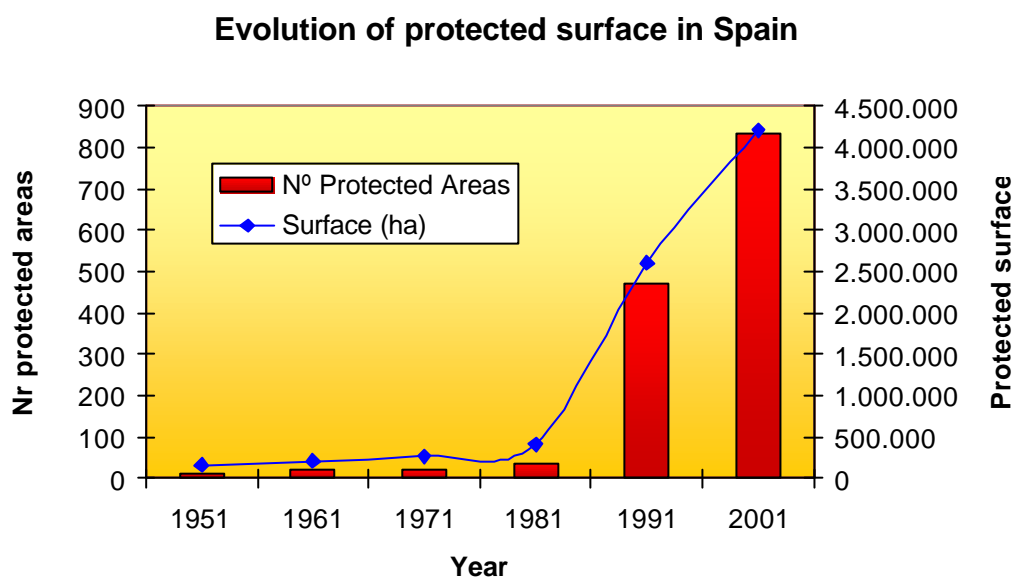


Figure 3: Number of protected areas and protected surface in Spain (Múgica *et al.*, 2003)

Since 1992, the Habitats Directive has strongly enhanced the rebirth of conservation policies, for instance, in regions where these policies were not well developed. Spain is proposing 1,301 SCIs for the Natura 2000 network, which sum 11,3 million hectares of land and 0,6 million hectares of sea surface (see Fig. 4) (EC 2004). At present, 460 protected areas under national legislation (55% of the total number) partially or totally overlap with the SCIs. Therefore, some regions have included this protection measure in their legislation and others are enlarging their network of protected areas so as to include the SCIs.

A new milestone was the creation of the Ministry of the Environment, in 1996, which absorbed the nature conservation and forestry tasks from the Ministry of Agriculture.



Figure 4: Spanish proposal for Natura 2000 (Ministry of the Environment, 2001)

In 1999, the Ministry of the Environment presented the Strategy for Conservation and Rational Use of Biological Diversity, a document prepared with the participation of many different actors. Also, numerous regions have their own biodiversity conservation strategies.

Habitats and species management.

The Nature Conservation Basic State Law 4/89 established for certain protection types the need to develop a Natural Resources Order Plan (PORN) previous to its actual protection. Once the area is declared protected, a Management and Use Director Plan (PRUG) must be drafted. Both plans include a socioeconomic study of the affected population.

The Basic State Law 4/89 also creates the national catalogue of threatened species, including those species that need specific conservation measures to be set up by the public administrations. For all species included in the catalogue a conservation or a recovery plan must be established. These are prepared by the regions, although in case the species is distributed over several regions the National Commission of Nature Protection gives guidelines about their content.

Since the regions have competence in environmental and nature conservation legislation all, except one, have approved their own regional legislation. In a comparison made on legislation related to protected areas, some differences are found. Although all regions establish the obligation to prepare a PORN or a similar planning instrument, its content may vary from the very basic requirements set by the Basic Law 4/89 to more specific requirements. Within the context of social research, Catalanian, Galician and Valencian legislation require a deeper social study and diagnose of the socioeconomic conditions of the settlements to be affected by a future protected area and its area of influence.

At present there are numerous biodiversity conservation and protection programmes in all Spanish regions. Most of them are funded with national funds, while some other fall under the Life programme.

NGOs

A very important chapter in biodiversity conservation in Spain is the role of NGOs. They usually have a low number of members; the four most important ones hardly sum 138,000 affiliates (own data) and the recruitment of new members is difficult. However, the low numbers are compensated by the high degree of participation in certain campaigns, the effect of their campaigns in mass media and their good reputation among the general population. Environmental NGOs promote changes in policies, enhance the creation of new protected areas and the protection of new species, etc.

2.2.3 Interaction between biodiversity conservation and socioeconomic development

Protected areas and socioeconomic development

The low intensity of agricultural activities in large areas of the country allows the compatibility between socioeconomic activity and nature conservation. Furthermore, some important habitats are a product of human activity and therefore, reinforce the idea of a link between biodiversity conservation and socioeconomic development. For this reason, many protected areas include human settlements, and it is estimated that 400,000 people live within Spanish natural protected areas and over 11 million people live in the 1,077 affected municipalities (Múgica *et al.*, 1998). This shows that there is a tight link between nature conservation and rural communities (Fig. 3).

The first trial to integrate conservation interests with those of rural communities took place in 1982, when the “areas of socioeconomic influence of National Parks and Game Reserves” were created. The ICONA was then authorised to invest in social welfare and promotion in rural areas. In 1999, the granting of these aids was regulated by law (Fernandez y Pradas, 2000).

Some regions see protected areas as an opportunity for sustainable development, and they develop specific management tools to achieve this purpose. For instance, in Andalusia, the planning stated by the 4/89 Law should be complemented with a Sustainable Development Plan. Its purpose is to improve the quality of life of the population in the area of influence of natural parks, without neglecting environmental conservation and considering the protected area as a motor for local economic development. The Andalusian Council of the Environment coordinates and controls the planning, but this document is in fact prepared by the Institute of Regional Development. These are socioeconomic dynamizing plans, since they improve production uses and entrepreneurial activities linked to the sustainable use of the parks' natural resources, offering employment opportunities and income to the local population of each natural park. The plans do not include specific budgets and their financing is completed by the contribution of each department of the Andalusian government. Its final success will depend on how the local communities get involved in the different development initiatives. Because of this, the planning stage has a high degree of participation. Other regions are developing similar programmes.

Protected areas and tourism

Protected areas, besides being nature conservation instruments, have become an important resource for tourism and leisure activities (Sunyer 2000, MCYT 1999). The few data existing on ecotourism in Spain indicate that it has grown 26% in the past

years and that this growth is particularly important in protected areas, which act as a major pole of attraction for this type of tourism.

Visitor numbers in natural protected areas have therefore increased steadily. It has been estimated that Spanish protected areas received 4,2 million visitors in 1973; 20 million in 1982 and 44 in 1996 (Múgica *et al.* 1998). In 2000 a pilot programme was developed to implement the Spanish System of Tourism Quality (SCTE) in 7 protected areas. Today, it has been implemented in 25 protected areas.

Although public use is not an activity directly related to nature conservation, it is an important instrument to disseminate to the wider public the need to preserve biodiversity. The environmental authorities, aware of this opportunity, design public use programmes that require enormous investments in information centres and other needed infrastructures to bring nature closer to the visitor. The authorities also regularly perform questionnaires to know the perception of visitors. However, despite these efforts, protected area managers still hesitate whether the information and messages are properly understood by visitors. To know this, they started a comprehensive study in 2003 (EURPARC-Spain, *pers. comm.*).

2.3 Research on biodiversity

There are different research lines on biodiversity. On one side, there are the actions performed at national level. An important research budget, focused on conservation (applied research), is set aside by the General Directorate of Biodiversity Conservation. Between 1982 and 1990 a great effort was made to know the most emblematic species of the country. In 1992, after the approval of the Habitats Directive, a new stage in research is reached, whose aim is to gather the necessary information for a proper application of this directive. Important studies were made on the habitats and species included in the directive (Morillo 2003a).

However, policy makers were aware that information was not yet complete. Therefore, in 1999, the National Biodiversity Inventory was started with three goals: to know the state and trends of biodiversity; to assess the efficiency of conservation policies; and to comply with international agreements and, in particular, with the Convention of Biological Diversity (Morillo 2003b).

Another important research line at national level, which started in the eighties, is led by the Higher Scientific Research Council (CSIC). It consists of a series of programmes (Fauna Iberica, Flora Iberica, Flora Micologica, Continental Algae), financed by national research programme, with the aim to inventory all the flora and fauna species of the country (basic research).

The regions may also finance their own research on biodiversity, mainly from the regional budget. Some of these programmes are quite large, as that of the Canaries.

Many research projects related to biodiversity or ecosystem management are performed at local scale, or within a protected area. Some of these programmes may be at large scale. For instance, the National Parks service manages one research programme on biodiversity, within the National R+D+I Plan, with a budget of 1,4 M€ in 2003.

Over 50% of this “local” research is not formally published and therefore difficult to access. In average, 7% of the studies deal with the socioeconomic conditions of the area (Múgica *et al.* 2002) (Fig. 5)

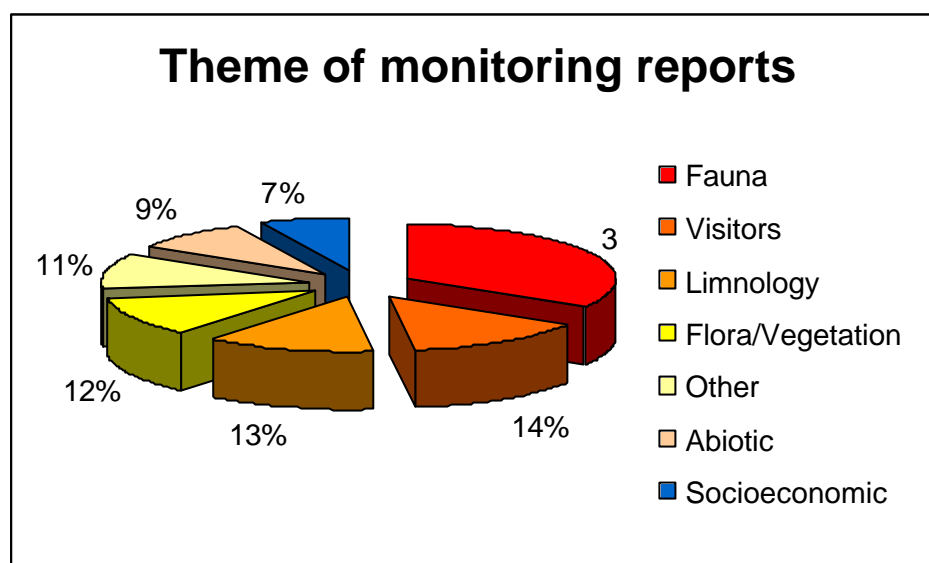


Figure 5: Monitoring of natural protected areas in Spain, according to area of interest

2.4 Current state of social research regarding biodiversity, environment and natural resources

2.4.1 Introduction to Spanish sociology

Sociology as a science was born in Spain in the late 19th century thanks to the contribution of preeminent professors. The first half of the 20th century was marked by a slow introduction of social theories into Spanish sociology.

Empirical sociology in Spain kicks off during the sixties, in a period when Spanish society is immersed in a deep transformation. In the seventies, social research is analytical, systematic and uses scientific-based methodologies. Both private as public institutions contribute to this empirical research. In the second half of the seventies, research is done in a democratic context. Spanish society shows mass consumption behaviour and public opinion becomes relevant. The use of sociology as a tool is demanded by society itself, to understand markets, consumer attitudes and behaviour, the role of public administrations, etc. Another feature of the last decades of the 20th century is the development of sociology as a scientific discipline, for the sake of it.

2.4.2 Environmental sociology in Spain

Social sciences have traditionally ignored the physical-natural system as an integrated element of economic analysis and of social systems. Sociology, as a science, has not included the study of nature within its goals; there is a deep, historic cleft between

social sciences and biology (García 2004, Jiménez Blanco 1991). Traditionally, nature was opposed to culture, hence to society. This allowed sociology to have its own entity as a scientific discipline and enhanced to cut biological determinism and its politically and morally unacceptable implications by its roots (Pardo 1996).

Environmental sociologists argue that man is a social as well as a biological being: man is part of nature. Therefore, environmental sociology will require the construction of a sociological object that includes nature as an element of social reality. Furthermore, socioecology as a discipline will need to add a new goal, which is to restore the relationship between man and nature (Jiménez Blanco 1993). This would lead to show contradictions with the currently predominant model of social development, such as the importance of biodiversity for society and its loss under current economic models (Pardo 1996).

Environmental sociology has traditionally paid more attention to the theoretical background of environmental degradation than to the improvement of the environment or the alternative solutions. It neither regards the environment as an instrument of social control. In fact, environmental sociologists see the environmental crisis as an opportunity for social change, towards a more rational, conscious and even democratic society (Pardo 1996). Because of this, the most preferred field of environmental sociologists is, without doubt, the analysis of social and political values (Pardo 1996).

On the other hand, different surveys indicate that the loss of biodiversity is not considered an urgent environmental problem for the citizens (Gómez et al, 1999; Junta de Andalucía 2003; García 2004; Ihobe, 2004) (BOX 1). An important factor influencing this perception could be that country has a low population density and still many places in were nature is relatively well conserve and easy to get lost (see points 2.1.2 and 2.1.3). This lack of interest does not allow the issue to enter as a priority issue in the agenda of social scientists.

During the last years of the dictatorship and the transition to democracy, there were some interesting studies on land use planning, the meaning of the environment for sociology and the environmentalist movement, among others (García 2004). However, it is only in the last decades that Spain can timidly start speaking about a sub discipline of sociology dealing with the environment, Environmental sociology.

Some important milestones of this incipient subdiscipline have been the creation of specific working groups (Pardo 1998):

- 1990: Commission of Environmental Sociology of the Official Association of Political Science and Sociology
- 1995: Study group on sociology of the environment, during the National Sociology Congress in Granada
- 1996: Research group within the Spanish Sociology Federation
- 1996: Spanish Network of Environmental Sociologists

Environmental sociology has, ever since, regularly appeared in regional and national sociology meetings.

In the future, environmental sociology will have new issues of concern. These may be grouped in four areas (Pardo 1998):

- 1) The causes or origins of environmental problems, that is, how variations in social structure and organisation produce changes in the use of natural resources and how this will impact the environment.
- 2) The social impact of biophysical changes and their consequences on different social systems, depending on each society and the historical moment.
- 3) Theoretical and applied research towards solutions to environmental problems and how societies will need to change in order to solve them.
- 4) How the abundance or the scarcity of resources will interact with the societies that created the conditions and how they will affect social change

Box 1. Social perception of Biodiversity in Spain.

Research on the general attitude of Spaniards towards the environment started in the late nineties (Gómez et al, 1999), with a national study. This first study was soon followed by regional studies performed by the regional administrations (Ecobarómetro de Andalucía 2001, 2002, 2003; Ecobarómetro social vasco 2001, 2004), or even research centres (García 2004). All these studies are focused to have a wide knowledge on the attitudes towards the environment, and therefore are not focused on biodiversity (Junta de Andalucía 2003; García 2004; Ihobe, 2004).

Their main conclusions in relation to biodiversity are (Table Box 1):

- Local and regional biodiversity is not perceived as a priority concern
- The loss of global biodiversity (rain forests, etc) is perceived as a priority issue
- The concern on biodiversity is closely related to the economic condition of the interviews, being the highest in biodiversity students. Although many other environmental concerns are related to the economic conditions, this has been the greatest (Gómez et al, 1999).

Table Box 1

	Regional scope	Andalucía			País Vasco		Valencia	Spain
	Reference	www.juntadeandalucia.es			www.ihobe.net		García, 2003	Gómez et al 1999
	Year	2001	2002	2003	2001	2004	2000	1999
Perception on national-regional biodiversity	% being very concern on biodiversity	20	22,9	24,7	45	28	38,6	0
	Nº more priority issues	4	3	3	4	9	6	15
	% being concern on the most priority issue	63,5	63,7	60	50	45	65,6	30,8
Perception on global biodiversity	% being concern on biodiversity	40	41,7	45,9	n.a	n.a	n.a	23
	Nº more priority issues	1	1	1	n.a	n.a	n.a	1
	% being concern on the most priority issue	53,9	55,7	51,1	n.a	n.a	n.a	33,8

Sociologists will have to show that they have a specific contribution to make and their role to better understand and solve environmental problems. Global environmental issues (climate change, biodiversity loss) are a challenge not only for natural sciences but also for social sciences. Classic, compartmented research will need to make place for interdisciplinary, socio-environmental sciences (Pardo 1996, 2004).

2.4.3 Social research programmes related to the environment

Socioenvironmental research in Spain does not have specific structures or research centres and therefore is not yet recognisable within the organisation of general scientific and environmental research in Spain (Paniagua *et al.* 1998). Until recently it was included as a secondary line of research within environmental programmes (Paniagua *et al.* 1998), but in the last years it is becoming a priority research area. This must be interpreted as a response to the interest in integrating conservation policies within the interest of local communities. The most important research programme, the National R+D+I Plan 2004-2007 (with a similar structure to the EU's 6th R+D framework programme), acknowledges this fact. It includes a Biodiversity programme, and another on Social, Economic and Law Sciences, in both of which a reference is made to the potential conflict between nature conservation and traditional socioeconomic development, and stimulates the search of solutions and opportunities for a sustainable relationship between both factors. However, no specific SoBio-like research programmes are outlined in this Plan (MCYT 2004b).

Another example is the National Parks research programme. On its first call for proposals, in 2003, it included the sociocultural context as a priority research area. However, only one of the 104 applications received was related to this area, and was not granted the aid (Ministerio de Medio Ambiente 2004).

Socioenvironmental research is mainly funded by public institutions, not always specifically focused on this purpose. Other sources of funding are usually regional or sectorial, hardly coordinated with basic R+D structures. The occasional, unprogrammed character of this type of research makes it less competitive and more vulnerable to lobbying and networking pressures. However, despite its little relevance, it offers the best imbrication between researchers and policy makers.

3. METHODS AND MATERIAL

The following information sources were used to gather information on research lines, projects and institutions; key researchers; bibliography and ongoing research related to the SoBio project:

- References within TERRA's own library
- The web sites of all the Spanish universities that hold departments of sociology, geography, psychology and ecology, to detect possible lines of research, key researchers and literature.
- The web sites of other research centres, as the Centre for Sociological Research (CIS) and the Higher Scientific Research Council (CSIC).
- The TESEO PhD thesis database, which includes bibliographical data on all PhD thesis written in Spanish universities, provided data on research departments and researchers dealing with issues related to SoBio.
- Scientific journals on sociology, psychology, geography, ecology and biology.
- The Spanish Association of Environmental Sociologists, which provided a list of 75 members. All of them were individually searched in the web in order to find relevant literature.
- Other professional associations, which proved a good source of conference proceedings.
- The web site of the Ministry of the Environment, as well as those of the environmental authorities of the 17 regions.
- Personal contacts with key persons at the Ministry of the Environment and some regional departments responsible for nature conservation. These were selected among those regions in where we knew or suspected the existence of unpublished research (Andalusia, Navarra, Madrid, Catalonia).
- Personal contacts with experts dealing with the conservation of social conflictive species, NGO's dealing with nature conservation (WWF, SEO BirdLife). Sociologists and other institutions also gave access to some difficult-to-reach work (unpublished or internal reports, ongoing research, etc.).
- Libraries belonging to research institutions, universities and public bodies, in which the search for incomplete or new, unknown references was completed. (Centre for Sociological Research -CIS, Faculties of Sociology, Biology and Geography, National Parks Documentation Centre, General Directorate of Nature Conservation, etc).

In order to filter the information that was gathered in this phase of the project, all references were studied in order to determine whether they belonged to the aims of SoBio. For this purpose, the following criteria were followed:

- To be social research
- To have direct relation with biodiversity conservation (habitats, species, landscapes)
- To have direct relation with ecosystem and protected areas management

Therefore socioeconomic studies were not considered. Neither work related to landscape perception or reports on visitors to protected areas were considered, unless

these analysed the motivations behind the attitudes or behaviours found in landscape spectators or visitors.

Some studies also refer to the environmental impact of human activities performed in natural areas, such as agriculture, livestock raising, hunting, tourism, etc. However, they tend to focus on merely biological or economical aspects, usually not linking the social and biodiversity aspects of the activity concerned. Therefore, they were not included in the final database of SoBio research.

A number of institutions have performed quantitative research on environmental attitudes and perceptions on local population (whether urban or rural) and on visitors to natural protected areas. This type of work usually does not deepen into biodiversity conservation issues and stresses more urban-like environmental problems such as climate change, waste management, pollution, etc. However, it is worth mentioning that several authorities (the regions of Andalusia, Navarra and Basque Country, as well as the Centre for Sociological Research, CIS) are performing regular surveys to assess the attitudes towards the environment of the population. Also, the network of national parks and other protected areas yearly assesses the needs and the degree of satisfaction visitors have during their visits to all national parks in Spain. This qualitative work was not included in the final database.

Finally, most planning instruments (PORN, PRUG, land use planning, environmental impact assessment studies) include social research. However, this type of research is very much oriented towards planning itself rather than towards gaining scientific knowledge (whether applied or not), and was therefore disregarded in the context of this project.

Hence, from an initial selection of 134 references, only 35 were finally considered to belong to the purposes of the SoBio project. These can be seen in Annex 1.

For the management and analysis of the information, an Access data base was created, with fields covering all the information from the basic reference grid and the methodological variables and items for SoBio framework (The SOBIO Conceptual Framework for Literature Analysis, Zalf 2004). It also includes information on the authors` backgrounds.

4. WHO PERFORMS SOBIO RESEARCH IN SPAIN?

4.1 Research centres

The following table shows the situation of SoBio research from the point of view of related institutions. There are no specific socioenvironmental research centres in Spain, but some large research centres allow marginal SoBio like research. This table only includes those institutions which have produced more than one SoBio reference. It should be borne in mind that the first two cases are large research bodies that cover a number of research centres. To give details of each particular research centre would mean to dissect each SoBio reference individually, with one exception. This is the case of the Interuniversity Department of Ecology, a research group spread in the Universities Autónoma of Madrid, Complutense and Alcalá, all of them based in the Madrid region. This department has produced 6 SoBio references. All other universities do not promote SoBio research; it usually is performed by the initiative of individual researchers.

Table 2: Socio-scientific research centres

Institutions	Research topics	Research methods (social biodiversity research)	Scientific subjects
Academic research (7 universities)	Landscape perception, conflict species, visitors to protected areas	Quantitative, qualitative, empirical research	Sociology, psychology, geography, ecology, education sciences
Higher Scientific Research Council-CSIC	Visitors to protected areas, perception of the environment	Quantitative, qualitative	Sociology, geography, economy

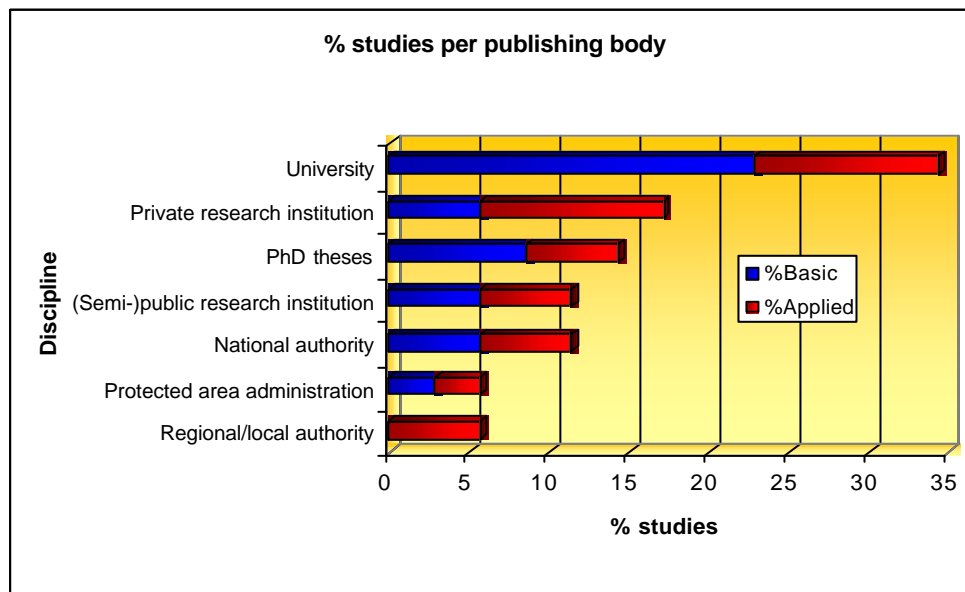


Figure 6: Percentage of selected SoBio literature according to type of research and publishing body

Most socioenvironmental as well as SoBio research is done by universities and PhD students (Fig. 6). Of this research, 41% is performed within ecology departments, 24% by sociologists and the rest by psychologists (18%), education scientists (12%) and geographers (6%). More than half of the academic research is done in universities within the Madrid district (53%), the rest being spread elsewhere in the country.

A few non-profit institutions that focus on environmental issues, have also dealt occasionally with socioenvironmental research. Also, some other non-profit organisations and NGOs related to social sciences have paid attention to environmental concerns and biodiversity. In all cases, only one SoBio reference could be found, showing the lack of SoBio research lines.

Just as it happens with socioenvironmental research, very few SoBio studies belong to specific research lines or programmes. The following table summarizes the research programmes that may promote SoBio research in Spain.

Table 3: Research programmes

Research programme	Organisation	Scope	Content/Objectives
6 th framework programme 2002-2006	EU	EU	<ul style="list-style-type: none"> ▪ Integration of environmental issues into common policies ▪ Sustainable development ▪ Realisation of environmental objectives
National Programme on Biodiversity, Earth Sciences and Global Change	National R+D+I Plan 2004-2007 Ministry of Science and Education	Spain	<ul style="list-style-type: none"> ▪ Deepen the knowledge on biodiversity ▪ Halt biodiversity loss ▪ Raise environmental awareness ▪ Understand the role of anthropogenic changes in nature
National Programme on Social, Economic and law Sciences	National R+D+I Plan 2004-2007 Ministry of Science and Education	Spain	<ul style="list-style-type: none"> ▪ Causes of development and its sustainability ▪ Rational use of natural resources ▪ Enhance values and respect for nature and the environment
National Parks Autonomous Body OAPN	Ministry of the Environment	National Parks in Spain	<ul style="list-style-type: none"> ▪ Biodiversity conservation ▪ Control of invasive species ▪ Socioeconomic and demographic conditions ▪ Social and individual attitudes ▪ Sociocultural context

4.2 Specialists versus generalists

Although there are about a hundred sociologists who have dealt with socioenvironmental research in Spain, most of them work part-time on these issues, at non-specialised research centres and usually have a short career in this field (Paniagua *et al.* 1998).

Few authors concentrate on this type of research, usually not participating in more than two SoBio-like studies during their career. For example only four of the 51 SoBio authors (7,5%) have participated in more than one study (Fig. 7).

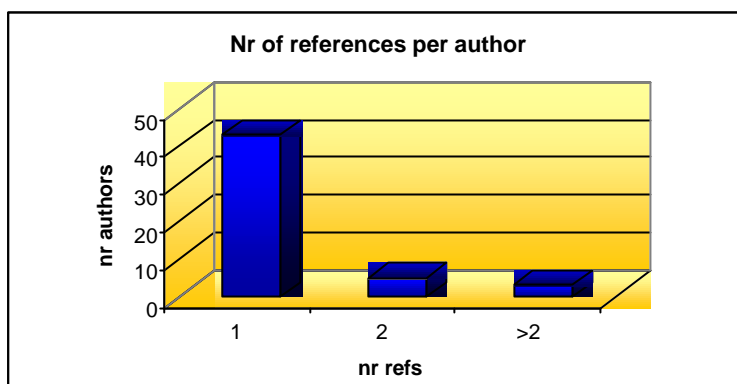


Figure 7: Number of selected references per author

4.3 Disciplinarity and background of authors

The composition of socioenvironmental research groups is dominated by the main researcher's discipline. He/she usually recruits the members of the team within his/her own institution and among researchers of his/her own discipline. Very few teams integrate different disciplines and in exceptional cases, combine social and natural sciences.

Within the SoBio selected studies all research teams were monodisciplinary, but some of them focused their research from the point of view of a different discipline. A vast majority of the selected studies were performed from a sociological perspective, whereas the percentage of social research teams was much lower (Fig. 8, Table 4).

<i>Discipline</i>	<i>Per study</i>	<i>Basic</i>	<i>Applied</i>	<i>Discipline of authors</i>
Sociology	15	5	10	9
Psychology	7	6	1	4
Tourism	6	4	2	4
Education	3	0	3	2
Geography/History	2	1	1	1
Economy	1	1	0	1
Ecology	1	1	0	14
Total	35	18	17	35

Table 4: Studies per discipline of authors and discipline of the study and per research type

Not only the theoretical background of the study itself is relevant, but also that of the authors, which do not always coincide. Most SoBio authors' original discipline was ecology (40%) although only one ecological study was selected. The rest of the studies were mainly performed by authors of the same discipline. This indicates that ecologists tend to explore new disciplines and fields of study more often than sociologists and

other social scientists. This approach is an important step towards interdisciplinarity, although, ideally, it should be reciprocal.

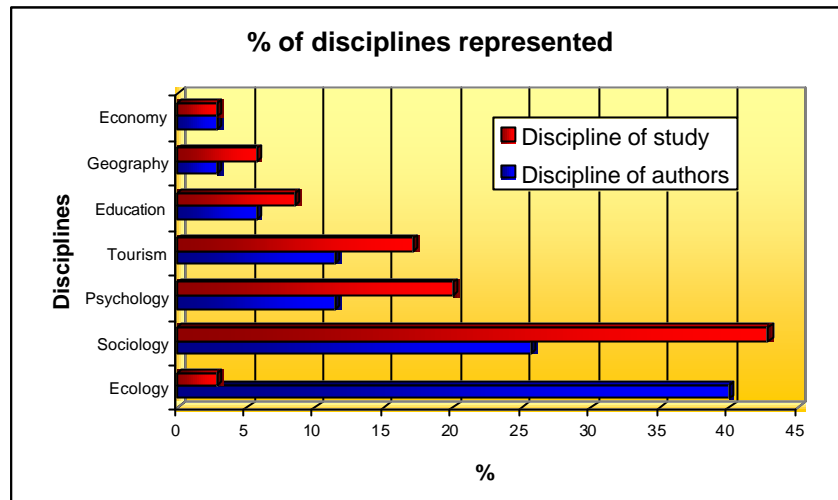


Figure 8: Comparison between the discipline of the authors and the discipline of the selected studies

A similar figure was found by Paniagua *et al.* (1998), about 40% of socioenvironmental research performed in Spain is done by natural scientists, 50% by geographers and the remaining 10% by other social scientists.

The reasons for having a low inter- or even multidisciplinary in socioenvironmental research in Spain are (Paniagua *et al.* 1998, Pardo 1998):

- large influence of traditional disciplines in the organisation of university and research general structures
- low tradition of socioenvironmental research in Spain
- dominance of the biological perspective in environmental research centres
- high degree of dissemination and fragmentation of researchers and research teams specialised in this area
- the social profitability of socioenvironmental research is not well acknowledged

4.4 Research over time

Within all SoBio references, there is a clear growing trend in number of studies per year. In Table 5 and Figure 9 the number of selected studies increases from three in the first five years to 13 in the last five.

Table 5: Number of studies per lustrum and per type of research

Period	Total Nr	Basic	Applied
1986 to 1990	3	1	2
1991 to 1995	7	6	1
1996 to 2000	12	7	5
2001 to 2004	13	4	9
Total	35	18	17

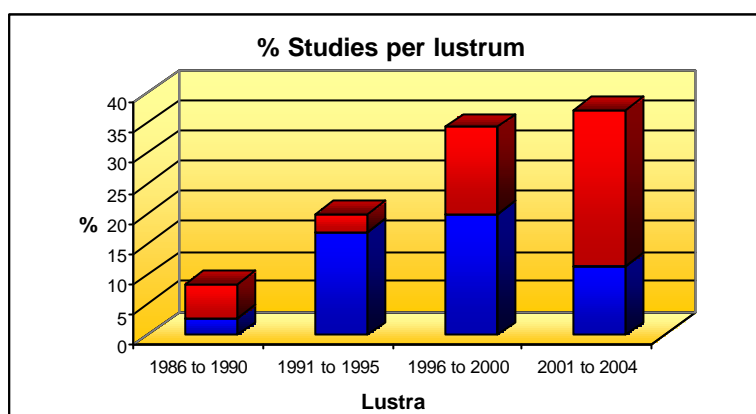


Figure 9: Number of studies per lustrum and per type of research. (In red applied research and in blue basic research).

Of the 35 selected studies, 14 (40%) were classified as written from a sociological perspective (Table 4). The time distribution of these 14 studies can be seen in Figure 10. Before 1996, only one study is found. After that year, when the Spanish Network of Environmental Sociologists was created, the number of studies increases until reaching four in 2004¹.

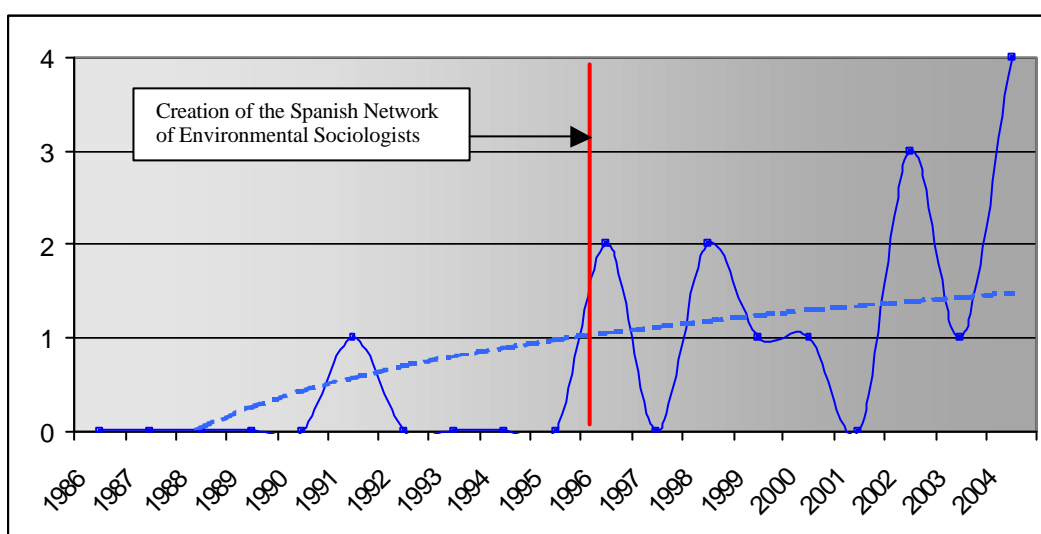


Figure 10: Time distribution of sociological studies within the SoBio literature

4.5 Basic versus applied research

In Spain, there is a tradition of keeping science, politics and “reality” apart from each other. Scientists tend to work on basic issues, which do not respond to the needs of policy makers and the wider public. The different scientific disciplines are kept in

¹ In addition, the VIII Spanish Congress of Sociology which will take place in September 2004 includes an specific workshop on environment, with four sessions. At least three speakers will deal with social aspects of biodiversity conservation. However these references have not been included within the SoBio literature because they have been published in August, once the bibliographic search was finished

separate compartments and very few research groups are multi-, let alone, interdisciplinary (Paniagua et al. 1998). On the other hand, policy makers do not demand scientific backup to their policies and therefore do not promote applied scientific research (Baigorri *pers. comm.*). In the last few years, the research programme authorities tend to favour applied research.

En SoBio, it has been noted that research is evolving from basic to applied, the latter showing a steeper growth curve (Table 5 and Fig. 7). Universities and PhD students tend to do some more basic than applied research, whereas private research institutions (among which, private companies, NGOs and foundations) and regional authorities prefer applied research, that is, focus on solving specific problems. Public research institutions and national authorities show an almost perfect balance between the two types of research (see Fig. 6).

4.6 Scope of the studies

About two thirds of the selected studies focus on certain social groups (25 out of 35) and on certain areas (22 out of 35). Their research methodology includes different types of qualitative and quantitative techniques, such as questionnaires, in depth interviews, field observations and group discussions.

The social groups the studies focused on may be classified as:

- Stakeholder groups (3 studies)
- Visitors to natural protected areas (8 studies)
- Local population of a certain protected area or a certain region (11 studies)
- Children (5 studies)

In some studies, the research focus overlaps two or more groups (visitors and local population; local population and stakeholder groups; children and local population, etc.)

From a spatial point of view, the focus of the research was on:

- Specific natural protected area(-s) (11 studies)
- Municipality (1 study)
- Region (not necessarily a formal administrative one) (10 studies)
- Spain as a whole (2 studies)
- No spatial relation (11 studies)

The latter category corresponds to basic research such as general essays and analyses, including also two applied studies, in which biodiversity policy methodologies are proposed.

4.7 Other social research dealing with biodiversity

There are a number of social disciplines other than sociology which have dealt with biodiversity issues, such as geography, economy, philosophy, psychology, law, history,

etc.. Also, other non-social disciplines have touched the issue of social research related to biodiversity conservation, such as forestry, agricultural sciences, ecology, etc.. These scientific disciplines are not watertight.

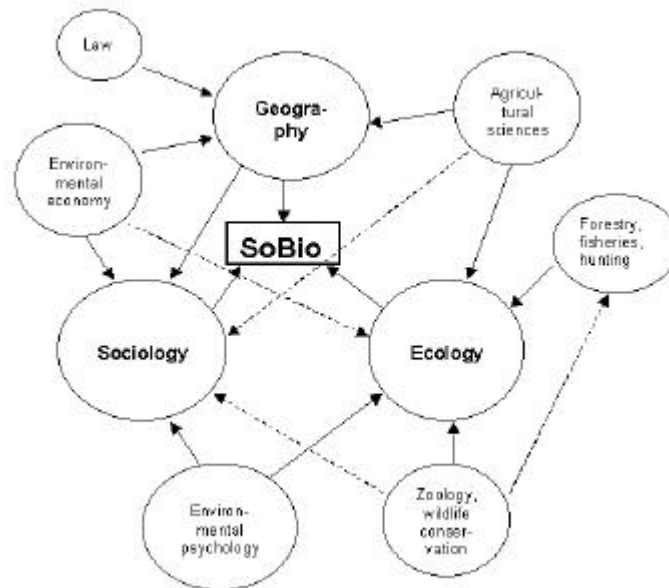


Figure 11: Interrelationships between disciplines in Spanish SoBio research. Solid lines indicate a rather straight relationship between disciplines, whereas dotted lines indicate a weaker one

Figure 11 illustrates the interrelationships between social and natural disciplines as found in Spain. Within the selected references, the following disciplinary approaches have been found. As can be seen, some fields overlap. These disciplines correspond to the disciplines in which Figure 8 and Table 4 are divided.

- Ecology: Public use management in protected areas, landscape perception, species perception, biodiversity management, social conflicts related to species
- Economy: Socioeconomic studies, valuation of natural resources, valuation of protected areas
- Education: Pedagogic studies, communication, environmental education, environmental awareness
- Geography: Geographical analysis, land use planning, rural areas, changes in agricultural system, landscape protection and perception
- History: Historical reviews of social issues, history of nature conservation
- Psychology: Behaviour studies, anthropological research, environmental psychology, landscape perception and interpretation
- Sociology: Social studies, quantitative and qualitative, theory, essays
- Tourism: Studies related to visitors in protected areas

Other disciplines that marginally touch the social aspects of biodiversity conservation are law (legislative aspects of nature protection, protected area management, etc.) and ethics (nature philosophy, ecoreligions). Also, engineering disciplines such as agriculture,

forestry, cattle raising... regard biodiversity as an economic resource and do not focus on social aspects of biodiversity conservation. No studies have been found in Spain that treat the SoBio issues from these disciplinary perspectives.

4.8 Conclusions

As can be seen from the results presented above, Spanish sociology has not achieved any form of synergy with natural sciences dealing with biodiversity conservation. There is a high degree of fragmentation in SoBio research in Spain and hardly any leadership. This weakness also affects the career of individual researchers or research teams. For most of them, socioenvironmental research is of peripheral interest within their priorities, and only 7,5% of the 51 SoBio authors has participated in more than one study. All research teams were monodisciplinary, except one, but some of them focused their research from the point of view of a different discipline.

Only 35 references have been considered to belong to the purposes of the SoBio project, and most of them (71,4%) have been released after 1996. Within the SoBio selected studies

Most SoBio research (40%) has been performed by ecologists, and 25,7 % by sociologists. This indicates that ecologists tend to explore new disciplines and fields of study more often than sociologists and other social scientists.

It has been noted that SoBio research is evolving from basic to applied, the latter showing a steeper growth curve in numbers.

5. CONTENT ANALYSIS

Most SoBio references are found within agenda setting (57%), followed by policy implementation (23%) and policy evaluation (14%). Policy formation is the least represented stage, with only 2 studies (6%).

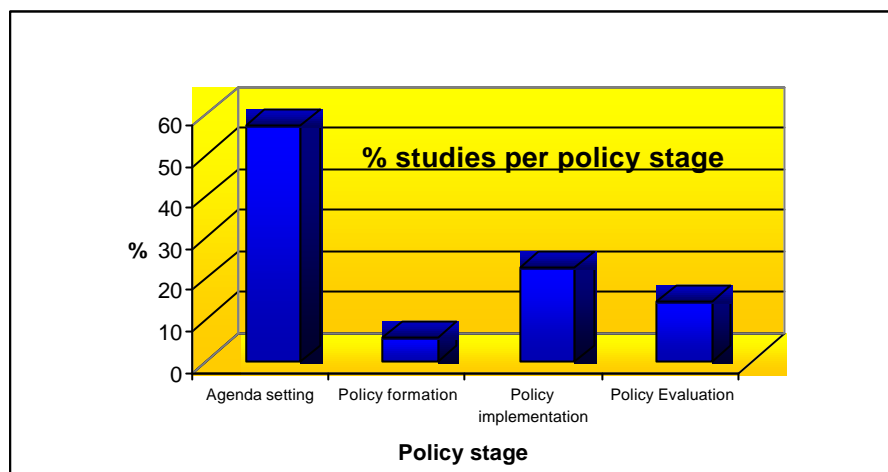


Figure 12: Percentage of SoBio references per policy stage

It is clear that agenda setting is the focus of most social studies related to biodiversity conservation. This is partly due to the gap existing between researchers and policy makers, who do not know about each other's needs and frequently miss the opportunity to join forces. As can be seen also in Figure 13, the further we get into the policy cycle, the more applied studies. The earlier stages in the policy cycle, especially context analysis, is focused on basic research. This makes sense, since context analysis does not usually apply to a certain situation, whereas policy implementation or evaluation usually implies the analysis of a particular case. Table 6 details the number of studies per thematic category within each policy stage.

Table 6: Number of studies per policy stage and type of research

POLICY STAGE	Basic	Applied	Total
IV.1 Agenda setting	13	7	20
IV.1.1 Impact of demographic changes on biodiversity	0	1	1
IV.1.2 Large scale patterns and variations in attitudes and behaviour	13	6	19
IV.1.3 Analysis of biodiversity discourse	0	0	0
IV.2 Policy formation	2	0	2
IV.2.1 Assumptions about the public in the acquisition and use of scientific knowledge	0	0	0
IV.2.2 Interaction between science and policy, effect of new ideas	0	0	0
IV.2.3 Social sciences as a tool for policy making	2	0	2
IV.3 Policy implementation	3	5	8
IV.3.1 Dynamics of decision making processes and conflicts in biodiversity management	1	2	3
IV.3.2 Public understanding of, and participation in, biodiversity policies and management	2	2	4
IV.3.3 Discussion of innovations, reactions of stakeholder groups towards new methods and ideas	0	1	1
IV.4 Policy Evaluation	0	5	5
IV.4.1 Evaluation of biodiversity policies and action plans	0	5	5
Total	18	17	35

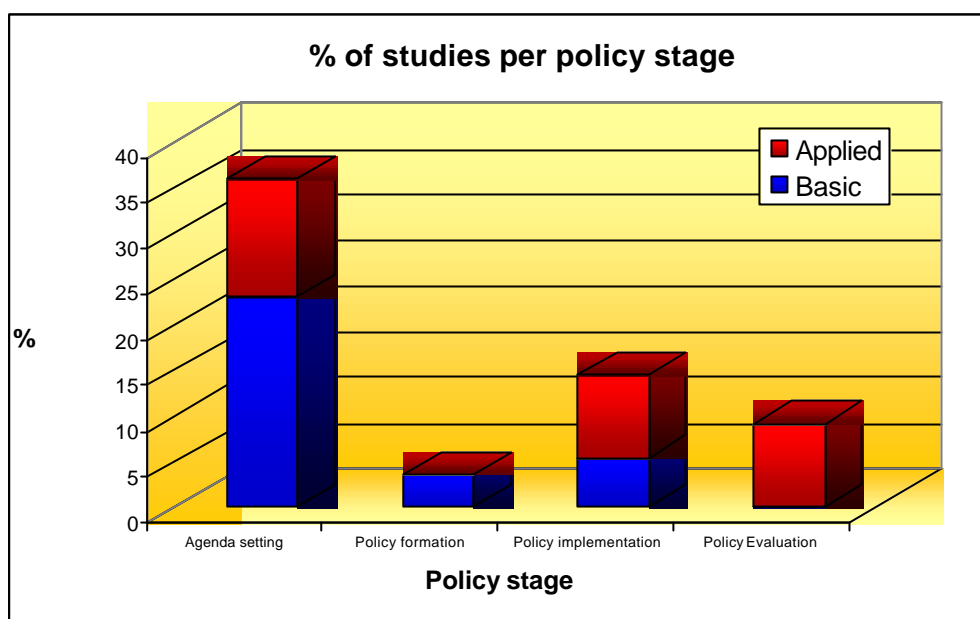


Figure 13: Percentage of studies per policy stage and type of research

5.1 Agenda setting

Most SoBio references are found within this stage (51%). This result confirms the general opinion of the interviewees that social studies are essential at this stage of the policy cycle, since diagnosis is the basis of any project, plan or policy.

The next table summarises the SoBio references found in the Agenda setting stage.

Schedule 1: Research focus areas in Agenda Setting

IV.1.1.	>	Impact of demographic changes on biodiversity
IV.1.2.	>	Large scale patterns and variations in attitudes and behaviour towards biodiversity between countries/cultures/religions
IV.1.3.	>	Analysis of biodiversity discourse: biodiversity as a topic of public debate

Table 7: Identified studies in Agenda Setting

Research focus (IV.1.1.- IV.1.3.)	Scope	Discussed aspects regarding policy cycle*	Approach resp. correlation to biodiversity	References
IV.1.1	Perception of landscape diversity in different cultures. Effects of land abandonment	CA	Landscape beauty related to natural quality	Gómez-Limón & de Lucio 1999
IV.1.2.	Social conflict and perceptions on the wolf	PI	Conflict species	Blanco & Cortés 2002

IV.1.2.	Attitudes and perceptions towards animals in children	CA	Animals as an indicator of biodiversity	Alonso 1996 Alonso <i>et al.</i> 1991
IV.1.2.	Visitors' landscape preferences in recreational areas of a mountain range	CA	Landscape beauty related to natural quality	Atauri <i>et al.</i> 2000
IV.1.2.	The social nature of nature	CA	Natural values are found in any kind of territory	Baigorri 1999
IV.1.2.	Sociological analysis of the brown bear/human population cohabitation	PI	Conflict species	Bobbé 1993
IV.1.2.	Social perception and cost benefit analysis of nature	PI	Nature as an economic object	Buñuel & Delgado 2002
IV.1.2.	Perception of protected areas by local population in Andalusia and Majorca	PI	Biodiversity concept of the CBD	CIS 1991 Moreno & Pino 1993
IV.1.2.	Perception of landscape diversity in different cultures	CA	Landscape beauty related to natural quality	de Lucio & Gómez-Limón 2002
IV.1.2.	Landscape preferences and behaviour of visitors to Spanish protected areas	CA	Landscape beauty related to natural quality	de Lucio & Múgica 1994 Gómez-Limón 1999 Gómez-Limón <i>et al.</i> 1994 Múgica 2000 Zamora & Nicolás 1996
IV.1.2.	Social and economic transcendence of landscape	CA	Landscape beauty related to natural quality	González Bernáldez 1989
IV.1.2.	Attitudes towards the reintroduction of a conflict species	PI	Conflict species	Martín Rosa & González Benasco 1998
IV.1.2.	Social perception of environmental values of the Navarra population	PI	Biodiversity concept of the CBD	Pardo 2000
IV.1.2.	Social and economic implications of tortoise captivity	PI	Conflict species	Pérez 2004 Pérez <i>et al.</i> 2004

*PI: problem identification; CA: context analysis

However, a thematic classification of the SoBio projects found in the bibliography analysis, divides the references into the next three categories.

IV.1.1. Impact of demographic changes on biodiversity

Some of the problems related to biodiversity conservation in Spain are directly caused by human behaviour. Perhaps the most important one is the abandonment of rural areas, which, slowly but inexorably, is introducing important changes in biodiversity. On one side, it favours the expansion of wooded areas, and hence certain species such as Roe deer (*Capreolus capreolus*), wild boar (*Sus scrofa*) and wolf (Sáez-Royuela & Tellería 1983). It also favours the disappearance of other species that need open spaces or cultivated areas, such as Rabbit (*Oryctolagus cuniculus*), Red-legged partridge (*Alectoris rufa*) and Partridge (*Perdix perdix*), which are important hunting species as well as food for other species such as Bonelli's eagle (*Hieraaetus fasciatus*) and the

Pardel lynx, the later one of the most endangered species in the world (Tucker & Heath, 1994; Palomo & Gisbert, 2002; Martí & del Moral, 2003). Despite the importance of this process, the few social studies found are only related to landscape perception (see for instance Gómez-Limón & de Lucío 1999).

IV.1.2. Large scale patterns and variations in attitudes and behaviour towards biodiversity between countries/cultures/religions

Studies focused on area management

Natural protected areas are, among others, social scenarios. Within a natural protected area, very different management goals and expectations meet, often leading to social conflict. In order to design a natural protected area management strategy that respects all goals and avoids social conflict, it is important to know the perception visitors and locals have of the area itself as well as of its previous management results.

Numerous studies have focused on the social perception of nature as well as of the equipment and facilities offered by natural protected areas in Spain, often within the same research project (Atauri *et al.* 2000, Azqueta 1996, Corraliza *et al.* 2002, Farías Torbidoni 2000, Gómez-Limón & de Lucío 1994, Gómez-Limón *et al.* 1994, Gómez-Limón *et al.* 1996, González Bernáldez *et al.* 1981, Múgica *et al.* 1993). The main issues of interest in these studies are the assessment of a specific protected area as a territory with emotional value, to understand what the area represents for people (beliefs, values, superstitions), the analysis of the motivations of visitors and the activities performed within the area, the evaluation of available material resources and infrastructures destined to the public use of the area, etc.. The knowledge of these issues allows to understand the reason of being of natural protected areas, outside the more or less objective biological reasons.

With a wider perspective than just protected areas, landscapes are considered today “the external expression of a certain area’s ecosystems, reflecting, as if it were indicators, their features and functions” (González Bernáldez 1989). Thus, landscapes are a reflection of environmental quality, and translate ecological and biological diversity. But also, landscapes are a sort of “historical document in which the evolution of human activity can be read” (González Bernáldez 1989), therefore hosting an important cultural heritage. And last, but not least, landscapes are an object of aesthetic contemplation, which arise subjective feelings and emotions. The latter features of landscapes have important social implications. In Spain, there is an important school of ecologists studying landscape perception.

The interest in area management can be seen in the selection of SoBio bibliography, since most studies found in this policy stage (35%) are visitor surveys to assess their landscape perception (Atauri *et al.* 2000), their behaviour (Gómez Limón *et al.*, 1994; Zamora & Nicolas, 1996; Gómez Limón, 1999) or both (Mugica, 1993; Lucio & Mugica, 1994). Although not all studies are oriented towards management, they certainly offer interesting insight into public use management in protected areas. Besides, one of the studies (Moreno & Pino, 1998) questions visitors about their perception of the park’s management, so that it could also be included in the policy evaluation stage.

Protected areas, as well as a social scenario, are the visible face of biodiversity conservation policies and therefore it is essential that the public has a positive view and feel satisfied after visiting one of them. For this reason, many protected areas survey their visitors' opinion. These surveys have not been included as SoBio references, because they are very much oriented towards tourism.

In relation to social conflictivity of protected areas, a survey was made on the Doñana National Park (CIS, 1991). By the end of the eighties, this park was suffering great social conflictivity, since it was regarded as a burden for local development. A number of development projects in the area clearly threatened the park. The survey aimed at knowing the attitude of the local and regional population towards protected areas in general and focused then on the population directly affected by the park (CIS, 1991). The conflict was solved by the intermediation of an international expert committee and the European Commission, which allowed the design of a specific operative programme for the area within the frame of structural funds.

In the last years, numerous studies have been made on protected area economics, in which the contingent valuation technique is used (Barreiro, 1998). They are based on visitor surveys on their willingness to pay for conservation. Due to the economic character of the studies they have not been included in SoBio. However, one reference was included (Buñuel & Delgado, 2002) in which the effect of social perception of willingness to pay is studied. It concludes that although people are generally concerned about the environment, they are not willing to pay because they think industry and governments should do so. Therefore, the study questions the value of the contingent valuation method.

Studies focused on species management

Another important field of work is the relationship between society and wildlife management, which is becoming increasingly recognised as an important component for nature conservation (Bath 2000). One of these issues are conflictive species, such as the Brown bear and the Wolf (*Canis lupus*). The existence of such a conflict represents one of the main threats to the recovery and conservation of their populations, as it has been recognised by the experts (Layna *et al.*, 2000, Heredia, 2003), and therefore management is often more sociopolitical than biological (Bath, 2000). Therefore the understanding of the human dimension is essential for successful conservation of certain species.

However, studies are scarce in this area and only recently the case of the wolf has been studied (Blanco & Cortés, 2002). One of the main findings of this study is that brings to the fore tensions in today's society that are common to other conservation problems, as the conflict between the pro-wolf social group (urban inhabitants), that showed its appreciation for their symbolic, ethical, scientific, aesthetic and recreational values, rejecting the hunting and utilitarian values. However, the two latest are the most valued by the anti-wolf sector members (mainly rural inhabitants), who, on the contrary, showed little appreciation of the values most favoured by the pro-wolf group.

More recently, a Canadian research team has studied the wolf in a county in NW Spain, but the data have not yet been processed (Bath 2000, Alistair Bath *pers. comm.*). The only study found on the brown bear has been performed by a foreign researcher (Bobbé, 1993).

Species conflictivity is occasionally so high, that the realisation of social studies previous to the design of conservation plans would be desirable. Examples of this are the reinforcement of wild populations of the brown bears or the reintroduction of the Monk Seal (*Monachus monachus*). Here also there is a research gap, being only worth mentioning a study made by a social studies consulting (Martín & González, 1996), about the social attitudes towards the reintroduction of the monk seal in the Canaries, as part of a LIFE project. Their main findings are similar to those of Blanco & Cortés, 2002.

However non-conflictive species may also be threatened by social habits and customs. For instance, in the southeast of Spain it is customary to collect spur-thighed tortoise (*Testudo graeca*) as a pet. A PhD thesis on this subject has recently started, with the aim to study this phenomenon and to propose conservation measures for this species (Pérez *et al.* 2004, Pérez unpublished).

Studies focused on planning in general.

This section include those SoBio studies embedded in a general planning process. Only one such study has been found.

The Navarran Biodiversity Conservation Strategy (1999) included the need to elaborate an Environmental Education Strategy. To enclose the alter one in its socioenvironmental context, a social participation process was designed, as well as a questionnaire for public authorities and a general survey (Pardo, 2000).

Other studies

Besides these sections, five other references have been found for agenda setting. Two of them are studies on the perception of animals by schoolchildren (Alonso, 1996; Alonso & Benayas 1991). Both studies were performed on children in zoos, and considers the relationship towards animals as an indicator of attitudes towards the environment.

Two others are landscape perception studies (González, 1989; de Lucio & Gómez-Limón, 2002), which are too general to be included in the previous section on area management. A fifth study is an essay on the question whether protected areas should exist as protected islands or the whole territory should be protected in different degrees (Baigorri 1999).

Conclusions

Most references within agenda setting deal with landscape perception and visitors' attitudes in protected areas. These, together with visitors surveys in protected area are an important source of information for public use managers.

However, there are hardly any studies that evaluate the acceptance and attitudes of local population previous to the designation of a certain protected area. Current legislation requires the making of management plans, but the chapter on social environment is usually descriptive, superficial and methodologically poor (Múgica & Pardo, *pers. comm.*)

Although certain species conservation strategies demand social studies, very few have been performed up to date. Conservation planners have enough biological knowledge of threatened species, but hardly any about the relation of these species with humans.

There is still a large gap in this area, which is essential for the protection of certain species.

Most of these studies have been performed by ecologists and biologists.

5.2 Policy formation

Only two studies have been found to belong to the policy formation stage (Armell 1998, de Castro 1991). Both of them are essays dealing with the social aspects of natural resource management. They stress the value of social scientific techniques as tools for natural protected area management, especially regarding the contact with local population: communication between society and policy makers. Since this contact should exist before policy is implemented, they were considered as belonging to the policy formation stage. Table 8 shows both studies. Since none of them belonged to the proposed research focus areas (see below), a new one is proposed for both.

Schedule 2: Research focus areas of Policy Formation

IV.2.1.	>	Assumptions about the public in the acquisition and use of scientific knowledge by experts
IV.2.2.	>	Interaction between science and policy; effect of new ideas in ecology and social sciences on policy
IV.2.3.	>	Social sciences as a tool for policy making

Table 8: Identified studies in Policy Formation

Research focus (IV.2.1.- IV.2.2.)	Scope	Discussed aspects regarding policy cycle	Approach resp. correlation to biodiversity	References
IV.2.3.	Contributions of social sciences to natural resource management	Methodological proposal	Nature conservation as a biodiversity management strategy	Armell 1998
IV.2.3.	Social aspects of natural area management	Methodological proposal	Nature conservation as a biodiversity management strategy	de Castro 1991

IV.2.3. Social sciences as a tool for policy making

One of the studies analyses the differences between urban and rural inhabitants in relation to forest management plans (Armell 1998), resulting in similar conclusions those of Blanco & Cortés, 2002 (see agenda setting). To understand these differences, as was explained in the introduction, is essential to understand Spanish idiosyncrasy in relation to biodiversity. Without this previous understanding, no social tool may help. To illustrate the importance of this statement, it is worth mentioning that all SoBio studies that used questioning techniques always had separate questionnaires for rural dwellers and urban visitors, even when dealing with similar issues (management of public use facilities in a protected area, landscape perception).

The analytical character of both studies leaves behind their approach to biodiversity. The authors are not directly interested in biodiversity conservation, but rather in how to make conservation policies effective.

No studies have been found focusing on the “assumptions about the public in the acquisition and use of scientific knowledge by experts” or the “interaction between science and policy, effect of new ideas in ecology and social sciences on policy”. In the latter case, a number of environmental sociologists (Aledo, Paniagua, Riechmann, etc.) have studied the “green movement” and its influence on society (not exactly on policy making itself). However, the studies on green movement were far flung from biodiversity and were therefore disregarded in the context of this report.

The other study (de Castro, 1991) is an essay on the social aspects of protected areas, concluding that the social dimension should be considered as important that the ecological or the economic.

Conclusions

Research focused on the policy formation stage may help find the correct political instruments (legislation, plans and programmes, public participation, infrastructures) to define efficient biodiversity conservation strategies. However the scarcity of studies found in the policy formation stage does not allow to make a deeper analysis on the state of research. Apparently, very few studies have been performed and therefore a large gap exists on research dealing with the interactions between science and policy.

5.3 Policy implementation

Eight SoBio references have been found for this stage (22%). These studies have a local scope, mainly a certain protected area (Álvarez et al. 1986, García & Cabrejas 1996, Casas 1999, Troitiño 2001, Torres 2002, Carbonell 2003; Torres & Sanz 2004), except in one case, in which the whole country is considered (Callaghan 2003). The studies have focused on groups, which have been interviewed or questioned. In other cases, the results of the study were written in essay form.

Table 9 shows the different SoBio references found. In this policy stage, some of the studies were difficult to classify, since they may be applicable to more than one stage (policy formation, policy evaluation).

Schedule 3: Research focus areas for Policy Implementation

IV.3.1.	>	The dynamics of decision making processes and conflicts concerning the management of biodiversity
IV.3.2.	>	Public understanding of, and participation in, biodiversity policies and management, including variations in attitudes and behaviour towards biodiversity among stakeholder groups, different social and cultural groups
IV.3.3.	>	Diffusion of innovations, reactions of stakeholder groups towards new methods and ideas concerning land use and biodiversity management

Table 9: Identified studies in Policy Implementation

Research focus	Scope	Discussed aspects regarding policy cycle	Approach resp. correlation to biodiversity	References
IV.3.1.	Conflict management through participative planning	Conflict resolution process	Participation as an instrument of biodiversity conservation and management	Carbonell 2003
IV.3.1.	The role of stakeholders in conservation	Acceptation, conflict resolution	Participation as an instrument of biodiversity conservation and management	Casas 1999
IV.3.1.	Social conflict between conservation and development goals	Situation analysis	Conflict over natural resources	García & Cabrejas 1996
IV.3.2.	The role of communication in biodiversity conservation	Public understanding of biodiversity management	Biodiversity concept of the CBD	Callaghan 2003
IV.3.2.	Methodological proposal of protected area management involving stakeholders	Conflict resolution process	Biodiversity concept of the CBD	Torres 2002 Torres & Sanz 2004
IV.3.2.	Good practices in land management based on public participation	Conflict resolution process	Biodiversity concept of the CBD	Troitiño 2004
IV.3.3.	Effects of an environmental education programme on the attitude towards natural landscapes	Acceptation of nature	Landscape beauty related to natural quality	Álvarez <i>et al.</i> 1986

These studies, although scarce, cover a wide thematic range: communication (1), environmental education (1) and mainly participation (6). This latter aspect is very important, since it constitutes 35% of the problems detected by protected area managers when management plans are to be implemented (Troitiño, 2001)

IV.3.1. The dynamics of decision making processes and conflicts concerning the management of biodiversity

A few of the selected studies focus on “the dynamics of decision making processes and conflicts concerning the management of biodiversity” (García & Cabrejas 1998; Casas 1999; Carbonell 2003), since they give certain recommendations for policy makers on what to do in conflict areas (natural protected areas in which a conflict of crossed interests prevail) or with conflict species.

IV.3.2. Public understanding of, and participation in, biodiversity policies and management, including variations in attitudes and behaviour towards biodiversity among stakeholder groups, different social and cultural groups

Public participation

In other cases, the importance of public participation in policy making is stressed. In two studies, new participation methodologies are being proposed (Torres 2002; Torres & Sanz 2004). Therefore, these have been considered to focus on “public understanding of, and participation in, biodiversity policies and management, including variations in attitudes and behaviour towards biodiversity among stakeholder groups, different social and cultural groups” (see also Troitiño, 2001). To the latter category, as well as to the “discussion of innovations, reactions of stakeholder groups towards new methods and ideas concerning land use and biodiversity management” belongs one study, which showed the changes in attitude towards biodiversity in children as a response to an environmental awareness campaign (Álvarez *et al.* 1986).

Although policy makers themselves acknowledge the importance of social participation for the protection and conservation of natural (Casas, 1999; de Benito, *pers. comm.*), it is still insufficiently used (Troitiño, 2001). The current legislation requires certain deadlines for participation in protected area planning (PORN and PRUG), but these take place once the documents have been finished. Therefore, participation becomes a claim (de Benito *pers. comm.*). As a response to this problem, some authors stress the need to include participation from the very beginning of the process (Troitiño, 2001; Carbonell, 2003).

In some protected areas, the population has been intensely involved in the process since its early stages. However, this is not easy, since not everybody is ready to participate, the issues concerned are not well known to the participants and the process needs to go through a training phase. Another usual problem is that participation is a relatively new social tool in Spain and neither facilitators nor participants are well trained in the process. A lot of time is lost then. For instance, the elaboration of the Management Plan of the Teide National Park followed this model and took six years to be completed. The Sustainable Development Plans used in Andalusia follow a similar model.

More recently, in conflict situations intermediation techniques have been used, both by public administrations (Carbonell, 2003), as NGOs (J.C. Cirera *pers. comm.*).

As a difference from agenda setting, where most authors were environmental scientists, in policy implementation most studies have been performed by sociologists or other social scientists. None of the authors, being mainly applied studies, explicitly explain their view on biodiversity.

Communication

The loss of biodiversity is mainly caused by human behaviour. However, this problem tends to be detached from socioeconomic, territorial and social problems, which in turn makes it difficult to make society understand the issue of biodiversity conservation (Callaghan, 2003). In fact, the loss of biodiversity is not perceived as a serious problem at local level (Callaghan, 2003; Junta de Andalucía, 2003; Garcia, 2004), but it is at global level (Junta de Andalucía 2003). In a survey made by the CIS, neither the

designers of the survey nor the respondents, mentioned it as a local (i.e. Spanish) environmental problem (CIS 1999).

Although communication is an important aspect of biodiversity conservation, only Callaghan's (2003) article was found. A possible reason is that policies are made by and for people and biodiversity comes in second place. Only well known problems (flag species and some popular protected areas) draw the attention of society and "secondary" species, such as any obscure endangered endemic plant, have no apparent social implications.

IV.3.3. Diffusion of innovations, reactions of stakeholder groups towards new methods and ideas concerning land use and biodiversity management

Educación.

Only one article was found on education and biodiversity (Alvarez et al, 1986), focused in the changes of attitude of the local population towards an specific area. This was of a high value in the past, when was used as pasture land, but not in the present, because livestock raising has been abandon, and area is in danger because a construction of an industrial area is planned. Although we have found just a few SoBio references on education, this is considered an emerging issue in Spain (Benayas, et al. 2003).

Conclusions

Social sciences are an important contributor to policy implementation, as public participation is essential in this phase. The degree of influence of public participation on policy making needs to be considered carefully when biodiversity conservation priorities clash with the general interest of the local population, because unfriendly but necessary policies may be disregarded by the public. This is especially true when land use and/or conflict species are at stake.

In the case of Spain, most SoBio studies are stressing the importance of public participation but few actually show the results of this policy instrument. If they do, it is to show the flaws of its use, that is, to demonstrate that public participation is more complex than it seems (more actors involved that it appears at first glance, for instance, or improper cultural approach to the different actors).

Instruments such as communication and education are rarely found in the literature, although in some references that are cited as essential for the application of biodiversity conservation plans and policies.

5.4 Policy evaluation

Although most interviewees declare that social studies are handed in this stage, the bibliographical search only gave 5 references, that is 14% of the SoBio list. The references are summarised in Table 10.

Schedule 4: Research focus areas for policy evaluation

IV.4.1. > Evaluation of biodiversity policies and action plans

Table 10: Identified studies in Policy Evaluation

Research focus (IV.4.1.)	Scope	Discussed aspects regarding policy cycle	Approach resp. correlation to biodiversity	References
IV.4.1.	Evaluation of changing attitudes in children towards the environment	Evaluation of education / awareness policies	Landscape beauty related to natural quality	Benayas 1990
IV.4.1.	Conservation and use of natural parks in Spain	Evaluation of conservation plans	Nature conservation as instruments of biodiversity conservation and management	Corraliza <i>et al.</i> 2002 Castell 2004
IV.4.1.	Impact on the population affected by the enlargement of the Covadonga National Park	Evaluation of conservation plans	Nature conservation as instruments of biodiversity conservation and management	Guerra 1998
IV.4.1.	The concept of biodiversity in secondary education	Evaluation of education / awareness policies	Biodiversity concept of the CBD	Salinas 2001

IV.4.1. Evaluation of biodiversity policies and action plans

Plans and project assessment

Three of these studies evaluate protected area management (Guerra, 1998; Corraliza *et al.* 2002, Castell, 2004). The three of them assess the social perception of the local population affected by protected areas, but the best aimed at assessing a certain policy is that of the Diputación de Barcelona (not yet published). At the time when a certain Natural Park's management plan was to be updated, the complete population living or working within this park was surveyed. The final goal was to assess different aspects related to the park and, more specifically, the degree of satisfaction of the population with respect to a general view of the park, legislation, park guards, equipment, infrastructures, personal services and local development programmes. Also, there was an open question section in which the respondents could mention their opinions unrestrictedly

Two other studies were found which assessed formal and informal environmental education programmes by asking children of different age about their knowledge and attitude towards biodiversity before and after the implementation of the programme (Benayas 1990, Salinas 2001). The former author evaluates the definition of biodiversity given to children in their textbooks. Apparently, the definitions were heterogeneous and incomplete, generally confusing or discouraging the children to learn more about the subject.

Policy evaluation

If the evaluation of plans and programmes is scarce, let alone biodiversity policy evaluations. Surveys made at state level are very general and are oriented towards

knowing attitudes and behaviours, that is they are more basic research (Gómez *et al.* 1999). On the other hand, surveys made by the regions are oriented towards the evaluation of policies. Only a few opinion surveys have been found, which are being performed since 2001 in some regions (See Box in page 17). They have not been included as SoBio references because they include all aspects related to the environment. They do include questions and answers on biodiversity and are used to evaluate specific policies, such as the protected area policy.

Another study that may be included in this chapter was initiated in 2003 by EURPARC. It aims at assessing the public's understanding of the messages offered by protected areas' interpretation centres (why the protected area was created, which are their natural values, etc.. (EUROPARC-Spain, *pers. comm.*).

Conclusions

After agenda setting, policy evaluation is the stage where social sciences may contribute at the most (See expert interviews). Social sciences may help explain what went right or wrong with a certain policy and may suggest changes to a certain policy that satisfy all stakeholders, based on the knowledge of the attitudes and behaviour of these stakeholders.

The SoBio references found indicate that these studies are quite recent and scarce in Spain. This is not only a problem found in social sciences, but also many other fields.

However, the last years have seen a shift in trend, and this type of studies will probably increase in the near future.

6. ANALYSIS OF EXPERT INTERVIEWS

6.1 Description of the interviewees

The following list of interviewees includes a short description explaining the reasons for choosing them. Under the name of the interviewee is indicated whether he/she is a key researcher or a policy maker, and his/her present occupation.

Artemio Baigorri (*Key researcher*)

Sociologist and professor at the University of Extremadura. His areas of interest cover socioenvironmental issues such as rural development, agriculture, organic farming, etc. He has published numerous articles and has participated since the 80s in rural development and organic farming initiatives in the field.

Juan Manuel de Benito (*Policy maker*)

Biologist. Former Subdirector of ICONA (Institute of Nature Conservation) between 1989-1994. Since 2000 he is Head of Department of the National Parks Autonomous Body, in where is of the research programme at national parks.

Juan Carlos Blanco (*Key researcher*)

Biologist. Freelance consultant in biodiversity and expert in conflictive species. In the last years he has focused on the wolf and is considered a world reference researcher on this issue.

José Antonio Corraliza (*Key researcher*)

Sociologist. Holder of a PhD in Psychology and professor at the University Autónoma of Madrid. He has led numerous studies on landscape perception and assessment of protected area management, mainly from the point of view of social psychology. He is also a pioneer in Spanish environmental psychology.

Ignacio Elorrieta (*Policy maker*)

As a former General Director of Environment of the Government of Navarra he prepared the Navarran Sustainable Development Strategy. He was also involved in the Navarran Biodiversity Conservation Strategy (1999), the assessment of biodiversity conservation in the region, and the Navarran Strategy of Environmental Education (2001). Today is Director of the Environmental Integration Unit at the regional Department of the Environment.

Marta Múgica (*Key researcher and policy maker*)

Biologist. Member of the technical office of EURPARC-Spain, an organisation that enhances the coordination and development of Spanish protected areas, under the umbrella of its Europe-wide mother organisation EURPARC. Marta Múgica did her PhD on visitor's perception of the protected areas of the region Madrid.

Marcedes Pardo (*Key researcher and policy maker*)

Sociologist. Among her numerous duties, Pardo is professor at the University of Navarra, President of the Spanish Global Change Committee and Coordinator of the Spanish Network of Environmental Sociologists. She has been interested in

socioenvironmental issues since the 80s and has published many articles and books on them.

6.2 Assessment of current social research on biodiversity and gap analysis

How do you appraise the state of biodiversity research regarding quality/quantity/methodology/innovativeness and up-to-dateness/orientation on need of research?

Research in biodiversity as such is regarded as being acceptable from the points of view of quality and quantity. Most interviewees agree that it has significantly improved in the last few years. However, the interviewees also acknowledge the fact that biodiversity in Spain needs to improve. Being one of Europe’s biodiversity hotspots, Spain should devote more resources to its research and, at least, do it at the level the leading countries in this field are performing. From the point of view of methodology, innovativeness and orientation on research needs, policy makers complain that research is too basic and not oriented towards management.

Table 11: Assessment of Status Quo – Biodiversity Research*

Interviewee	Quality	Quantity	Innovativeness/ Topicality	Demand-orientation
Policymaker	2/0/1	2/0/1	0/0/0	1/1/0
Researcher	1/1/0	2/1/0	1/1/0	1/1/0

*Please note that not all interviewees were able/willing to answer this question

How do you appraise the state of social research related to biodiversity conservation and management regarding quality/quantity/ methodology/ innovativeness and up-to-dateness/orientation on need of research/ disciplinarity?

Social research related to biodiversity is, to put it mildly, virtually inexistent. Elorrieta even named it “science fiction”. Most key researchers are only able to mention a few examples of their own experience, which indicates the low degree of dissemination and lack of interdisciplinarity existing in this field. Most of them, though, do mention applied social studies for the purpose of land use or protected area planning. These studies are usually of a very poor quality and follow poor methodologies. The reason may be that this type of work is embedded within larger environmental studies and are performed by researchers without proper social science training.

Table 12: Assessment of Status Quo – Social Research regarding Biodiversity*

Interviewee	Quality	Quantity	Innovativeness/ Topicality	Demand-orientation	Embedding in Biodiversity Research
Policymaker	0/0/2	0/0/2	0/0/1	0/0/1	0/0/0
Researcher	0/0/4	0/0/4	0/0/3	0/0/4	0/0/0

*Please note that not all interviewees were able/willing to answer this question

6.3 Contribution of social research to biodiversity conservation policies within the frame of the policy cycle

What can/should be the contribution of social sciences to biodiversity research?

There is a consensus among the interviewees as to how social sciences may contribute to biodiversity research. Social sciences may help understand the cultural and historical aspects of the environment. Especially in this part of the world, where landscapes have been man-made since centuries, the relationship between man and nature is very close. Social sciences may also contribute identifying problems. Biodiversity does not exist in itself, but in relation to human beings. Hence, how they interact and what people see as a problem may be better understood with the help of social sciences. Finally, social sciences may also provide with research tools that help solving a specific problem, especially when public participation is involved.

Referring to the policy cycle, in which fields do you consider a contribution of social sciences to be reasonable?

- **basic research and problem analysis**
- **policy formation and formation of a judgment**
- **policy implementation**
- **policy evaluation**

In general, the interviewees agree that the contribution of social sciences to the policy cycle is less than it should be. Both policy makers tend to be more negative, indicating that there is a gap between the interests of scientists and the needs of policy makers and managers. Researchers (Blanco), however, argue that social research is steered towards the political needs of policy makers, rather than the needs of biodiversity conservation as such. With respect to the different stages, most interviewees think that social sciences contribute mainly to agenda setting (to the identification of problems) and policy formation (especially to the choice of policy instruments).

In which fields do you perceive a further need for social research regarding biodiversity?

As was said before, there is a need for social research in all stages of the policy cycle. Social research is essential to diagnose the need for a certain policy and to identify the problems to be addressed. According to Baigorri, Corraliza and de Benito, policy evaluation also needs social research, in order to interpret the results and effects of a certain policy, and hence help correct and redirect it. Finally, with respect to policy formation, some policy makers detect the need of social sciences to choose and use participation tools.

How should social research be best embedded into the research of other disciplines? (inter- transdisciplinary, not embedded)

As Pardo put it, “there is no interdisciplinary culture in Spain”. Spanish research tends to be performed in monodisciplinary teams and researchers tend to be wary exploring

other disciplines. Especially sociologists do so. In order to change this, in the first place, researchers themselves need to become interested in other disciplines and explore them or demand interdisciplinary research. Policy makers, as Elorrieta stated, should also understand the key role of social scientist in the process of policy making. Pardo and Baigorri suggested that scientists should have a broader training (social scientists should learn about biodiversity issues and natural scientists should learn the basics of social research). This will enhance interdisciplinary understanding. Other measures for this purpose suggested by Múgica are the information exchange platforms (the internet, specialised press), multidisciplinary meetings and the eradication of compartmented disciplines.

Do you perceive a real gap of social research regarding biodiversity between status quo and need? If yes, what are the causes in your opinion? What appear to be the best suited solutions to bridge this gap?

Yes, there is a gap in social research. That was clearly stated in a previous question (see Table 6). The causes of this gap are hinted above. Both sociologists such as Baigorri and biologists such as Múgica acknowledge that the first step is to create an interest in this type of research among social scientists. For instance, de Benito suggested that the reason for this lack of interest is that sociologists regard biodiversity as an issue out of their scope of work, which is centred on human society. Also, Blanco indicates the need of a leading researcher who should open this line of research and create a solid, stable research team. Finally, some researchers claim that the gap may also be bridged with adequate research programmes and purpose-specific budgets.

6.4 Relation between research and policy making

How do you appraise support measures for biodiversity research regarding quality of programme and contents/budget/innovativeness/orientation on need of research?

In general, the support measures for biodiversity research are regarded as fair. Only three interviewees (Blanco, Múgica, Pardo) felt familiar enough with the subject to state their opinion. Biodiversity research, as was said before, has improved in the last few years, and so have the measures that support it (programmes, budgets, etc.). However, given the high degree of biodiversity in Spain and the number of potentially conflictive species present (wolf, brown bear, lynx) much more research should be done and, hence, supported. Also, Blanco considers that Spain is lagging behind with respect to the quality of the peer-reviewed publications related to biodiversity.

Table 13: Promotion of Biodiversity Research

Interviewee	Quality	Quantity	Innovativeness/ Topicality	Demand-orientation
Policymaker	0/2/0	0/2/0	0/2/0	0/2/0
Researcher	0/1/0	0/1/0	0/1/0	0/1/0

How do you appraise support measures for social sciences in biodiversity research regarding quality of programme and contents/budget/innovativeness/orientation on need of research?

Here, all interviewees are unanimous. There are no measures of support for social sciences in biodiversity research. Baigorri mentions that EU funds may exist for this type of research, but feels that they are difficult to get. Both Corraliza and Pardo state that there are private funds available for this type of research, as well as public funds from some regions, such as Navarra. De Benito also mentioned that in the last call for proposals of the national parks research programme this was a priority area, but just one project applied for it. This type of funds favour applied research, oriented towards the identification or solution of specific problems. The rest of the existing social research on biodiversity is funded by either general research programmes or is embedded as a side project in larger research projects (Corraliza, Múgica).

Table 14: Promotion of Social Sciences

Interviewee	Quality	Quantity	Innovativeness/ Topicality	Demand-orientation
Policymaker	0/0/3	0/0/3	0/0/3	0/0/3
Researcher	0/0/4	0/0/4	0/0/4	0/0/4

6.5 The use of social research instruments in biodiversity policy making

Do you think that social research results are finally sufficiently applied in policy processes?

Key researchers agree that the results of social sciences are being used in policy making. The degree of application varies. According to Pardo, results are sufficiently applied, but Corraliza and Baigorri miss a deeper analysis of the results. Múgica claims that results are used partially and with great time delay.

What types of research seem to be preferred in application?

Here, the responses of the interviewees are focused on social research tools. Most of them mention surveys, interviews, public participation, group meetings, direct observation, etc. Múgica adds SWAT analysis and Logframe as research tools that are becoming more usual in social research.

What is the common way to implement social research on biodiversity in policy processes?

The only practical case was mentioned by Elorrieta. In his former post within the Government of Navarra, he launched a biodiversity research centre, in order to make

research interests and managers' needs meet. This centre was closed at the last turn of the regional government.

Which models and policy instruments that have been developed by social research regarding biodiversity are appropriate for the application in policy processes? How do they contribute to the development of successful policies?

All policy instruments mentioned before may be useful for their application in policy processes. It should be borne in mind, though, that each instrument serves a certain purpose. The choice of instrument, according to most interviewees, will depend on what the research or policy maker needs to know/do.

Which models and policy instruments seem to be appropriate, but are not employed? What are the causes?

Elorrieta would like socioeconomic instruments (public participation, socioeconomic studies, social impact assessment, etc.) to be used more often. Although they have a normative support, they are not frequently used. Pardo, on the other hand, would like to see more historical work done, from a socioeconomic perspective. Also, studies that connect values, ideas, behaviour and political structures are scarce. No interviewee would mention the reasons for not using them.

Which socio-scientific models and instruments of other fields than biodiversity research are well employed in policy processes in your opinion?

Again, the importance of socioeconomic studies is stressed, this time by de Benito and Múgica, thereby acknowledging their use in other policy making processes.

Which others do you perceive to be appropriate for biodiversity management as well?

de Benito regards public participation as a useful tool for biodiversity management. Blanco adds in-depth interviews with opinion leaders. Múgica does so with cost-benefit analyses and economic assessment studies.

6.6 Conclusions

The quality and quantity of research on biodiversity issues in Spain is fair, but clearly improving. This is not the case for social research related to biodiversity issues, which is virtually non-existent. The few studies that exist, as was found during the bibliographic analysis, are monodisciplinary and disconnected with each other. Scientists are usually working on other lines of research and tangentially touch SoBio-like research.

The measures of support for research are fair when considering biodiversity as a whole but very poor in the case of social research. Some applied research has been funded by regional governments and private institutions.

Policy makers and social researchers work in separate fields, thereby missing the results of social research or the needs of policy management, respectively. Social research is needed in all policy making stages, but essential in the agenda setting and policy evaluation ones. Most SoBio references found were related to agenda setting, followed by policy implementation. Hence, there are two research gaps: one in the policy evaluation stage, because of its relative importance, and the other, in the policy formation stage, because it deals with the choice of policy instruments and virtually no studies were found.

With respect to the use of social research instruments, most of the well known ones are being currently used. As an exception, the socioeconomic perspective and historical studies are still poorly used. Most social research instruments are useful for biodiversity policy making, provided the right instrument is applied for each need.

In general, the results of the interviews do not differ with the results of the bibliographical research. The most striking result is the differences in view found between policy makers, who are oriented towards solving current conflicts, and key researchers, who in turn are oriented towards more theoretical, future problems. The exception to this opposing views were the cases of Pardo and Múgica, who had an intermediate perspective. Was it due to their ambiguous professional position (they both find themselves in the interphase of research and policy making) or was it because of their gender?

7. OVERVIEW AND GENERAL ASSESSMENT

7.1 Introduction

Biodiversity conservation policies are well developed in Spain. They acknowledge that conservation is clearly linked to social and economic factors. It counts on a specific department within the Ministry of the Environment and the regions are making important legislative, planning and managing efforts with respect to biodiversity conservation.

However, Spanish society does not see loss of biodiversity as an urgent problem at local level and tends to see it as an issue far from home (for instance, the loss of rain forests). Several factors may affect this view, among which:

- the relative good health of Spanish biodiversity
- the effect of mass media, which tend to show catastrophes (loss of rain forests)
- bad communication from science to society, often using scientific jargon

Socioenvironmental research in Spain has focused on issues with a wide social interest and, since biodiversity is not one of them, few studies have been performed within the frame of SoBio. The new current of environmental sociologists in Spain rather concentrates on the urban environment and the environmentalist movement.

However, nature conservation demands this type of research, both for the protection of species as for protected areas. This view can be seen in the priority list of recent research programmes, but it does not translate into practice yet. Therefore, Spanish sociology has not achieved any form of synergy with natural sciences dealing with biodiversity conservation.

The creation of the Spanish Network of Environmental Sociologists in 1996, has contributed to promote socioenvironmental research, and nowadays it is a common issue at national and regional sociology meetings. In our opinion, it is a discipline with great opportunities in the near future.

7.2 Who performs SoBio research in Spain?

Only 35 references have been considered to belong to the purposes of the SoBio project, and most of them (71,4%) have been released after 1996 and the tend is to grow. It has been noted that SoBio research is evolving from basic to applied, the latter category showing a steeper growth curve in numbers.

There is a high degree of fragmentation in SoBio research in Spain and hardly any leadership. This weakness also affects the career of individual researchers or research teams. For most of them, socioenvironmental research is of peripheral interest within their priorities, and only 7,5% of the 51 SoBio authors has participated in more than one study.

Within the SoBio selected studies all research teams were monodisciplinary, except one, but some of them focused their research from the point of view of a different discipline.

Most SoBio research (40%) has been performed by ecologists, and 25.7 % by sociologists. This indicates that ecologists tend to explore new disciplines and fields of study more often than sociologists and other social scientists. The highlights of Spanish social research on biodiversity conservation are related to protected area management and landscape perception, which are performed by consolidated research groups. Issues related to environmental education as well as conflict species are being touched, albeit by researchers from less solid groups.

Most of the studies (71,4%) focus on specific social groups and on certain geographical areas (62,8%). Their research methodology includes different types of qualitative and quantitative techniques. The geographical distribution of the publication place of the selected studies is centred in the region of Madrid, with 40% of all studies concerned. This does not include the studies performed by national authorities or those published in international journals.

SoBio research is mainly funded by public research institutions, followed by public authorities and non-profit organisations.

7.3 Content analysis

1. Agenda setting

General results

- 51% of SoBio references within this stage
- Mainly dealing with landscape perception and conflict species
- Studies performed mainly by natural scientists

Focus area: 1.1 Impact of demographic changes on biodiversity

- Some of the problems related to biodiversity conservation in Spain are directly caused by human behaviour, such as the abandonment of rural areas
- Few studies on this area and mostly dealing with landscape changes after abandonment
- Regional level

Focus area: 1.2 Large scale patterns and variations in attitudes and behaviour

- Studies focused on the social perception of nature, analysis of motivations and activities by visitors, and assessment of the equipment and facilities offered by protected areas. These studies, together with other visitors surveys performed at different protected areas are an important source of information on this issue.
- Few studies on the man-species conflicts (wolf, brown bear), although being recognised as important for species conservation.

Focus area: 1.3 Analysis of biodiversity discourse

- Not a topic of discussion in Spain

Starting points for management-related research

- Study of the effects of the abandonment of rural areas on wildlife, ecosystems and biodiversity.

- Study of the role of local communities and stakeholders and their relation to biodiversity (from perceptual issues to practical problem-solving)
- Social research on the prediction of future problems and the effects of different policy alternatives.
- Improve research applicability: know the needs of policy makers, give specific recommendations, shift from basic to applied
- Need for interdisciplinary teams for nature conservation

2. Policy formation

General results

- Very few studies and therefore a large gap exists on research dealing with the interactions between science and policy
- Proposals for methodology; social aspects should be taken into account when planning and implementing policies
- No particular regional scope

Focus area: 2.1 Assumptions about the public in the acquisition and use of scientific knowledge

- No references found within this focus area

Focus area: 2.2 Interaction between science and policy, effect of new ideas

- No references found within this focus area

Focus area: 2.3 Social sciences as a tool for policy making

- The references found stress the value of social scientific techniques as tools for natural protected area management, especially regarding communication between society and policy makers

Starting points for management-related research

- Development of flexible, innovative participation tools, adapted to the local situation
- Enhanced dissemination of scientific results to policy makers and the public
- Improval of the public's ability in participatory processes
- Analysis of impact of communication and awareness campaigns on the public

3. Policy implementation

General results

- Wide thematic range: communication, environmental education and mainly participation
- Nature conservation authorities are paying more attention to these instruments, both for the set up of protection measures as for biodiversity conservation and management. Therefore, it is expected that the studies belonging to this stage will increase in the future.
- Studies performed mainly by social scientists
- Local scope (generally, a certain protected area)

Focus area: 3.1 Dynamics of decision making processes and conflicts in biodiversity management

- Recommendations given to policy makers on what to do in conflict protected areas or with conflict species

Focus area: 3.2 Public understanding of, and participation in, biodiversity policies and management

- Most studies stress the importance of public participation but few actually show the results of this instrument. If they do, it is to show the flaws of its use, that is, to demonstrate that public participation is more complex than it seems (more actors involved than it appears at first glance, for instance, or improper cultural approach to the different actors)
- Proposal of new participation methodologies
- Communication as an important aspect of biodiversity conservation, as its loss is not perceived as a serious problem at local level

Focus area: 3.3 Discussion of innovations, reactions of stakeholder groups towards new methods and ideas

- Changes of attitude of the interviewees towards biodiversity after certain actions/campaigns

Starting points for management-related research

- Analysis of acceptance factors of different stakeholder and actor groups and development of strategies for target group-oriented communication, compensation, etc.
- Increased awareness on the importance of local biodiversity

4. Policy evaluation

General results

- Most studies are quite recent and still scarce in Spain.
- Policy evaluation is not only scarce in social sciences, but also many other fields
- According to the interviewees, policy evaluation should be one of the stages in which social sciences may contribute at the most. Social sciences may help explain what went right or wrong with a certain policy and may suggest changes to a certain policy that satisfy all stakeholders, based on the knowledge of the attitudes and behaviour of these stakeholders.

Focus area: 4.1 Evaluation of biodiversity policies and action plans

- A few studies on the social perception of the local population affected by protected area management measures
- Assessment of formal and informal environmental education programmes by asking children of different age about their knowledge and attitude towards biodiversity
- General, state-level, surveys on environmental attitudes and behaviours too broad to assess biodiversity policies

Starting points for management-related research

- Assessment of the social and economic impact of biodiversity policies

- Use of recommendations for the design of future biodiversity policies
- Development of evaluation and social monitoring tools and indicators for biodiversity policies

7.4 Expert interviews

The expert interviews were made with two policy makers (one at national level and the other at regional level), three researchers (two sociologists and one biologist) and two others who were both policy maker and researcher (one sociologist and one biologist). They were the only two women of the group.

General research on biodiversity is regarded by the interviewees as acceptable. It has significantly improved over the last years, but still needs to improve further in quality and quantity. Especially, given the high degree of biodiversity found in Spain. However, social research on biodiversity is virtually non existent. Reference was made to social studies within planning documents, usually of poor quality.

There is a gap between the needs of policy makers and the interests of researchers. In general, policy makers need applied solutions to today's problems and researchers are more interested in basic research or the prevention of future problems. This is in fact a common problem for science in Spain.

The main contribution of social research for biodiversity conservation is that it provides understanding of the cultural context of the environment. It also provides tools for problem identification, solving and evaluation.

The contribution of social sciences to the policy cycle is less than it should be. Agenda setting is the most commonly addressed stage by social scientists. However, there is a need for this type of research in all stages. Especially agenda setting, as a problem identification tool, and policy evaluation. Policy formation, with the use of public participation instruments, has also been mentioned as important.

Most social studies on biodiversity conservation are performed by monodisciplinary teams. Research disciplines in Spain are well compartmented and researchers tend to be wary on exploring or collaborating with other disciplines. Especially social scientists need to become more interested in biodiversity issues.

The support measures (programmes, budgets) for general biodiversity research are considered acceptable, although they need to improve. However, the support measures for social research on biodiversity do not exist at national level. This type of research is either embedded in other type of projects or is funded either by regional authorities or by private funds.

The most commonly used research instruments are surveys, interviews, discussion groups and direct observation. Less common are socioeconomic studies, cost-benefit analyses, public participation, SWAT analysis and Logframe, although their use is increasing. Still lagging behind are the use of historic studies on values and behaviour towards biodiversity and in relation to policy making. The choice of each instrument will depend on the type and quantity of information that is sought.

7.5 Final conclusions

- In Spain, social research applied to biodiversity conservation hardly exists.
- There are no specialised research teams in this area and very few specialised researchers. The only exception are a few Ecology departments, dealing with visitors attitudes and behaviour in protected areas.
- On the other hand, conservation policy makers believe social studies are important for species conservation and the protection of natural areas. In the last years, this has been included as a priority in some research programmes.
- The lack of coordination between offer and demand shows there is a communication problem between both areas. It should be noted, though, that ecologists tend to explore more often the field of social sciences than the other way around.
- However, social researchers are showing a growing interest in biodiversity issues and than can be seen in the proceedings of recent meetings as well as in the number of studies found.
- Therefore, we consider it is a growing sector in the short run.

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31. Salinas, I. S. (2001) *El concepto de biodiversidad: Un nuevo contenido de ecología en la educación secundaria*, Unpublished PhD thesis, Univ. Granada, Granada
32. Torres, A. J. (2002) *Estudio sociológico de los espacios naturales protegidos: De la conservación a la sostenibilidad*, Unpublished PhD thesis, Univ. Granada, Granada
33. Torres, A. J. & Sanz, C. (2004) *La participación social en las nuevas políticas de conservación de la naturaleza*, In: VIII Congreso Español de Sociología, Alicante, 23-25 septiembre 2004
34. Troitiño, S. (2001) *Buenas prácticas en actuaciones territoriales basadas en la participación ciudadana y su aplicación a la gestión de espacios naturales protegidos*, In: III Congreso Internacional de Ordenación del Territorio, Fundicot, Madrid
35. Zamora Martínez, F. & Nicolás Zabala, J. M. (1996) *Motivaciones y perfil medio de los visitantes del Parque Regional de la cuenca alta del Manzanares*, In: I Congreso de Parques Naturales, pp. 152-156

Table I-1: Theoretical background and regional scope of the selected bibliography

Author(s)	Date	Theoretical background	Regional scope
Alonso, E.	1996	Psychology	
Alonso, E., Benayas, J. & Ruiz, J. P.	1991	Psychology	
Álvarez Durán, D., Hernández Ruiz, B., Rodríguez Pérez, A.	1986	Psychology	Canaries
Armell, R.	1998	Sociology	
Atauri, J. A., Bravo, M. A. & Ruiz, A.	2000	Tourism	Madrid
Baigorri, A.	1999	Sociology	
Benayas, J.	1990	Education	Several locations
Blanco, J.C. & Cortés, Y.	2002	Sociology	Cantabria
Bobbé, S.	1996	Psychology	Cantabria
Buñuel, M. & Delgado, M. L.	2002	Economy	Spain
Callaghan, P.	2003	Education	Madrid
Carbonell, X.	2003	Sociology	Aragón
Casas, J.	1999	History	World
Centro de Investigaciones Sociológicas	1991	Sociology	Andalusia
Corraliza, J. A., García, J. & Valero, E.	2002	Sociology	Several prot. Areas
de Castro, R.	1991	Psychology	
de Lucio, J. V. & Gómez-Limón, J.	2002	Psychology	
de Lucio, J. V. & Múgica, M.	1994	Tourism	Several prot. Areas
Diputación de Barcelona	2004	Sociology	Catalonia
García, E. & Cabrejas, M.	1996	Sociology	Com. Valenciana
Gómez-Limón, J.	1999	Tourism	Madrid
Gómez-Limón, J., Múgica, M., Medina, L. & de Lucio, J. V.	1994	Tourism	Madrid
González Bernáldez, F.	1989	Ecology	
Guerra Mazorra, I.	1998	Sociology	Cantabria, Asturias
Martín Rosa, M. A. & González Benasco, J. D.	1996	Sociology	Canaries
Moreno, J. & Pino, J.	1998	Tourism	Balearic Islands
Múgica, M.	1993	Psychology	
Pardo, M. (coord.)	2000	Sociology	Navarra
Pérez, I.	2004	Sociology	Murcia
Pérez, I., Giménez, A., Sánchez-Zapata, J. A., Anadón, J. D., Martínez, M. & Esteve, M. A.	2004	Sociology	Murcia
Salinas, I. S.	2001	Education	
Torres, A. J.	2002	Sociology	Andalusia
Torres, A. J. & Sanz, C.	2004	Sociology	
Troitiño, S.	2001	Geography	Spain
Zamora Martínez, F. & Nicolás Zabala, J. M.	1996	Tourism	Madrid

Table I-2. Methodological features of the selected bibliography. Describes the references from the research point of view. It gives details on the type of reference it is (publication, report, PhD thesis, etc.), the type of research and the analysis methods employed in the study. It should be borne in mind that PhD theses are rarely published in Spain and may only be found through university libraries and the authors themselves. Some studies are not empirical and, therefore, no analysis techniques were used in the research. These were considered as “essays”.

Author(s)	Reference type	Type research	Analysis techniques
Alonso, E.	Abstract - PhD	Quantitative	Questioning,
Alonso, E., Benayas, J. & Ruiz, J. P.	Article	empirical	observation
Álvarez Durán, D., Hernández Ruiz, B., Rodríguez Pérez, A.	Article	quantitative	interviews
Armell, R.	Article	Essay	
Atauri, J. A., Bravo, M. A. & Ruiz, A.	Article	quantitative	interview
Baigorri, A.	Article	context analysis	
Benayas, J.	Abstract - PhD	Quantitative	questioning
Blanco, J.C. & Cortés, Y.	Book, chapter	qualitative	questioning
Bobbé, S.	Book, chapter	qualitative	interviews
Buñuel, M. & Delgado, M. L.	Book(let)	essay	
Callaghan, P.	Article	essay	
Carbonell, X.	Report	case study	context analysis
Casas, J.	Article	essay	
Centro de Investigaciones Sociológicas	Report	quantitative	questioning
Corraliza, J. A., García, J. & Valero, E.	Book, whole	quantitative	questioning
de Castro, R.	Article	context analysis	environmental
de Lucio, J. V. & Gómez-Limón, J.	Book, chapter	Essay	
de Lucio, J. V. & Múgica, M.	Article	qualitative	questioning
Diputación de Barcelona	Report	qualitative	interviews
García, E. & Cabrejas, M.	Article	quanti- and quali.	interviews, cluster
Gómez-Limón, J.	Article	quantitative	questioning
Gómez-Limón, J., Múgica, M., Medina, L. & de Lucio, J. V.	Book, whole	quantitative	questionnaire, field
González Bernáldez, F.	Article	Essay	
Guerra Mazorra, I.	Report	qualitative	interview
Martín Rosa, M. A. & González Benasco, J. D.	Report	qualitative,	in depth interviews,
Moreno, J. & Pino, J.	Article	quantitative	questioning
Múgica, M.	Article - PhD	experiment	questioning
Pardo, M. (coord.)	Book, chapter	quantitative	questioning
Pérez, I.	Abstract	mixed	questioning
Pérez, I., Giménez, A., Sánchez-Zapata, J. A., Anadón, J. D., Martínez, M. & Esteve, M. A.	Article	quantitative	questioning
Salinas, I. S.	Abstract - PhD	Mixed	Questionnaires, other
Torres, A. J.	Abstract - PhD	Meth. proposal	
Torres, A. J. & Sanz, C.	Abstract	methodology	evaluation
Troitiño, S.	Article	context analysis	
Zamora Martínez, F. & Nicolás Zabala, J. M.	Article	qualitative	interview

ANNEX II: Table of acronyms

Spanish Acronym	Spanish name	English name
CIS	Centro de Investigaciones Sociológicas	Centre for Sociological Research
CSIC	Consejo Superior de Investigaciones Científicas	Higher Scientific Research Council
ICONA	Instituto para la Conservación de la Naturaleza	Institute of Nature Conservation
INE	Instituto Nacional de Estadística	Statistics National Institute
OAPN	Organismo Autónomo de Parques Nacionales	National Parks Autonomous Body
MYCT	Ministerio de Ciencia y Tecnología	Ministry of Science and Technology
PORN	Plan de Ordenación de los Recursos Naturales	Natural Resources Order Plan
PRUG	Plan Rector de Uso y Gestión	Management and Use Director Plan
SCTE	Sistema de Calidad Turística Española	Spanish System of Tourism Quality