

European Topic Centre on Nature Conservation

DATABASES ON SPECIES, HABITATS AND SITES
SURVEY AND ANALYSIS 1995-96

By

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FOREWORD

One of the most important issues for the European Environment Agency is to set up an efficient process for collection of information on environment at European level, based on a stable and reliable network of institutions and on relevant data sources.

In the field of Nature, there are some specific difficulties due to the fact that data-holders are as well administrative bodies, research centres, NGOs, or individuals and that data sources range from local to European or international level.

The European Topic Centre on Nature Conservation is presently developing a European Nature Information System (EUNIS) aiming at identifying and organising access to existing information with the main purpose of reporting on the state and trends of nature and biodiversity in Europe in different periods of time as well as giving support to the Natura 2000 process.

It is therefore important to identify the existing sources of data and information, to select the most relevant ones to answer specific questions from customers but also to assess their availability, coverage and accessibility. Some data must be kept centrally, but for many types of data specific agreements will have to be developed between the Agency and the dataholders, mainly within the EEA European Information and Observation Network (EIONET).

The present survey is a first step in identifying relevant data sources. Not all National Focal Points have been able to reply to the request within the given deadlines but the process should go on. Further to the EEA's interest in fulfilling its missions of harmonisation of data, the results of this survey should allow countries to compare their own initiatives with their neighbours and hopefully encourage exchanges of experiences.

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EXECUTIVE SUMMARY

- *As part of the work on the nature conservation topic of the 1995 Annual Work Programme for the European Environment Agency the European Topic Centre on Nature Conservation performed a **survey of data sources on nature in Europe**. The work was undertaken by the National Museum of Natural History in Paris together with the core team of the Topic Centre.*
- *The survey was based on a set of questionnaires. The process of the survey is described in this report. The information describing the data sources is termed meta-information.*
- *Many sources containing data from geographical inventories and ecological parameters exist at European and national levels (databases, paper files, collections...). A survey is necessary to **identify, describe and locate these data sources** and to support an analysis of gaps in data.*
- *The **first part of the survey** relates to the inventory of data sources; the **second part** consists in an analysis and assessment of gaps according to the potential needs of the European Environment Agency and the European Commission -DG XI (implementation of Natura 2000 Network)*
- *Information gathered during the survey has been used during the development of the principles for the **EEA Catalogue of Data Sources**. A practical solution to the future co-ordinated organisation, maintenance and further development of meta-information on sources of important nature data in Europe is foreseen in the light of both the ETC/Nature Conservation and ETC/CDS work-plans.*
- *As the management of information on species and natural areas is very different in each country, information was difficult to collect and consequently, the **present inventory is not comprehensive** even if the obtained number of data sources exceed by far the figures previously known. It needs to be carried on together with Member States and with relevant international institutions.*
- *The main results of this study **may seem obvious**, without bringing new statements. But they are for the first time based on concrete data. They reflect the present ability of EIONET to obtain the necessary information at national level and therefore to meet the needs of EEA. It gives an indication of how far efforts should be developed within EIONET.*
- ***Almost 200 data sources in Europe were recorded up to 15 October 1995**: 13 countries replied to the questionnaire developed and described 186 data sources on species, habitats and sites. This survey also includes 13 international and European sources.*
- *Data were collected under 3 main headings : **species, habitats and sites**. More than 40 % of data sources relate, among other subjects, to species, 18 % to sites, and 16 % to habitats.*
- ***Vertebrates are the most studied group of species**. More than 50 % of species sources relate to vertebrates of which 21 % to birds. The main habitat types are almost equally studied by the data sources but the questionnaire was not detailed enough with respect to*

habitat typology. Monitoring of sites, scientific objectives : 54 % of data sources on sites are related to monitoring programmes and scientific inventories.

- ***Data on species populations are very rare and often limited to birds.*** *The management of habitat information is often linked with data on species and sites and then illustrates a weakness in terms of quantitative data.*
- ***Public organisations are the main dataholders:*** *the study shows that 51 % of dataholders on nature are public institutes, 24 % governmental organisations, and 16 % associations. But the methods for collecting the information for the survey are likely to have caused a degree of bias in the result.*
- ***Support to the implementation of Natura 2000 :*** *national data on populations and distribution of Annex II species of the Habitats Directive as well as quantitative data on habitats are very limited. However, these sources will probably be enriched with on-going inventories in the framework of the Habitats Directive.*
- ***Many data sources are of limited comparability :*** *33 % of sources on species do not use taxonomic standards and 43 % of sources on habitats have no standards concerning the habitat typology. There are also various spatial units.*
- ***Gaps*** *were evaluated according to the potential needs for the implementation of the Habitats Directive.*
- ***Recommendations:*** *standards for harmonisation of data should be developed. The current national and international initiatives should be supported in various ways. Deontological aspects should be taken into account.*
- *This review should be completed by analysing more deeply some of the results and detailing some of them on the basis of a selection of the most interesting sources for the EEA purposes.*

1 - INTRODUCTION: OBJECTIVES OF THE PROJECT

In the field of nature conservation, one of the objectives of the European Environment Agency is to ensure assessment of biodiversity in Europe and to support implementation of the NATURA 2000 network.

The European Topic Center on Nature Conservation (ETC/NC) was set up in 1994 to assist EEA in fulfilling nature objectives of the EEA Work Programme.

Part of the assessment of biodiversity relates to the knowledge and information about ecology and geographical distribution of species as well as habitats and more particularly habitats and species from annexes of Birds and Habitats Directives. One of the major tasks was to begin to implement a European Nature Information System (EUNIS).

The identification and assessment of data sources is a full part of the implementation of EUNIS, as foreseen in the ETC/NC work-programme. This report contains the results of the first survey of data sources.

Warning

The survey was undertaken through questionnaires sent to National Focal Points or National Reference Centres of the 17 initial Member States of the European Environment Agency.

As the management of information on species and natural areas is very different in each country, information was difficult to collect and late in being transferred.

Therefore the possibilities of analysis of gaps in data sources were limited and the survey had to be completed with information from other data sources in Europe.

This analysis is based on answers received until 15 October 1995

Bearing in mind these difficulties, the European Topic Centre on Nature Conservation hopes that this report will help to complete the lack of information on data sources.

In order to assess how far data are comparable and how they can be aggregated to be used at a European level, the present survey aims at locating and describing these data sources (first phase of the study) in order to support an analysis of existing gaps in information about species, habitats and sites (second phase) and to establish contacts to relevant institutions.

Due to the late setting-up of the Topic Centre on Catalogue of Data Sources, there was no standard format for describing the sources, when the survey was initiated. Data were gathered

according to a specific format defined by the Topic Centre on Nature Conservation. Transfer of test data have been done to the EEA CDS during its development phase.

The total number of data sources (*) is large and they are of varied types, containing data from geographical inventories and ecological conditions at local, national level or international level. They also differ in technical types. More and more become computerised (databases), but many exist in other forms (paper files, maps) and some such as collections consist of specimens.

(*) « The 4 main types of data sources are :

- *Institutions responsible for environmental data and information*
- *Activities (data-collection, monitoring, data-management, research, information, standardisation of methods or terminologies)*
- *Products (collections of data such as reports, databases and maps)*
- *Stations and sites where data are collected » (PINBORG, 1994)*

In this survey the ETC/NC has used the third type with the following definition :

data source: every homogeneous set of data collected for one or several objectives previously selected, and stored in a consistent structure with strict procedures. These sources may be either computerised or not and may be held in manual files, index, catalogue, computerised records or databases.

2 - WORK UNDERTAKEN WITHIN THE FIRST PHASE

The survey consisted of three parts :

1. a review of existing international and national CATALOGUES OF DATA SOURCES
2. a review of REDLISTS of species and habitats
3. the survey of DATA SOURCES

The survey was carried out on the basis of a set of questionnaires (annexes 3, 4 and 5).

2a - Review of international and national CATALOGUES OF DATA SOURCES

Many initiatives such as catalogues of sources or meta-databases are or have been carried out, or are starting at international or national level;

The MNHN therefore initiated the present project by beginning with a survey of such existing catalogues of data sources to avoid later multiple requests to dataholders and to try to pre-fill (at least, partially) the questionnaire on data availability and accessibility on species, habitats and sites (cf paragraph 2c and annex 5) in order to facilitate the work for the institutions contacted.

At international level

The review of data sources carried out at international level served two purposes : first, to locate data sources at European level (and not at national level) and to be able to contact these European sources; secondly, to be able to get a first idea on the number of national data sources.

Council of Europe (CoE)

In the framework of a seminar held in 1985 in Strasbourg, the Council published the following report : « *Catalogue of data banks in the field of nature conservation*» (CDSN-INF (85) 2) which reviewed more than 70 databases managed by 15 countries and some ten international projects.

A second questionnaire was sent in 1987 but the results have not been analysed by the CoE. However, Paul Harding (HARDING P.T. and CROFT J.M. 1995) has updated the first list with the collected information.

CONNECT

In August 1994, the CONNECT network has surveyed databases managed by its member institutes. Nearly 50 databases on species, sites, monitoring or pollutants have been described by 8 organisations from 8 European countries.

DGXI

In June 1994, a report entitled « *Besoins d'informations et tâches à réaliser dans le cadre de la politique de conservation de la nature et du premier programme multiannuel de l'Agence Européenne de l'Environnement (Rapport ULB B4-3101/94/DGXI/000081)* » has reviewed 10 European data sources on species.

WCMC

The World Conservation Monitoring Centre manages a computerised catalogue of data sources linked with the UNEP GRID Meta-database. But, at present, this catalogue describes mainly data sources outside Europe.

Organisations managing data bases at European level have been contacted on the basis of the DGXI report (the most recent report); the WCMC was contacted directly.

In this way, this survey carried out by the MNHN has permitted to locate more than 180 national databases managed by 13 countries and to update information on 13 European and international databases.

There are a number of other interesting initiatives either involving surveys of data sources or development of networks. Such further contacts to be explored are:

The Convention on Biological Diversity

At the request of Member States, wishing to have a survey of sources, the Secretariat of the Convention on Biological Diversity in 1994 sent a questionnaire on existing databases of relevance to the Convention on Biological Diversity.

ETC/NC has had some preliminary contacts with the Secretariat concerning possibilities for collaboration on data source information related to Europe. Such collaboration should be seen as a future possible general collaboration between EEA and the Headquarters of the Convention.

Systematic Agenda 2000

This world-wide initiative is currently developing a European plan linking systematic research and knowledge to Biodiversity conservation. As a result of a meeting held May 1995, several actions have been defined; one of them was to promote data bases on systematic expertise and collections.

It is important to follow closely this project which could supply interesting information on data sources.

UNEP-INFOTERRA

This information system manages an International Directory of Sources which surveys more than 7000 sources of information on over 1000 environmental subjects. The sources are located in governmental institutions, ministries and documentation centres, research institutes, universities, non-governmental and international organisations, United Nation agencies and private consultant companies (WCMC, 1994).

At national level

A questionnaire on existing Catalogues of Data Sources related to the field of nature was sent by ETC/NC in March 1995 (cf annex 3) to the 17 member countries of the Agency through the National Focal Points (NFP) or the National Reference Centres on Nature (NRC). The countries were also asked to supply a copy of the catalogue if it existed.

Results of the ETC/NC questionnaire on Catalogues of Data Sources

By 15. October 1995 11 countries had replied :

∞ Finland and France supplied a catalogue on the whole environmental field

- ⊗ Austria and Denmark had some initiatives more oriented on species and protected areas (only Austria) but they were not able to supply a catalogue for technical reasons. Austria's catalogue was integrated in a more general project from where it was not possible to extract information on Nature. The one from Denmark was integrated in the CONNECT initiative.
- ⊗ Greece and Ireland had two on-going projects.
- ⊗ The Netherlands did not supply its catalogue but results from the ECNC questionnaire sent in January 1995 have been used.
- ⊗ Norway and Sweden had no catalogue.
- ⊗ UK tried an extraction form the computerised catalogue (prepared on behalf of the Co-ordinating Commission for Biological Recording) but was met with problems due to data transfer.

Due to these results, it was not possible to pre-fill the ETC/NC questionnaire describing data sources (cf paragraph 2c and annex 5) as it was initially planned to do, in order to facilitate the work of NFPs or NRCs.

	Catalogue (y/n)	Beginning	Updating periodicity	Comments
Austria	species protected areas	1994 1987	twice a year	within the framework of the Federal law for freedom of information
Belgium(*)				
Denmark	species	1994		in the framework of the international CONNECT initiative managed by Institute of Terrestrial Ecology (UK)
Finland	Y	1990	2e ed. in 1995	Environmental Monitoring Programmes in Finland
France	Y	1993	2e ed. in 1996	Catalogue des Sources de Données de l'Institut Français de l'Environnement (IFEN) 1994
Germany	national Niedersachsen Baden- Württemberg Sachsen-Anhalt	1993 1991 1993 1993	yearly regularly	
Greece	on-going	1995	yearly	
Iceland (*)				
Ireland	on-going			
Italy (*)				
Luxemb. (*)				
Netherlands	Y	1988	last ed. 1994	
Norway	N			
Portugal (*)				
Spain (*)				
Sweden	N			
UK	Y	1992		Co-ordinating Commission Biological Recording Database

(*) no answer

Table 1 : Results of the questionnaire on CATALOGUES OF DATA SOURCES

2b - Review of REDLISTS

A questionnaire on species and habitat redlists was sent out in March 1995 (cf annex 4) to the 17 member countries of the Agency through the NFP or NRC on Nature.

This inventory allowed to depict a state-of-the-art on the existing or on-going redlists. It should be completed with information held by WCMC.

11 countries replied.

	Fauna Redlist	Flora Redlist	Habitats Redlist
Austria	1990	1996	1996/97
Belgium (*)			
Denmark	1991 revised & improved in 1996	1991 revised & improved in 1996	
Finland	1991	1991	
France	1994	1995	
Germany	1994	1995	1994
Greece	1992	1996	
Iceland (*)			
Ireland	yes	?	
Italy (*)			
Luxembourg (*)			
Netherlands	1994-95	1989-1992	
Norway	1992	1992	
Portugal (*)			
Spain	1992		
Sweden	1992-1993	1991	
UK	1995	1977-1992 planned for 1996	

(*) no answer

Table 2 : Results of the questionnaire on REDLISTS

2c - Availability and accessibility of data sources

Sending out the ETC/NC questionnaire

After this followed a questionnaire concerning actual sources of data, data availability and accessibility. It was sent out by the ETC/NC in May 1995 (cf annex 5) to the 17 member countries of the Agency through the NFP or NRC on Nature.

This questionnaire was organised in three parts taking into account the three main elements of Nature Conservation : species, habitats and sites. It had been developed on the basis of the analysis of existing questionnaires from different countries and in particular, the questionnaire used by the Co-ordinating Commission Biological Recording (UK).

The questionnaire was sent in paper form but a floppy disk under Word 6.0 format was also provided, mostly to reduce the volume of paper rather than for entering the data (there was no time and no money to develop an input module).

Replies from NFPs

The main problems concerned :

- difficulties in collection of information in the countries where information is decentralised
- the collection meant extra work
- the deadline was seen as short

Only 4 countries returned the questionnaires on floppy disks. 2 countries used the Word file but returned the answers on paper.

13 countries replied with a fully completed questionnaire, between 1st July and 15th October 1995. Other answers were provided after this date and have therefore not been fully integrated in the analysis carried out under task MN1.3.

The questionnaire was sent again to Iceland in September following the announcement of new contacts (NFP and NRC)

Italy informed in November that questionnaires were waited from local organisations.

Descriptions of European Atlases and WCMC bases have also been taken into account as has the IUCN Law Center databases in Bonn.

Input of data

Data input has been made with a Microsoft Access application developed by the ETC/NC. Captured data have been returned to the countries for validation. So far only five countries have validated data and made a few modifications (DK, FI, GR, NO, SE).

The relational structure (cf annex 2) of the ETC/NC database allowed production of several results for this report (figures and maps). It has been organised in a easy way to facilitate data transfer to the future Catalogue of Data Sources of the EEA.

Accuracy of the results

Most of the questionnaires were quite well filled; some countries have added more information than asked (i.e. list of species names to which some other names have been added manually by some countries).

Among 161 databases dealing with species, the family list for which the number of species has been taken into account has been filled in 94 cases. The Species list for the Habitats Directive and Bern Convention has been filled in 101 cases.

The results also showed, that the habitat typology proposed by the questionnaire was not detailed enough to allow a good analysis. The questions on record numbers and data volume were ambiguous, and the answers consequently very weak.

3 - ANALYSIS OF THE COLLECTED DATA (SECOND PHASE)

3a - Review of existing information on nature in Europe

Almost 200 data sources in Europe

92% of the sources identified were in computerised form.

Table 3 illustrates the number of data sources per country : between 1 and almost 60 data sources are recorded depending on the country.

Pays/Country	Sources
Austria	4 (*)
Belgium	2
Denmark	27
Finland	18
France	3
Germany	3 (**)
Greece	18
Iceland	(***)
Ireland	1
Italy	(***)
Luxembourg	1
Netherlands	17
Norway	57
Portugal	(***)
Spain	(***)
Sweden	6
United-Kingdom	29
sub-total	186
Europe	10
International	3
TOTAL	199

(*) Austria has provided a list of 10 data sources, but only 4 filled questionnaires have been returned

(**) other data pending

(***) data pending

Table 3 : Number of data sources in each country + Europe + International reported before 15-10-95

On 30 July 1996, several questionnaires had been returned to ETC/NC , but they are not taken into account in the analysis			
Austria: +5	Denmark: +6		
Germany: +12	UK: +17	International: +1	

The figures of Table 3 are not representative of the quantity of information available in each country. The sources may be more or less voluminous and more or less specialised in terms of studied species or habitats.

The differences are also due to the ways of describing data sources. For example, Denmark and Norway have many sources which are often held by the same organisation, but described as separate sources.

In France and Belgium, several inventories are contained in a single database described in its entirety.

We have to point out that, due to time-limit, some countries have chosen to describe only some of the most important data sources. It will be necessary to complete this survey according to criteria given by the ETC/NC.

The data sources may be general or specialised, depending on the country

Figure 1 presents a comparison of the number of records held in each country .

A record is the basic element of information of the database. For example, a database on species is generally composed of observations; each record specifies the name of the species, the author, the date and the place of the observation. In a database on sites, each record describes a site by its name, its area, its geographical position, types of habitats, etc...

For some countries, the conditions of figure 1 are reversed when compared with figure 2. Actually, Denmark, Greece, Norway and United Kingdom have many data sources with the mean number of records being quite low (figure 2). Most of these sources are very specialised and concern a single group of species, or perhaps a few species, as in Norway.

Germany, Belgium and France have few but voluminous data sources: they are very centralised and usually cover all groups of species.

In figure 1, the results for The Netherlands are explained by a huge database on birds.

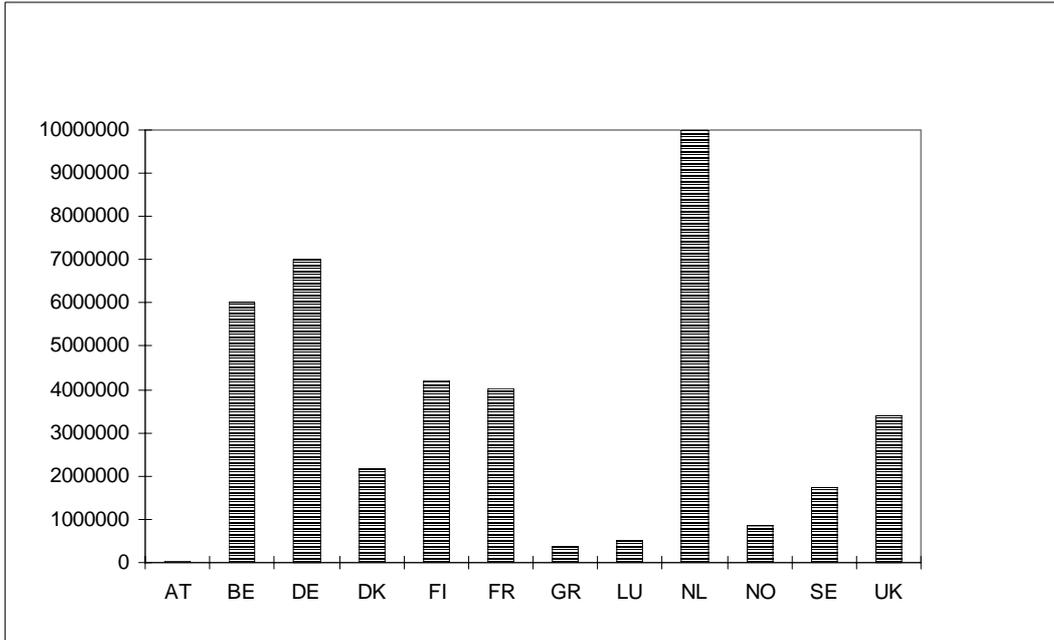


Figure 1 : Total number of records in each country (calculated for 135 sources)

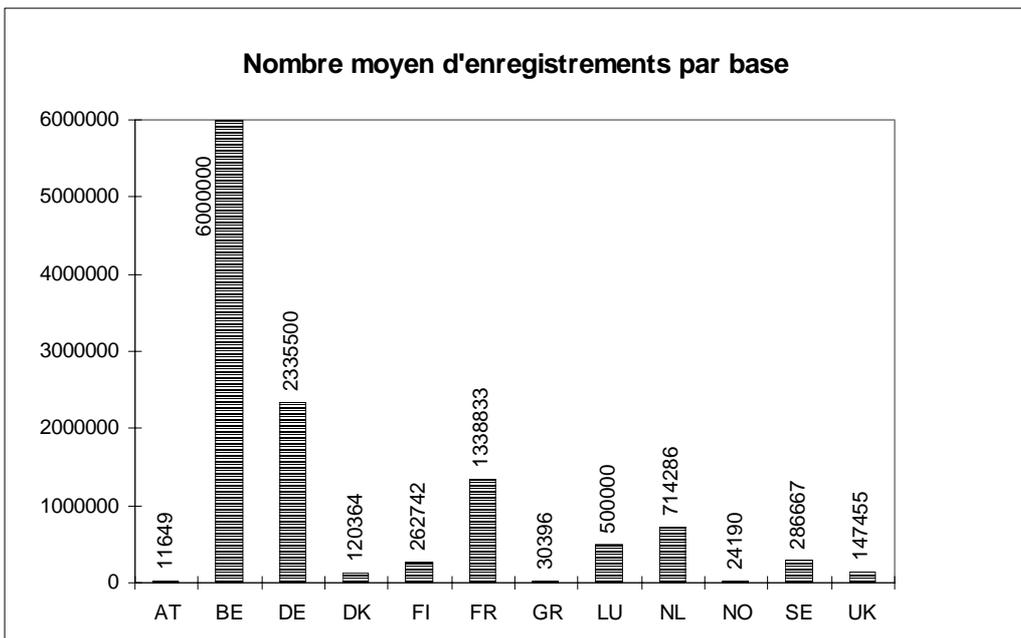


Figure 2 : Mean number of records in each data source (calculated for 135 sources)

For each source the main objectives of collection and use of data were specified: survey of species, habitats or sites, ecological research, genetic information or policies.

The groups of species, the types of habitats and sites taken into account by these sources were also specified.

More than 40 % of data sources relate to species.

In figure 3, 42 % of sources relate, among other objectives, to species, 18 % to sites and 16 % to habitats.

Of 196 sources, 40 % sources concern exclusively species, 6 % habitats and 4 % sites; the other sources have multiple objectives.

At national level, map n° 1 illustrates a predominance of data bases relating to species and sites.

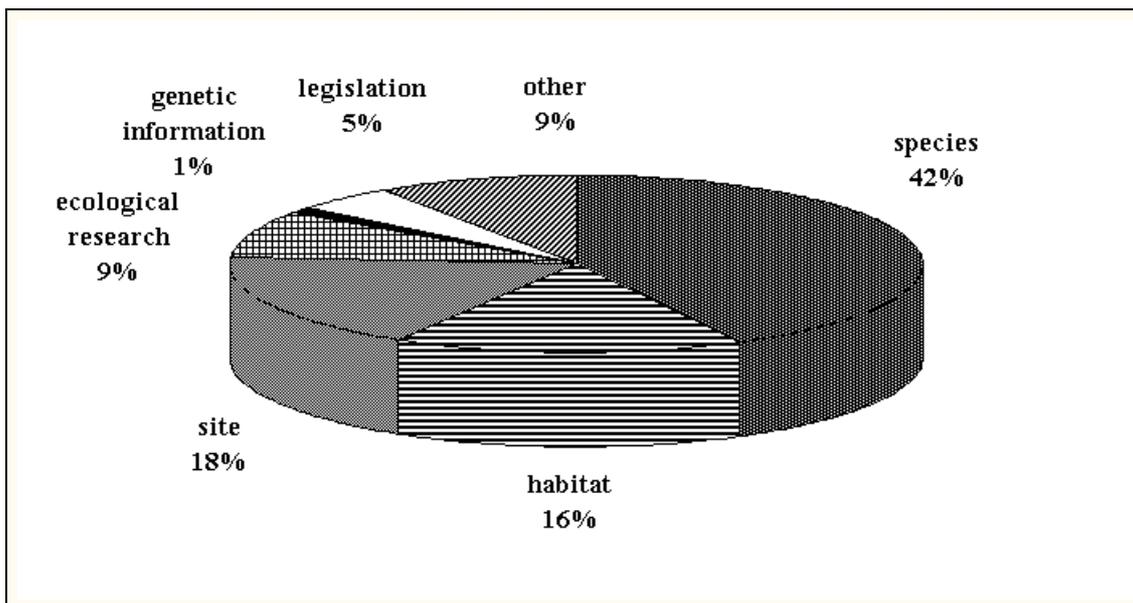


Figure 3 : Main topics of data sources in Europe

Vertebrates: the most studied species group

More than 50 % of sources on species deal with Vertebrates among which 22 % are on Birds (figure 4).

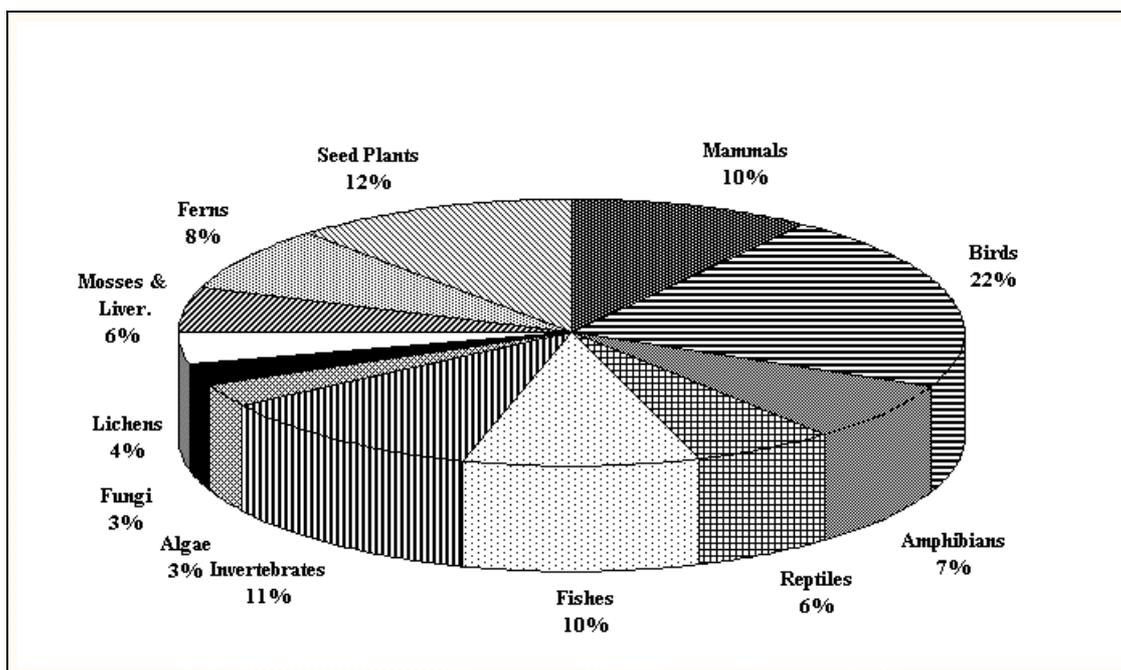


Figure 4 : Species groups taken into account by data sources in Europe

Data sources on species are very specialised (even if they are not exclusively related to species) 72 % of these deal only with one group of which 49 % relate to Birds, 12 % to Invertebrates and 13 % to Mammals.

At national level, data on Vertebrates are also predominant (map n° 2).

Few sources on habitats but all main habitat types are equally taken into account

16 % of sources deal with habitats (figure 3; page 10) and take into account equally all main types of habitat (figure 5).

Nearly half of the data sources concern a single type of habitat and this is especially the case for coastal and marine waters.

Belgium, France and The Netherlands have no source specialising in habitats (map n°3).

In fact, most of the countries deal with information on habitats through sources on species and sites and it is often impossible to use search criteria on habitat type.

However it must be recognised that the habitat list provided in the questionnaire was too brief to allow a good analysis.

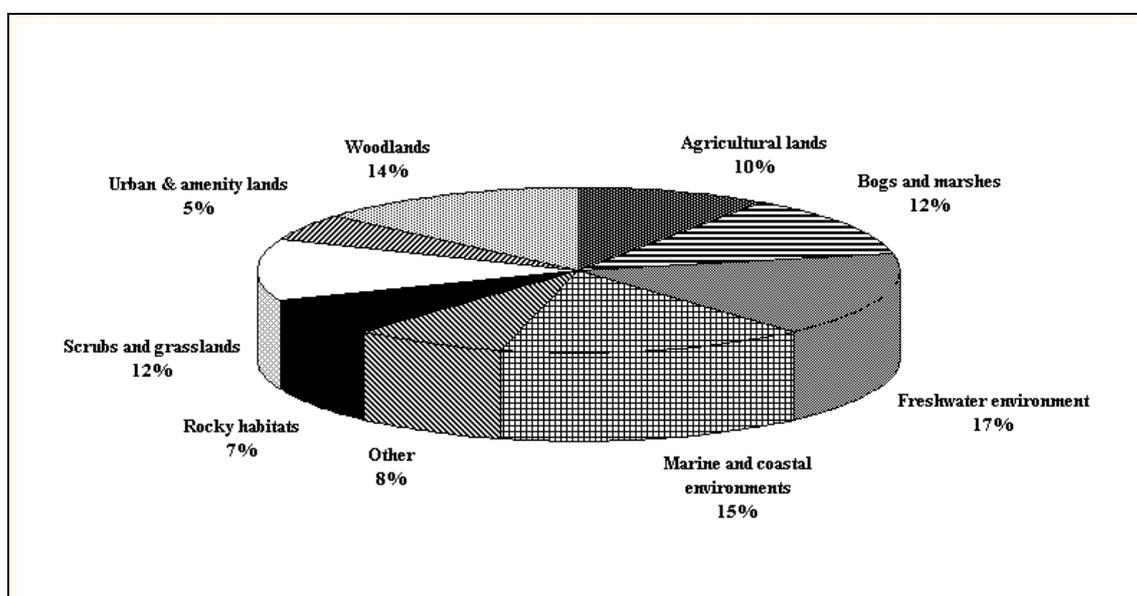


Figure 5 : Habitat types covered by data sources in Europe

A survey of sites : scientific objective

Figure 6 shows that 54 % of data sources on sites deal with monitoring programmes and scientific inventories.

32 % also hold legal information.

At national level, legal information exists in 10 countries and scientific inventories in 8 countries (map n° 4).

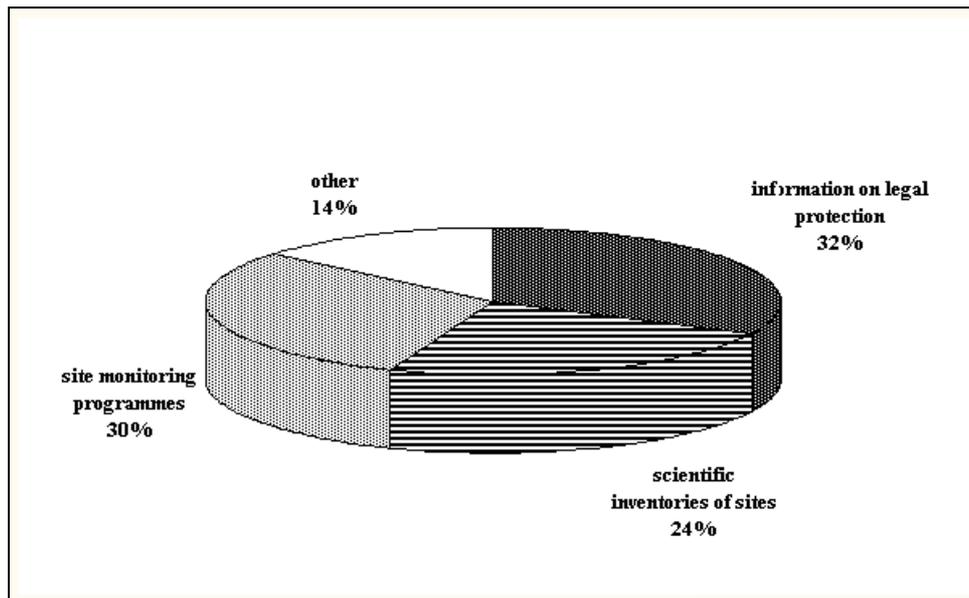


Figure 6 : Site types covered by data sources in Europe

Depending on the objectives of the sources, parameters used in the sources can be different. Three groups of parameters were defined in the questionnaire to be more specific about the three main objectives of the survey : species, habitats or sites.

The most detailed surveys always relate to Birds.

Nearly 70 % of 150 data sources on species which include parameter data, contain quantitative data (count data) and more than 50 % concern data on presence/absence (figure 7).

Among these 70 %, 43 sources out of 107 deal exclusively with Birds.

Site management and species data : the main parameters in sources on habitats

Between 60 and 70 % of sources on habitats (data calculated on 52 sources relate to this point) collect data on site management and on species.

Habitat management and quantitative data (surfaces) are third and fourth most important.

Information on habitats is thus collected more through survey of species and sites than by survey of habitats.

Types of information on sites

Data on sites concern aspects such as ownership, management and protection as well as species and habitats.

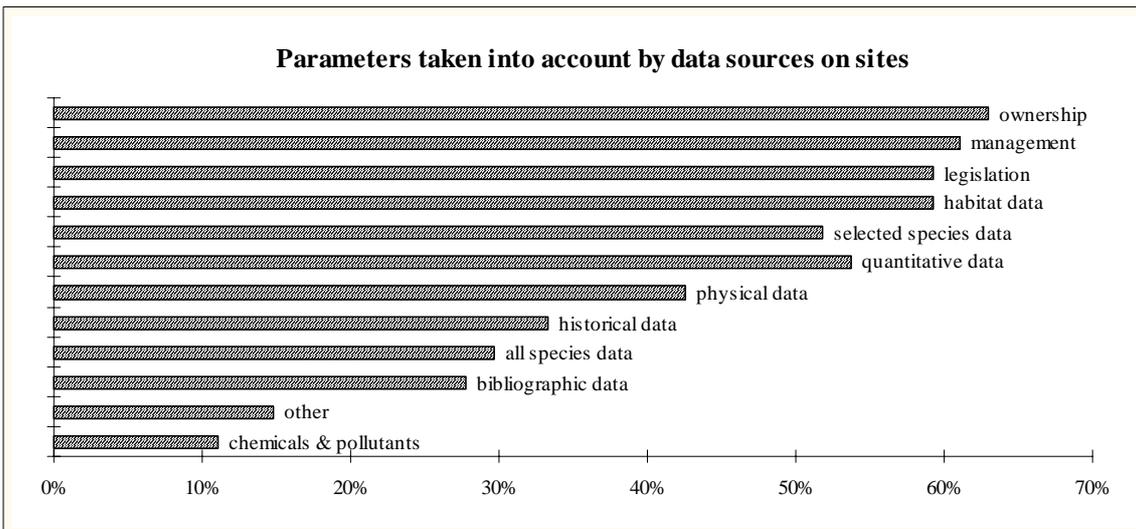
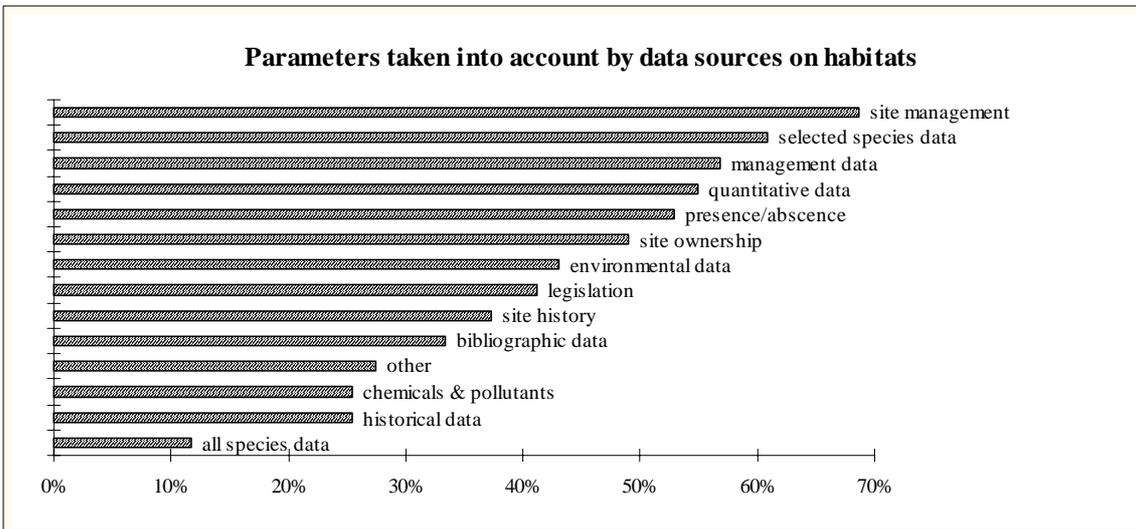
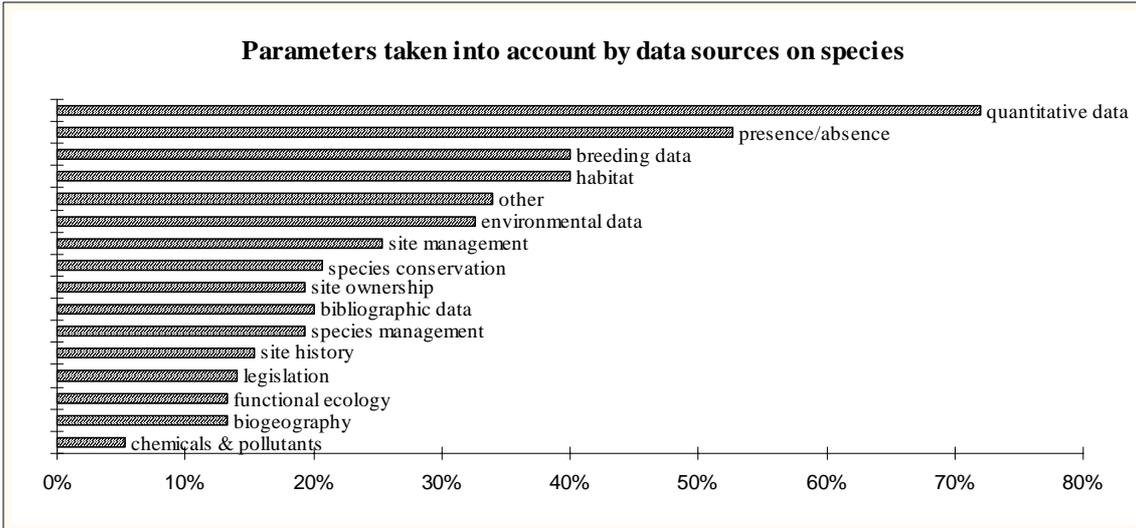


Figure 7 : Parameters taken into account by data sources on species, habitats & sites

Data sources are mainly at national level

Countries were asked to describe data sources of national importance (fig. 8) but it did not mean that geographical coverage of data had to be limited to national level.

In fact, 11 % of sources have a broader coverage than their country. For example, some sources deal with all Scandinavian countries or with the marine environment. (Datasets held by international organisations or associations have not been taken into account here) (map n° 5).

Data sources from local and regional levels could also be of European and national importance if they describe habitats or species of community interest.

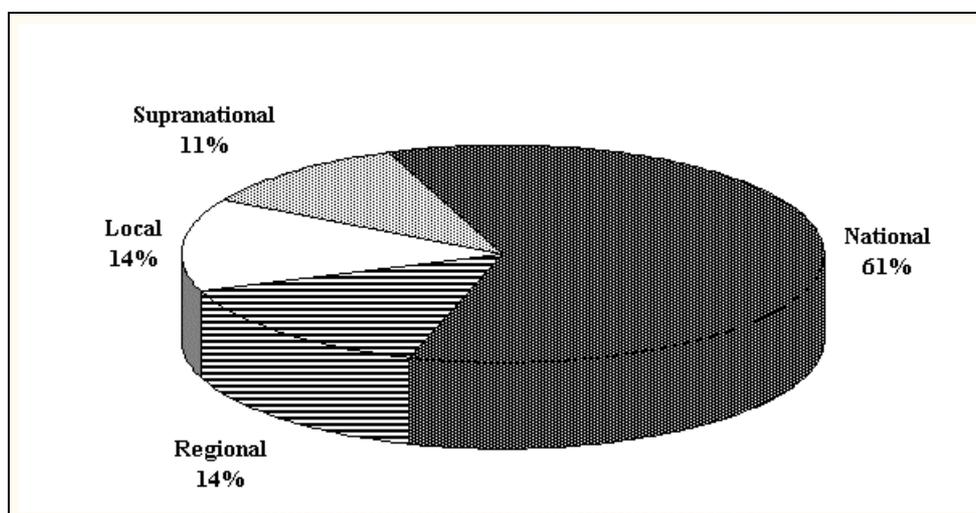


Figure 8 : Geographical coverage taken in account by data sources in Europe

Main dataholders are public organisations

In Europe, 51 % of data on nature topics is managed by public institutes, 24 % by governmental organisations and 16 % by associations.

Excluding the 57 Norwegian data sources (managed by 4 public organisations and 1 NGO), it becomes 39 % institutes, 26 % governmental organisations and 22 % associations (fig. 9).

According to map n°6, NGOs are important dataholders in Greece, Sweden, Netherlands and United-Kingdom.

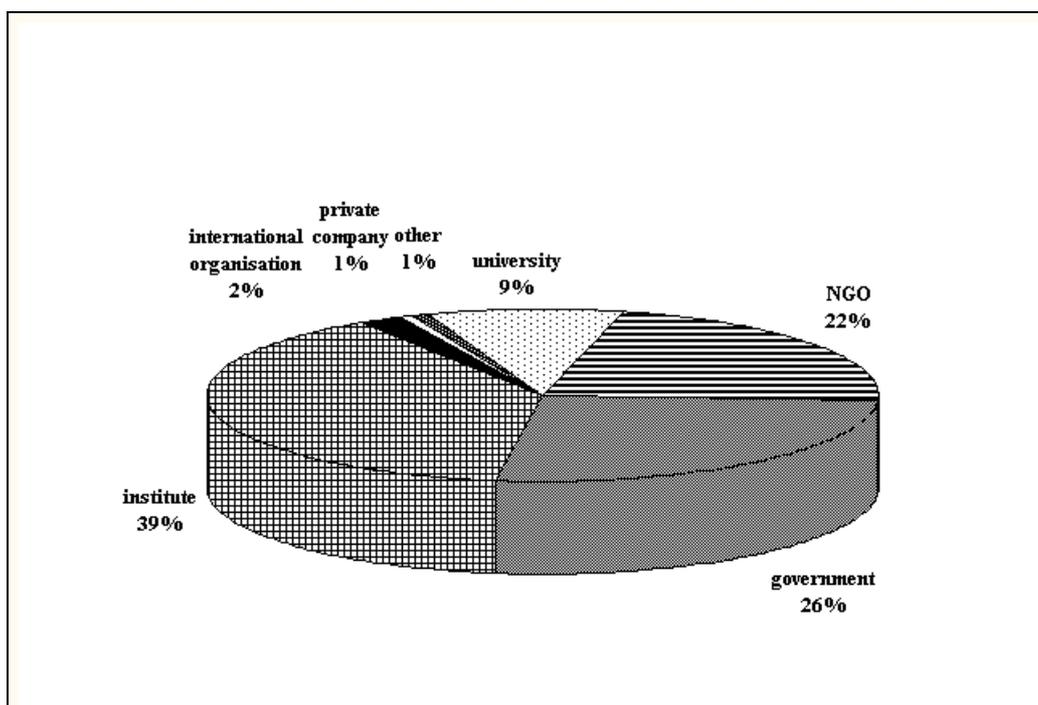


Figure 9 : Main holders of data sources in Europe

Collection of data is made by official staff, monitoring programmes and volunteers

34 % of data are collected by official staff*, 20 % by monitoring programmes and 19 % by volunteers (figure 10).

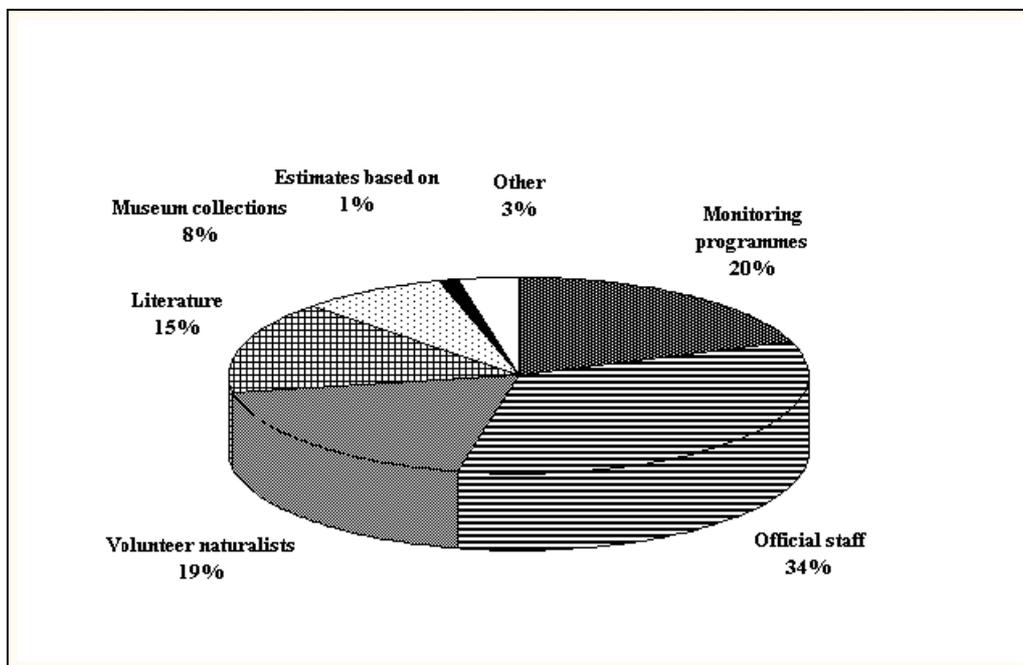


Figure 10 : Sources of collected data

Map n°7 shows the main tendency at each national level.

- *. official staff : data collected in the frame of staff work out of official programmes*
- . monitoring programmes : data collected in the frame of official monitoring programmes*
- . volunteers naturalists : data collected by naturalists or by in-house staff during their spare-time*
- . literature : extraction of historical & recent records from published or unpublished sources*
- . museum collections : historical data attached to specimens in a museum collection*

With few exceptions, all data sources are subject to deontological rules

One or more deontological rules apply to nearly all sources (fig. 11): data collection (27%), access to data (28 %), diffusion and publication (24 %), pricing criteria (19%).

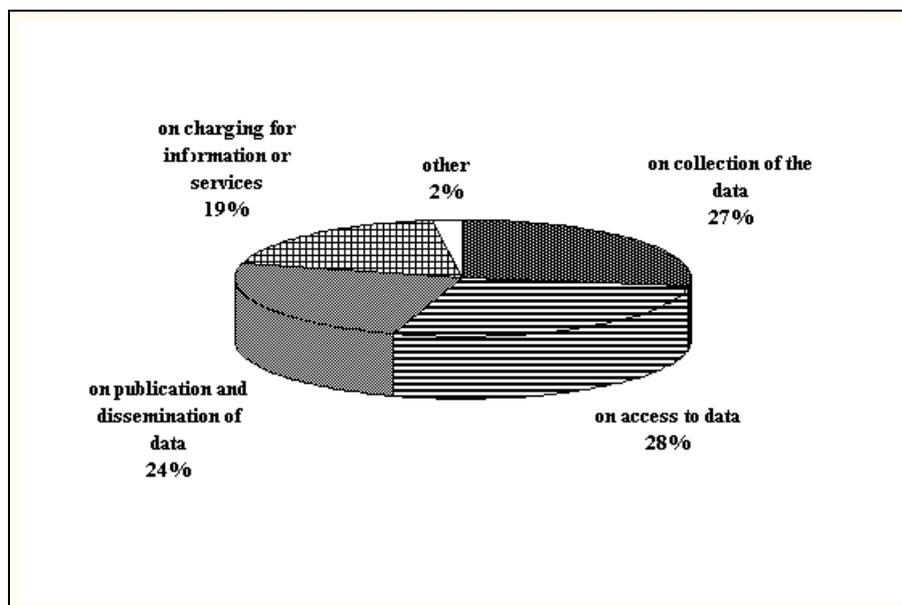


Figure 11 : Deontology applied to data sources

3b - Comparative assessment according to the needs of the Habitats Directive

The implementation of the Fauna, Flora and Habitats Directive (92/43/EEC) - the so-called FFH Directive - is one of the most important missions in the immediate future for the European Union Member States as well as for the Commission.

It is extremely important to know which data sources may be useful for the evaluation of sites proposed for the NATURA 2000 network.

Concerning species data sources, the questionnaire asked respondents to specify which species of the FFH Directive Annexes were covered by these sources.

A quick comparison has been made between sources holding data on present, possible or extinct Annex II species in each country of the European Union as mentioned in the draft document from DG XI (EEC-DG XI, 1995) and results from annex 3 of the MNHN questionnaire (Species list of FFH Directive and Bern Convention). 100 questionnaires have been returned with this annex completed (results from 12 countries out of 15 affected by the directive).

Data sources on species of annex II of FFH Directive are rather limited

Mammals (fig. 12):

5 countries hold data on all species of the annex occurring in their territory. The Atlas of Societas Europaeae Mammalogica surveys 36 Annex II species (out of 39) excluding the Scandinavian countries and Italy.

Reptiles and Amphibians (fig.13):

7 countries hold data on all species of the annex occurring in their territory. The Atlas of Societas Europaeae Herpetologica surveys all Annex II species.

Fish (fig.14):

Only 3 countries hold data on all species of the annex occurring in their territory.

Invertebrates (fig. 15):

Only 3 countries hold data on all species of the annex occurring in their territory. The European Invertebrate Survey is evaluating existing data on Invertebrates from annexes of the directive (VAN HELSDINGEN P.J. & WILLEMSE L.).

Flora (fig. 16):

Only 2 countries hold data on all species of the annex occurring in their territory. Atlas Flora Europaea covers 50 % of Pteridophyta and 20 % of Spermaphyta from Annex II of the Habitats Directive.

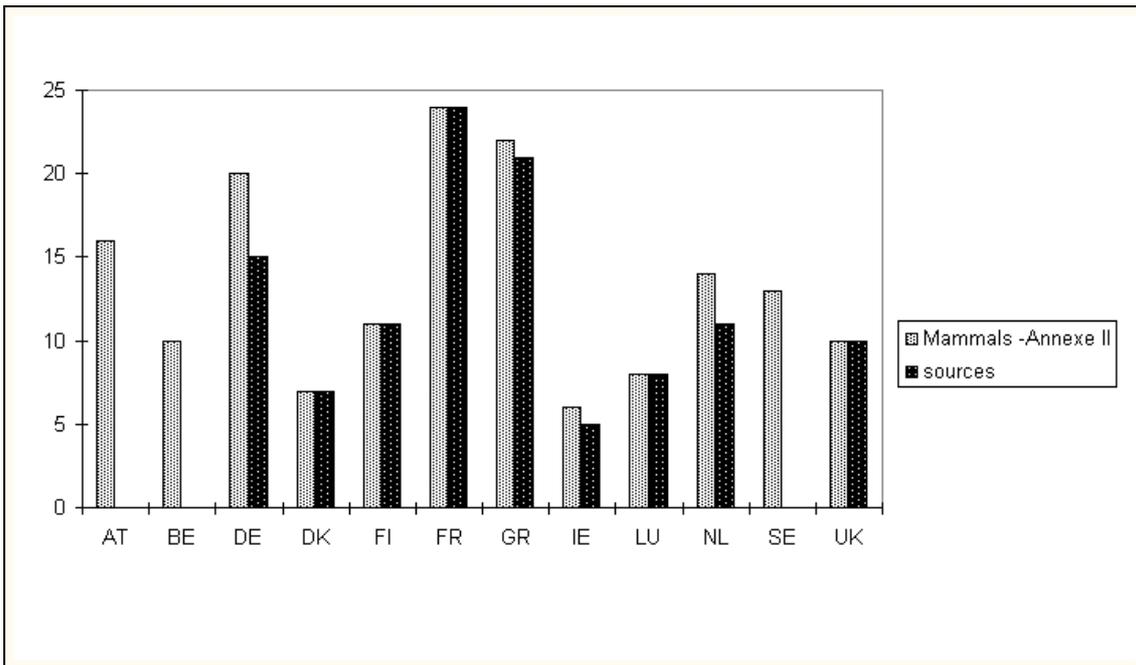


Figure 12 : Mammals - Number of species from Annex II present in each country and number of species taken into account by national data sources

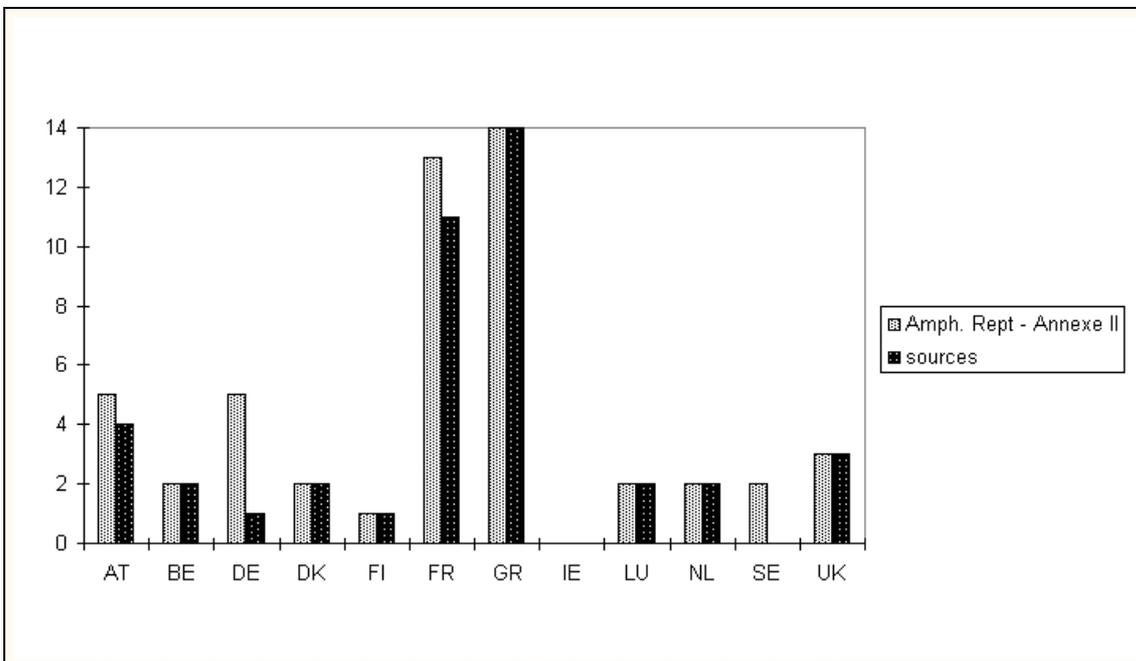


Figure 13 : Reptiles & Amphibians - Number of species from Annex II present in each country and number of species taken into account by national data sources

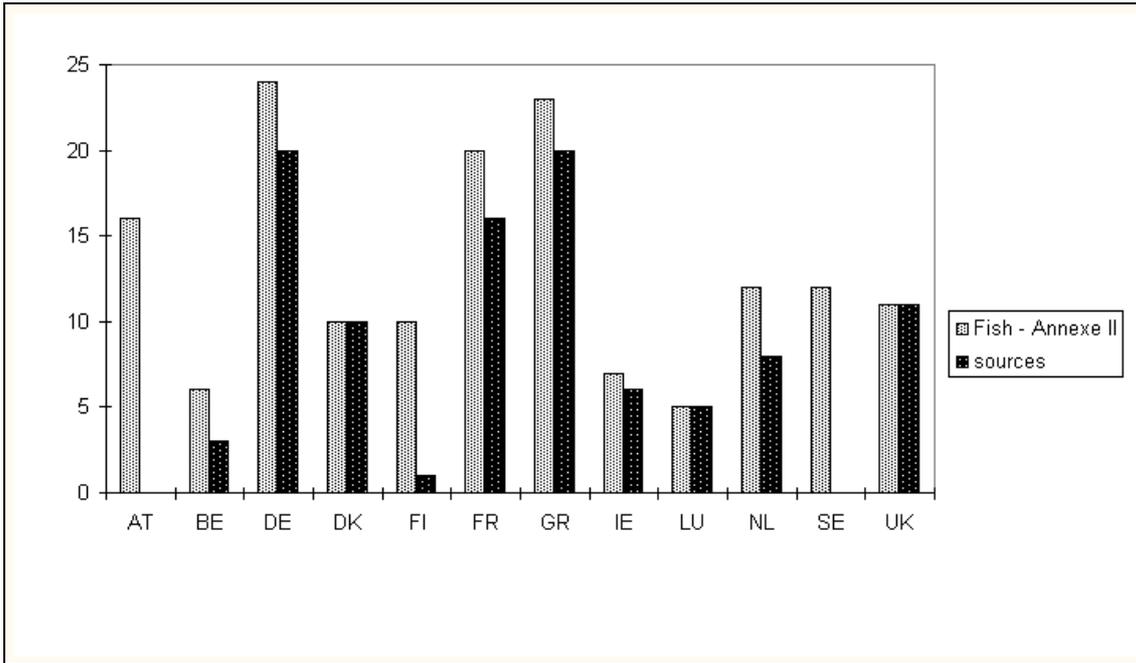


Figure 14 : Fish - Number of species from Annex II present in each country and number of species taken into account by national data sources

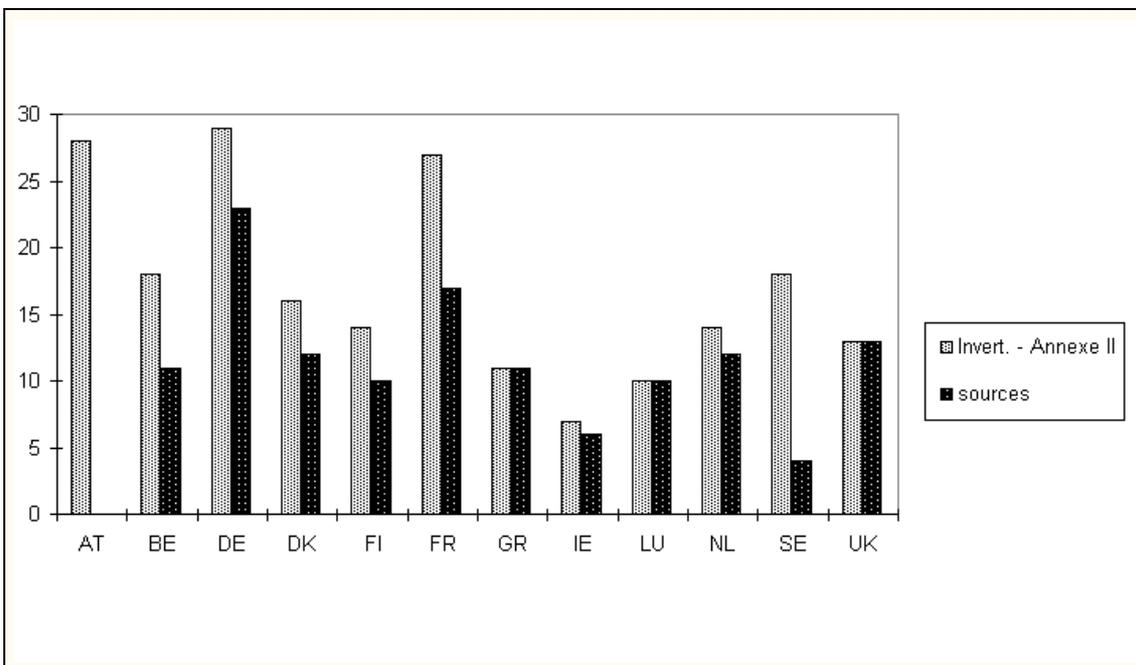


Figure 15 : Invertebrates - Number of species from Annex II present in each country and number of species taken into account by national data sources

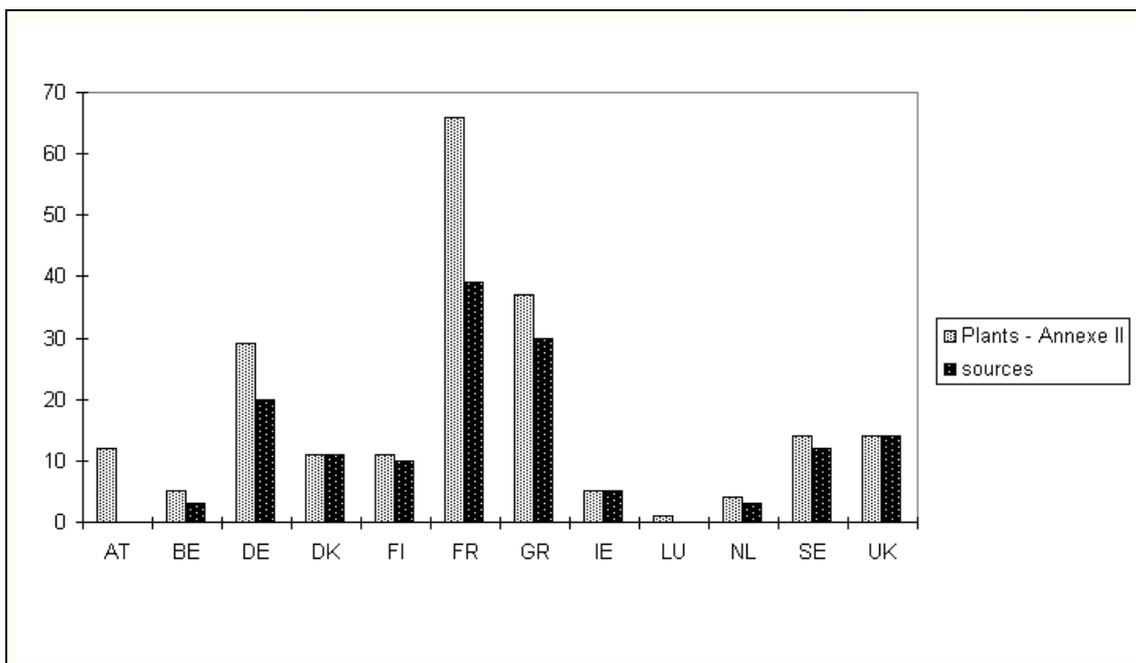


Figure 16 : Plants - Number of species from Annex II present in each country and number of species taken into account by national data sources

The data sources do not cover all the needs for the NATURA 2000 implementation

According to article 4 of the FFH Directive, the Member States must supply - within the limits of current knowledge - information on sites eligible as Sites of Community Interest. This information includes data on each site and also general data necessary to evaluate the interest of the site in comparison with the national situation.

For the habitats, these general data concern national surface of each habitat type, its structure and functions and its restoration possibilities.

For the species, these general data concern size of populations and their degree of isolation.

According to figure 7 (p 19), less than 60 % of sources on habitats contain quantitative data (surfaces; percentages...) and barely 55 % contain information on habitat management. 65 % contain information on site management.

Regarding the size of populations, nearly 70 % of species sources contain quantitative data of which 40 % are devoted to Birds.

3c - Comparability of data sources

33 % of sources on species do not use taxonomic standards

An object for which data are collected must be identified and named. Animal and plant species surveyed for inventories or monitoring programmes are named using nomenclatures with varying degrees of standardisation according to species groups. For Mammals and Birds, the nomenclatures which are applied are often in common use. Less well known groups which are more important in terms of size, such as Invertebrates and Lower Plants have no standard lists of names in common use.

Following the question : « which taxonomic standard are you using ? » 10 % of sources use national standards, 10 % Flora Europaea, the rest being shared between 7 standards. Even if the number of standards is related to the number of species, 33 % of sources do not use standards at all.

Another important point is the utilisation of coding to make the management of data easier. Figure 17 shows that 47 % of sources have their in-house coding system and 24 % have no system at all.

43 % of sources on habitats do not use standards

Discussions on classification are on-going and work on standardisation is not well advanced.

In the results of the questionnaire, 7 classifications have been quoted including :

- CORINE classification
- Habitats Directive classification
- Nordic Vegetation Type
- UK National Vegetation Classification

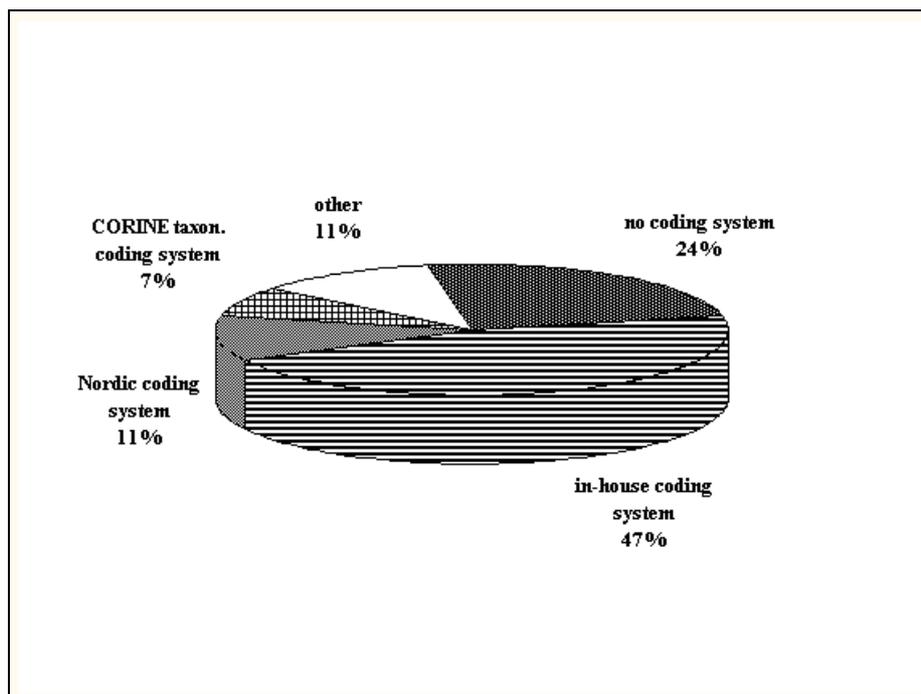


Figure 17 : Taxonomic coding systems used by data sources in Europe

Various spatial units

To allow comparison between species and habitats distribution, a geographic reference system based on comparable spatial units is necessary.

Figure 18 illustrates the wide variety of types of units used.

It is also very difficult to compare the different grids used (50, 10, 2 km², ...) since the associated type of projection is hardly ever specified for sources on habitats and sites; it is only specified for 50 % of sources on species.

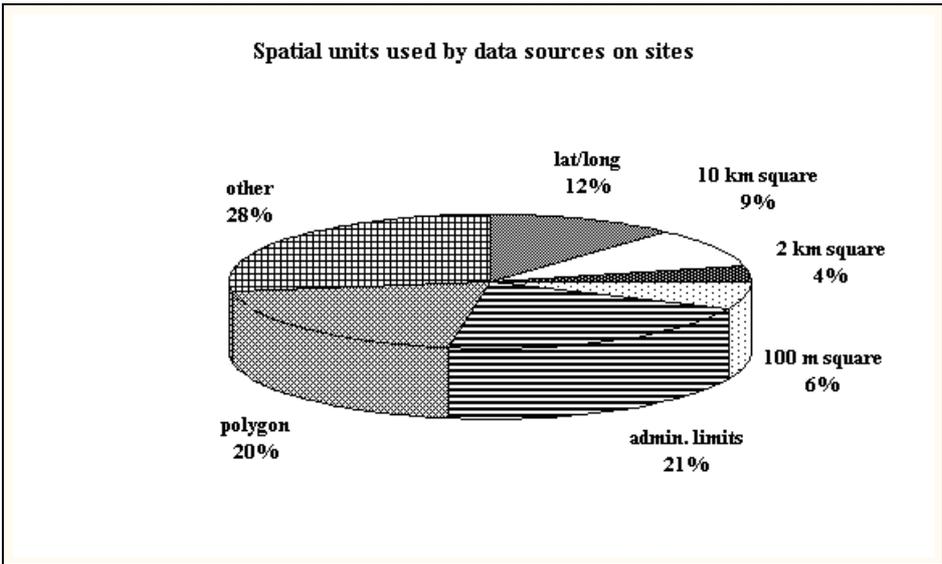
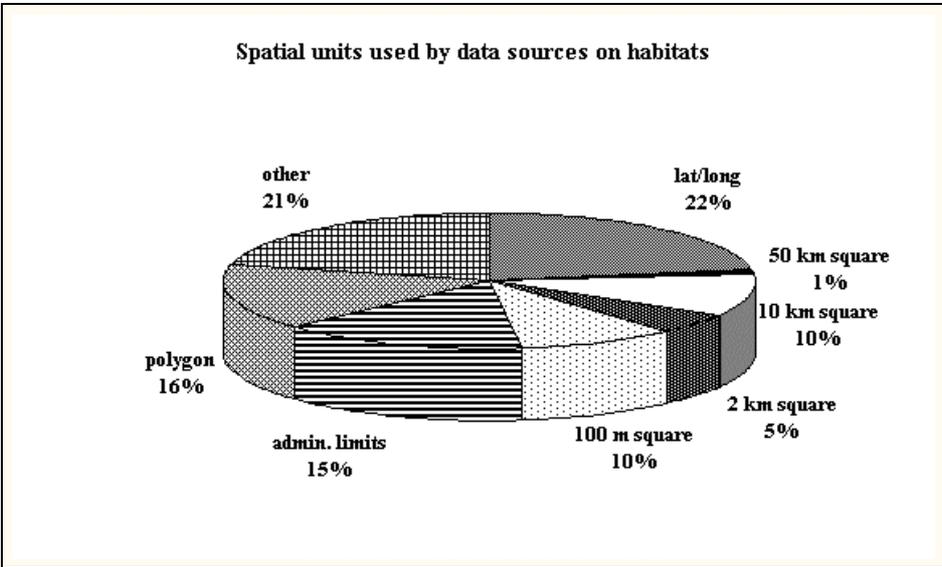
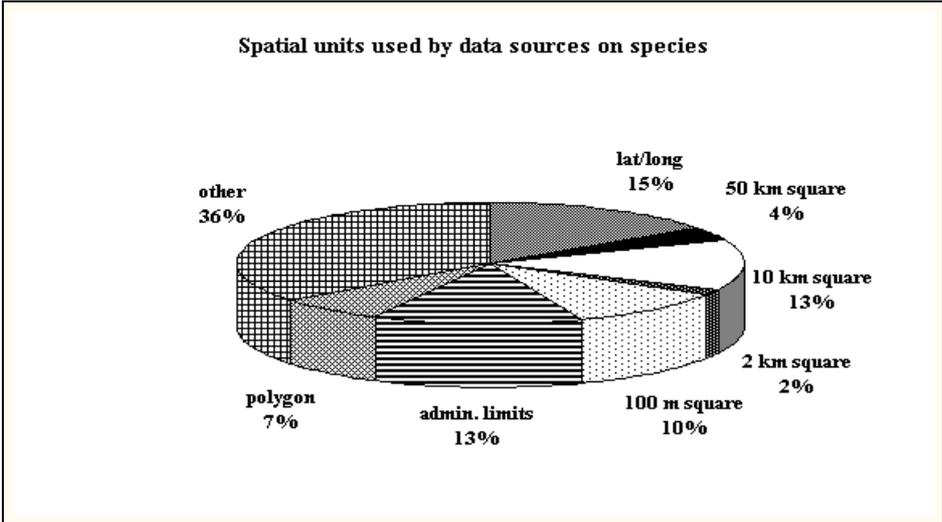


Figure 18 : Spatial units used by data sources in Europe

3d - Main gaps in data

It should be emphasised that this survey has been concentrated on data related to fauna and flora species, habitats and sites. These data are mostly the result of inventories and, to a minor extent, of monitoring programmes.

The functionalities of ecosystems, which are of major importance for Nature conservation and Biodiversity issues are not reflected in such a survey, since they refer to specific, often interdisciplinary, programmes of research, which cannot be described in easy standardised data bases.

Integrated impact assessments should incorporate complementary data sources to those described here, in the framework of pilot studies for example.

Taking this into account, the information gaps should be assessed according to the needs of the information users.

The most obvious needs to identify are, as a priority, the needs linked with the implementation of Natura 2000 Network. For the time-being, only this aspect will be worked on according to the EC-DG XI needs. But, it is obvious that, regarding biodiversity, there are much more important gaps; for example, Invertebrates which are very important for the functioning of the ecosystems (i.e. soil fauna).

Species

Table 4 summarises the main information gaps on Habitats Directive Annex II species; these gaps are very different depending on groups and countries.

In general, data on populations are rare. It would be worthwhile going into this point more closely later.

Habitats

The weakness of habitats information is mostly linked to a problem of availability. There are few surveys on habitats as such. Existing data are often associated with species and sites and it is then often impossible to reach information on a given type of habitat. Otherwise, until the implementation of CORINE-BIOTOPES programme and then of the Habitats Directive, the concept of « habitat » was not clearly identified in European documents.

As the countries have to provide a list of Sites of Community Interest, there is an incentive to establish such databases.

It is also necessary to complete quantitative data to improve the knowledge on habitat surface area.

	AT	BE	DE	DK	ES	FI	FR	GR
Mammals	0/16	0/10	15/20	7/7	?	11/11	24/24	21/22
Amphibians Reptiles	4/5	2/2	1/5	2/2	?	1/1	11/13	14/14
Fish	0/16	3/6	20/24	10/10	?	1/10	16/20	20/23
Invertebrates	0/28	11/18	23/28	12/16	?	10/14	17/27	11/11
Plants	0/12	3/5	20/29	11/11	?	10/11	39/66	30/37

? data pending

	IE	IT	LU	NL	PT	SE	UK	EU
Mammals	5/6	?	8/8	11/14	?	0/13	10/10	36/39
Amphibians Reptiles	0	?	2/2	2/2	?	0/2	3/3	38/38
Fish	6/7	?	5/5	8/12	?	0/12	11/11	
Invertebrates	6/7	?	6/7	12/14	?	4/18	13/13	?
Plants	5/5	?	0/1	3/4	?	12/14	14/14	?

? data pending

Table 4 : Number of Annex II species taken into account in data sources / Number of Annex II species existing in each country (according to source : EEC-DG XI, 1995)

4 - RECOMMENDATIONS

☞ Elaboration of standards and guidelines

Quality criteria for information to be useful at a European scale may be defined according to three aspects: comparability, up-to-dating and aggregation/disaggregation possibilities.

It is necessary to elaborate standards for species and habitats reference lists and recommendations on priority data to collect and spatial units to use.

The ETC/NC work programme includes work on these tasks.

☞ Further surveys of data sources

The survey of sources should be carried on with the countries which have not replied, which have not made enough investigations because of the short deadline and with other dataholders (UNEP-INFOTERRA ...).

The sources related to some of the big groups of species, as Invertebrates for example, and the sources related to the habitats should be analysed further to allow a better assessment of gaps.

☞ Completion of information gaps

Gaps assessment was only carried out at a general level due to lack of time and lack of information on data sources. It would be useful to go into this point more closely.

Collaboration with the Topic Centre on Land Cover might help to improve knowledge on distribution and surface area of the habitats at a general level.

Regarding species, collaboration with the European Atlases and any other geographically broad initiatives, should be developed to support their actions. These sources are actually interesting due to the gathering and the validation of information at European level with inputs from experts networks which are already well established.

The European Environment Agency should encourage the National Focal Points to support national initiatives and to use the commonly agreed standards.

☞ Implementation of a European Information System on Nature

Specifications of the European Nature Information System (EUNIS) have been developed in a preliminary report by ETC/NC. The reflection on the implementation of such a system

is made under the frame of a Technical Advisory and Appraisal Group. The assessment of data sources is part of the the task.

The assessment of data sources in Europe reveals two important points:

Dataholders are not always Focal Points, public or governmental organisations, but frequently NGO associations at regional, national or international level.

The quality of these sources depends on their functional ability and their continuity; the quality of the European Information System on Nature depends then on the quality of these sources.

Most dataholders work according to deontological rules (copyright, ...). This will influence the work of the Agency; Proposal for a general framework or guidelines related to the use and the distribution of data in the EEA network is necessary.

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WCMC (1994) - The Biodiversity Information Clearing House - Concept and Challenges - WCMC Biodiversity n° 2, November 1994

VAN HELSDINGEN P.J., WILLEMSE L. (1995) - Background information on Invertebrates of the Habitats Directive - Draft final report, 30-06-1995

For the development of the questionnaire, analysis of several questionnaires has been made :

CCBR Programme for the establishment of a national system for the co-ordination of biological record - Questionnaire, Sept 1992.

ECNC Survey on species data availability with special emphasis of the EC directive 92/43/EEC and Bern Convention - questionnaire Jan. 1995

ICONA Encuesta sobre bancos de datos de conservacion , Hispanat marzo 1995.

CBD Questionnaire on existing databases of relevance to the Convention on Biological Diversity Jan 1994

