

Final Report

**Harmonizing Metadata
Initiatives Throughout IABIN**

Project Director

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October, 2000

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1.0 BACKGROUND

Data and information on biological diversity are needed in the decision-making process to achieve the objectives of sustainable development. Several efforts have begun at the global, regional, and national levels to establish collection and cataloguing systems of biological data. Although important information on use and conservation of biodiversity in the Americas already exists, search, identification and use of this information is a slow process. Technical and institutional capacities needed to gather such extensive and heterogeneous information across the Americas is presently inadequate and there are no mechanisms in place to exchange information and experiences in a comprehensive manner. At the 1996 Summit of the Americas on Sustainable Development, the heads of state recognized these problems and pointed to the need for an integrated and coordinated action of all countries throughout the Hemisphere, resulting in Initiative 31 of the Plan of Action on Sustainable Development of the Americas. Initiative 31 mandated countries to establish an Inter-American Biodiversity Information Network (IABIN) to promote compatible means of collection, communication and exchange of information relevant to decision-making and education on biodiversity conservation.

2.0 PURPOSE OF STUDY

Objective: To promote compatible means for finding and exchanging biodiversity data and information among the countries in the hemisphere

Among the factors that affect the development of a hemispheric network are: the fast development of new information technologies; the numerous institutions and organizations (academic, government and research, etc.) dedicated to the generation, storage and distribution of biodiversity information; and immediate needs, limitations and different priorities within the participating organizations. These factors contribute to the lack of a common and congruent system that facilitates the search for information and the exchange and comparison of data among the different actors. Within the hemisphere, IABIN seeks a common framework as a solution to this problem.

One of the problems identified by IABIN participants as an impediment to the exchange of information is searching for available biodiversity information over the Internet. While commercial web search engines can be used to find some of these resources, commercial search engines offer only elementary searching capabilities (full-text), and have no specific disciplinary focus. This lack of focus results in very low search precision, and as a consequence, frequently lengthy or unsuccessful search sessions. In addition, much of the content available on biodiversity is not directly accessible via WWW URLs and must often be accessed via search interfaces that are inaccessible to web engines. Web search engines can do little more than present located pages as is.

In contrast, metadata records provide sufficient structure and consistency in content to implement services for advanced presentation and manipulation. Metadata provides information that supports the location, access and appropriate use of datasets, databases and other biodiversity information resources. Creation and standardization of metadata is critical for conducting successful data searches across institutions and networks. The need for standardized sets of metadata and the importance of developing compatible environmental information systems has become more apparent with the development of the Internet.

A catalog is a collection of metadata records that describe data and information resources and through which the latter can be accessed. The items described by a catalog can be quite heterogeneous in nature, including images, algorithms, computer programs, statistical datasets, scientific instruments, data processing systems, large databases, technical abstracts, and even other catalogs and information systems on the Web. A catalog system allows users to search for data and information through the catalog "gateway" which contains a user-friendly Web interface. The gateway sends user's requests to multiple servers (network nodes), which contain metadata, where the search takes place. These servers can be located in various countries and networked into a distributed architecture to provide a wide variety of mechanisms for search and retrieval of information, and unified searches at national and regional levels. A catalog system can be a common denominator to national efforts, and a catalyst for the integration of hemispheric activities at the highest level, such as IABIN.

3.0 PROJECT COMPONENTS AND PRODUCTS

The work carried out under this grant consists of three components:

- 1.0 Preparation of a survey of metadata standards, protocols and tools in the Americas;
- 2.0 Development of a prototype biodiversity catalog for Central America; and
- 3.0 Development of guidelines and recommendations on metadata standards, protocols and tools for IABIN.

The results of these activities will be described in the following section.

3.1 Survey of Metadata Standards, Protocol and Tools Used Throughout the Americas

Report prepared by Leonel Gonzalez

In this study we have carried out a survey of efforts at the national level to establish catalog systems for biodiversity data. This system will provide the basis for the development of a regional catalog. In order to implement IABIN it is necessary to know the existing infrastructure in each country, and how it is being utilized. It is also necessary to know what standards and protocols are being used, in order to coordinate efforts and to achieve IABIN's goal of developing a hemispheric information exchange system.

This report is a compilation of basic information concerning present regional tendencies, in terms of standards, protocols and software tools used. For that reason a specific survey format was developed and key organizations within the Latin American region were contacted and asked to fill out the questionnaire.

The methodology used to gather information for this report was to send a survey format to each IABIN focal point, who recommended who to contact within their countries. Once new contacts were identified, the surveys were sent via e-mail and a telephone interview was held with key personnel in order to get the desired information.

This study included universities, government, as well as research institutions. Section 3.1.2 presents the contacted institutions and the answers obtained.

3.1.1 Survey Format Description

The survey was subdivided into 5 sections:

- a) Background information,
- b) Institutional Identification,
- c) Country Leadership,
- d) Technology used, and
- e) Obstacles and Limitations.

The survey presents questions about a series of issues, such as:

- The process used for documenting data;
- The use of metadata and its accessibility using a catalog;
- Types of standards/protocols and tools used to handle the information;
- Type of electronic format in which the information is made available;
- Hardware platform and type of connectivity,
- Main limitations and proposed solutions.

Refer to Annex I for a detailed survey format (Spanish and English). A summary of survey answers is presented in Annex II.

3.1.2 Contacted institutions and their responses

Through out the Latin American region, a total of 22 institutions were contacted in 15 countries, the following table lists them. The frequency of response corresponds to a 59% of the sample. See Table 1.

Table 1.

1	Sistema de Información Ambiental Nacional, SERNAH	Argentina	Yes
2	Base de Datos Tropical, Andre Tosello Foundation	Brazil	Yes
3	Comision Nacional de Medio Ambiente CONAMA.	Chile	Yes
4	Universidad de Concepcion, Facultad de Ciencias Naturales y Oceanograficas.	Chile	Yes
5	Instituto de Investigacion de Recursos Biologicos Alexander von Humboldt.	Colombia	Yes
6	Instituto Nacional de Biodiversidad INBio.	Costa Rica	Yes
7	Corporacion Centro de Datos para la Conservacion CDC.	Ecuador	Yes
8	Universidad Nacional San Carlos de Guatemala, Centro de Estudios Conservacionistas CECON.	Guatemala	Yes
9	Comision Nacional para el Conocimiento y Uso de la Biodiversidad CONABIO.	Mexico	Yes
10	El Colegio de la Frontera Sur, ECOSUR	Mexico	Yes
11	Universidad Nacional Autonoma de Mexico, Facultad de Ciencias, MZFC-NABIN.	Mexico	Yes
12	Centro de Datos para la Conservacion de la Naturaleza, Facultad de Ciencias Forestales, Universidad Nacional Agraria La Molina CDC.	Peru	Yes
13	Consejo Nacional del Ambiente CONAM	Peru	Yes
14	Asociacion Boliviana para la Conservacion TROPICO.	Bolivia	No
15	Ministerio del Medio Ambiente, Subsecretaria de Gestion Ambiental.	Ecuador	No
16	Ministerio del Medio Ambiente y Recursos Naturales, Programa de Biodiversidad.	El Salvador	No
17	Comision Nacional del Medio Ambiente CONAMA.	Guatemala	No
18	Secretaria de Recursos Naturales y Ambiente SERNA.	Honduras	No
19	UNEP, Regional Office for Latin America and the CARibbean, Natural Resources Unit.	Mexico	No
20	Ministerio de Agricultura y Ganaderia, Subsecretaria de Recursos Naturales y Ganaderia, Centro de Datos para la Conservacion de Paraguay.	Paraguay	No
21	ONAPLAN, Departamento de Planificacion Ambiental.	Dominican Republic	No
22	UNESCO, Proyecto BioPlata	Uruguay	No

3.1.3 Data analysis and results

Present Capacity by Node in Metadata and Standards

The following table presents the most advanced institutions that actually generate metadata, have an implemented standardized metadata catalog, use software tools for its administration, applies a specific type of vocabulary or thesaurus, and has on-line servers.

Table 2.

Sistema de Información Ambiental Nacional, SERNAH.	Argentina
Base de Datos Tropical, Andre Tosello Foundation. ^{1,2}	Brazil
Comision Nacional de Medio Ambiente CONAMA.	Chile
Comision Nacional para el Conocimiento y Uso de la Biodiversidad CONABIO.	Mexico

1 No thesaurus or vocabulary implemented.

2 Metadata catalog not on-line, however it does have Internet connectivity, and data can be located on-line.

The second group of institutions is close to optimum condition, however do not use metadata catalogs or standards to document data, but have expressed their interest in working on this topic in the near future.

Table 3.

Instituto de Investigacion de Recursos Biologicos Alexander von Humboldt.	Colombia
Instituto Nacional de Biodiversidad INBio.	Costa Rica
Centro de Datos para la Conservacion de la Naturaleza, Facultad de Ciencias Forestales, Universidad Nacional Agraria La Molina CDC.	Peru
Consejo Nacional del Ambiente CONAM	Peru

The third group does not use metadata and associated technology everyday, but could work with this type of technology in the future.

Table 4.

Corporacion Centro de Datos para la Conservacion CDC.	Ecuador
Universidad Nacional Autonoma de Mexico, Facultad de Ciencias, MZFC-NABIN.	Mexico
Universidad Nacional San Carlos de Guatemala, Centro de Estudios Conservacionistas CECON.	Guatemala

The institutions in the last group are considered not to be working or having any relation whatsoever with metadata and its technologies, within a biodiversity information context.

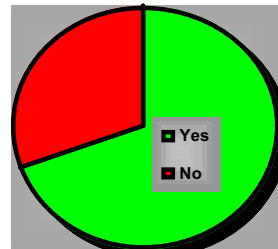
Table 5.

Universidad de Concepcion, Facultad de Ciencias Naturales y Oceanograficas.	Chile
El Colegio de la Frontera Sur, ECOSUR	Mexico

Internet and Connectivity Knowledge

Of the surveyed institutions, 69.23% have knowledge and use the Internet.

Internet usage	09
No Internet usage	04



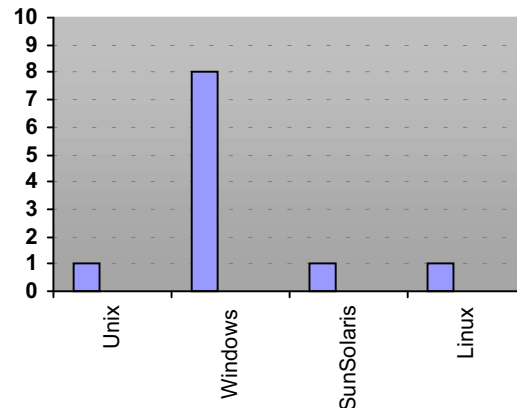
Types of Identified Servers

Most institutions tend to work over platforms based in Windows NT/98, with just very few using Unix, Sun and Linux platforms. See more details in the table below.

Table 6.

Unix ¹	01
Windows	08
Sun Solaris ²	01
Linux ³	01
No Platform	02

- 1 BDT, Brazil
- 2 Humboldt, Colombia
- 3 INBio, Costa Rica



Metadata Strategies and Leadership

Of the interviewed institutions, 77% have a formal strategy within the working scheme for the management and implementation of metadata, using a type of standard, protocol and software tool for data management.

The middle of 1996 tends to be the average date where most institutions began their data strategy in biodiversity; almost half of the institutions interviewed are in charged themselves of implementing these processes of information management in their countries.

Technology, Standards, Protocols and Software Tools

Nine out of thirteen institutions generate metadata, which means 70%. Four out of those 13 have implemented a metadata catalog, mainly using the FGDC, Metamaker, NBII, Dublin-Core and TNC standard. The spreading vehicle for these metadata catalogs is the HTTP protocol, assisted by TCP/IP or Z39.50.

The most common software tools used to manage the metadata information are data bases in personal computers like, Access, DBase, SQL and Delphy, as well as the Excel electronic sheet; for thematic map applications Arc/INFO is used, and ERDAS for image processing.

Five out of thirteen organizations use a thesaurus or vocabulary to identify key words for searches and catalogs; 9 of 13 institutions have on-line servers for searching information or metadata.

Additional information regarding software tools can be located in a report written by the UNDP which identifies, within 66 contacted organizations through out the world, other types software tools used in the administration of data banks about biodiversity, please refer to Annex IV for a detailed list of these tools.

Electronic Format and Media

Eight out of thirteen institutions have an on-line web server, which is used to publicize different scale information. However, just 4 have some type of access to on-line metadata catalogs; the prevailing electronic format for obtaining data is the electronic spread sheet, data base tables, type HTML archives (Email and Internet downloads), and Arc/INFO shape files in the event of geo-referenced thematic maps. Annex II summary tables present the addresses in the Web.

Main Limitations

The major limitations commonly encountered in the start up of documenting information technologies and metadata catalogs are condensed in the following bullets:

- Lack of financial aid for the hiring of qualified personnel and acquisition of up to date technology;
- Lack of common guides for the harmonization and standardization of data and metadata, as well as a common understanding among different sets of data;
- Lack of trained personnel for a suitable implementation of metadata policies;
- Lack of quality control mechanisms for data documentation, and
- Institutional reluctance to share information and jointly participate in similar initiatives.

The users and producers of data conclude that certain solutions to those limitations can be the following:

- To search for external financial sources (special projects, sale of services, etc.) in order to decrease dependency on institutional or government budgets;
- To enhance inter-institutional communication;
- To increase capacity building;
- To make data available to the public through legislation;
- To join the existing data banks, making all groups of data accessible on-line, and enhance the existing data access mechanisms.

The persons contacted suggested than doing the following can improve the actual situation:

- Increase training workshops for users and producers of data;
- Enhance the accessibility of data and standardize all information;
- Include biodiversity metadata generation issues in the government technical agendas;
- Increase institutional coordination within a national/regional strategy;
- Promote the computerization of data sets and increase use of software tools for collecting data.

3.1.4 Other identified initiatives

The following are other types of metadata catalogs managing systems and/or biodiversity data known throughout the world, and identified by the different personnel interviewed.

Table 7.

	The Species Analyst, developed at Kansas University, USA
ABI	Asociacion para la Información sobre Biodiversidad
BCIS	Biodiversity Conservation Information System
BGCI	Botanic Gardens Conservation International
BIOTA	The digital biology project
BIOTICA	Biotica Health Care
CepNET	Caribbean Environment Programme, UNEP
CHM	Clearing House Mechanism
CORINE	from France
EONET	From EU
ERIN	From Australia
ETI	Institution from Netherlands
EUROSTAT	European Communitie
GBIF	Global Biodiversity Information Facility
INFOTERRA	United Nations Environment Programme
ITIS	Integrated Taxonomic Information System, USA and Canada
NABIN	North América Biodiversity Information Network
NBIA	
REMIB	De la CONABIO, Mexico
SIMEBIO	Sistema Mesoamericano de Información sobre la Biodiversidad
Species2000	Distributed Taxonomic Databases
WCMC	The World Conservation Monitoring Centre, UK

A great number of initiatives working with metadata and/or biodiversity information were identified, at local, regional and global levels. Refer to Annex III for details.

3.1.5 Conclusions

After analyzing all the data provided by key personnel from institutions, as well as information from interviews, the following is concluded:

- 3 Within the institutions in charge of biodiversity information in Latin American there is a tendency (even though slow) to develop data banks.
- 4 In general there is a lack of mechanisms to access these data.
- 5 There is a lack of standardization concerning the metadata generation processes, even within countries;
- 6 There is a need to train personnel on key technological and metadata issues;
- 7 The idea of developing Metadata and the implementation of a catalog system was well received at the different institutions contacted
- 8 Personnel at the institutions contacted made it clear that it is necessary to include these topics within governments' technical agendas, so they can be established as government policies that can eventually allow for the development of metadata;

3.2 Development of a Prototype Distributed Catalog System for Biodiversity Data and Information in Central America.

The World Bank's InfoDev Program provided funds during 1999-2000 for training in Central America in matters concerning development of a catalog system and metadata. With this background, a distributed catalog system has been proposed for seven Central American countries. This catalog system could support the Mesoamerican Biological Corridor Information System (CorreNet), SIMEBIO, IABIN, and other projects in the region.

This component expands on the InfoDev project and aims to demonstrate a prototype of a distributed catalog system on biodiversity for Central America. It includes:

1. Training of metadata developers

Four metadata developers were trained at CICEANA's facilities in Mexico City. The one-week training was attended by two metadata developers from Honduras and two from El Salvador. This session was held in July, 1999. The metadata developers learned how to use USGS software (Metalite) in order to develop metadata in the FGDC standard.

2. Development of metadata for biodiversity and related information, in order to obtain the critical number of entries that are needed so the catalog be useful.

Metadata developers were contracted in El Salvador, Nicaragua, Honduras, and Guatemala. The metadata developed in each country are presented in Appendix V. In total, 530 metadata were developed and quality checked.

Catalog nodes were established in each of these countries. The nodes in Nicaragua, Honduras and Guatemala reside in servers at the Sustainable Development Network (RDS) in each country, while the node in El Salvador resides at the CCAD. The nodes are Linux servers using ISITE software and the Z39.50 protocol.

3. Development of a search and retrieval interface for biodiversity data, to be accessible through institutional home pages.

A search and retrieval interface developed by CICEANA was used. This interface can be accessed through the Internet at the following web addresses:

www.isite.ciceana.org.mx

www.sicanet.org.sv

This interface allows the user to do Boolean searches using keywords. The user can choose multiple servers to do the search.

3.3 Start an Evaluation Process of Existing Metadata Standards, Protocols and Tools by a Group of Experts and Begin the Preparation of Metadata Guidelines and Recommendations for IABIN.

To facilitate exchange of information among network users and providers of data, guidelines and recommendations on standards, protocols and formats need to be promoted among IABIN participants. This is an issue that needs to be addressed as early as possible in the development of IABIN. For this purpose six metadata experts met in Hollywood, Fla on April 3-4, 2000, at the Clarion Hotel. The meeting agenda is presented in Annex VI. The members of the Metadata Experts Committee are:

- Janet Lamb – Environment Canada, Canada
- Juan Carlos Bello – Humboldt Institute, Colombia
- Ricardo S. Pereira – BDT, Brazil
- Laura Arriaga – CONABIO, Mexico
- Michael Anthony – USGS, USA
- Helena Schaeffer – USGS, USA

This meeting was also attended by Elizabeth Martin, representing IABIN, Mario Leon, who has been in charge of metadata quality control for this project, and Vincent J. Abreu, the Project Director. The tasks for the Committee were:

1. The evaluation of metadata standards, protocols and tools from findings of the survey (3.1) and the prototype development (3.2).
2. Begin preparation of a report on guidelines and recommendations for metadata standards, protocols and tools promoted by IABIN.

The guidelines include information about how metadata standards, protocols and tools can facilitate the exchange of information among network participants; what existing standards, protocols and tools may satisfy the needs of users

and data providers; and in general what are the minimum requirements that metadata standards should satisfy. The Committee recommendations follow:

3.3.1 General recommendations

The following general recommendation were made:

- It is suggested that participants provide mechanisms that allow metadata interoperability. A “clearinghouse”, i.e. a decentralized system of metadata collection, could achieve this interoperability. It is also suggested that “gateways” be developed which allow common search and retrieval mechanisms for metadata available in servers located at IABIN participating countries. The current suggested protocols and technologies to achieve this are Z39.50 and XML. Others can be added as required. IABIN should facilitate participants with software, manuals, “cookbooks”, and training on how to be a node in the clearinghouse system.
- The South American Countries, included in IABIN, should develop sub-regional information networks, such as NABIN and SIMEBIO. It is suggested that a priority activity of these sub-regional networks be the implementations of metadata catalogues.
- Promote targeted training related to metadata in countries participating in IABIN.
- It is recommended that metadata be reviewed for quality before entered into the clearinghouse system. For this purpose, it is recommended that organizations participating in the IABIN network have a metadata expert in their team, who will be responsible for metadata quality on a long term basis. As an alternative approach, the metadata quality check could be done remotely by entering metadata on a designated site, where it will be reviewed.

3.3.2 Recommendations on metadata

Prepared by: Michelle Anthony, United States Geological Survey, Helena Schaeffer, Biological Resources Division, United States Geological Survey, and Janet Lamb, Ecological Monitoring and Assessment Network Coordinating Office, Environment Canada

April 4, 2000
IABIN Metadata Workshop
Hollywood, Florida

1. For the purposes of capturing biodiversity data, which in many cases involve the diversity of species in a geographic area, it is recommended that the extended United States Geological Survey’s National Biological Information Infrastructure Biological Profile (NBII) to the Content Standard on Digital Geospatial Metadata (CSDGM) be used. This profile allows for capture of important taxonomic information necessary when looking at biodiversity data. However, it is suggested that a more general system or classification field(s) be investigated so that atmospheric, or ecosystem studies (for example) are adequately captured. Two examples of ecology studies, described using the NBII profile are attached.
2. It is recommended that gaps in environmental metadata field coverage be identified and addressed. For example, further profiles will be needed to adequately describe hydrometric and atmospheric data.
3. It is recommended that there be a way to perform a multi-lingual search on metadata records. It is recognized that all metadata records will not be translated into multiple languages, therefore a multi-lingual thesaurus is required. International efforts are already underway by the-Pan-American Institute of Geography and History (PAIGH) and the USGS Hurricane Mitch project. This online website allows metadata creators to find metadata keywords with their language translations in English, Spanish, Portuguese and French. The current system is currently in development and needs more partners to assist in the population of keyword terms. The end user of the system can use the online tool to find and populate their metadata with these keywords. The metadata software, MetaLite, has also incorporated the multi-lingual thesaurus within its software. A prototype

can be reviewed at: <http://edents11.cr.usgs.gov/theo/> It is understood that the European Union may also be working on a multi-lingual thesaurus and this work should also be investigated.

4. It is expected that ISO TC211 will address a new “language of metadata” field, which does not currently exist in the Content Standard for Digital Geospatial Metadata, nor the Biological Profile developed by the USGS’s NBII.
5. The following minimum set of fields is recommended for the IABIN community. It is also recommended that IABIN review the ISO TC211 standard as soon as it becomes available:

Originator	The name of an organization or individual that developed the dataset. If the name of the editors or compilers are provided the name must be followed by “(ed.)” or “(comp.),” respectively.
Publication Date	The date when the data set is published or otherwise made available or released
Title	The name by which the data set is known
Geospatial Data Presentation Form	The mode in which geospatial is represented. Domain: (the listed domain is partially from pp. 88-91 in Anglo-American Committee on Cataloguing of Cartographic materials, 1982, Cartographic materials: A manual of interpretation of AACR2: Chicago, American Library Association): “atlas” audio” “diagram” “document” “globe” “map” “model” “multimedia presentation” “profile” “raster digital data” “remote-sensing image” “section” “spreadsheet” “tabular digital data” “vector digital data” “video” “view” free text Extended Domain: “book chapter” “CAD data” “conference proceedings” “database” “figure” “hologram” “journal article” “pamphlet” “table (non-digital)”
Publication Place	The name of the city and state or province and country where the data set was published or released.
Publisher	The name of the individual or organization that published the data set.
Abstract	A brief narrative summary of the data set
Purpose	A summary of the intentions with which the data set was developed.
Time Period of Content	Information about the date or time of an event. This can be described by a single or multiple date, or range.
Currentness Reference	The basis on which the time period of content information is determined. There are only three choices: “ground condition”, “publication date”, and “observed”. Information about the currentness of a data set (that is, how “up-to-date” a data set is) is important to many, if not most potential users. Most users are interested in the currentness of data set related to the “ground condition” (that is, when the “real world” looked the way it is described in the data set). Unfortunately, sometimes only the time that the information was recorded or published is known. The Currentness Reference element requires the producer to identify if the Time Period of Content dates and times refer to the ground condition, or some later time when the information was recorded, published, etc.
Progress	The state of the data set. There are three accepted values for this field: “Complete”, “In work”, and “Planned”.
Maintenance and Update Frequency	The frequency of which changes or additions are made to a dataset after the dataset is completed. An examples of values are: “Continually”, “Daily”, “Weekly”, “Monthly”, “Annually”, “Unknown”, “As needed”, “Irregular”, “None planned”, and free text.
Description of Geographic Extent	A short description of the areal domain of the data set. Examples could be watersheds or basins, eco-regions, ecosystems, etc. The extent describes features that transcend physical or political boundaries.
West Bounding Coordinate	Western-most coordinate of the limit of coverage expressed in longitude. The value must be greater than –180.0 or less than 180.0. This field must be in decimal degrees.
East Bounding Coordinate	Eastern-most coordinate of the limit of coverage expressed in longitude. The value must be greater than –180.0 or less than 180.0. This field must be in decimal degrees.

North Bounding Coordinate	Northern-most coordinate of the limit of coverage expressed in longitude. The value must be greater than -90.0 or less than 90.0. This field must be in decimal degrees.
South Bounding Coordinate	Southern-most coordinate of the limit of coverage expressed in longitude. The value must be greater than -90.0 or less than 90.0. This field must be in decimal degrees.
Thesaurus	Reference to a formally registered thesaurus or a similar authoritative source of theme keywords
Theme Keyword	Common used word or phrase used to describe subject of the dataset
Access Constraints	Restrictions and legal prerequisites for accessing the data set
Use Constraints	Restrictions and legal prerequisites for using the data after access has been granted
Metadata Date	The date that the metadata was created or last updated
Metadata Contact Person or Organization	The name of the individual to which the contact applies. <or> The name of the organization to which the contact applies. Note: It may be either, or both, but not neither.
Metadata Address Type	The information provided by the address Acceptable Values: "Mailing Address", "Physical Address", or "Mailing and Physical Address"
Metadata Contact Address	The address for the organization or individual.
Metadata Contact City	The city of the address
Metadata Contact State or Province	The state or province of the address
Metadata Contact Postal Code	The ZIP or other postal code of the address
Metadata Contact Country	The country of the address
Metadata Contact Voice Telephone	The telephone number by which individuals can speak to the organization or individual

Please note that the above elements are required for setting up a compliant GEO profile clearinghouse and that they make up the mandatory elements of the US Federal Geographic Data Committee's Content Standard for Digital Geospatial Metadata (CSDGM). To more fully describe a data set, the full CSDGM should be consulted which includes such major sections as "Data Quality", "Spatial Data Organization", "Spatial Reference", "Entities and Attributes", and "Distribution Information".

Attached are two examples of described data sets using the CSDGM and NBII profile.

3.3.3 Example 1

Identification_Information:

Citation:

Citation_Information:

Originator: Thomas Doyle

Originator: USGS Biological Resource Division's National Wetlands Research Center

Publication_Date: 1997

Title:

Mangrove Growth and Forest Structure Data for South Florida

Geospatial_Data_Presentation_Form: Tabular digital data

Description:

Abstract: Predictions about global change include increases in the intensity of tropical storms. The low-lying Gulf of Mexico and South Atlantic Coastal Forests are susceptible to direct damage from wind and surge force sufficient to alter forest structure and diversity. Landscape simulation models were developed to evaluate the impacts of increasing water levels and disturbance associated with global climate change on mangrove forests of the Everglades, Florida, USA. A hindcast simulation for 1886-1989 indicates that the periodicity and trajectories of a few major hurricanes accounted for most of the impact on forest structure of modern day mangrove forests across

south Florida. As hurricane intensity increases over the next century, model projections suggest that future mangrove forests are likely to be diminished in average height and will contain a higher proportion of red mangroves.

Purpose: The goal of this work was to develop a suite of spatial simulation models to predict the effects of global climate change impacts and scenarios on coastal wetlands of the gulf coast region. Computer simulation models can serve an important adjunct to field and laboratory studies by providing a comprehensive means of integrating our knowledge and understanding of natural and physical system into a holistic framework. They also offer the ability to interpolate and extrapolate between and beyond our limited empirical observations that are constrained by space, time, and cost. Their greatest utility is demonstrated in addressing problems that are spatially and temporally extensive and dynamic, such as global climate change. Simulation models can be particularly useful in evaluating environmental impacts that are operating at either variable or long time scales that otherwise cannot be tested reliably with experimental methods.

Time_Period_of_Content:

Time_Period_Information:

Range_of_Dates/Times:

Beginning_Date: 19930101

Ending_Date: 19970101

Currentness_Reference: Observed

Status:

Progress: Complete

Maintenance_and_Update_Frequency:

None Planned

Spatial_Domain:

Description_of_Geographic_Extent: The mangrove forests along the coastline of Florida.

Bounding_Coordinates:

West_Bounding_Coordinate: -81.00

East_Bounding_Coordinate: -79.00

North_Bounding_Coordinate: 27.00

South_Bounding_Coordinate: 25.00

Keywords:

Theme:

Theme_Keyword_Thesaurus: None

Theme_Keyword: mangrove forests

Theme_Keyword: tropical cyclones

Theme_Keyword: Hurricane Andrew

Theme_Keyword: tropical storms

Theme_Keyword: sea-level rise

Theme_Keyword: coastal saltwater marsh

Theme_Keyword: coastal freshwater marsh

Theme_Keyword: GIS

Theme_Keyword: model

Place:

Place_Keyword_Thesaurus: None

Place_Keyword: Florida

Place_Keyword: FL

Place_Keyword: south Atlantic

Place_Keyword: Gulf of Mexico

Place_Keyword: Everglades National Park

Place_Keyword: Ten Thousand Island National Wildlife Refuge

Taxonomy:

Keywords/Taxon:

Taxonomic_Keywords: *Laguncularia racemosa*

Taxonomic_Keywords: *Rhizophora mangle*

Taxonomic_Keywords: *Avicennia germinans*

Taxonomic_Keywords: Domain
Taxonomic_Keywords: Province
Taxonomic_Keywords: Humid
Taxonomic_Keywords: Tropical
Taxonomic_Keywords: Savanna
Taxonomic_System:
Classification_System: Integrated Taxonomic Information System
Classification_System_Citation:
Citation_Information:
Originator: US Department of Agriculture
Publication_Date: 20000000
Title: Integrated Taxonomic Information System
Geospatial_Data_Presentation_Form: Tabular Digital Data
Publication_Information:
Publication_Place: Washington, DC
Publisher: USDA
Online_Linkage: <http://www.itis.usda.gov/itis/>
Classification_System_Modifications: Updated frequently.
Identifier_Reference:
Citation_Information:
Originator: US Department of Agriculture, Natural Resource Conservation Service
Publication_Date: 19990000
Title: The PLANTS Database
Geospatial_Data_Presentation_Form: Tabular Digital Data
Publication_Information:
Publication_Place: Baton Rouge, LA
Publisher: National Plant Data Center
Online_linkage: <http://plants.usda.gov/plants>
Identifier:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: USDA, Natural Resource Conservation Service
Contact_Address:
Address_Type: Physical Address
Address: National Plant Data Center
City: Baton Rouge
State_or_Province: LA
Postal_Code: 70874
Country: USA
Contact_Voice_Telephone: Unknown
Taxonomic_Procedures: Unknown
Taxonomic_Completeness: Unknown
Vouchers:
Specimen: Greenhouse specimens
Repository:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: USGS/BRD National Wetlands Research Center
Contact_Person: Thomas Doyle
Contact_Address:
Address_Type: Mailing and Physical Address
Address: 700 Cajundome Blvd
City: Lafayette
State_or_Province: LA
Postal_Code: 70506
Country: USA

Contact_Voice_Telephone: 337-266-8500
Taxonomic_Classification:
Taxon_Rank_Name: Kingdom
Taxon_Rank_Value: Plantae
Applicable_Common_Name: Plant
Taxonomic_Classification:
Taxon_Rank_Name: Division/Phylum
Taxon_Rank_Value: Magnoliophyta
Taxonomic_Classification:
Taxon_Rank_Name: Class
Taxon_Rank_Value: Magnoliopsida
Taxonomic_Classification:
Taxon_Rank_Name: Order
Taxon_Rank_Value: Myrtales
Taxonomic_Classification:
Taxon_Rank_Name: Family
Taxon_Rank_Value: Combretaceae
Taxonomic_Classification:
Taxon_Rank_Name: Genus
Taxon_Rank_Value: Laguncularia
Taxonomic_Classification:
Taxon_Rank_Name: Species
Taxon_Rank_Value: Laguncularia racemosa
Applicable_Common_Name: white mangrove
Taxonomic_Classification:
Taxon_Rank_Name: Kingdom
Taxon_Rank_Value: Plantae
Applicable_Common_Name: Plant
Taxonomic_Classification:
Taxon_Rank_Name: Division/Phylum
Taxon_Rank_Value: Magnoliophyta
Taxonomic_Classification:
Taxon_Rank_Name: Class
Taxon_Rank_Value: Magnoliopsida
Taxonomic_Classification:
Taxon_Rank_Name: Order
Taxon_Rank_Value: Lamiales
Taxonomic_Classification:
Taxon_Rank_Name: Family
Taxon_Rank_Value: Verbenaceae
Taxonomic_Classification:
Taxon_Rank_Name: Genus
Taxon_Rank_Value: Avicennia
Taxonomic_Classification:
Taxon_Rank_Name: Species
Taxon_Rank_Value: Avicennia germinans
Applicable_Common_Name: black mangrove
Taxonomic_System:
Classification_System: Baliey's Ecoregions of the United States
Classification_System_Citation:
Citation_Information:
Originator: Robert G.Bailey
Publication_Date: 1978
Title: Ecoregions of the United States
Geospatial_Data_Presentation_Form: map
Publication_Information:

Publication_Place: Washington, D.C.
Publisher: USDA, US Forest Service
Scale_Denominator: 1750000
Classification_System_Modifications: None
Identifier_Reference:
Citation_Information:
Originator: J.M. Crowley
Publication_Date: 19670000
Title: Biogeography
Geospatial_Data_Presentation_Form: Journal Article
Publication_Information:
Publication_Place: Canada
Publisher: Canadian Geographer
Identifier:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Robert G. Bailey
Contact_Organization: USDA, US Forest Service
Contact_Address:
Address_Type: Mailing and Physical Address
Address: 3825 E. Mulberry St.
City: Fort Collins
State_or_Province: CO
Postal_Code: 80524
Country: USA
Contact_Voice_Telephone: 970-498-1500

Taxonomic_Procedures: In developing the ecoregion map, the Koppen classification by Trewartha (1943) and climatic map of North America by Thornthwaite (1931) were consulted for delimiting the climatic regions. The Kuchler's map of "Potential Natural Vegetation" was generated and modified to delineate provinces and sections.
Taxonomic_Completeness: This classification is offered as an experiment in categorizing the major ecological divisions of the US. The classification may be incomplete due to a lack of data or inconsistencies of data available for some areas.

Vouchers:

Specimen: Not applicable
Repository: Not applicable
General_Taxonomic_Coverage:
Taxonomic_Classification:
Taxon_Rank_Name: Domain
Taxon_Rank_Value: 400 Humid Tropical
Applicable_Common_Name: Humid Tropical
Taxonomic_Classification:
Taxon_Rank_Name: Division
Taxon_Rank_Value: 410 Savanna
Applicable_Common_Name: Savanna
Taxonomic_Classification:
Taxon_Rank_Name: Province
Taxon_Rank_Value: 411 Everglades
Applicable_Common_Name: Southern Florida, Florida Keys

Access_Constraints: NWRC Standard Data Liability Disclaimer (April 1997): Although these data have been processed successfully on a computer system at the National Wetlands Research Center, no warranty expressed or implied is made regarding the accuracy or utility of the data on any other system or for general or scientific purposes, nor shall the act of distribution constitute any such warranty. This disclaimer applies both to individual use of the data and aggregate use with other data. It is strongly recommended that these data are directly acquired from a Biological Resource Division server, and not indirectly through other sources which may have changed the data in some way. It is also strongly recommended that careful attention be paid to the contents of the metadata file

associated with these data. NWRC shall not be held liable for improper or incorrect use of the data described and/or contained herein. So, these data are provided "as is" and without any express or implied warranties, including, without limitation, the implied warranties or merchantability and fitness for a particular purpose. Also, use of trade names or commercial products in this metadata is solely for the purpose of providing specific information, and does not imply recommendation or endorsement by the US Government. Any downloading and use of these data signifies a user's agreement to comprehension and compliance of the NWRC Standard Disclaimer. Insure all portions of metadata are read and clearly understood before using these data in order to protect both user and NWRC interests. See section 6.3 Distribution Liability.

Use_Constraints: Acknowledgement of the National Wetlands Research Center as a data source would be appreciated in products developed from these data, and such acknowledgment as is standard for citation and legal practices for data source is expected by users of this data. Sharing new data layers developed directly from these data would also be appreciated by NWRC staff. Users should be aware that comparison with other data sets for the same area from other time periods may be inaccurate due to inconsistencies resulting from changes in mapping conventions over time. These data are not legal documents and are not to be used as such.

Point_of_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: USGS/BRD National Wetlands Research Center

Contact_Person: Thomas Doyle

Contact_Position: Principal Investigator

Contact_Address:

Address_Type: Mailing and Physical Address

Address: 700 Cajundome Blvd

City: Lafayette

State_or_Province: LA

Postal_Code: 70506

Contact_Voice_Telephone: 337-266-8647

Contact_Facsimile_Telephone: 337-266-8513

Contact_Electronic_Mail_Address: thomas_doyle@usgs.gov

Cross_Reference:

Citation_Information:

Originator: Henry F. Diaz, Roger S. Pulworthy (Eds)

Publication_Date: 19970000

Title: Hurricanes Climate and Socioeconomic Impacts. 6 The Frequency and Intensity of Atlantic Hurricanes and their Influence on the Structure of South Florida Mangrove Communities

Publication_Information:

Publication_Place: New York, NY

Publisher: Springer-Verlag

Data_Quality_Information:

Attribute_Accuracy:

Attribute_Accuracy_Report: Unknown

Logical_Consistency_Report: Unknown

Completeness_Report: Unknown

Lineage:

Methodology:

Methodology_Type: Field and Lab

Methodology_Identifier:

Methodology_Keyword_Thesaurus: None

Methodology_Keyword: permanent plots

Methodology_Keyword: greenhouse experiments

Methodology_Keyword: forest inventories

Methodology_Keyword: remote videography

Methodology_Keyword: fixed quadrant plots

Methodology_Keyword: transects

Methodology_Description: Field and experimental studies were conducted to improve our understanding of species tolerance and community zonation and to aid modeling trials for study sites in South Florida. Permanent plots and greenhouse experiments were instituted to determine growth habits and ecology of mangrove species following hurricane disturbance. Forest inventories were conducted before and after the passage of Hurricane Andrew in 1992 to assess and monitor the effects of hurricanes and climate change on mangrove forests. Remote video-graphy was taken at low altitude by helicopter over mangrove forests along the southwestern coast of Florida to derive a coast-wide assessment of damage extent and pattern. Over 20 fixed quadrant plots have been established in Everglades National Park and adjoining USFWS refuges and state lands. Over 2000 mangrove trees have been stem-mapped and measured. Field assessments of damage to mangrove forests from Hurricane Andrew (1992) have been analyzed and published (Doyle, et al.)

Spatial_Data_Organization_Information:
Indirect_Spatial_Reference: GPS based
Direct_Spatial_Reference_Method: Not applicable

Spatial_Reference_Information:

Entity_and_Attribute_Information:

Overview_Description:

Entity_and_Attribute_Overview: The data consists of attributes pertaining to the growth of mangrove forests; these attributes include diameter, height, and node development of the trees within the experimental plots.

Entity_and_Attribute_Detail_Citation: Project proposal/report

Distribution_Information:

Distributor:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: USGS/BRD National Wetlands Research Center

Contact_Person: Thomas Doyle

Contact_Position: Biologist

Contact_Address:

Address_Type: Mailing and Physical Address

Address: 700 Cajundome Blvd

City: Lafayette

State_or_Province: LA

Postal_Code: 70506

Country: USA

Contact_Voice_Telephone: 337-266-8647

Contact_Facsimile_Telephone: 337-266-8513

Contact_Electronic_Mail_Address: thomas_doyle@usgs.gov

Hours_of_Service: Monday thru Friday, 8am to 4pm CST

Resource_Description: Southern Florida mangrove

Distribution_Liability: Although these data have been processed successfully on a computer system at the Biological Resources Division, no warranty expressed or implied is made regarding the accuracy or utility of the data on any other system or for general or scientific purposes, nor shall the act of distribution constitute any such warranty. This disclaimer applies both to individual use of the data and aggregate use with other data. It is strongly recommended that these data are directly acquired from a Biological Resource Division server, and not indirectly through other sources which may have changed the data in some way. It is also strongly recommended that careful attention be paid to the contents of the metadata file associated with these data. The Biological Resources Division shall not be held liable for improper or incorrect use of the data described and/or contained herein.

Custom_Order_Process: Contact Thomas Doyle for access and customization of data.

Metadata_Reference_Information:

Metadata_Date: 20000410

Metadata_Contact:

Contact_Information:

Contact_Person_Primary:
Contact_Person: Helena Schaefer
Contact_Organization: USGS/BRD National Wetlands Research Center
Contact_Position: Geographer
Contact_Address:
Address_Type: Mailing and Physical Address
Address: 700 Cajundome Blvd
City: Lafayette
State_or_Province: LA
Postal_Code: 70506
Country: USA
Contact_Voice_Telephone: 337-266-8696
Contact_Facsimile_Telephone: 337-266-8616
Contact_Electronic_Mail_Address: helena_schaefer@usgs.gov
Hours_of_Service: Monday thru Friday, 8am to 4pm CST
Metadata_Standard_Name: Draft Content Standard for National Biological Information Infrastructure Metadata,
National Biological Service
Metadata_Standard_Version: December 1995

3.3.4 Example II

Identification_Information:
Citation:
Citation_Information:
Originator: USGS National Wetlands Research Center
Publication_Date: 19880101
Title: 1988 Gulf of Mexico Coastal Louisiana Habitat Data from NWRC
Geospatial_Data_Presentation_Form: Map
Description:
Abstract: This data set consists of digital data describing wetland and upland habitats in the coastal or near Gulf Coast areas of Louisiana, in 1988. The data set includes 343 7.5' quadrangles which were digitized at the National Wetlands Research Center using WAMS (Wetland Analytical Mapping System), from 1:24,000 scale hard copy maps developed by the National Wetlands Inventory (NWI). Wetlands were classified according on the NWI maps using the Cowardin, et al., wetland classification scheme to the level of salinity modifiers. Uplands were classified using a customized classification scheme which can be cross-referenced to Anderson, et al., and were added by NWRC.
Purpose: The intended use of this data set is to provide historical information for comparison to monitor wetland trends over time.
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 19880101
Currentness_Reference: Ground Condition during source photography acquisition.
Status:
Progress: Complete
Maintenance_and_Update_Frequency: None Planned
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -90.00
East_Bounding_Coordinate: -89.00
North_Bounding_Coordinate: 29.500
South_Bounding_Coordinate: 28.875
Keywords:
Theme:
Theme_Keyword_Thesaurus: None

Theme_Keyword: basins
Theme_Keyword: bays
Theme_Keyword: bayous
Theme_Keyword: canals
Theme_Keyword: floodplain
Theme_Keyword: wetlands
Theme_Keyword: marshes
Theme_Keyword: swamps
Theme_Keyword: marshlands
Theme_Keyword: habitats
Theme_Keyword: uplands
Theme_Keyword: vegetation types
Theme_Keyword: land cover types
Theme_Keyword: landform types
Theme_Keyword: coast
Theme_Keyword: coastal
Theme_Keyword: delta
Theme_Keyword: coastal habitats
Theme_Keyword: geographic information system data
Theme_Keyword: classified aerial photography
Theme_Keyword: maps
Theme_Keyword: mapping
Theme_Keyword: National Wetlands Inventory

Place:

Place_Keyword_Thesaurus: None
Place_Keyword: Louisiana
Place_Keyword: Louisiana Coast
Place_Keyword: Gulf of Mexico
Place_Keyword: South Louisiana
Place_Keyword: Mississippi River

Temporal:

Temporal_Keyword_Thesaurus: None
Temporal_Keyword: 1988

Access_Constraints: Any downloading and use of these data signifies a user's agreement to comprehension and compliance of the NWRC Standard Disclaimer. Insure all portions of metadata are read and clearly understood before using these data in order to protect both user and NWRC interests. See section 6.3 Distribution Liability.

Use_Constraints: Acknowledgement of the National Wetlands Research Center as a data source would be appreciated in products developed from these data, and such acknowledgment as is standard for citation and legal practices for data source is expected by users of this data. Sharing new data layers developed directly from these data would also be appreciated by NWRC staff. Users should be aware that comparison with other data sets for the same area from other time periods may be inaccurate due to inconsistencies resulting from changes in photo-interpretation and mapping conventions over time. These data are not legal documents and are not to be used as such. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, State, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Point_of_Contact:

Contact_Information:

Contact_Organization_Primary:
Contact_Organization: USGS National Wetlands Research Center
Contact_Person: Larry Handley
Contact_Position: Geographer and Principle Investigator
Contact_Address:

Address_Type: Mailing and Physical Address

Address: 700 Cajundome Blvd

City: Lafayette

State_or_Province: LA

Postal_Code: 70506
Contact_Voice_Telephone: 337 266-8691
Contact_Facsimile_Telephone: 337 266-8513
Contact_Electronic_Mail_Address: larry_handley@usgs.gov

Data_Set_Credit: None
Native_Data_Set_Environment: WAMS version 2.1 and ARC/INFO Version 7.0.4 GIS Software for Silicon Graphics (UNIX) workstations operating under IRIX version 6.2 Operating System.

Data_Quality_Information:

Attribute_Accuracy:

Attribute_Accuracy_Report: The attribute accuracy was tested using several methods during the data development phases and completion. Data was tested by manual comparison of the source with hard copy printouts and/or symbolized display of the digital wetlands data on an interactive computer graphic system. In addition, WAMS software tests the attributes. Overall, the attribute accuracy is believed high due to the multiple error-checking steps done redundantly during processing. Process testing was done on the multiple staff error-checking steps and software error-checking steps to develop estimates of the accuracy and error rates. The final accuracy assessment used calculated average accuracy and error rates for the human stages and software verification stages, which were done redundantly to insure double checking verification of the data coverages comprising the data set. Exact tolerances vary with coverages, as does the date of the processing and testing. The final accuracy values expressed are the best summation which can be developed from the smaller areas which comprise the data set. Data has been checked and verified against original maps and over years of use. The accuracy values expressed represent the final calculated accuracy estimate of the multiple steps of data development from source photography to completed data. The actual final should be considered as average and perhaps conservative or over estimating the percent change of error for areas in this data set.

Logical_Consistency_Report: This logical consistency report includes information about both general and specific topological tests and data generation dynamics in the fidelity of data. Data is inherently polygonal. Polygons intersecting the neatline are closed along the border. Segments making up the outer and inner boundaries of a polygon tie end-to-end to completely enclose the area. Line segments are a set of sequentially numbered coordinate pairs. No duplicate features exist nor duplicate points in a data string. Intersecting lines are separated into individual line segments at the points of intersection. Point data are represented by two sets of coordinate pairs, each with the same coordinate values. All nodes are represented by a single coordinate pair which indicates the beginning or end of a line segment. The neatline for each quad is generated by connecting four corners of a digital file, as established during initialization of the digital file. All data crossing the neatline are clipped to the neatline and data within a specified tolerance of the neatline are snapped to the neatline. Tests for logical consistency are performed by WAMS verification software.

Completeness_Report: All photo-interpretable wetlands are identified and mapped using standard methodologies and equipment for the photo interpretation phases of the data development. In the upland areas, 1/4 acre wetlands generally are mapped. In coastal marsh, swamps, and bottomland hardwood areas, small open water and emergent wetlands are mapped. In general, the minimum mapping unit is from 1 to 3 acres depending of the wetland type and the scale and emulsion of the source aerial photography. Some small wetlands, densely broken marsh, and those wetlands obscured by dense forest cover may not be included in this data set. Processing of the digital data also follows conventions and standard methodologies for the time period and within limitations of available workstation equipment at the date of data development. Processing follows standard operating procedures as used, developed, and shared by the National Wetlands Inventory of the U.S. Fish and Wildlife Service. Data products were completed using similar systems and methodologies which are used by NWI and by USGS.

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report: For reference points accuracy, the accuracy for the digital data are tested by visual comparison of the source with hard copy maps, and by understanding of the hardware tolerances and processing values reported by the software used in data development. Additional checks on comparison were possible when georeferencing/rectification was done using the USGS maps, which cite National Mapping Accuracy Standard compliance.

Vertical_Positional_Accuracy:

Vertical_Positional_Accuracy_Report: Not applicable

Lineage:

Source_Information:
Source_Citation:
Citation_Information:
Originator: National Aeronautics and Space Administration
Publication_Date: 19880101
Title: Color Infrared Aerial Photography
Edition: Varies
Geospatial_Data_Presentation_Form: Remote-Sensing Image
Publication_Information:
Publication_Place: NASA Ames, California
Publisher: National Aeronautics and Space Administration (NASA), United States
Source_Scale_Denominator: 65000
Type_of_Source_Media: Stable-Base Material
Source_Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 19880101
Source_Currentness_Reference: Source Photography Date
Source_Citation_Abbreviation: NASA CIR
Source_Contribution: Primary data for photo interpretation and identification of wetland and upland classes.
Source_Information:
Source_Citation:
Citation_Information:
Originator: United States Geological Survey (USGS)
Publication_Date: 19830101
Title: USGS Topographic Quadrangles, standard 7.5 minute series maps
Edition: Varies
Geospatial_Data_Presentation_Form: Map
Publication_Information:
Publication_Place: Reston, VA
Publisher: United States Geological Survey (USGS)
Source_Scale_Denominator: 24000
Type_of_Source_Media: Paper
Source_Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 19830101
Source_Currentness_Reference: Source map date
Source_Citation_Abbreviation: USGS Quads
Source_Contribution: Provided base maps for wetland and upland polygon layer information.
Source_Information:
Source_Citation:
Citation_Information:
Originator: United States Fish and Wildlife Service's National Wetlands Inventory
Publication_Date: 19880101
Title: National Wetlands Inventory Hard Copy Wetland Maps
Geospatial_Data_Presentation_Form: Map
Publication_Information:
Publication_Place: St. Petersburg, Fl
Publisher: U.S. Fish and Wildlife Service's National Wetlands Inventory
Source_Scale_Denominator: 24000
Type_of_Source_Media: Hard copy maps
Source_Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 19880101

Source_Currentness_Reference: Source photography for maps
Source_Citation_Abbreviation: NWI Maps
Source_Contribution: Provided hard copy maps to be digitized.

Process_Step:

Process_Description: NASA High altitude 1:65,000 color infrared aerial photographs were photo interpreted for wetland and upland habitat classifications. Habitat layer was overlaid on USGS Quad base maps to create the NWI maps

Process_Date: 1989-1992

Process_Step:

Process_Description: The hard copy 1:24,000 NWI maps were digitized at the National Wetlands Research Center using WAMS (Wetland Analytical Mapping System).

Process_Date: 1993

Spatial_Data_Organization_Information:

Indirect_Spatial_Reference: Not applicable

Direct_Spatial_Reference_Method: Vector

Spatial_Reference_Information:

Horizontal_Coordinate_System_Definition:

Planar:

Grid_Coordinate_System:

Grid_Coordinate_System_Name: Universal Transverse Mercator

Universal_Transverse_Mercator:

UTM_Zone_Number: 15

Transverse_Mercator:

Longitude_of_Central_Meridian: -93

Latitude_of_Projection_Origin: 0

False_Easting: 500000

False_Northing: 0

Scale_Factor_at_Central_Meridian: .9996

Planar_Coordinate_Information:

Planar_Coordinate_Encoding_Method: Coordinate Pair

Coordinate_Representation:

Abscissa_Resolution: .61

Ordinate_Resolution: .61

Planar_Distance_Units: Meters

Geodetic_Model:

Horizontal_Datum_Name: North American Datum of 1927

Ellipsoid_Name: Clarke 1866

Semi-major_Axis: 6378206.4

Denominator_of_Flattening_Ratio: 249.98

Entity_and_Attribute_Information:

Detailed_Description:

Entity_Type:

Entity_Type_Label: Wetland and Upland Habitat Polygons

Entity_Type_Definition: Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface of the land is covered by shallow water. Uplands are terrestrial systems that do not exhibit wetland characteristics.

Entity_Type_Definition_Source: Cowardin, Lewis M., Virginia Carter, Francis Goblet, and Edward T. Laroe. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service. Biological Services Program; FWS/OBS - 79/31. 103 pp.

Attribute:

Attribute_Label: Hab88

Attribute_Definition: The wetland classification system is hierarchical, with wetlands and deepwater habitats divided among 5 major systems at the broadest level. The five systems include Marine, Estuarine, Riverine, lacustrine, and Palustrine. These systems are further divided into subsystems which reflect hydrologic conditions. Below the subsystems are classes and subclasses describing vegetation or substrate, and modifiers relating to hydrology, soils, water chemistry, and man's activities.

Attribute_Definition_Source: Cowardin, Lewis M., Virginia Carter, Francis Goblet, and Edward T. LaRoe. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service. Biological Services Program; FWS/OBS - 79/31. 103 pp. Customized classification which can be cross-referenced to Anderson, James R., Ernest E. Hardy, John T. Roach, and Richard T. Witmer. A Land Use and Land Cover Classification System for Use with Remote Sensor Data. Geological Survey Professional Paper 964. A revision of the land use classification system as presented in U.S. Geological Survey Circular 671. United States Government Printing Office, Washington: 1976.

Attribute_Domain_Values:

Codeset_Domain:

Codeset_Name: Cowardin, et al., Wetland Classification Scheme

Codeset_Source: Cowardin, Lewis M., Virginia Carter, Francis Goblet, and Edward T. LaRoe. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service. Biological Services Program; FWS/OBS - 79/31. 103 pp.

Attribute_Domain_Values:

Codeset_Domain:

Codeset_Name: Modified version of Anderson et al. Classification scheme for uplands.

Codeset_Source: Can be cross-referenced to Anderson, James R., Ernest E. Hardy, John T. Roach, and Richard T. Witmer. A Land Use and Land Cover Classification System for Use with Remote Sensor Data. Geological Survey Professional Paper 964. A revision of the land use classification system as presented in U.S. Geological Survey Circular 671. United States Government Printing Office, Washington, DC, USA.

Distribution_Information:

Distributor:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: USGS National Wetlands Research Center

Contact_Person: Larry Handley

Contact_Position: Geographer and Principle Investigator

Contact_Address:

Address_Type: Mailing and Physical Address

Address: 700 Cajundome Blvd.

City: Lafayette

State_or_Province: Louisiana

Postal_Code: 70506

Country: USA

Contact_Voice_Telephone: 337 266-8691

Contact_Facsimile_Telephone: 337 266-8513

Contact_Electronic_Mail_Address: larry_handley@usgs.gov

Hours_of_Service: 8:00 a.m. to 4:00 p.m. Monday Through Friday

Distribution_Liability: Although these data have been processed successfully on a computer system at the U.S. Geological Survey, no warranty expressed or implied is made regarding the accuracy or utility of the data on any other system or for general or scientific purposes, nor shall the act of distribution constitute any such warranty. This disclaimer applies both to individual use of the data and aggregate use with other data. It is strongly recommended that these data are directly acquired from a U.S. Geological Survey server, and not indirectly through other sources which may have changed the data in some way. It is also strongly recommended that careful attention be paid to the contents of the metadata file associated with these data. The U.S. Geological Survey shall not be held liable for improper or incorrect use of the data described and/or contained herein.

Standard_Order_Process:

Digital_Form:

Digital_Transfer_Information:
Format_Name: ARCE
Format_Version_Number: 7.1.1
File-Decompression_Technique: ARC/INFO Export .e00 Compression Format
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: <http://sdms.nwrc.gov>
Fees: None, if data are available online.
Custom_Order_Process: None

Metadata_Reference_Information:
Metadata_Date: 19981015
Metadata_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Helena Schaefer
Contact_Organization: USGS National Wetlands Research Center
Contact_Position: Geographer
Contact_Address:
Address_Type: Mailing and Physical Address
Address: 700 Cajundome Blvd
City: Lafayette
State_or_Province: Louisiana
Postal_Code: 70506
Country: USA
Contact_Voice_Telephone: 337 266-8696
Contact_Facsimile_Telephone: 337 266-8616
Contact_Electronic_Mail_Address: helena_schaefer@usgs.gov
Hours_of_Service: 9:00 a.m. to 4:00 p.m. CST for phone calls. Any hours for E-mail or fax transmit.
Metadata_Standard_Name: Draft Content Standard for National Biological Information Infrastructure Metadata,
National Biological Service
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Access_Constraints: See Section 1.8 Access Constraints
Metadata_Use_Constraints: None



Banco Mundial
Inter-American Biodiversity Information Network IABIN
(Red Inter-Americana de Información de Biodiversidad)

Formato de Encuesta

Propósito de la Encuesta

Los metadatos proveen información que ayuda a la localización, acceso y uso apropiado de conjuntos de datos y otras fuentes de información sobre la biodiversidad. La creación y estandarización de metadatos es crítica para lograr búsquedas exitosas de datos a través de las diferentes instituciones y redes. La estandarización de conjuntos de metadatos se ha convertido en una necesidad, a partir de la aparición del Internet y de hacer accesible sistemas de información ambiental a través del Web.

Para los países interesados en el desarrollo de sistemas de información sobre la biodiversidad, el acceso a la información y a guías sobre estándares de metadatos, protocolos y herramientas es crítico.

Su respuesta a esta encuesta ayudará a realizar una evaluación y análisis preliminar sobre los tipos de estándares, protocolos y herramientas utilizados, para así proponer una serie de recomendaciones y guías que serán utilizados para implementar una Red Interamericana de Información Sobre la Biodiversidad.

También quisiera proporcionarle unas definiciones para ayudarle a contestar la encuesta.

METADATO: información sobre la información, es un descriptor utilizado para la implementación de catálogos de información, que por lo general describe el contenido, calidad, y otras características sobre un conjunto de datos.

ESTANDAR: conjunto de reglas predefinidas para un procedimiento, y generalmente adoptados bajo un consenso general.

PROTOCOLO: lenguaje utilizado para el común entendimiento y comunicación entre dos sistemas diferentes.

Agradecemos su tiempo invertido para contestar la siguiente encuesta, una vez finalizada sea tan amable de enviarla por correo electrónico a: iabin@intelnet.net.gt.

También deseo informarle que estaré comunicando vía telefónica con usted en un futuro cercano para ayudarle a contestar esta encuesta si así fuera necesario.

Leonel Gonzalez
Consultor
[IABIN](#) Team
The World Bank.

1. Identificación de la institución:
 - Nombre:
 - Siglas:
 - Dirección / teléfono / fax / email:
 - Pagina web:

2. Persona que supe la información:
 - Nombre:
 - Puesto:
 - Dirección postal:
 - Dirección de email:
 - Numero telefónico:
 - Numero de fax:

3. ¿Ha iniciado o propuesto su institución alguna iniciativa para el desarrollo y/o uso de estándares, protocolos o herramientas para la utilización y gestión de metadatos o infraestructuras de información relacionadas a la biodiversidad, ya sea a escala nacional o local (o algún equivalente)?

Sí ___ No ___

Nota: Si su respuesta es NO, por favor envíe ahora este cuestionario a: iabin@inteln.net.gt

Si su respuesta es SI, por favor responda a todas las preguntas restantes.

Liderazgo

4. ¿Qué institución en su país tiene la coordinación o liderazgo en el uso de estándares, protocolos y/o herramientas para la gestión de la información sobre la biodiversidad? (por favor provea el nombre, teléfono, email y dirección)

5. ¿Que otras instituciones conoce usted que estén trabajando con información relacionada a la biodiversidad, ya sea en su país u otro?

Tecnología utilizada en su institución. (o que se planifica utilizar en un futuro)

6. ¿Qué proceso utilizan o como documentan la información sobre la biodiversidad en su institución, por favor de una breve descripción de cada paso, incluyendo los sistemas utilizados?

7. ¿Se generan metadatos sobre la información en su institución?

8. ¿Existe un catalogo de metadatos en su institución?

9. ¿Que tipos de estándares son utilizados para documentar o tratar la información generada por su institución?

10. ¿Que tipos de protocolos se utilizan en sus sistemas para el proceso de documentar datos o metadatos, en su institución?

11. ¿Que herramientas o sistemas de software se utilizan en su institución para el manejo de los datos o metadatos, por favor incluya también los nombres de bases de datos?

12. ¿En que formatos electrónicos están disponibles los datos o metadatos, en su institución?

13. ¿Que tipo de servidor se utiliza para almacenar los metadatos?

UNIX ____ Windows (95/98/00/NT) ____ Otros, indique _____

14. ¿Que vocabulario o thesaurus utilizan para identificar palabras claves en los metadatos?
15. ¿Existe algún tipo de conectividad, en su institución para el catalogo de metadatos, como por ejemplo un servidor en línea vía Internet?
16. ¿Desde que año se implemento o cuando se implementara este tipo de tecnologías en su institución?
17. ¿Cómo se hacen disponibles los datos en su institución, ya sea para uso interno o externo, identifique con que sistemas o si existe una pagina web que contenga los catálogos de información, por favor indique la dirección?
18. ¿Utilizan o conocen los estándares ISO para este tipo de tecnologías?, ¿Que número o tipo de ISO, por favor indique?
19. ¿Conoce usted otros sistemas a escala mundial para la gestión de información sobre biodiversidad, tales como BCIS o NABIN, por favor indíquelos?

Limitantes y problemas

20. ¿Cuáles son los principales obstáculos o problemas que su institución ha encontrado en la implementacion y/o utilización de este tipo de tecnologías (estándares, protocolos y herramientas para la gestión de datos sobre la biodiversidad) ya sean de tipo financiero, administrativo, de apoyo, de capacitación u otros?
21. ¿Cómo cree que los problemas descritos anteriormente pueden ser solventados?
22. ¿Cómo cree que mejoraría o incrementaría el uso de estas tecnologías en su país?

Comentarios generales: (algo que usted considere importante de agregar)

Gracias por su colaboración, por favor envíe este cuestionario ahora a: iabin@intelnet.net.gt



The World Bank
Inter-American Biodiversity Information Network IABIN

Survey Format

Purpose of the Survey

The metadata provide basic information to help in the process of localization, access and appropriate usage of set of data and other relevant sources of information, one application is the biodiversity information. The metadata creation and definition and standardization are a critical issue to achieve successful searches of data among the existing networks and institutions working on this theme. The data sets standardization has become a priority need with the recently usage of the Internet and to make possible the availability of environmental information systems in the Web.

For the countries interested in the development of biodiversity information systems, the access to the information and to guides about metadata standards and protocols is a critic matter.

By answering to this survey you will help to make an evaluation and preliminary analysis on the types of standards, used protocols and tools, thus to propose a series of recommendations and guides who will be used to implement an Inter-American Network of information on the biodiversity.

Also I wanted to provide some definitions to help to you to answer the survey.

METADATA: information on the information, is a description used for the information catalogue implementation, that generally it describes the content, quality, and other characteristics on a data set.

STANDARD: assembly of rules predefined for a procedure, and adopted generally under a general consensus.

PROTOCOL: language used for the common understanding and communication between two different systems.

We thank for its inverted time to answer the following survey, once finalized, kindly send it by electronic mail to: iabin@intelnet.net.gt. Also desire to inform you that I will be communicating by telephone in a near future in case you need some help to answer the survey.

Best regards,

Leonel Gonzalez
Consultant
[IABIN](#) Team

Institution identification:

- Name:
- Acronyms:
- Address / Telephone / Fax / Email:
- Web page:

Person filling out the survey:

- Name:
- Position:
- Address (leave in blank if same as above):
- Email:
- Telephone:
- Fax:

Has your institution initiated a program for the development and/or use of standards, protocols or tools for the use and management of metadata or related infrastructures of information in biodiversity, at the national or local scale (or some equivalent one)?

Yes ___ No ___

Note: If your answer to the above question is NO, please send this form now to the email: iabin@intelnet.net.gt

If your answer is YES, please continue responding to the rest of the form.

Leadership

What institution in your country has the coordination or leadership in the usage of standards, protocols and/or tools for the management of biodiversity information? (Please provides the name, telephone, email and address, if available)

What other institutions you know that are working with information related to biodiversity, either in your country or another one?

Technology used at your institution. (Or what is planned to be used in the future)

6. What process is used to document the information on the biodiversity in your institution please gives a brief description of each step, including the used systems?
7. Are generated metadata on the information in your institution?
8. Exists a catalogue of metadata at your institution?
9. What types of standards are used to document or to treat the information generated by your institution?
10. What types of protocols are used in their systems for the process of document data or metadata at your institution?
11. What tools or software systems are used in your institution for the management of the data or metadata, please include also the names of databases?
12. In which electronic formats are available the metadata or data, in your institution?

13. What kind of computer platform your institution uses to store the metadata?

UNIX ____ Windows (95/98/2000/NT) ____ Other, specify _____

14. What kind of vocabulary or thesaurus you use to identify key/relevant words in the metadata?

15. Is there any kind of connectivity in your institution for the metadata catalog, for example an online server through the Internet, please identify it?

16. Since when or in what year you established this kind of technology in your institution?

17. Is the data available in your institution, for internal an external use, identify the systems or web pages that contains this information, please write the address?

18. Did you use or know about the ISO or ISO-likely standards for this kind of technology, please describe the ISO number or type?

19. Do you know any other word scale systems used to manage biodiversity information, such as BCIS or NABIN, please identify it?

Obstacles and Problems

20. Which are the principal obstacles and problems that your institution found in the implementation of this type of technology (standards, protocols and tools for biodiversity information management) perhaps financial, administrative, support or capacity type or others?

21. How do you believe that the above-described problems can be solved?

22. How do you believe what the usage of this type of technology can be the increased or improve in your country?

General comments: (something you believe is important to note or add)

Thank you for your cooperation, now kindly send this survey to: iabin@intlnet.net.gt

ANNEX II - SUMMARY TABLES

Table 8. Metadata Strategy and Leadership.

All institutions are placed in alphabetical order using the country first and then the name. The # symbol followed by a number, indicates its relation with the survey question.

Institution #1	Has started or has an ongoing metadata strategy? #3	Year? #16	Leader institution in your country? #4
1) Sistema de Información Ambiental Nacional, SERNAH ARGENTINA	Yes	1998	Instituto Geografico Militar
2) Base de Datos Tropical, BCT-ATF BRASIL	Yes	1998	No answer
3) Comision Nacional de Medio Ambiente CONAMA CHILE	Yes	1997	CONAMA
4) Universidad de Concepción, Facultad de Ciencias Naturales y Oceanográficas. CHILE	Has not begun or planned to start any type of strategy yet.	---	---
5) Instituto de Investigación de Recursos Biológicos Alexander von Humboldt. COLOMBIA	Yes	1999	Instituto Humboldt
6) Instituto Nacional de Biodiversidad INBio COSTA RICA	Yes	Data 1994. Metadata 1996.	Instituto Nacional de Biodiversidad.
7) Corporación Centro de Datos para la Conservación. ECUADOR	Yes	1992	Ministerio de Turismo y Medio Ambiente, CIBE Centro de Información.
8) Universidad Nacional San Carlos de Guatemala, Centro de Estudios Conservacionistas CECON GUATEMALA	No	1990	---
9) Comisión Nacional para el Conocimiento y Uso de la Biodiversidad CONABIO. MEXICO	Yes	1999.	CONABIO
10) El Colegio de la Frontera Sur, ECOSUR MEXICO	No	---	---
11) Museo de Zoología "Alfonso L. Herrera", Universidad Autónoma de México UNAM MEXICO	Yes	1995.	CONABIO.
12) Centro de Datos para la Conservación, Universidad Nacional Agraria La Molina. PERU	Yes	2000.	CONAM and/or Instituto Nacional de Recursos Naturales INRENA.
13) Consejo Nacional del Ambiente CONAM PERU	Yes	1998.	CONAM.



Table 9. Technology, Standards, Protocols and Software Tools.

Inst.	Uses any process to document data? #6	Generate metadata #7	Metadata Catalog #8	Uses Standards #9	Uses Protocols #10	SW Tools #11	HW Platform #13	Thesaurus #14	Conectivity #15
1	Yes	Yes	Yes	IGM/FGDC	http	ArcInfo/Access	Windows	Yes	Yes
2	Yes	Yes	Yes	Dublin-Core	INFO system	Perl/CGI/SQL Oracle	Unix	No	Half
3	Yes	Si	Yes	Guidelines SINIA	TCP/IP	Access/SQL	Windows	Yes	Yes
4	---	---	---	---	---	---	---	---	---
5	Yes	Yes	No	No, data Yes, GIS-data	No	ARCAS/Delphy/Oracle/ ARANEOS/GIS.	UNIX, Sun Solaris.	No.	Yes
6	Yes	Yes	No	No	http.	Oracle/File Maker/Office/ ArcInfo/PowerBuild/MapObjects	LINUX.	No.	Yes, (without data queries)
7	Yes	Yes	No.	Yes, TNC.	No	Access/ArcInfo/ERDAS	Windows	No.	No.
8	Yes	No	No	Yes	No	Access/Excel/BCD	Windows	Yes	No
9	Yes, proprietary systems.	Yes	Yes	Yes. FGDC, MetamakerD GM-NBII	http	Access/GIS/Metamaker/ Edit html.	Windows	NBII.	Yes
10	No	No	No	No	No	---	---	No	No
11	Yes	No	No	Si, Biotica.	Z39.50	Access/Biotica.	Windows.	No	Yes
12	Yes	Yes	No	Yes. TNC.	Yes	Excel/Visual Basic Access/ Dbase.	Windows	Yes. AGRIS of FAO.	Yes
13	Yes	Yes	No	No	No	Excel/Access.	Windows	No	Yes



Table 10. Electronic Media and Format, Main Limitations.

Inst.	Electronic Format #12	Means of obtaining data #17	Main limitations #20	Proposed Solution #21	How to make improve it #22	Comments
1	*.mdb BD en PC/ *.shp ArcInfo	www.medioambiente.gov.ar jfabri@sernah.gov.ar	Lack of personnel	Increase personnel / Make data public to people	Training/ Workshops/ Regulations/ Enhance availability	---
2	Html	www.bdt.org.br/busca	Lack of long term funds/ Long term government policies / Lost of key personnel / Lack of guidelines and standards/ Lack of other initiative knowledge in order to integrate information	Search of aid in external sources so not to depend on the governmental budget	Efforts in order to standardize data/ Publish the importance of this type of technology/ Include metadata technology issues into the government's technical agendas/	---
3	Html/Excel/ArcView	www.conama.cl www.sinia.cl	Lack of will to share information	Improving the inter-institutional communication.	Stabilizing project development.	---
4	---	---	---	---	---	---
5	MS Excel	www.humboldt.org.co/hmcolombia	Institutional awareness, institutional envy, Country economic setting Lack of trained personnel, Lack of leadership and process guide.	Yes	Increase the institutional awareness. Work within a national strategic framework. Improve Copyright information Workshops	Humboldt has high level of proaction to participate.
6	Html Oracle y FileMaker	www.inbio.ac.cr and for internal use a proprietary system BIMS Client-Server	High amount of information / Costs	Yes Using funds to create metadata as well as access mechanisms.	Reactivating the BioData network.	---
7	PC Data Base. GIS layers.	---	Lacks financial aid in order to augment personnel and equipment.	Yes Potential donors. Show the right way to	Open more information to the public, Increase the use of educational GIS and	---

			Quality control.	follow.	CDs.	
8	Excel/Access/Dbase	It locally checks on a DB	Financing/ Lack of the right technology/ Lack of training/ Lack of institutional support	Fund raising	Know how and Technology transfer.	Would like to have more knowledge concerning these technologies
9	PC Data Base.	Www.conabio.gob.mx/sig/metadatos_n.html	A better program for generating metadata, the ones now are limited. Financial resources.	Yes Improve the developing of tools.	Promote the usage of software tools for data collecting.	---
10	---	---	---	---	---	---
11	Access Consultation done through PZ39.50 DB Biotica	Www.conabio.gob.mx/remib/doctos/remib.html http://chipotle.nhm.ukans.edu/nabin/	Financing/ Lack of will to share information.	Linkage of data sets/ Resources in order to compute sets of data/ Induce to the generation of new data assets and technology applications to analyze data.	Presently working on the issue with the CONABIO	---
12	PC Data Base.	Manual response, via Email, phone or prints.	Financial Resources/aid	Charge for services, Developing of new projects as a way to raise funds.	Institutional strengthening, training and spread to the public.	Has a specialized library.
13	Electronic Spread Sheet. PC Data Base.	http://www.conam.gob.pe/chm http://www.conam.gob.pe/endb http://www.conam.gob.pe/sinia	Financial aid. Lack of training	Taking advantage of CHM in order to implement at lower cost.	Increasing information demand.	---



ANNEX III – SUMMARY OF IDENTIFIED INITIATIVES

(Source: [UNDP](#) Report on Software Tools for Biodiversity Data - Biodiversity Internet Sites)

Global Scope:

BCIS	Biodiversity Conservation Information System
BioForum	The Biodiversity Forum
BIOSIS	Biology Abstracts and Zoological Records
BIONET	Biodiversity Action Network
Botany	Internet Directory for Botany
CAFF	Conservation of Arctic Flora and Fauna
CBD	Convention on Biological Diversity
CHM	CBD Clearing-House Mechanism
CSD	Commission on Sustainable Development
CITES	Convention on International Trade in Endangered Species
Earth Summit+5	1997 Review of Implementation of Agenda 21
EcoDir	EcoDirectory
EMAN	Ecological Monitoring and Assessment Network
FAO	Food and Agriculture Organization
GCDIS	Global Change Data and Information System
GCMD	Global Change Master Directory
GEF	Financial Mechanism of the CBD
G7ENRM	The G7 Environment and Natural Resources Management Program
IBIN	Indigenous Peoples Biodiversity Information Network
ICONS	Integrated Conservation Networking System
IOPI	International Organization for Plant Information
IISD	International Institute for Sustainable Development (IISD) "Linkages" Biodiversity Meetings and documents
IUCN	The World Conservation Union
JIWLP	Journal of International Wildlife, Law and Policy
Nature	Nature Magazine
OECD	Organization for Economic Cooperation and Development Megascience Forum
Ramsar	The Ramsar Convention on Wetlands
SINGER	System-Wide Information Network for Genetic Resources
SPECIES 2000	Species 2000
Triologue	Focus is placed on providing information on the conventions, and specifically highlighting the activities and actions of NGOs.
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO-MABNet	The Man and Biosphere Program
VLEB	The Virtual Library of Ecology and Biodiversity
WRI	World Resources Institute
WS	Wildlife Society
WSL	The World Species List
WWF	World Wildlife Fund
WB	The World Bank
WBMEPD	World Bank Monitoring Environmental Progress Database
WCMC	World Conservation Monitoring Centre

[WIEWS](#) World Information and Early Warning System on Plant Genetic Resources
[PAVL](#) WCMC Protected Areas Virtual Library

Regional Scope:

[ARBEC](#) ASEAN Review of Biodiversity and Environmental Conservation
[Bin21](#) Biodiversity Information Network 21
[BONAP](#) Biota of North America Program
[CEC](#) Commission for Environmental Cooperation
[CYTED](#) Ciencia y Tecnologia para el Desarrollo (Science&Tech.; for Development)
[ECNC](#) European Centre for Nature Conservation
[Essig Museum](#) Essig Museum of Entomology
[FLORA](#) Flora of North America
[IGDN](#) Inter-American Geospatial Data Network
[IABIN](#) Inter-American Biodiversity Information Network
[MABNet-Americas](#) The Man and the Biosphere Program: Networking the Americas
[ORNITH](#) Ornithology Home Page
[PEBLDS](#) Pan-European Biological and Landscape Diversity Strategy
[PPBS](#) Plant Population Biology Section
[SAEP](#) Southern Africa Environment Project
[TNC](#) The Nature Conservancy Natural Heritage Program and the Conservation Data Centers (CDC)

Local Scope:

Australia

- [Australian National Botanic Gardens Biodiversity Server](#)
- [Environmental Resource Information Network \(ERIN\)](#)

Austria

- [CEDAR - Central European Environmental Data Request Facility](#)

Brazil

- [Iterei Rainforest Reserve](#)

Canada

- [Canadian Biodiversity Information Network \(CBIN\)](#)
- [Canada MAB](#)
- [Great Lakes Information Management Resource](#)
- [International Development Research Centre](#)
- [Royal British Columbia Museum](#)
- [WWW Sites of Interest to Botanists](#)
- [WWW Sites of Interest to Ecologists](#)

Finland

- [Finnish Biodiversity Information Network \(FBIN\)](#)
- [International Botany Link Server \(in Helsinki\)](#)

Germany

- [German National Focal Point to the CBD Clearing-House Mechanism](#)

Japan

- [Environment Agency](#)

Mexico

- [National Commission for the Understanding and Use of Biodiversity \(CONABIO\)](#)

Sweden

- [Royal Institute of Technology Library](#)

United Kingdom

- [Naturenet](#)
- [Virtual Library Museum](#)
- [Weeds of the World Project](#)

ANNEX IV - OTHER TYPES OF IDENTIFIED SOFTWARE TOOLS

1. Fauna and Flora Data Management Systems

1.	Name of System:	PANDORA
2.	Contact:	Richard Pankhurst and Martin Pullan
3.	Address:	Royal Botanic Garden 20A Inverleith Row EDINBURGH EH3 5LR Scotland
4.	Telephone:	+44-31-552-7171 ext. 432
5.	Facsimile:	+44-31-552-0382 or 0481
6.	Email:	R.Pankhurst@rbge.org.uk
7.	World Wide Web:	WWW.RBGE.ORG.UK and FTP at FTP.RBGE.ORG.UK
8.	Availability and Cost:	£200, which covers cost of single use Pandora , AREV, documentation and online support.
9.	Description:	Flora Data Management Systems - official database of the Royal Botanic Garden Edinburgh for plant taxonomic projects.
10.	Minimum Requirements:	IBM/PC MSDOS 5 with 386 or above and 20 mb of hard disk, 386 PC or above with DOS 5, 1M of expanded memory, VGA display. Also requires runtime version of Advanced Revelation database system (AREV 3.1).
11.	Input/output Formats:	ASCII delimited, dBASE and Lotus123 PANDORA is for taxon diversity, and its central files are for - nomenclature and synonymy at all levels - biography; who are the authors, collectors etc. - literature; books, journals etc. - specimen and published record data (herbarium catalogues) - geography (gazetteer), and - descriptions (morphology, in DELTA format) for identification To these are added files for other secondary kinds of data, such as: - images - vernacular names - uses and there is a complete herbarium label printing system. Standard world data sets (for plant genera, geography, biography and uses) are available.
12.	Current Users:	na (not available)
13.	References:	na (not available)
14.	Training and Conferences:	by arrangement

1.	Name of System:	Hawaiian Molluscs
2.	Contact:	Scott Miller for hard copy of catalog, contact: Backhuys Publishers PO Box 321 2300 AH Leiden The Netherlands phone +31 71 170208 fax: +31 71 171856 e-mail: backhuys@euronet.nl
3.	Address:	Hawaii Biological Survey (HBS) home page below, by clicking on "Databases" and then on

		"Mollusk Databases"
4.	Telephone:	Na
5.	Facsimile:	Na
6.	Email:	scottm@HAWAII.EDU
7.	World Wide Web:	http://www.bishop.hawaii.org/bishop/HBS/hbs1.html
8.	Availability and Cost:	Free
9.	Description:	Searchable database of native land and freshwater molluscs of the Hawaiian Islands from the catalog by; Cowie, Evenhuis & Christensen, 1995. All the species-group names (species and infra-specific taxa) applied to the fauna. Each name is placed in a genus and family according to the most recent published revision. The author and date of publication of each name is given. The individual island(s) on which the taxon is found is/are also given. Searchable fields are family, genus, species, publication, author, date of publication, and island. A bibliography of literature on the fauna is also searchable and includes citations for all the original descriptions of the native Hawaiian land and freshwater molluscs, as well as citations for the taxonomic revisions that have been used in compiling the "Catalog" itself. The bibliography is wais indexed and is searchable by word or character string.
10.	Minimum Requirements:	Internet Access
11.	Input/output Formats:	Na
12.	Current Users:	Na
13.	References:	The mollusc databases have been developed for the web by Scott Miller, Gordon Nishida, Neal Evenhuis and Jeffrey Sue.
14.	Training and Conferences:	Na

1.	Name of System:	Filemaker.Pro
2.	Contact:	Stuart Allison
3.	Address:	Department of Biology Central College Pella, Iowa 50219
4.	Telephone:	515-628-5204
5.	Facsimile:	na
6.	Email:	allisons@central.edu
7.	World Wide Web:	na
8.	Availability and Cost:	na
9.	Description:	A filemaker.Pro template designed to keep track of species in herbaria. Applicable to vertebrate species as well.
10.	Hardware Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	Ministry of Economic Affairs, Environment and Tourism Database and GIS System
2.	Contact:	Alan Southwood
3.	Address:	Private Bag X1126 P Bag X1126 Port Elizabeth, 6000 South Africa
4.	Telephone:	(041)3902179
5.	Facsimile:	(041)337468
6.	Email:	laidlerd@cncpe.ecape.gov.za

		southa@cncpe.ecape.gov.za
7.	World Wide Web:	
8.	Availability and Cost:	Most information freely available at no cost.
9.	Description:	
10.	Requirements:	486DX; 8 Mb RAM; 100 Mb hard drive space Windows 3.1; Microsoft Access 2.0 Pentium; 32 Mb RAM; 2 Gb hard drive space Windows 95; Access 2.0; Arcview 2.0; PC/ArcInfo 3.4.2
11.	Input/output Formats:	database: from datasheets via keyboard and conversion of databases from other database GIS: digitizing, data on disc and CDs, and obtained via e-mail. Output: reports to disc, printer or plotter
12.	Current Users:	Managers and scientific support staff within Ministry; occasional requests from other ministries, research institutions and the public.
13.	References:	Potgieter S. 1996. GIS coverages on the LAN. A comprehensive description of all coverages available to our agencies staff via the LAN. Southwood A. 1996. The management of environmental information. A list/description of all databases available on our LAN.
14.	Training and Conferences:	

1.	Name of System:	Biota
2.	Contact:	Maire Scavatto, Marketing Assistant
3.	Address:	Sinauer Associates Sunderland, MA 01375-0407
4.	Telephone:	413-549-1118
5.	Facsimile:	
6.	Email:	publish@sinauer.com
7.	World Wide Web:	na
8.	Availability and Cost:	US\$125
9.	Description:	General Biodiversity Database.
10.	Minimum Requirements:	68030 Macintosh with coprocessor or PowerMac. Requires runtime version of 4th-Dimension database published by ACI.
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	Biota is written by Rob Colwell at U. Connecticut.
14.	Training and Conferences:	na

1.	Name of System:	Wildlife Institute of India
2.	Contact:	Ms. Ratna Singh
3.	Address:	Wildlife Institute of India P.B.#18 Dehradun 248 001, U.P. India
4.	Telephone:	na
5.	Facsimile:	Na
6.	Email:	wii.isnet@access.net.in
7.	World Wide Web:	na
8.	Availability and Cost:	na
9.	Description:	Computerized database on the fauna, flora, legal status, and published information on Indian protected areas, National Parks, Wildlife Sanctuaries etc.

10.	Minimum Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	T. R. Shankar Raman Centre for Ecological Sciences Indian Institute of Science Bangalore - 560 012, INDIA. Ph: +91 80 3340985 Fax: +91 80 3341683 Email: shankar@ces.iisc.ernet.in
14.	Training and Conferences:	Na

1.	Name of System:	Microbanque Faune-Flore
2.	Contact:	Yvan Barbier
3.	Address:	University of Mons-Hainaut Laboratory of Zoology Avenue Maistriau, 19 B-7000 Mons - BELGIUM
4.	Telephone:	Na
5.	Facsimile:	+32 65 37 30 54
6.	Email:	Yvan.Barbier@mercure.umh.ac.be
7.	World Wide Web:	http://panoramix.umh.ac.be/zoologie/cff/cff_en.html
8.	Availability and Cost:	A free demo copy is available.
9.	Description:	DOS mapping software to manage Fauna and Flora data.
10.	Minimum Requirements:	DOS
11.	Input/output Formats:	Na
12.	Current Users:	Na
13.	References:	Na
14.	Training and Conferences:	na

1.	Name of System:	PLANTAS II
2.	Contact:	Dr. Walter G. Berendsohn
3.	Address:	Freie Universitaet Berlin Botanical Garden and Museum Berlin-Dahlem Koenigin-Luise-Str. 6-8, 14191 Berlin, Germany
4.	Telephone:	+49 30 83006-143
5.	Facsimile:	+49 30 83006-186
6.	Email:	wgb@zedat.fu-berlin.de
7.	World Wide Web:	http://userpage.fu-berlin.de/~wgb/ http://iopi.csu.edu.au/iopi/iopidpd1.html
8.	Availability and Cost:	Specially designed for the herbarium management and floristic inventory projects at the Jardin Botanico La Laguna in El Salvador
9.	Description:	Herbarium specimen management; Taxonomic Checklists, Vouchered checklists; Literature references (rudimentary); Herbarium labels; Botanic garden plant labels.
10.	Minimum Requirements:	286 PC
11.	Input/output Formats:	Input via user-interface. Output text, ITF, delimited text, anything that can be generated from dBase file format tables.
12.	Current Users:	Jardin Botanico La Laguna in El Salvador; Flora of El Salvador Project at the BGBM
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	RAMAS/GIS
2.	Contact:	Resit Akcakaya
3.	Address:	Applied Biomathematics Telephone 100 North Country Road Facsimile Setauket, New York 11733
4.	Telephone:	516-751-4350
5.	Facsimile:	516-751-3435
6.	Email:	ramas@gramercy.ios.com
7.	World Wide Web:	http://gramercy.ios.com/~ramas
8.	Availability and Cost:	na
9.	Description:	Fauna Data Management Systems.
10.	Minimum Requirements:	DOS
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	Uganda Forest Department Biodiversity
2.	Contact:	Paolo Viskanic
3.	Address:	c/o FAO, P.O. Box 521 Kampala, Uganda
4.	Telephone:	+256 - 41 - 221672
5.	Facsimile:	+256 - 41 - 221672
6.	Email:	viskanic@imul.com
7.	World Wide Web:	http://www.fao.org/WAICENT/faoinfo/forestry/bio_web/default.htm
8.	Availability and Cost:	Data is not available yet, will probably be by the end of this year
9.	Description:	Specifically designed database to store and analyze data collected in a 5 year biodiversity assessment programme.
10.	Minimum Requirements:	PC 486, 8MB Ram Database is developed in MS Access Vers. 2 and is linked to Excel and SPSS for analysis and Idrisi and MapInfo for GIS.
11.	Input/output Formats:	Same as those for Excel, SPSS, Idrisi and MapInfo.
12.	Current Users:	Uganda Forest Department - Biodiversity Database P.O. Box 40148, Nakawa Tel. +256 41 221672 Kampala, Uganda Email: viskanic@imul.com
13.	References:	na
14.	Training and Conferences:	The whole program has been presented at 1994 IUFRO Biodiversity Symposium in Chiang Mai, Thailand, and at 1995 Smithsonian Conference in Washington DC.

1.	Name of System:	West Virginia Flora and Fungi Herbaria Database System
2.	Contact:	P. J. Harmon
3.	Address:	na
4.	Telephone:	na
5.	Facsimile:	na
6.	Email:	pharmon@mail.dnr.state.wv.us pjflora@aol.com
7.	World Wide Web:	na
8.	Availability and Cost:	Not currently available.

9.	Description:	Flora and Fungi Herbaria Database System developed in Foxpro for Windows
10.	Minimum Requirements:	Windows 3.1
11.	Input/output Formats:	na
12.	Current Users:	WV University WV Natural Heritage Marshall University
13.	References:	WV Natural Heritage Program WV Flora West Virginia committee
14.	Training and Conferences:	na

1.	Name of System:	Panorama
2.	Contact:	Regis B. Miller Forest Products Lab Madison, WI
3.	Address:	ProVue Development 18411 Gothard, Unit A, Huntington Beach, CA 92648
4.	Telephone:	714/841-7779
5.	Facsimile:	714/841-7779
6.	Email:	/S=R.MILLER/OU1=S32A@MHS-FSWA.ATTMAIL.COM (Regis Miller)
7.	World Wide Web:	na
8.	Availability and Cost:	na
9.	Description:	non-relational or flat database.
10.	Minimum Requirements:	ProVue Development
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	Alice
2.	Contact:	Peter Winfield, Bob Allkin
3.	Address:	Royal Botanic Gardens Kew Richmond SURREY TW9 3AB England or, Scottish Agricultural Science Agency OAEFD EDINBURGH EH12 8NJ Scotland
4.	Telephone:	na
5.	Facsimile:	na
6.	Email:	alice@dial.pipex.com (Peter Winfield)
7.	World Wide Web:	http://www.web13.co.uk/alice
8.	Availability and Cost:	No finalized our price list is available. Contact Alice.
9.	Description:	1. Fauna Data Management Systems. 2. Flora Data Management Systems. 3. Genetics and Germplasm Databases. Ace (replacing Alice version 2) is the core program for designing and building biodiversity databases. Ace enables user to set up their own gazetteer, design their own descriptors,

		capture and edit data about taxa and produce reports. Alice is a suite of programs for building and managing relational databases which contain information about living organisms. Any Alice database may include common and Latin names, various classes of synonym, geographical distribution at three levels, habitats, economic importance, notes and free text. Users may define any number of their own descriptors to record ecological, morphological or biotechnological observations or record administrative information about taxa. Any fact about a taxon can be linked to one or more citations.
10.	Minimum Requirements:	Hardware: IBM compatible PC 386, 486 or Pentium with a minimum of 512K RAM. Software: Alice requires Alice Version 2 database. ALICE runs under DOS, Windows, Windows NT and OS/2. Alice can be made available for UNIX.
11.	Input/output Formats:	DBASE, SDF, variable length fields, DELTA - for identification programs and the Exchange Data Format (XDF).
12.	Current Users:	Na
13.	References:	Na
14.	Training and Conferences:	na

1.	Name of System:	Biological Conservation Database
2.	Contact:	Paul Rabinovitch, The Nature Conservancy
3.	Address:	The Nature Conservancy 1815 North Lynn Street Arlington, VA 22209
4.	Telephone:	(703)841-8799
5.	Facsimile:	
6.	Email:	prabinovitch@tnc.org
7.	World Wide Web:	@www.tnc.org
8.	Availability and Cost:	Na
9.	Description:	Biological Conservation Database is a large database and biological computer system. It is maintained nationwide and internationally by a network of quasi-public offices known as Natural Heritage offices.
10.	Minimum Requirements:	na
11.	Input/output Formats:	Na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	ETI (expert center for taxonomic identification)
2.	Contact:	Joel Hallan
3.	Address:	UNESCO or Joel Hallan 4405 Manzanillo Dr. Austin, TX 78749
4.	Telephone:	512-280-2546
5.	Facsimile:	na
6.	Email:	biocat@uts.cc.utexas.edu
7.	World Wide Web:	http://www.eti.eti.bio.uva.nl/Default.html
8.	Availability and Cost:	na
9.	Description:	A general biodiversity database.
10.	Minimum Requirements:	na
11.	Input/output	na

	Formats:	
12.	Current Users:	na
13.	References:	Joel Hallan 4405 Manzanillo Dr. Austin, TX 78749
14.	Training and Conferences:	na

1.	Name of System:	Linnaeus II
2.	Contact:	Les Kaufman
3.	Address:	Boston University Marine Program Department of Biology Boston University 5 Cummington Street Boston, MA 02215
4.	Telephone:	617-353-5560
5.	Facsimile:	617-353-6340
6.	Email:	lesk@BIO.BU.EDU (Les Kaufman)
7.	World Wide Web:	na
8.	Availability and Cost:	na
9.	Description:	Linnaeus II, is used to construct CD-ROM based taxonomic expert systems.
10.	Minimum Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	Les Kaufman Boston University Marine Program Department of Biology Boston University 5 Cummington Street Boston, MA 02215
14.	Training and Conferences:	na

1.	Name of System:	Large Mammals of Africa
2.	Contact:	Luigi Boitani
3.	Address:	Dipartimento di Biologia Animale e dell'Uomo Universit# di Roma Viale Universit# 32 00185 Roma, Italy
4.	Telephone:	+39-6-491135
5.	Facsimile:	+39-6-491135
6.	Email:	boitani@pan.bio.uniroma1.it
7.	World Wide Web:	na
8.	Availability and Cost:	It will be completed by middle 1997 and available on a web site.
9.	Description:	databank on the medium and large mammals of Africa at continental scale. The databank is developed on ArcInfo and it will include all distribution maps of 350 species.
10.	Minimum Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	dBase IV and .i.dBase 5.5 .i.Visual and .i.DELTA
2.	Contact:	Lynn Heilman
3.	Address:	The Flora of Pennsylvania Project Morris Arboretum of the University of Pennsylvania
4.	Telephone:	na
5.	Facsimile:	na
6.	Email:	mabot@pobox.upenn.edu
7.	World Wide Web:	na
8.	Availability and Cost:	dBase is currently owned and maintained by: Borland International, Inc. 100 Borland Way, PO Box 660001 Scotts Valley, CA 95067-0001
9.	Description:	dBase manages the Flora of Pennsylvania Project. The project has produced one hardcover publication, The Vascular Flora of Pennsylvania: Annotated Checklist and Atlas. Production of a second publication, a field manual to the flora of Pennsylvania, is underway. For this project we are using dBase and DELTA. The ATLAS file contains code information for every species contained in the database and a checklist information on characteristics of the plant. The LOCATION file is a listing of specific locations, primarily within the Commonwealth of Pennsylvania where plants have been identified. The file includes latitude and longitude for each location which is uniquely referenced by the sequence number field. The DISTRIBUTION file cross-references specific plants with specific locations in the state. The HERBARIUM file contains on herbarium collections. The BIBLIOGRAPHIC file contains information on each bibliographic reference. The REFERENCE file is used to link the BIBLIOGRAPHIC file to the ATLAS file. The GEOGRAPHIC file contains information on geographic locations in Pennsylvania. MAPPING FILES are used to generate maps of plant distributions. These procedures utilize information from the ATLAS, DISTRIBUTION, and LOCATION files. The map program was written using Turbo Pascal.
10.	Minimum Requirements:	standard dBase requirements.
11.	Input/output Formats:	standard dBase
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	DELTA, Descriptive Language for Taxonomy
2.	Contact:	CSIRO
3.	Address:	Division of Entomology Commonwealth Scientific and Industrial Research Organization (CSIRO) GPO Box 1700, Canberra ACT 2601, Australia
4.	Telephone:	na
5.	Facsimile:	na
6.	Email:	delta@ento.csiro.au
7.	World Wide Web:	gopher/ftp site at "muse.bio.cornell.edu (directory: /pub/delta) Web site at: http://muse.bio.cornell.edu/delta/
8.	Availability and Cost:	Shareware and trial versions may be downloaded from the Internet at with the FTP or WWW addresses. To register a copy a fee of \$100 is required. Exceptions are available for educational and certain other academic and research applications.

9.	Description:	Na
10.	Minimum Requirements:	dBase, MS-DOS or Windows 3.1, 386 with 4 MB of RAM
11.	Input/output Formats:	Na
12.	Current Users:	Na
13.	References:	Na
14.	Training and Conferences:	dBase training available from Borland

1.	Name of System:	Index Nominum Genericorum (.i.ING)
2.	Contact:	Ellen Farr
3.	Address:	Botany Department of the Smithsonian Institution
4.	Telephone:	Na
5.	Facsimile:	Na
6.	Email:	MNHBO001@SIVM.SI.EDU (Ellen Farr)
7.	World Wide Web:	http://www.nmnh.si.edu/ing/
8.	Availability and Cost:	Botany Department of the Smithsonian Institution International Association for Plant Taxonomy
9.	Description:	Plant taxonomy searchable database. The ING database covers validly published generic names of plants (including fungi). The intent is to bring generic names in all plant groups together in a single list to reveal cases of homonymy. ING includes bibliographic citations and information about the typification and nomenclatural status of generic names.
10.	Minimum Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	IRIS version 2.3
2.	Contact:	Andre Hospers
3.	Address:	na
4.	Telephone:	Na
5.	Facsimile:	Na
6.	Email:	Hosper@ptt-telecom.unisource.nl
7.	World Wide Web:	http://www.euronet.nl:80/users/mbleeker/prog/soflis_e.html
8.	Availability and Cost:	na
9.	Description:	A dBase system with numerous fields designed for registering Orchid-data. The ORS (Orchid Registration System) could also be used for other applications in the field of flora and fauna. The name of the application was changes in IRS (Inventarisatie Registratie Systeem). During installation a taxonfile with almost all Orchid-names is installed. This file had been put together by K. Kreutz.
10.	Minimum Requirements:	Runs on an IBM-compatible PC: - type PC, XT, AT, 386 or 486, with at least 512 kb main memory.
11.	Input/output Formats:	Standard dBase.
12.	Current Users:	na
13.	References:	Na
14.	Training and Conferences:	na

1.	Name of System:	Orde
2.	Contact:	Jeroen Fokker
3.	Address:	Dept. Computer Science

		Utrecht University PO Box 80089, 3508TB Utrecht, the Netherlands
4.	Telephone:	+31-30-534129
5.	Facsimile:	+31-30-513791
6.	Email:	Jeroen@cs.ruu.nl
7.	World Wide Web:	http://www.cs.ruu.nl/people/jeroen/orde
8.	Availability and Cost:	US\$150
9.	Description:	Program for the management of data about the ecology and distribution of insects.
10.	Minimum Requirements:	PC =386, Windows =3.0
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	Na
14.	Training and Conferences:	na

1.	Name of System:	Faunist 2.01
2.	Contact:	Mark van Veen
3.	Address:	Couwenhoven 42-27 3703 ED Zeist The Netherlands
4.	Telephone:	++ 31 30 6962687
5.	Facsimile:	na
6.	Email:	Mark.van.Veen@rivm.nl
7.	World Wide Web:	na
8.	Availability and Cost:	Demo version for free, the real version for 99 guilders (approx. US\$60-70)
9.	Description:	Fauna management system for statistical and analytical users. Faunist maintains an ASCII based database where records of caught and/or collected invertebrates can be stored. Faunist provides the following tools to analyze the faunistic data set i. maps, similarities with reference data, cluster analyses, distribution in main faunistic areas. These analyses are confined to the Netherlands, Belgium and Luxembourg. Other geographic areas are not supported yet. ii. activity period histogram (all data, for two stadia or sexes, field vs collected data), simultaneous representation of activity periods of multiple species by range and quartile bars, or range and periods where species is very abundant bars, display of reference data, statistical tests for differences between activity periods, description of range and quartiles of activity period, correlograms. iii. Display of seasonal data, including moving average, statistical tests for differences between seasonal patterns, correlograms. iv. Oecocode - histograms v. Lists of associated plants, histogram of most abundant associated plants, plant diversity and tests for preference for plants.
10.	Minimum Requirements:	PC with MS-windows 3.1 installed and working 2 Mb free on hard drive.
11.	Input/output Formats:	Generic ASCII files, either fixed column, or with an unique separator for the fields. Data can be save as ASCII-files with unique separator. Graphics can be saved as EPS, HPGL and windows metafile.
12.	Current Users:	European Invertebrate Survey
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	B-map
2.	Contact:	Simon Pepping Elsevier Science E-mail: S.Pepping@Elsevier.NL
3.	Address:	B-map is written by Bart Vreeken.
4.	Telephone:	na

5.	Facsimile:	na
6.	Email:	S.Pepping@Elsevier.NL
7.	World Wide Web:	na
8.	Availability and Cost:	US\$20 and next version will be \$50.
9.	Description:	This program offers the possibility to put your data in with an precision of a few meters. It can use GIS maps. With a mouse you are able to select the place you found the species and add the abundant. You can present four species at once in different colors. Available in Dutch, German and English.
10.	Minimum Requirements:	DOS machine with one MB memory.
11.	Input/output Formats:	ASCII file
12.	Current Users:	Some communities and Some very large private Dutch nature reserves. Very few private users.
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	Dbase3+
2.	Contact:	Donna I. Ford, Asst. Prof. Biol.
3.	Address:	West Virginia Univ. Herbarium Curator (WVA) Box 6057 425 Brooks Hall Morgantown, WV 26506
4.	Telephone:	(304)293-5201 X2549
5.	Facsimile:	(304)293-6363
6.	Email:	diford@wvnm.wvnet.edu
7.	World Wide Web:	na
8.	Availability and Cost:	The system can be copied free of charge.
9.	Description:	Herbarium (flora) data management system.
10.	Minimum Requirements:	runs under Dbase3+, in our case on a 386PC
11.	Input/output Formats:	Standard Dbase3+
12.	Current Users:	na
13.	References:	A full description is published in Missouriensis 16(2):45-56. 1995.
14.	Training and Conferences:	

1.	Name of System:	BIMS (Biodiversity Information Management)
2.	Contact:	Herbert Barrientos
3.	Address:	INBio, Instituto Nacional de Biodiversidad INBio, Instituto Nacional de Biodiversidad PO Box: 22-3100, Sto. Domingo de Heredia, Costa Rica
4.	Telephone:	(506) 244-0690
5.	Facsimile:	(506) 244-2816
6.	Email:	hbarr@lantana.inbio.ac.cr
7.	World Wide Web:	http://www.inbio.ac.cr
8.	Availability and Cost:	Free Access on WWW
9.	Description:	Biodiversity Information Management System. BIMS supports an efficient and reliable process of data capture, validation and organization generated by the national biodiversity inventory.
10.	Minimum Requirements:	Needs a server and workstation Intergraph. The server has 10GB on its hard

	Requirements:	drive, of main memory it has 126MB. Each workstations has 16MB and 600MB of hard drive. It needs Oracle database, Unix Operating System and Run Time version of DB access. TCP/IP is essential of their communication.
11.	Input/output Formats:	No policies for importing or exporting data, although all the data is in oracle tables.
12.	Current Users:	na
13.	References:	Ing. Maritza Serrano INBio E-mail: mserrano@quercus.inbio.ac.cr
14.	Training and Conferences:	Dissemination Biodiversity Information Workshop, Amsterdam. March, ¥96.

1.	Name of System:	SysTax
2.	Contact:	Juergen R. Hoppe Evelin Boos,
3.	Address:	Abteilung Spezielle Botanik, Universitaet Ulm, D-89069 Ulm
4.	Telephone:	0731-502-2703
5.	Facsimile:	0731-502-2720
6.	Email:	juergen.hoppe@biologie.uni-ulm.de boos@audrey.biologie.uni-ulm.de systax@audrey.biologie.uni-ulm.de
7.	World Wide Web:	http://www.biologie.uni-ulm.de/systax
8.	Availability and Cost:	na
9.	Description:	SysTax - a database system for systematics and taxonomy
10.	Minimum Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	BIODIV version 5.1
2.	Contact:	Exeter Software
3.	Address:	na
4.	Telephone:	516-689-7838
5.	Facsimile:	516-689-0103
6.	Email:	ExeterSftw@aol.com
7.	World Wide Web:	na
8.	Availability and Cost:	about US\$350
9.	Description:	na
10.	Minimum Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	hqian@unixg.ubc.ca (Hong Qian)
14.	Training and Conferences:	na

1.	Name of System:	Mexican Mammals
2.	Contact:	Ricardo Lopez Wilchis
3.	Address:	Universidad Autonoma Metropolitana Iztapalapa Departamento de Biologia

		Ap. Postal 33-535 Mexico 09340, D.F. MEXICO
4.	Telephone:	na (not available)
5.	Facsimile:	na (not available)
6.	Email:	rlw@xanum.uam.mx
7.	World Wide Web:	na (not available)
8.	Availability and Cost:	na (not available)
9.	Description:	Database of Mexican Mammals to be found in United States and Canada mammal collections.
10.	Minimum Requirements:	na (not available)
11.	Input/output Formats:	na (not available)
12.	Current Users:	Na
13.	References:	Na
14.	Training and Conferences:	Na

1.	Name of System:	African birds, mammals, snakes, amphibians, butterflies and plants
2.	Contact:	Neil Burgess, Coordinator - Danish Centre for Tropical Biodiversity Danish Centre for Tropical Biodiversity Research Fellow
3.	Address:	Zoological Museum of the University of Copenhagen, Universitetsparken 15, DK-2100, Copenhagen, Denmark
4.	Telephone:	+45 35 32 10 31
5.	Facsimile:	+ 45 35 32 10 10
6.	Email:	ndburgess@zmuc.ku.dk
7.	World Wide Web:	na
8.	Availability and Cost:	na
9.	Description:	Programme aims to map species richness and endemism patterns for African birds, mammals, snakes, amphibians, butterflies and some plant groups, at a one degree scale. Mapping of species distribution of African birds, mammals, snakes, amphibians, butterflies and plants. The program is an attempt to map the species-richness and endemism values for a number of taxonomic groups in Sub-Saharan Africa at the scale of 1 degree square. System will include: species-list of African taxa, species distribution data for the target species in Sub-Saharan Africa, species range and locality data onto the specialized biodiversity analysis programme,
10.	Minimum Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	BDT (Base de Dados Tropical)
2.	Contact:	Dora Ann Lange Canhos
3.	Address:	Base de Dados Tropical Fundacao "Andre' Tosello"
4.	Telephone:	+55 192 427022
5.	Facsimile:	+55 192 427827
6.	Email:	dora@bdt.org.br
7.	World Wide Web:	http://www.bdt.org.br/paper/padctbio.cgi/ http://www.bdt.org.br/
8.	Availability and Cost:	Na
9.	Description:	Aim to characterize the country's capacity in major areas that may contribute to the preservation, use and management of its biodiversity (fauna, flora and microbiota).

10.	Minimum Requirements:	Na
11.	Input/output Formats:	Na
12.	Current Users:	Na
13.	References:	Na
14.	Training and Conferences:	Na

1.	Name of System:	Taman Negara
2.	Contact:	Dr. Gregory C. Gibbons, Managing Director
3.	Address:	Australian Biotechnological Resources Pty. Ltd.
4.	Telephone:	Na
5.	Facsimile:	Na
6.	Email:	abrgibb@ibm.net
7.	World Wide Web:	Na
8.	Availability and Cost:	Na
9.	Description:	Database on the biodiversity of the Malaysian National Park - Taman Negara.
10.	Minimum Requirements:	Australian Biodiversity Database software from Viridian's Pty. Ltd. (see below for description of Viridians).
11.	Input/output Formats:	Na
12.	Current Users:	Na
13.	References:	Na
14.	Training and Conferences:	Na

1.	Name of System:	VIRIDANS
2.	Contact:	Dr. Gregory C. Gibbons
3.	Address:	Australian Biotechnological Resources Pty. Ltd.
4.	Telephone:	na
5.	Facsimile:	na
6.	Email:	abrgibb@ibm.net
7.	World Wide Web:	na
8.	Availability and Cost:	na
9.	Description:	Biodiversity Database in wide use and highly customized. It provides the mechanism for data storage, retrieval, verification and reporting; data analysis and classification; and mapping geographic ranges of species and vegetation communities. Areas of application include, but are not limited to: 1. Ecological surveying and input to environmental impact studies. 2. Regional Surveying. 3. Determining sites of botanical significance for overall conservation planning. 4. Land Use Planning 5. Rare and threatened plant management. 6. Ecological analysis prior to the approval of mining leases; major land clearing.
10.	Minimum Requirements:	PC-based
11.	Input/output Formats:	na
12.	Current Users:	Victorian Department Of Conservation & Natural Resources The Flora Section of the Department of Conservation and Natural Resources, Victoria, Australia The University Of Ballarat - Victoria, Australia The Museum Of Victoria The Museum Of South Australia The National Herbarium Of Victoria Department Of Environment & Heritage - Queensland Australian Nature Conservation Agency (ANCA)

		Department of Wildlife and National Parks - Malaysia Department Of Agriculture - Brunei Darussalam Dept. Of Lands, Surveys & Environment- Western Samoa
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	TROPICOS
2.	Contact:	Alan V. Tucker
3.	Address:	Missouri Botanical Garden
4.	Telephone:	na
5.	Facsimile:	na
6.	Email:	tucker@mobot.org (Alan V. Tucker)
7.	World Wide Web:	http://db.mobot.org
8.	Availability and Cost:	na
9.	Description:	Botanical Database
10.	Minimum Requirements:	Windows-based
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	World Biodiversity Database Series
2.	Contact:	Donald Hagen Director UNIPUBUNIPUB
3.	Address:	UNIPUB is a distributor in the U.S. for UNESCO
4.	Telephone:	na
5.	Facsimile:	na
6.	Email:	dhagen@kraus.com
7.	World Wide Web:	na
8.	Availability and Cost:	na
9.	Description:	The World Biodiversity Database series on CD-ROM is a computer-based information system created to foster taxonomic knowledge by producing easy to understand, user friendly systems addressed to both specialists and the general public. The CD-ROMs in this series are being published by the Expert-center for Taxonomic Identification (University of Amsterdam) and UNESCO. Titles produced so far, include: Birds of Europe North Australian Sea Cucumbers Marine Planarians of the World Protocist Glossary An Illustrated reference Guide to Terms and Taxa Fishes of the North Eastern Atlantic Mediterranean Lobsters
10.	Minimum Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	Ecosystem Management Bibliographic Database
2.	Contact:	Jim Manolis
3.	Address:	University of Minnesota

		Program In Conservation Biology 200 Hodson Hall, 1980 Folwell Ave St. Paul, MN 55108
4.	Telephone:	612-625-1987 612-624-3421
5.	Facsimile:	na
6.	Email:	jcm@finsandfur.fw.umn.edu
7.	World Wide Web:	gopher://minerva.forestry.umn.edu:70/11/ecosys
8.	Availability and Cost:	na
9.	Description:	An on-line bibliographic database of ecosystem management literature citations is now available on the Internet through the gopher server of the Forestry Library, College of Natural Resources, University of Minnesota. The database contains more than 1,000 citations for both social science and biophysical literature. The database does not contain full articles. An annotation is included for some citations to provide additional information. The citations are accessible to full text searches. The database is accessible both through the World Wide Web and Gopher.
10.	Minimum Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	Royal Botanic Gardens Kew Biodiversity Databases
2.	Contact:	Bill Loader
3.	Address:	Royal Botanic Gardens Kew Richmond, Surrey TW9 3AB, England
4.	Telephone:	44 - (0)181 - 332 5000
5.	Facsimile:	44 - (0)181 - 332 5197
6.	Email:	W.Loader@lion.rbgkew.org.uk (Bill Loader)
7.	World Wide Web:	www.rbgkew.org.uk
8.	Availability and Cost:	Free online or by request.
9.	Description:	Includes the follow databases (refer to table below): Kew Record of Taxonomic literature, Index Kewensis, Index Filicum, Economic Botany Bibliography, Plant Anatomy Bibliography, Economic Botany Specimen Data, Survey of Economic Plants for Arid and Semi Arid Lands Database, Project Nordeste - Brazil, Fungi Specimen Index, Fungi Host Index, World Palm Database, Pollen Slide Index, Spirit Collections Index, Flora Zambeziaca Gazetteer, Grass Species Identification (DELTA), Library General Catalogue, Cactaceae Checklist, Orchids Checklist, Wood Identification & Use System, DNA Extractions Database, Seed Bank Management System, Seed Bank Seedlist, LCD - Specimen Catalogue, Brunei Checklist, Madagascar Checklist, Kew Familie & Genera, Authors (TDWG), Geog. (TDWG).
10.	Minimum Requirements:	Internet Access or appropriate platform (refer to table below).
11.	Input/output Formats:	Various.
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

Royal Botanic Gardens Kew Biodiversity Databases

Kew Gardens Database Title	Biblio.	Platform				
Kew Record of Taxonomic literature	B	Unix	Publ.	Disk		Enq.
Index Kewensis	B	Unix	Publ.	Disk	CD	Enq.
Index Filicum	B	Unix	Publ.	Disk		Enq.
Economic Botany Bibliography	B	Unix				Enq.
Plant Anatomy Bibliography	B	Unix				Enq.
Economic Botany Specimen Data	D	Unix				Enq.
Survey of Economic Plants for Arid and Semi Arid Lands Database	D	PC				Enq.
Project Nordeste - Brazil	D	PC				Enq.
Fungi Specimen Index	D	Unix				Enq.
Fungi Host Index	D	Unix				Enq.
World Palm Database	D	PC				Enq.
Pollen Slide Index	D	Unix				Enq.
Spirit Collections Index	D	PC				Enq.
Flora Zambeziaca Gazetteer	D	PC				Enq.
Grass Species Identification (DELTA)	D	PC				Enq.
Library General Catalogue	D	Unix				Enq.
Cactaceae Checklist						
Orchids Checklist						
Wood Identification & Use System	D	Unix				Enq.
DNA Extractions Database	D	PC				Enq.
Seed Bank Management System	D	Unix				Enq.
Seed Bank Seedlist	D	Unix				Enq.
LCD - Specimen Catalogue	D	Unix		Disk		Enq.
Brunei Checklist	D/GIS	PC/Unix				Enq.
Madagascar Checklist	D/GIS	PC				Enq.
Kew Familie & Genera	S	Unix	Publ.	Disk		Enq.,OL
Authors (TDWG)	S	Unix	Publ.	Disk		Enq.,OL
Geog. (TDWG)	S	Unix /PC	Publ.			

TDWG = Taxonomic Databases Working Group

Publ. = Printed publication available

Disk = Information available can be made available on disk

CD = Information available can be made available on CD-Rom

Enq. = Postal/telephone inquiries only

OL = Online inquiries

B = bibliography

D = database

S = standard

2. Genetics and Germplasm Databases

1.	Name of System:	EGID (Evaluation et Gestion Informatique de la Diversité gÉnÉtique)
2.	Contact:	Roland Cottin
3.	Address:	SRA INRA-CIRAD 20230 San Giuliano France
4.	Telephone:	(33) 95 55 01 10
5.	Facsimile:	(33) 95 55 01 65
6.	Email:	cottin@corse.inra.fr sra@corse.inra.fr

7.	World Wide Web:	http:\www.corse.inra.fr\sra\sra.htm
8.	Availability and Cost:	Beta version soon release as freeware (except shipping and duplication costs)
9.	Description:	Computerized Evaluation and management of genetic diversity. Multi-lingual, Multi-users germplasm management on citrus Including pictures, historical data, pomological and phenological data synonym management. Input thru bar code available
10.	Minimum Requirements:	PC / windows 3.11 or better. SVGA 256 colors. Bar code readers.
11.	Input/output Formats:	Microsoft access format, BMP for pictures, output on printer, or in TXT file, in Word / Wordstar, WordPerfect format, Quattro, excel, lotus format
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	Microbial Germplasm Database
2.	Contact:	Joe Hanus
3.	Address:	Dept. of Botany and Plant Pathology Oregon State University Corvallis, OR 97331-2902
4.	Telephone:	(503)-737-5300
5.	Facsimile:	(503)-737-3573
6.	Email:	hanusj@mgd.cordley.orst.edu
7.	Internet:	URL is http://mgd.cordley.orst.edu/cgi-bin/mgd Joe Hanus URL http://mgd.cordley.orst.edu/~hanusj gopher to bcc.orst.edu
8.	Availability and Cost:	Reachable through the internet, free
9.	Description:	Microbial Germplasm Database Online, interactive, browsable web interface to SQL database of Microbial Germplasm found primarily in research oriented stock collections of individual scientists at Universities and Experiment Stations.
10.	Minimum Requirements:	Any system running Netscape 2.0 or better.
11.	Input/output Formats:	
12.	Current Users:	
13.	References:	1. Mark Newsome, Joe Hanus, Larry Moore, and Cherri Pancake. Web-based Query Interfaces for Scientific Databases. Supercomputing '95, December 1995, San Diego, CA. 2. Joe Hanus, Mark Newsome, and Larry Moore. Facilitating access to microbial germplasm through electronic networks, 5th International Conference on Pseudomonas syringae Pathovars and Related Pathogens. Sept. 3-8, 1995 and Agrobacterium and Beyond, Sept. 25-26 Paris, France. 3. Hanus, J., M. Newsome, C. Pancake, et al. Microbial Germplasm Database: Facilitating access to microbial germplasm through Electronic networks. 5th International Conference on Pseudomonas Syringae pathovars and related pathogens, 3-8 September 1995, Berlin, Germany.
14.	Training and Conferences:	

1.	Name of System:	RASA 1.1.1 and .i.RASA Plot 1.1.1
2.	Contact:	JAMES LYONS-WEILER
3.	Address:	DOCTORAL PROGRAM IN ECOLOGY, EVOLUTION, AND

		CONSERVATION BIOLOGY 1000 VALLEY ROAD/186 THE UNIVERSITY OF NEVADA, RENO RENO, NEVADA 89512-0013
4.	Telephone:	Na
5.	Facsimile:	Na
6.	Email:	Weiler@ERS.UNR.EDU (James Lyons-Weiler)
7.	World Wide Web:	http://loco.biology.unr.edu/archives/rasa/rasa.html
8.	Availability and Cost:	Free Download.
9.	Description:	Nascent software for the Mac that will perform "Relative Apparent Synapomorphy Analysis", a test for the presence of phylogenetic signal in any type of discrete character data matrix (morphological or molecular).
10.	Minimum Requirements:	na
11.	Input/output Formats:	Reads a data file, measures signal, and writes a file readable by: RASA Plot 1.1.1 Allows you to plot the results of the test.
12.	Current Users:	Na
13.	References:	Lyons-Weiler, J., G.A. Hoelzer, and R.J. Tausch. 1996. Relative Apparent Synapomorphy Analysis (RASA) I: the statistical measurement of phylogenetic signal. Molecular Biology and Evolution, in press.
14.	Training and Conferences:	na

1.	Name of System:	Bibliography of Genetic Variation in Natural Populations
2.	Contact:	Barry N. Brown, Assoc. Prof., Science Librarian & Access Services Coordinator
3.	Address:	Mansfield Library University of Montana Missoula, MT 59812
4.	Telephone:	406-243-6811
5.	Facsimile:	406-243-2060
6.	Email:	Barry@selway.umt.edu
7.	World Wide Web:	http://entity.lib.umt.edu/localdbi/allendorf/allendorf.html
8.	Availability and Cost:	
9.	Description:	This is a keyword searchable bibliographic database with citations and Abstracts on the topic of genetic variation in natural populations. It Also covers trout/fish genetics and conservation genetics. There are over 25,000 citations from the last 25 years. It was compiled by Dr. Fred Allendorf, Division of Biological Sciences, University of Montana.
10.	Minimum Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	Na
13.	References:	Na
14.	Training and Conferences:	na

1.	Name of System:	NAPIS
2.	Contact:	Mr. Gregg Dietzman
3.	Address:	White Point BioMarine
4.	Telephone:	Na
5.	Facsimile:	Na
6.	Email:	
7.	World Wide Web:	na

	Web:	
8.	Availability and Cost:	na
9.	Description:	<p>Is an integrated database system and service for dissemination of information on natural products chemistry, biological activity and biodiversity. This system uses advanced technologies to provide a standard for data capture and exchange.</p> <p>The key features include: interface with commercially-available databases through the phylogenetic structure database engine (PSDE), the ability to easily create custom taxonomic schemes, photographic and scanned laboratory print-out image handling, and a geographical information system (GIS) that is tailored to the needs of natural products investigators and biodiversity inventory projects.</p> <p>NAPIS is currently under development by White Point BioMarine with Phase II Small Business Innovation Research (SBIR) grant funds from the National Cancer Institute.</p>
10.	Minimum Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	Na
13.	References:	Na
14.	Training and Conferences:	Na

3. Raster GIS Systems

1.	Name of System:	GRASS
2.	Contact:	Gilles Clement, LAS Inc., 1570 Chabanel Ouest Montreal, Quebec, Canada H4N 1H4
3.	Address:	Na
4.	Telephone:	(514) 858-1104
5.	Facsimile:	Na
6.	Email:	Na
7.	World Wide Web:	Na
8.	Availability and Cost:	\$1000
9.	Description:	<p>Full-fledged geographic information system program including 8-bit image processing of LANDSAT images. Runs under the A/UX 3.0 operating systems and you had better have plenty of free hard disk space (more than 400 megabytes would be nice). Has rather specific requirements with regard to digitizing tablets and printers. Requires an external terminal attached to one of the serial ports (a VT100 works perfectly) because the Mac screen is used only for graphics display (the interactive windowing environment doesn't quite work up to par yet). This is the Macintosh version of the GRASS software developed by the Corps of Engineers and in wide use in various branches of the Department of the Interior and Department of Defense. Grass 4.1 version level 5 will soon be available that runs under Professional MachTEN BSD UNIX and MachTen X windows.</p>
10.	Minimum Requirements:	Na
11.	Input/output Formats:	Na
12.	Current Users:	Na
13.	References:	Na
14.	Training and Conferences:	Na

1.	Name of System:	IDRIS
2.	Contact:	The IDRISI Project

3.	Address:	The Clark Labs for Cartographic Technology and Geographic Analysis Clark University, 950 Main Street Worcester, Massachusetts, U.S.A. 01610-1477
4.	Telephone:	(508)793-7526
5.	Facsimile:	(508) 793-8842
6.	Email:	IDRISI@vax.clarku.edu
7.	World Wide Web:	http://www.idrisi.clarku.edu/
8.	Availability and Cost:	US\$ 250 (student), US\$ 990 (commerc.)
9.	Description:	A powerful geographical analysis and image processing system.
10.	Minimum Requirements:	DOS + Win 3.1, 486-66 (min.), 8MB
11.	Input/output Formats:	
12.	Current Users:	
13.	References:	
14.	Training and Conferences:	

1.	Name of System:	ENVI 2.0
2.	Contact:	Research Systems, Inc.
3.	Address:	2995 Wilderness Place Boulder, CO 80301
4.	Telephone:	Na
5.	Facsimile:	Na
6.	Email:	info@bscllc.com
7.	World Wide Web:	
8.	Availability and Cost:	Na
9.	Description:	The Environment for Visualization "ENVI" is a state-of-the-art image processing system designed from the ground up to provide turn-key panchromatic, multispectral, and hyperspectral analysis of satellite and aircraft remote sensing data. It provides an extremely powerful, innovative, and user-friendly environment to display and analyze images of any size or data type. The ENVI software system includes basic tools required for image processing across multiple disciplines, but is flexible enough to allow users to implement their own specific analysis strategies. ENVI provides a broad suite of utilities to simplify image processing. These include tape and file input, capabilities for creating test data sets, diagnosing data structures, resizing, and reformatting images, and converting data types. ENVI also provides utilities specifically for dealing with Landsat MSS and TM data as well as calibration of more advanced data sets such as AVIRIS.
10.	Minimum Requirements:	ENVI operates on multiple UNIX platforms (SUN, DEC, IBM, SGI, HP), on DEC Alpha machines under OSF-1 and Windows NT, under Microsoft Windows, Windows 95 and Windows NT on 80386, 80486, and Pentium machines, and on Apple Macintosh and Power PC platforms.
11.	Input/output Formats:	ENVI is unique in its combined file and "band-based" approach to image processing. When an input file is opened, each band is put into a list and is then available to all system functions. Bands can be of disparate data types and have identifying names associated. With multiple input files open, the user can easily select bands from different files to be processed together. ENVI supports a wide variety of standard image and remote sensing formats.
12.	Current Users:	Na
13.	References:	Na
14.	Training and Conferences:	Contact Publisher

1.	Name of System:	UNIBA
2.	Contact:	Diogo Figueiredo

		Lera Miles Centro de Ecologia Aplicada Universidade de vora
3.	Address:	Largo dos Colegiais 7000, Portugal.
4.	Telephone:	(+351 066) 740868
5.	Facsimile:	(+351 066) 744968
6.	Email:	ceaue@uevora.pt
7.	World Wide Web:	Na
8.	Availability and Cost:	Not available at present.
9.	Description:	UNIBA is under development. It is a custom database designed in Microsoft Access v.2.0, outputting files to be used in Idrisi for Windows v 1.0. In terms of outputs, the system makes use of the built in functions of these programs. Goal is to integrate with European biodiversity networks and to exchange data with other similar national and international centres and to initiate and support biodiversity studies to enhance methodologies for priority area selection, biodiversity monitoring and the modeling of spatial patterns.
10.	Minimum Requirements:	Hardware: 486-DX PC with 8 MB RAM, 8 bit graphics card, screen spatial resolution of 640 x 480. Software: Idrisi for Windows, Windows 3.1 or 95, Access 2.0 full or run-time version.
11.	Input/output Formats:	Access - Microsoft Access, Delimited text, Fixed-width text, Microsoft Excel, Lotus 1-2-3, Paradox, FoxPro, dBASE III and dBASE IV, Idrisi - DXF, TIF, BMP, BIL, BIP, DLG, DEM, CTG, DDK, ArcInfo, Atlas*GIS, ERDAS, GRASS, Map Analysis, OSU-Map, Odyssey, SurferGRID, SPOTView.
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	GAIA Software
2.	Contact:	Richard Podolsky
3.	Address:	95 Magnolia Drive Tenafly, NJ 07607
4.	Telephone:	201-568-9494
5.	Facsimile:	201-568-6959
6.	Email:	podolsky@worldnet.att.net
7.	World Wide Web:	http://www.ldeo.columbia.edu/~podolsky/
8.	Availability and Cost:	Contact Podolsky
9.	Description:	GAIA is an easy to use satellite imaging software system for any Macintosh computer. It is especially useful for thematic mapping and ground truthing. Support integration and overlaying of vector GIS files onto satellite imagery. Allows importation of aerial photographs.
10.	Minimum Requirements:	Any Macintosh with color monitor and at least 4 megabytes of memory.
11.	Input/output Formats:	SPOT, Landsat satellite imagery, and raster image, DXF vectors.
12.	Current Users:	several hundred.
13.	References:	na
14.	Training and Conferences:	contact author.

4. Vector GIS Systems

1.	Name of System:	FLORIN and .i.FLORIN Vidi
2.	Contact:	Konstantin Savov, FLORIN Project Leader
3.	Address:	DataX/FLORIN, Inc.

		Moscow, Russia Advanced Data Management Systems
4.	Telephone:	+7 (095) 158-9520, 158-9461
5.	Facsimile:	+7 (095) 158-5700
6.	Email:	kps@florin.ru floriner@florin.msk.su
7.	World Wide Web:	http://www.florin.ru/florin/
8.	Availability and Cost:	Complete set \$6,660 \$7,970 \$8,130 \$15,450 not (Taxonomy+ available Geography+ Herbarium) Taxonomy \$4,540 \$6,810 \$8,130 \$11,830 \$360 (incl. Informix (without RT v.5.x)Infx RT) Geography \$910 \$1,160 \$1,410 \$1,660 CALL (entry level) Herbarium \$1,210 \$1,460 \$1,710 \$1,960 CALL Vidi CALL Medicinal Plants CALL (with database)
9.	Description:	FLORIN Information System designed to deal with a wide range of data concerning plants: taxonomy, geography, herbarium and living collections. FLORIN Vidi is a vector GIS system integrated within FLORIN and supports mapping of collecting localities and specimens.
10.	Minimum Requirements:	DOS/Windows
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	MapFactory, (formerly .i.MAP-II)Map
2.	Contact:	Robert Gammon
3.	Address:	ThinkSpace Inc.
4.	Telephone:	na
5.	Facsimile:	na
6.	Email:	gammon@thinkspace.com
7.	World Wide Web:	http://www.thinkspace.com/
8.	Availability and Cost:	na
9.	Description:	na
10.	Minimum Requirements:	Macintosh (4MB) or PowerMac (8MB).
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	SIG/ANGAP & .i.SIB/ANGAP
2.	Contact:	J.M DUFILS (Technical Advisor) R. RAKOTONINDRINA (ANGAP General Director) Mrs FARAMALALA (Director DIVB)
3.	Address:	ANGAP/DIVB BP 1424-Antananarivo 101 MADAGASCAR
4.	Telephone:	
5.	Facsimile:	261.2.31994
6.	Email:	6450041@MCIMAIL.COM

		0006450041@mcimail.com (TRDM)
7.	World Wide Web:	
8.	Availability and Cost:	Not yet defined. Some Data will be disseminated next year on CD ROM
9.	Description:	Computer-based Biodiversity Management System implemented in Madagascar within ANGAP/DIVB. ANGAP=Association Nationale pour la Gestion des Aires protegees (National Association for Protected Areas Management). 2 complementary systems which will be connected later: SIG/ANGAP: GIS for multi sectorial data (topo, forest, population, infrastructure, etc.)SIB/ANGAP: RDBMS for biodiversity data to produce a National Monograph by the end of the year. Capacity to integrate and analyze any spatial information.
10.	Minimum Requirements:	Pentium 90/RAM 64 mo/HD 2GB, 1 SUN WS, peripherals (scanner, plotter, CD ROM. Software: RootsPro, ArcInfo, MapInfo, PCI, IdrisiWSIB/ANGAP: ParadoxC
11.	Input/output Formats:	Almost all common GIS vector and raster formats are imported. Most common export ARC/INFO (generate, export), DXF, MapInfo (MIF), Idrisi, TIF, ERDAS.D
12.	Current Users:	Protected Areas staff, International institutions & donors (UNDP, USAID), Malagasy governmental institutions (Water & Forest, Census Bureau,), projects (health, agriculture, roads,..), NGOs (WWF, CI, CARE,)
13.	References:	
14.	Training and Conferences:	

1.	Name of System:	NDDB (Natural Diversity Database)
2.	Contact:	Patrick Gaul, Geographer Michael Tuffly, Research Analysis
3.	Address:	California Department of Fish and Game Natural Heritage Division 1416 Ninth Street, 12th Floor Sacramento, California 95814
4.	Telephone:	(916) 322-1950 (916) 445-6264
5.	Facsimile:	
6.	Email:	pgaul@gishost.dfg.ca.gov mtuffly@gishost.dfg.ca.gov
7.	World Wide Web:	
8.	Availability and Cost:	
9.	Description:	Natural Diversity Database Feature types: Line, Point Coverage Precision: Double Coverage Projection: Albers Data Source: Natural Diversity Database
10.	Minimum Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	Na
13.	References:	Na
14.	Training and Conferences:	na

1.	Name of System:	Tydac .i.SPANST
2.	Contact:	Clark Lawlor, Sales Manager Europe
3.	Address:	na
4.	Telephone:	na
5.	Facsimile:	na

6.	Email:	lawlor@tydac.com support@esri.com info@esri.com service@esri.com
7.	World Wide Web:	http://www.tydac.com/ http://www.esri.com
8.	Availability and Cost:	5.000 US\$
9.	Description:	na
10.	Minimum Requirements:	Pentium, 16MB, Win, Unix, OS/2 ESRIs A/I (Unix) of course Workstation, 32MB
11.	Input/output Formats:	Raster, Quadtree and Vector
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	CARIS (Computer aided resource information system)
2.	Contact:	Paul MacNab
3.	Address:	Universal Systems Ltd. Fredericton, New Brunswick
4.	Telephone:	na
5.	Facsimile:	na
6.	Email:	paul_macnab@pch.gc.ca
7.	World Wide Web:	na
8.	Availability and Cost:	Na
9.	Description:	CARIS is a high end vector package used in Canada for nautical charts, resource management and topographic mapping; and internationally, for hydrographic applications.
10.	Minimum Requirements:	Na
11.	Input/output Formats:	Na
12.	Current Users:	Na
13.	References:	Na
14.	Training and Conferences:	Na

1.	Name of System:	ArcView, ArcInfo, ArcInfo GRID (raster)
2.	Contact:	Charles Convis, ESRI Conservation Program Coordinator
3.	Address:	Environmental Systems Research Institute 380 New York St., Redlands, CA, 92373, USA
4.	Telephone:	(909) 793-2853
5.	Facsimile:	(909) 793-5953
6.	Email:	cconvis@esri.com
7.	World Wide Web:	Web page: http://www.esri.com/
8.	Availability and Cost:	Contact ESRI
9.	Description:	The "industry standard" GIS. Spatial analysis, which brings almost all of ARC/INFO GRID functionality to the desktop. Proximity analysis, contouring/interpolation, density mapping, surface analysis, cell & neighborhood statistics, zonal overlay, and Boolean overlay are all available through the user interface, while watershed analysis (flow direction/drainage), cost-based distance analysis, geometric transformation, and morphological analysis are available through Avenue scripts.
10.	Minimum Requirements:	UNIX, Windows, Mac, and PowerMac

	Requirements:	
11.	Input/output Formats:	Contact ESRI
12.	Current Users:	Contact ESRI
13.	References:	na
14.	Training and Conferences:	Yes, contact ESRI

1.	Name of System:	MapGrafic
2.	Contact:	ComGrafic, Inc.
3.	Address:	620 E. Street,, Clearwater, FL, 34616, USA
4.	Telephone:	813-443-6807, 8500
5.	Facsimile:	na
6.	Email:	na
7.	World Wide Web:	na
8.	Availability and Cost:	See below.
9.	Description:	A powerful GIS system that supports many functions; about the only thing it doesn't seem to support is image processing (it requires a user relational data base). It uses a typical Mac user interface to make available many tools for digitizing and creating map layers. The program offers a bewildering variety of input and output formats; it can, for example, translate between ARC/INFO data base files and its own and will read data in standard USGS formats. Maps can be georeferenced according to a large number of projection models. Mapping options produce contour maps and a variety of base maps. It can take advantage of a network to provide distributed jobs linked to a central data base and calculates in the background under Multifinder.
10.	Minimum Requirements:	na
11.	Input/output Formats:	The program outputs graphic data to standard Mac printers and has its own plotter driver. MapLink (\$495) supports translation to other formats, Map View (\$495) permits coordinate changes and georeferencing and MapGraf Display(\$850) is run time viewer that allows full access to data but no modification.
12.	Current Users:	na
13.	References:	Na
14.	Training and Conferences:	na

1.	Name of System:	CAMRIS
2.	Contact:	Dr. R. Glenn Ford
3.	Address:	Ecological Consultants, Inc. 2735 NE Weidler St. Portland, OR 97232
4.	Telephone:	503-287-5173
5.	Facsimile:	503-230-3984
6.	Email:	eci@netcom.com
7.	World Wide Web:	Na
8.	Availability and Cost:	Na
9.	Description:	Computer Aided Mapping and Inventory Resource System (CAMRIS) was developed by ecologist Glenn Ford. Easy to learn yet robust - with a intensive 2 day training course one can be up and running. Currently in use through out Latin America and use is growing. CAMRIS is appropriate technology for developing nations, it is not designed to replace the high end ARC-Info setups, but simply allows a sustainable system to be in place.
10.	Minimum Requirements:	Na
11.	Input/output Formats:	When coupled with Advanced Revelation textual databases and a raster based GIS a very powerful system can emerge.

12.	Current Users:	Na
13.	References:	B.W. Miller & C. M. Miller (galljug@BTL.NET) Tropical Forest Planning Project, Belize Wildlife Conservation Society Founded 1895 as New York Zoological Society Mail: P.O. Box 37, Belize City, Belize, Central America Ph/Fax/Ans Mach. country code[501]-21-2002
14.	Training and Conferences:	na

1.	Name of System:	MAPINFO, .i.MapBasic, .i.SQL DataLink
2.	Contact:	Na
3.	Address:	MapInfo Corp. Troy, NY., USA
4.	Telephone:	(800) 552-2511, (518) 285-6000
5.	Facsimile:	(518) 285-6060
6.	Email:	Na
7.	World Wide Web:	http://web1.digital.net/~mapinfo/
8.	Availability and Cost:	MapInfo 3.0 is priced at \$1,295; an upgrade from the previous version is \$299. MapBasic 3.0 is priced at \$795; upgrades are \$199. SQL DataLink for Macintosh is available for \$595.
9.	Description:	MapInfo is targeted to business users who perform geographic data analysis. Features include, data-visualization and data-analysis. Raster image files, such as satellite images and aerial photographs, can be integrated into MapInfo files. MapBasic is a separate module that lets programmers build vertical mapping applications. Version 3.x lets developers perform remote database query and update operations, and link multiple MapInfo modules. MapInfo's SQL DataLink module lets users connect to and access data on Oracle or Sybase databases and use that information in MapInfo applications.
10.	Minimum Requirements:	na
11.	Input/output Formats:	na
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

5. Remote Sensing and Landscape Analysis Systems

1.	Name of System:	Dimple Image Analysis Tools 2.0
2.	Contact:	Process Software Solutions PTY LTD
3.	Address:	PO Box 2100 Wollongong, NSW 2500 Australia
4.	Telephone:	+61-42-261757
5.	Facsimile:	na
6.	Email:	na
7.	World Wide Web:	
8.	Availability and Cost:	Private single use license is \$2500, educational single-use license is \$1000, educational site license is \$4500 for 10 copies.
9.	Description:	Software for multispectral image processing, rectification and registration, and supervised and unsupervised classification. Has a variety of 8-bit and 24-bit image processing tools. Dimple comes with versions for Macs with and without FPU's. An internal Image Operation Language makes it easy to batch process files and perform complex multistep image processing. Internally supports images in RAM or off disk (to allow processing of very large scenes). Dimple is an image processing system designed to provide the powerful image analysis tools

that geoscientists require within an interactive and user-friendly interface. Dimple provides a comprehensive range of tools, including image analysis (histogram, cross plots, linear transect, statistical analysis); image enhancement (filters, sharpening, smoothing, contrast enhancement, pseudo-coloring); image registration & rectification (using ground control points or mathematical models); multispectral analysis (supervised and unsupervised classification, training area analysis, principal components, canonical analysis); image transformations (color composites, 3-D plots, contour modeling); and the ability for users to define new tools and use them in the same way as built-in ones. Dimple supports most common file formats, including ERDAS and microBRIAN, while a generic "foreign" format ensures that virtually all data sources can be imported directly. Dimple allows images, reports and cross plots to be copied and pasted into other applications to make producing reports or papers incredibly easy.

10. Minimum Requirements:	Macintosh or Power Macintosh Computer.
11. Input/output Formats:	Reads and writes ERDAS files.
12. Current Users:	na
13. References:	na
14. Training and Conferences:	na
1. Name of System:	ER-Mapper 5.0ER-Mapper 5.0
2. Contact:	Earth Resource Mapping
3. Address:	4370 La Jolla Village Drive Suite 900 San Diego, CA 92122
4. Telephone:	619-558-4709
5. Facsimile:	619-558-2657
6. Email:	na
7. World Wide Web:	http://www.ermapper.com
8. Availability and Cost:	US\$ 2.900 and Unix US\$ 14.900
9. Description:	Full remote sensing system for all aspects of land management.
10. Minimum Requirements:	Win 95/NT
11. Input/output Formats:	All major formats supported.
12. Current Users:	na
13. References:	na
14. Training and Conferences:	Contact Earth Resource Mapping.

1. Name of System:	PCI Ortho-Engine and .i.EASI/PACE
2. Contact:	PCI
3. Address:	
4. Telephone:	905-764-0614
5. Facsimile:	703-243-3705
6. Email:	sales@pci.on.ca
7. World Wide Web:	http://www.pci.on.ca
8. Availability and Cost:	Contact PCI
9. Description:	Raster processing software produces all-digital ortho photos from aerial photos or satellite imagery, ready to fit into GIS vector maps.
10. Minimum Requirements:	Windows 3.1, NT, OS/2 and Unix.
11. Input/output Formats:	na

12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	na

1.	Name of System:	Diversidad
2.	Contact:	Richard Podolsky
3.	Address:	Avian Systems Magnolia Ave. Tenafly, NJ 07607
4.	Telephone:	201-568-9494
5.	Facsimile:	201-568-6959
6.	Email:	podolsky@worldnet.att.net
7.	World Wide Web:	http://www.ideo.columbia.edu/~podolsky/
8.	Availability and Cost:	Contact Avian Systems.
9.	Description:	Diversidad Software, a scientific imaging application for the Macintosh and Power Macintosh measures diversity directly from aerial photographs, satellite imagery, and any digital earth image product. Diversidad applies the same information theory models, pioneered by Claude Shannon, that ecologists use to measure diversity in ecological system. Diversidad is a two step process. In step one, Diversidad calculates the diversity of a digital earth image. To do so, users specify the size of the sampling grid. Grid size can be between 9 and 961 pixels. Diversidad then calculates two values for each and every pixel in the image, actual diversity and the theoretical maximum diversity. The theoretical maximum diversity is used in step two in which Diversidad displays the results of step one. To display the results, users specify whether they want to see areas of high or low diversity as a function of the regions percent of the maximum diversity. Diversidad renders a new gray scale image of diversity that can be exported to a GIS.
10.	Minimum Requirements:	Color Macintosh, 8MB Ram
11.	Input/output Formats:	PICT File
12.	Current Users:	na
13.	References:	Podolsky, R. 1995. Biodiversity Prospecting From Digital Earth Imagery. Diversity, Vol. 11 No.4. 1995, pp 16-17.
14.	Training and Conferences:	Upon Request

1.	Name of System:	TEMS Database
2.	Contact:	Dr. John Innes
3.	Address:	WSL, Zuercherstrasse 111, CH-8903 Birmensdorf, Switzerland.
4.	Telephone:	+41 1 739 2216
5.	Facsimile:	+41 1 739 2215
6.	Email:	john.innes@wsl.ch (John Innes)
7.	World Wide Web:	http://www.wsl.ch/wsldb/gtos/gtos.html
8.	Availability and Cost:	Access is free through the www. For security reasons, not all data are freely available, and not all sites have given permission for their information to be openly available. A copy of the entire database is not available.
9.	Description:	meta-database for terrestrial monitoring sites designed for to show who is monitoring what and where - but only includes interdisciplinary sites. Biodiversity sites would only be included if other measurements (e.g. climate, water chemistry, soils) were also included. The database has been established as an ORACLE relational database. It has built in links to ARC-INFO. It is most easily accessed through Netscape.
10.	Minimum Requirements:	na
11.	Input/output	Data are input by hand from information submitted by site managers.

	Formats:	
12.	Current Users:	na
13.	References:	na
14.	Training and Conferences:	Contact addresses are given on the relevant pages of www. Improvements are being constantly made as a result of feedback from users. New data are being added continuously.

1.	Name of System:	National Wetlands Inventory
2.	Contact:	Project Leader: Bill Wilen (703) 358-2161 Technical Contact: Linda Shaffer (813) 570-5412
3.	Address:	US Fish and Wildlife Service National Wetlands Inventory 9720 Executive Center Drive St. Petersburg, FL 33702
4.	Telephone:	(813) 570-5412
5.	Facsimile:	(813) 570-5420
6.	Email:	bill_wilen@mail.fws.gov (Bill Wilen) linda@wetlands.nwi.fws.gov (Linda Shaffer)
7.	Internet	ftp 192.189.43.33 http://www.nwi.fws.gov
8.	Availability and Cost:	Digital wetlands data in Digital Line Graph (DLG3-Optional) format are available free of charge via anonymous ftp. Data can be ordered in other formats (ARC Export, GRASS, MOSS, DXF) for delivery on magnetic media by calling 1-800-USA-MAPS. Cost is \$93.50 order charge plus \$7 per 7.5' quad. Approximately 18,000 quads of digital data are available covering approximately 25% of the U.S.
9.	Description:	US Fish & Wildlife Service, National Wetlands Inventory project. Digital wetlands location information. Digital wetlands classification information as defined by the Cowardin et al. Classification of Wetlands and Deep water Habitats. Data are suitable for use with GIS software.
10.	Minimum Requirements:	GIS software: ARC View, ARC/INFO, MapInfo, GRASS, MOSS CAD software: Autocad Minimum: Average digital wetlands file (1 quad) size is 4 megabytes. You must have storage capacity to handle whatever your project area covers.
11.	Input/output Formats:	Input: NWI collects data in Wetlands Analytical Mapping System (WAMS) format. Output: DLG3-Optional, ARC Export, MOSS, GRASS, DXF
12.	Current Users:	GIS users from all levels of government, academia, private enterprise. Digital wetlands data are used by natural resource planners, land use planners, developers, and biologists.
13.	References:	na
14.	Training and Conferences:	Contact Publisher

1.	Name of System:	StreamNet
2.	Contact:	The Northwest Aquatic Resource Information Network Project Manager: Stan Allen Regional Data Manager: Duane Anderson
3.	Address:	Pacific States Marine Fisheries Commission 45 SE 82nd Dr., Suite 100 Gladstone, OR 97027
4.	Telephone:	503-650-5400
5.	Facsimile:	503-650-5426
6.	Email:	stan_allen@psmfc.org : Stan Allen duanea@psmfc.org (Duane Anderson)
7.	Internet	ftp.psmfc.org : ftp site www.streamnet.org
8.	Availability and Cost:	Current data available through PC Windows interface (currently about 80mg) or direct inquiries at no cost. The system can be downloaded from our WEB site or mailed on request.
9.	Description:	StreamNet is a regional aquatic information system covering the Pacific NW states of ID, OR, MT, and WA. The focus is on anadromous fish information including long term trends of

		spawner abundance, dam counts, hatchery returns, hatchery releases, harvest, and habitat factors including spawning habitat, downstream and upstream passage conditions, and estuary and ocean habitat. Most data sets are geographically coded using the EPA's River Reach file allowing data to be imported into GIS systems.
10.	Minimum Requirements:	Currently, data is available through a Windows based application (StreamNet Distributed System) that runs on 386 or better processors with a minimum of 4mg ram and at least 100mg of free disk space. No additional software is required.
11.	Input/output Formats:	Data is provided by participating State, Federal, and Tribal organizations through a series of consistent data exchange formats designed by the StreamNet Steering Committee. Output formats are very flexible - the Distributed System allows for dBase outputs, ascii formats, and HTML format. Others are available on request.
12.	Current Users:	There are approximately 150 users of the Distributed System at this time.
13.	References:	Nearly every data point in the system is associated with a bibliographic citation. StreamNet maintains a library of these references and they are available on request. The system has not been peer reviewed.
14.	Training and Conferences:	Training is available on request.

1.	Name of System:	Coral Cay Conservation (CCC) database.
2.	Contact:	Alastair Harborne, Science Coordinator
3.	Address:	Coral Cay Conservation Ltd. 154 Clapham Park Road London, SW4 7DE, UK.
4.	Telephone:	+44 (0)171 498 6248
5.	Facsimile:	+44 (0)171 498 8447
6.	Email:	ccc@coralcay.demon.co.uk
7.	World Wide Web:	http://www.demon.co.uk/coralcay/home.html
8.	Availability and Cost:	It is not commercially available.
9.	Description:	CCC is an independent, non-profit making organization that utilizes divers to carry out baseline surveys in Belize, the Philippines and Indonesia. Divers carry out plot-less transect work to enable the production of resource maps to enable the establishment of marine protected areas. The data collected by CCC volunteers (ordinal abundance data) is held in a PC based database. This database is based on dBASE IV files with entry screens written in Visual C within a windows environment. The database has equivalent fields to those on the specially designed recording forms and includes a series of validation checks and prompts.
10.	Minimum Requirements:	386 PC or higher and windows v3.1
11.	Input/output Formats:	The database has been designed to be compatible with ARC/Info GIS for production of resource maps.
12.	Current Users:	
13.	References:	CCC's survey techniques were reviewed in the Bull. Mar. Sci. 56(3):737-751.
14.	Training and Conferences:	na

1.	Name of System:	TUSAP-GIS
2.	Contact:	Uygar and Stacy L. Ozesmi
3.	Address:	The MacArthur Interdisciplinary Program on Peace and International Cooperation University of Minnesota 214 Social Sciences Building 267 19th Avenue So. Minneapolis MN 55455
4.	Telephone:	(614) 292 6792
5.	Facsimile:	(614) 292 9773
6.	Email:	uozesmi@magnus.acs.ohio-state.edu
7.	World Wide Web:	http://\kh465a.ag.ohio-state.edu\user\ozesmi.html
8.	Availability and Cost:	At media and postage cost upon request, needs to be referenced and credit

	Cost:	given to the creators when used or published.
9.	Description:	TUSAP-GIS = Turkiye Sulak Alanlar Projesi - Geographic Information System. Point shape vector GIS on Turkish wetland ecosystems. Includes queries on the following attributes: location, province, altitude, wetland minimum and maximum area, depth, surrounding landuse, economic activities, threats, protection status, Ramsar classification, Ramsar status, importance, endangered species, endemic species, bird use, bird use numbers, bird species list. Hotlinks to detailed map of area and images of wetland.
10.	Minimum Requirements:	Needs ArcView 2.1 for GIS. If users do not have a GIS, they can use FilemakerPro 3.0 for the attribute tables.
11.	Input/output Formats:	Input: DBF file for GIS. Any delimited text files or spreadsheet files for FilemakerPro. Image files of any format such as TIFF, PICT, etc. Output: Maps, graphs, charts, and images in PICT and TIFF. Attribute tables as DBF or tab-delimited text.
12.	Current Users:	Society for the Protection of Nature in Turkey (DHKD)
13.	References:	The system will be presented at the Society for Wetland Scientists meeting in Kansas City June 10-14, 1996.
14.	Training and Conferences:	Training not necessary. Very simple to use with background in ArcView or FilemakerPro. Introductory slide show included in package.

ANNEX V - METADATA DEVELOPED

El Salvador – MARN (208 metadatos)

1.	“Agricultura Sostenible en Zonas de Ladera”: Mapas digitales
2.	El Salvador Aquaculture Feasibility Final Report
3.	Legislación y administración de aguas en El Salvador
4.	Mapa digital: Uso potencial del suelo (Mapa agrológico)
5.	Monitoreo de la calidad de los recursos hídricos en las cuencas de los ríos Sucio y Acelhuate y protección de márgenes del Río Sucio. Modelo, drenaje y vulnerabilidad
6.	Investigación Aplicada Sobre el Impacto Ambiental de la Contaminación del Agua en las Cuencas de los Ríos Sucio, Acelhuate y Cuaya
7.	Agro Ecología. Apuntes sobre la práctica y la teoría de una agroecología sostenible
8.	Análisis de situación y propuesta de asistencia técnica para el co-manejo del área protegida de Nancuchiname Bajo Lempa - El Salvador - Documento de trabajo
9.	Análisis de situación y propuesta de asistencia técnica para el co-manejo del área protegida de Nancuchiname Bajo Lempa - El Salvador - Documento de trabajo
10.	Monitoreo de la Calidad de los Recursos Hídricos en las Cuencas de los Ríos Sucio y Acelhuate, y Protección de Márgenes del Río Sucio, modelo, drenaje, vulnerabilidad
11.	Mapa digital: Capacidad de uso de la tierra de El Salvador, clasificación USDA
12.	Mapa digital: Uso del suelo (1996)
13.	Apuntes sobre la calidad de las aguas de uso potable
14.	Caracterización de algas, protozoos e insectos acuáticos presentes en las comunidades plantónicas y bentónicas en las aguas del río Chaguite (afluente del lago de Ilopango), El Salvador
15.	El Desafío Salvadoreño: De la paz al desarrollo sostenible
16.	Investigación aplicada sobre el impacto ambiental de la contaminación del agua en las cuencas de los ríos Sucio, Acelhuate y Coaya
17.	Recopilación y análisis de leyes relacionadas con el medio ambiente
18.	REVISTA . Departamento de Química Agrícola de la Facultad de Ciencias Agronómicas de la Universidad de El Salvador
19.	Análisis de situación y propuesta de asistencia técnica para el co-manejo del área protegida de "Nancuchiname", bajo Lempa, El Salvador - Documento de Trabajo
20.	Algunos aspectos biológicos sobre madurez sexual en poblaciones de "concha negra" Anadara tuberculosa y "curil" Anadara similis, del estero de la Barra de Santiago
21.	Evaluación del estado de la contaminación de los recursos hídricos superficiales de la cuenca de la Barra de Santiago / El Imposible
22.	Evaluación de los recursos agua de la República de El Salvador
23.	Ley del medio ambiente
24.	Apuntes sobre la calidad de las aguas negras
25.	Mapa digital: División administrativa cantonal
26.	Levantamiento y Mapeo de Índices de Sensibilidad Ambiental de la Línea Costero - Marino entre las Desembocaduras de los Ríos Paz, Lempa y Goascoran de El Salvador
27.	Mapa digital: División Administrativa Departamental
28.	Tenencia de Fauna Silvestre en El Salvador
29.	Unidades de manejo en once microcuencas (identificación y mapeo de áreas críticas)
30.	Proyecto sobre bases para la interpretación y uso turístico de áreas silvestres y conservación del medio ambiente del parque nacional "Las Brumas"

31.	Avian Diversity at El Imposible National Park and San Marcelino Wildlife Refuge, El Salvador
32.	Aves del complejo El Jocotal
33.	"Diagnóstico Pesquero", El Salvador
34.	Estudio de sitio en parcelas demostrativas en el área natural protegida de Colima, de la situación socioeconómica y del uso del suelo en las comunidades aledañas
35.	Inventario de aves marinas de la costa salvadoreña
36.	Inventario preliminar de los peces de agua dulce, estuarinos y cartilagosos de El Salvador, América Central # 10
37.	Mapa digital: Mapa pedológico El Salvador
38.	Plan de manejo del área natural silvestre de Nancuchiname
39.	Investigación para potabilizar las aguas del lago de Ilopango
40.	Mapa digital: Sistema Nacional de Áreas Naturales Protegidas
41.	Mapa digital: Tipos de cultivos
42.	Agricultura Sostenible en Zonas de Ladera – El Salvador. Resultados del diagnóstico participativo
43.	Agronomía (Revista)
44.	Lista actualizada de la avifauna presente en el Jardín Botánico La Laguna
45.	Clasificación de los principales cuerpos de agua de El Salvador, en base al grado de contaminación que presentan
46.	Proyecto de conservación de la tortuga marina en la Barra de Santiago
47.	Mapa digital: Corredor biológico
48.	Mapa digital: Cuencas hidrográficas
49.	Mapa digital: Infraestructura de caminos
50.	Manual de aves de El Salvador
51.	Mapa digital: Cobertura vegetal y suelos de El Salvador
52.	Mapa digital: Mapa de paisajes, con base en la geología y periodo de Crecimiento
53.	El Salvador: Perfil ambiental, estudio de campo
54.	Perfil ambiental de la región metropolitana de San Salvador
55.	Propuesta de política de los recursos hídricos. Borrador para discusión
56.	Vegetación de la Reserva Natural de El Amatal, San Diego, La Libertad
57.	Sistema Salvadoreño de Áreas Protegidas - Marco conceptual y metodología
58.	Bases dasonómicas para la conservación y recuperación de un área boscosa, en Miramundo, La Palma, Chalatenango
59.	Investigación y análisis preliminar de la fauna vertebrada y la flora del Área Natural de San Juan Buenavista.
60.	Características morfológicas - parataxonómicas y claves de identificación para la clase aves
61.	Mapa digital: Curvas a nivel cada 100 metros sobre el nivel del mar
62.	Estudio Climático de datos meteorológicos mensuales para llegar a una zonificación agroclimática
63.	Diagnóstico ambiental del municipio de El Divisadero, Departamento de Morazán
64.	Evaluación del sector agua potable y saneamiento. Informe preliminar
65.	Guía ilustrada de algunos poliquetos (Anélida y Polichaeta) de Solymar, La Libertad, El Salvador
66.	Inventario preliminar de arañas del Parque Nacional El Imposible
67.	Mapa digital: Mapa base de El Salvador
68.	Mapa digital: Cobertura vegetal y suelos de El Salvador
69.	Mapa digital: Mapa de precipitación promedio anual de El Salvador
70.	Recursos acuáticos del complejo El Jocotal
71.	Revista AGER: Organo divulgativo del departamento de Fitotecnia. Facultad de Ciencias Agronómicas. Universidad de El Salvador
72.	Ríos y quebradas principales

73.	Marco conceptual y metodológico - Sistema de áreas protegidas
74.	Mapa digital: Mapa de temperatura promedio anual de El Salvador
75.	Mapa digital: Mapa de evapotranspiración potencial de El Salvador
76.	Mapa digital: Modelo Digital de Terreno (MDT) de El Salvador
77.	Alternativas de manejo integral del área boscosa de la Cooperativa Santa Anita. Mercedes Umaña, Usulután
78.	Resultado por cantón de la caracterización biofísica del proyecto "Agricultura sostenible en zonas de ladera"
79.	Determinación de la capacidad de regeneración natural de cuatro especies en el manglar de "El Amatal" y prueba de germinación
80.	Mapa digital: Mapa de evapotranspiración potencial de El Salvador
81.	Manual de especies de fauna silvestre sujetas a decomiso
82.	Composición florística del cerro El Aguila, Santa Ana, El Salvador, Centro América
83.	Formulación de la estrategia nacional, Plan de acción y Primer informe del país sobre la diversidad biológica
84.	Inventario preliminar de los crustáceos marinos y de agua dulce en El Salvador
85.	Mapas digitales: Vulnerabilidad a desastres en El Salvador
86.	Zonificación del Parque Nacional Walter Thilo Deininger, de acuerdo a la perturbación de la vegetación y alternativas de recuperación
87.	Mapa digital: Mapa geológico nacional de la misión geológica alemana y CEIG, 1974
88.	Anfibios y reptiles del complejo El Jocotal
89.	Aves de la finca El Espino: Un cafetal con sombra
90.	Condiciones ambientales del basurero de Nejapa. Resultado de la investigación de agua, aire y suelo en la zona del botadero
91.	Proyecto Corredor Biológico Mesoamericano - PNUD/GEF
92.	Diagnóstico ambiental en el medio costero marino de la zona de Acajutla
93.	Diagnóstico del sector forestal y estrategias para su desarrollo
94.	Lista preliminar de plantas salvadoreñas amenazadas de extinción, El Salvador, América Central
95.	Normas para calidad de agua potable
96.	Estimating The Total Economic Value of Mangrove Ecosystem in El Salvador
97.	Análisis dasonómico del bosque El Imposible, Ahuachapán
98.	Biología y evaluación del cangrejo de agua dulce (<i>Pseudothelphusa magna</i>) del Lago de Coatepeque
99.	Caracterización de las áreas seleccionadas para el subcomponente: Rehabilitación de tierras degradadas
100.	Primer congreso nacional de cultivo in vitro de tejidos vegetales. Memoria
101.	Diagnóstico ambiental del municipio de Jocoro, departamento de Morazán
102.	Educación ambiental en escuelas del complejo El Jocotal
103.	Introducción al estudio de los insectos de la familia Cicadellidae (Orden Homóptera) en El Salvador, con énfasis en la taxonomía de sus Géneros
104.	Ley de conservación de vida silvestre
105.	Estudio de algunos factores fisicoquímicos que influyen en la diversidad de las especies de la macrofauna bentónica del estuario El Tamarindo
106.	Marco conceptual y metodológico: Sistema de áreas protegidas
107.	Política de áreas protegidas
108.	Restricciones para el desarrollo del sector forestal en El Salvador
109.	Zonificación agroecológica, metodología y estrategias
110.	Algunas aves residentes y visitantes del Parque Saburo Hirao
111.	Cien aves de El Salvador
112.	Aves del Parque Nacional Walter Thilo Deininger, Departamento de La Libertad
113.	Catálogo de nidos y huevos
114.	Descripción e importancia de las especies arbóreas del cerro de Las Pavas

115.	Estudio hidrogeológico de la subcuenca del Río Acapa, afluente del Río Comalapa, La Paz
116.	Investigación botánica en el área del Parque Nacional El Imposible. Ahuachapán, El Salvador
117.	La situación ecológica de El Salvador en cifras
118.	Arboles de Parque Nacional Walter Thilo Deininger
119.	Escenarios de cambio climático para evaluación de impactos en El Salvador
120.	Catálogo de la colección malacológica del Museo de Historia Natural de El Salvador
121.	Introducción al conocimiento etnobotánico en San Luis La Herradura, Departamento de La Paz, El Salvador
122.	Introducción al estudio de los insectos de la familia Cicadellidae (orden Homóptera) en El Salvador, con énfasis en la taxonomía de sus géneros
123.	Inventario nacional de gases de efecto invernadero (resumen ejecutivo)
124.	Lista preliminar de las libélulas de El Salvador
125.	Prevención y combate de incendios forestales
126.	Principales plantas medicinales utilizadas en los municipios de Santa Ana, Coatepeque, Chalchuapa y Texistepeque, Departamento de Santa Ana, El Salvador
127.	Rediseño del componente costero del área demostrativa de la Barra de Santiago
128.	Sea Turtles of El Salvador
129.	Mapa digital: Zonas de vida
130.	Notas sobre la biología de lepidópteros en El Salvador
131.	Desarrollo agrícola integrado de la cuenca del Río Jiboa, en la República de El Salvador
132.	Estudio preliminar de la diversidad de camarones y peces del estero de San Diego, El Salvador
133.	El Salvador: Degradación y perspectiva de manejo de los recursos naturales renovables
134.	Especies nectaríferas con importancia apícola en tres áreas de la República de El Salvador
135.	Guía para el levantamiento biofísico simplificado de microcuencas
136.	Propuesta de plan de manejo de los recursos naturales de la cuenca del lago de Ilopango
137.	Manejo de la Fertilidad del suelo en zonas de ladera (Manual del capacitador)
138.	Peces marinos de Los Cóbanos
139.	Plantas útiles del complejo El Jocotal
140.	Contribución al conocimiento reproductivo de cuatro especies de tiburones reportados en El Salvador
141.	Pankia. Boletín informativo / Cuscatlanía. Revista ocasional
142.	Tropical plants in El Salvador
143.	Vegetación arbórea del bosque nebuloso de Montecristo
144.	Estudio de la Distribución y Abundancia de Macromicetes en el Volcán de Conchagua, Departamento de La Unión
145.	Ecología salvadoreña
146.	Estudio hidrogeológico de la sub-cuenca de las quebradas: La Jutera, Quiomalapa, La Sierpe y Tecualuya, en el Departamento de La Paz
147.	Folletos informativos sobre los recursos naturales del complejo El Jocotal
148.	Lista preliminar de las mariposas de El Salvador, primera etapa: Lepidoptera
149.	Orquídeas de El Salvador
150.	Plan General de Manejo para el Parque Nacional Walter Thilo Deininger
151.	Vegetación acuática del refugio de vida silvestre laguna El Jocotal. Departamento de San Miguel, El Salvador
152.	La vegetación arbórea del Pedregal de San Isidro, un análisis florístico y cuantitativo
153.	Descripción botánica, análisis fitoquímico preliminar y bromatológico de <i>Machaerium riparium</i> y <i>Martynia annua</i> conocidas bajo el nombre común de "uña de gato" en El Salvador
154.	Vegetación arbórea del Pedregal de Las Lajas, Refugio de Vida Silvestre del complejo San Marcelino, Sonsonate, El Salvador

155.	Los bosques de El Salvador
156.	Plan de Manejo del Cerro de Las Pavas
157.	Observation on the White-bellied chachalaca (<i>Ortalis leucogastra</i>)
158.	La clase insecta en El Salvador. Guía ilustrada de los principales órdenes y familias
159.	Convenio para la conservación de la biodiversidad y protección de áreas silvestres, América Central
160.	Diccionario Geográfico de El Salvador
161.	Estudio nacional sobre la diversidad biológica marina y costera en El Salvador. Propuesta para declarar un área protegida.
162.	Evaluación de residuos orgánicos como sustrato para la propagación masiva de especies forestales
163.	Especies útiles de la flora salvadoreña
164.	Frecuencia de Plantas Parásitas en los Principales Parques y Plazas del Area Urbana de la Ciudad de San Salvador
165.	Inventario preliminar de moluscos marinos de la costa de El Salvador
166.	Registro de especies de orquídeas a tres gradientes de altitud en la zona Nor-Oriente del lago de Ilopango.
167.	Plan de manejo a largo plazo en el área del Parque Nacional El Imposible
168.	Plan de ordenación y desarrollo pesquero
169.	Plantas ictiotóxicas y sus propiedades medicinales
170.	Políticas de recursos naturales renovables
171.	La reforestación para la producción maderera en El Salvador
172.	Mapa digital: Ríos de El Salvador
173.	Supervivencia o extinción, el dilema de nuestra fauna
174.	Tipos de vegetación de El Salvador y su estado actual
175.	Descripción de la vegetación arbórea nativa y naturalizada en peligro de extinción de la zona caliente del municipio de San Miguel. Departamento de San Miguel, El Salvador.
176.	Estudio sobre la biota (flora y fauna) acuática del Lago de Ilopango
177.	Catálogo de coleópteros de la colección de entomología
178.	Estudio de la diversidad y dominancia de la vegetación arbórea en cuatro zonas del cerro de Las Pavas
179.	Frecuencia de plantas parásitas en los principales parques y plazas del área urbana de la Ciudad de San Salvador
180.	The Limnology of lakes Ilopango and Coatepeque El Salvador (Annual Report)
181.	Registro de especies de orquídeas a tres gradientes de altitud en la zona Nor-Oriente del Lago de Ilopango
182.	Investigación sobre plaguicidas naturales (Piretrinas en la flora salvadoreña)
183.	Prontuario de términos técnicos, siglas y abreviaturas utilizadas en la Dirección General de Recursos Naturales Renovables
184.	Protección vegetal
185.	Diagnóstico socioeconómico ambiental del Parque Santa Clara
186.	Diccionario ecológico
187.	Especies para el establecimiento de cercas vivas, en áreas desprotegidas en el Parque Nacional Walter Thilo Deininger
188.	Etnomicología en El Salvador
189.	Estudio comparativo entre la flora fúngica del Parque Nacional Walter Thilo Deininger y Cerro Verde
190.	La hidrología en El Salvador
191.	Inventario de la flora fanerogámica del cráter del volcán de San Salvador
192.	Listado oficial de especies de flora y fauna amenazada y en peligro de extinción
193.	Mapa ecológico de El Salvador. Memoria explicativa
194.	Plan nacional de manejo en los manglares

195.	Plantas alimenticias no comunes de uso tradicional de la comunidad indígena del municipio de Panchimalco. Departamento de San Salvador
196.	El bambú - Propagación y usos
197.	Guía para el estudio de familias de Cangrejos (crustáceos y decápodos) de El Salvador
198.	Hongos salvadoreños. Parte I
199.	Plan preliminar de manejo para el parque nacional Cerro Verde, República de El Salvador
200.	Contribución al conocimiento de las tortugas dulceacuícolas en el Departamento de San Miguel
201.	Decreto de declaración área natural protegida La Laguna El Jocotal
202.	Flora y fauna
203.	Flora Salvadoreña
204.	Algunos hongos de la ciudad universitaria
205.	Estado de los mamíferos marinos en El Salvador: Especies probables y confirmadas
206.	Biología reproductiva del "punche" (<i>Ucides occidentalis</i>) en la Bahía de Jiquilisco, Departamento de Usulután
207.	Inventory of the Flora of Walter Thilo Deininger National Park
208.	Incendios Forestales y Agrícolas en Centro América. Balance 1998

Guatemala – CONAMA (100 metadatos)

1.	Documento: Capítulo 2. El hábitat acuático del Parque Nacional Laguna del Tigre, Petén, Guatemala.
2.	Documento: Estudio de la composición florística de las cimas de los volcanes Acatenango, Agua, Atitlán, Fuego, Santa María, Santo Tomás Pecul y Tacaná en Guatemala.
3.	Documento: Capítulo 3. Las comunidades acuáticas macrófitas del Parque Nacional Laguna del Tigre, Petén, Guatemala.
4.	Documento: Informe 1998, Consejo Nacional de Cambio Climático, Guatemala.
5.	Documento: Capítulo 6. Una evaluación rápida de la diversidad de avifauna en hábitats acuáticos del Parque Nacional Laguna del Tigre, Petén, Guatemala.
6.	Documento: Legislación Agraria Vigente en Guatemala.
7.	Documento: Variación día/noche en la composición y abundancia de peces asociados a pastos marinos en la costa atlántica, Guatemala.
8.	Documento: Monografía Catastral de Santa Cruz Verapaz, Alta Verapaz, Guatemala.
9.	Documento: Grado de cumplimiento de los Tratados Ambientales Internacionales por parte de la República de Guatemala.
10.	Diagnóstico sobre regulaciones jurídicas relativas al manejo y aprovechamiento de la diversidad biológica, en especial al acceso de los recursos genéticos y formas de compartir sus beneficios. Caso Guatemala.
11.	Documento: Detección y cuantificación de sustancias químicas, para índices de contaminación de aguas superficiales de Atitlán, Guatemala.
12.	Documento: Análisis de muestreo de poblaciones de nemátodos en el género Pinus en viveros de la Dirección General de Bosques, Guatemala.
13.	Documento: Inventario de los pelecípodos de la costa atlántica de Guatemala con énfasis en especies comestibles.
14.	Documento: Estudio del dosel de la selva nublada del Biotopo del Quetzal Mario Dary en Guatemala.
15.	Documento: Evaluación del hábitat disponible para la guacamaya roja (<i>Ara macao</i>) en Petén, Guatemala.
16.	Documento: Evaluación de fluctuaciones poblacionales de aves en Manchón Guamuchal, San Marcos - Retalhuleu, Guatemala
17.	Documento: Estudio de algunos parámetros físico-químicos del ecosistema estuarino y su relación con el desarrollo del <i>Rhizophora mangle</i> en el manglar Las Lisas, Guatemala.
18.	Documento: Propuesta de plan de manejo de Caiman (<i>Caiman crocodylus</i>) en cautiverio para la reserva natural de Monterrico, Guatemala.
19.	Documento: Capítulo 7. La herpetofauna del Parque Nacional Laguna del Tigre, Petén, Guatemala; con énfasis en las poblaciones del cocodrilo Moreleti (<i>Crocodylus moreletii</i>).
20.	Documento: Preferencias alimenticias del faisán o pajuil <i>Crax rubra</i> en condiciones naturales en Guatemala.
21.	Documento: Contribución al estudio de las algas marinas macroscópicas del Atlántico de Guatemala.
22.	Documento: Caracterización de la avifauna y estimación de las densidades poblacionales relativas de 54 especies de aves en Carmelita, San Andres, Petén, Guatemala.
23.	Documento: Caracterización biológica y pesquera de las especies de pargo (<i>Lutjanidae</i>) capturadas por la pesca industrial y artesanal en el litoral del Pacífico de Guatemala.
24.	Documento: Evaluación de las comunidades de aves acuáticas presentes en el refugio de vida silvestre Bocas del Polochic, Guatemala.
25.	Efecto de la tasa de alimentación sobre el crecimiento del camarón <i>Penaeus</i> sp.
26.	Documento: Estudio preliminar de endoparásitos macroscópicos gastrointestinales de <i>Agouti</i> paca silvestres en el área de Uaxactún.
27.	Documento: Comparación y caracterización preliminar de tres etapas sucesionales de bosque secundario, en campos abandonados después de cultivar maíz en la Reserva de la Biósfera Maya, Guatemala.
28.	Documento: Estudio ecológico de las comunidades de <i>Bucida macrostachya</i> en el bosque muy seco de Guatemala.
29.	Documento: Análisis multielemental por reflexión total de rayos X en tejido muscular de lobina <i>Micropodus salmoides</i> y guapote <i>Cichlasoma managuense</i> en la aldea Chichoj, San Cristóbal Verapaz, Alta Verapaz, Guatemala.

30.	Documento: Ecología poblacional del ratón espinoso de bolsas <i>Heteromys desmarestianus</i> , en el parque nacional Tikal, Petén, Guatemala.
31.	Documento: Análisis de políticas y competencias institucionales sobre biodiversidad contenidas en la legislación guatemalteca.
32.	Documento: Reconocimiento ecológico del recurso natural del área propuesta Medio Monte como jardín botánico en Guatemala.
33.	Documento: Comparación de algunos parámetros fisicoquímicos y bacteriológicos en las microcuencas Pansalic y Pancocha en época seca y lluviosa en Guatemala.
34.	Documento: Propuesta de un programa de actividades de educación ambiental para el Museo de Historia Natural de la Escuela de Biología de la Universidad de San Carlos de Guatemala.
35.	Documento: Las comunidades de Quirópteros en los volcanes Zunil, Santo Tomás Pecul, Quetzaltenango, Guatemala.
36.	Documento: Estudio reproductivo y etnobotánico del esquisuchil, <i>Bourreria huanita</i> en la Antigua Guatemala y pueblos vecinos.
37.	Documento: Colecta, clasificación y distribución de las especies de gasterópodos en la Costa Atlántica de Guatemala
38.	Documento: Estimación de la distribución y el tamaño poblacional del manatí <i>Trichechus manatus</i> en Guatemala.
39.	Documento: Caracterización de la actividad pesquera artesanal desarrollada en el municipio de San José, Escuintla, Guatemala.
40.	Documento: Caracterización de la Ictiofauna con importancia alimenticia de los ríos San Pedro y Sacluc en el área de influencia de la estación biológica Las Guacamayas, Petén, Guatemala.
41.	Documento: Evaluación de la riqueza de especies del dosel y del sotobosque en la estación Biológica Las Guacamayas, Parque Nacional Laguna del Tigre, Petén, Guatemala.
42.	Documento: Capítulo 9 Las hormigas (Hymenoptera; Formicidae) del Parque Nacional Laguna del Tigre, Guatemala.
43.	Documento: Determinación de la homogeneidad del bosque en el área del monitoreo biológico en la cooperativa Bethel, La Libertad, Petén, Guatemala.
44.	Documento: Principios anatómicos de la absorción de agua en bromélias epífitas de El Rancho, El Progreso en Guatemala.
45.	Documento: Estudio preliminar y caracterización de ectoparásitos y hemoparásitos presentes en saurios de los géneros <i>Anolis</i> y <i>Sceloporus</i> .
46.	Documento: Caracterización ecológica de la herpetofauna del parque Nacional Sierra del Lacandón, Guatemala.
47.	Documento: Determinación preliminar de los hábitos alimenticios de tres especies de cíclidos (Cichlidae) del río Creeke Jute por medio de análisis de contenidos estomacales, Guatemala.
48.	Documento: Evaluación de la actividad de cacería en tres comunidades de Tres Volcanes y ensayo del sistema de cacería propuesto por el Consejo Nacional de Areas Protegidas (CONAP) en Guatemala.
49.	Documento: Análisis de la asociación de manglar en Manchón, San Marcos, Guatemala.
50.	Documento: Diseño de un sendero interpretativo, histórico natural, para la finca Bulbuxyá, San Miguel Panán, Suchitepequez, Guatemala.
51.	Documento: Capítulo 4. Estudio ictiológico del Parque Nacional Laguna del Tigre, Petén, Guatemala.
52.	Documento: Situación actual y propuesta de plan de manejo para <i>Crocodylus moreletii</i> en el área de influencia de la estación Biológica Las Guacamayas, "Parque Nacional Laguna del Tigre, Petén, Guatemala.
53.	Documento: Contribución al conocimiento de aspectos biológicos de <i>Cichlasoma trimaculatum</i> y <i>C. macracantum</i> , mojarra roja y mojarra negra.
54.	Documento: Plan de interretación del Biotopo Cerro Cahuí, Guatemala.
55.	Documento: Análisis estructural de la vegetación arbórea y sotobosque del Parque Nacional Laguna del Tigre, Petén, Guatemala.
56.	Documento: Determinación de la toxicidad aguda de la melaza sobre <i>Dormitator latifrons</i> por medio de bioensayos.
57.	Documento: Distribución, abundancia e identificación de los líquenes foliosos de las lagunas del Biotopo Chocon Machacas, Guatemala.
58.	Documento: Fenología reproductiva de 14 especies preferidas para alimentación por fauna cinegética en el

	bosque húmedo tropical del Parque Nacional Tikal, Guatemala.
59.	Contaminación de Hidrocarbón y daño de DNA en los peces del Parque Nacional Laguna del Tigre, Petén, Guatemala.
60.	Documento: Situación de aprovechamiento comercial de la iguana verde y su estructura legal en Guatemala.
61.	Documento: Evaluación preliminar de los parques nacionales declarados en Guatemala y su clasificación en las categorías correspondientes.
62.	Documento: Determinación de mamíferos por medio de sus rastros en el Biotopo Chocon Machacas, Izabal, Guatemala.
63.	Documento: Análisis comparativo en el cultivo de ostión de manglar <i>Crassostrea rhizophorae</i> en Guatemala.
64.	Documento: Capítulo 1. Introducción a la expedición RAP al Parque Nacional Laguna del Tigre, Petén, Guatemala.
65.	Documento: Aproximación a la ecología del pantano de Confra del Caribe Guatemalteco.
66.	Documento: Contribución al estudio de las cactáceas del departamento de El Progreso, Guatemala.
67.	Documento: Influencia de la temperatura y la salinidad en la distribución y la abundancia de postlarvas de <i>Penaeus</i> sp. en el canal de Chiquimulilla, Guatemala.
68.	Documento: Efectos hemorrágicos y mionecróticos de los venenos de serpientes guatemaltecas.
69.	Documento: Diversidad de mamíferos menores en cuatro bosques nubosos del núcleo de Centroamérica.
70.	Documento: Diseño de un programa de monitoreo biológico a lo largo del plazo mostrado a través de un estudio de caso: El corte selectivo del bosque en la cooperativa Bethel, La Libertad, Petén, Guatemala.
71.	Documento: La Fauna Silvestre de Guatemala.
72.	Documento: Propagación in vitro de tres variedades de caña de azúcar <i>Saccharum</i> sp. a partir de ápices en medio líquido en Guatemala.
73.	Documento: Efecto de la desnutrición proteínica calórica y del fenobarbital sobre la actividad de las glutatión S-transferasas en ratas.
74.	Documento: Efecto de la velocidad de la corriente sobre la microdistribución de larvas de <i>Simulium ochraeum</i> y <i>S. horacioi</i> en su hábitat, Guatemala.
75.	Documento: Distribución espacial de Iguana verde (<i>Iguana iguana</i>) en la vegetación de manglar de Monterrico, Taxisco, Guatemala.
76.	Documento: Utilización de un método geoestadístico para estimar distancias mínimas de trampeo y patrones espaciales en Scarabaeinae en Guatemala.
77.	Documento: Diagnóstico del uso de la tierra de los recursos forestales en el municipio de Zunil, Quetzaltenango, Guatemala.
78.	Documento: La Flora Silvestre de Guatemala.
79.	Documento: Extracción y purificación de la papaína a partir del látex de <i>Carica papaya</i> de Guatemala.
80.	Documento: Caracterización etnozoológica de la actividad de cacería en la comunidad de Uaxactún, Petén, Guatemala.
81.	Documento: Depredación de larvas y pupas de mosca del mediterráneo <i>Ceratitis capitata</i> por hormigas en un cafetal en la Fca. San Julián, Guatemala.
82.	Documento: estudio semidetallado de los suelos del Biotopo Universitario del Quetzal Mario Dary, Guatemala.
83.	Documento: Pruebas de mortalidad en camarones <i>Penaeus</i> producida por melaza.
84.	Documento: Estudio etnobotánico de 7 comunidades de la reserva de Biosfera Sierra de las Minas; Guatemala; con énfasis en plantas medicinales.
85.	Documento: Capítulo 8. La fauna mamífera del Parque Nacional Laguna del Tigre (PNLT), Guatemala.
86.	Documento: Distribución, Composición y Análisis estructural del manglar Las Lisas.
87.	Documento: El género <i>Pinus</i> en el proceso sucesional del bosque pluvial latifoliado en Baja Verapaz.
88.	Documento: Las mariposas Hesperidae de Bethel, La Libertad, Petén, Guatemala.
89.	Documento: Caracterización ecológica de Cerro Miramundo, Mataquescuintla Jalapa, Guatemala.
90.	Documento: Descripción de la actividad de daño causado por venado cola blanca <i>Odocoileus virginianus</i> a cultivos de nuez de macadamia <i>Macadamia tetraphylla</i> en Guatemala.
91.	Documento: Producción de hojarasca en un bosque monoespecífico de Manglar en el Canal de Chiquimulilla, Sta. Rosa, Guatemala.

92.	Documento: Análisis de la lluvia de semillas en dos etapas sucesionales del bosque secundario de Santa María de Jesús, Quetzaltenango, Guatemala.
93.	Documento: Infección experimental de <i>Simulium ochraceum</i> con microfilarias de <i>Onchocerca volvulus</i> .
94.	Documento: Las gramíneas del valle de Guatemala.
95.	Documento: Análisis de los cariotipos de cuatro especies de pino de Guatemala.
96.	Documento: Fluctuaciones de la densidad poblacional de la rata cañera <i>Sigmodon hispidus</i> durante un ciclo de cultivo de caña de azúcar <i>Saccharum officinarum</i> , en Guatemala.
97.	Documento: Estudio de la biología floral, modo de reproducción y viabilidad de semilla de 6 poblaciones de pericón <i>Tagetes lucida</i> , nativas de Guatemala.
98.	Documento: Relación entre nitrógeno no protéico y digestibilidad verdadera en cinco especies de leguminosas en Guatemala.
99.	Documento: Estudio de la regeneración natural preexistente en el Manglar Las Lisas.
100.	Documento: Frecuencia de ingesta de sangre y datos de infección natural de <i>Simulium ochraceum</i> en condiciones de campo.

Honduras – SERNA (113 metadatos)

1.	Clasificación de Suelos según Lefforest Miller
2.	Mapa de Unidades de Ordenamiento Territorial Subcuenca del Río Humuya Alto
3.	Mapa de Uso del Suelo Subcuenca del Río Humuya Alto
4.	Clasificación de Suelos Simmons-Castellanos [Sistema de Información Territorial]
5.	Mapa de Cambios en la Cobertura Vegetal de la Reserva de la Biosfera Tawahka Asangni 1988-95
6.	Mapa de Uso del Suelo de la Reserva de la Biosfera Tawahka Asangni 1988
7.	Mapa de Uso del Suelo de la Reserva de la Biosfera Tawahka Asangni 1995
8.	Mapa de Régimen de Tenencia Subcuenca del Río Humuya Alto
9.	Mapa de Uso del Suelo Subcuenca del Río Grande
10.	Mapa de Unidades de Ordenamiento Territorial Subcuenca del Río Grande
11.	Mapa Evaluación de daños al sub-sector forestal de Honduras causados por Huracán Mitch.
12.	Mapa de Unidades de Ordenamiento Territorial Subcuenca del Río Maragua
13.	Mapa de Unidades de Ordenamiento Territorial Subcuenca del Río Quirima
14.	Mapa de Unidades de Ordenamiento Territorial Subcuenca del Río Selguapa
15.	Mapa de Unidades de Ordenamiento Territorial Subcuenca del Río San Miguel
16.	Mapa de Unidades de Ordenamiento Territorial Subcuenca del Río San Miguel
17.	Mapa de Uso del Suelo Subcuenca del Embalse "El Coyolar"
18.	Mapa de Unidades de Ordenamiento Territorial Subcuenca del Río Humuya Bajo
19.	Mapa de Uso del Suelo Subcuenca del Río Humuya Bajo
20.	Mapa de Unidades de Ordenamiento Territorial Subcuenca del Río Humuya Medio
21.	Mapa de Uso del Suelo Subcuenca del Río Humuya Medio
22.	Mapa de Uso del Suelo Subcuenca del Río Quirima
23.	Mapa de Uso del Suelo Subcuenca del Río San Miguel
24.	Mapa de Uso del Suelo Subcuenca del Río Selguapa
25.	Mapa de Unidades de Ordenamiento Territorial Subcuenca del Embalse "El Coyolar"
26.	Mapa de Cambios en la Cobertura Vegetal del Cerro Celaque 1988-95
27.	Mapa de división administrativa Cuenca " El Cajón "
28.	Mapa de Cambios en Cobertura Vegetal del Área Forestal Protegida del Golfo de Fonseca 1989-95
29.	Mapa de Cambios en Cobertura Vegetal del Área Forestal Protegida del Golfo de Fonseca 1995-98
30.	Mapa de Régimen de Tenencia Subcuenca del Río Grande
31.	Mapa de Uso del Suelo Área Forestal Protegida del Golfo de Fonseca 1998
32.	Mapa de Uso del Suelo Área Forestal Protegida del Golfo de Fonseca
33.	Mapa de Uso del Suelo Área Forestal Protegida del Golfo de Fonseca 1995
34.	Mapa de Cambios en la Cobertura Vegetal del Parque Nacional "Cerro Azul Meambar" 1986-93
35.	Mapa de Régimen de Tenencia Subcuenca del Embalse "El Coyolar"
36.	Mapa de Régimen de Tenencia Subcuenca del Río Humuya Bajo
37.	Mapa de Régimen de Tenencia Subcuenca del Río Humuya Medio
38.	Mapa de Régimen de Tenencia Subcuenca del Río Maragua
39.	Mapa de Régimen de Tenencia Subcuenca del Río Quirima
40.	Mapa de Régimen de Tenencia Subcuenca del Río Selguapa
41.	Mapa de Régimen de Tenencia Subcuenca del Río San Miguel
42.	Mapa de Cambios en la Cobertura Vegetal de Montaña de Santa Barbara 1986-93
43.	Mapa de Uso del Suelo Parque Nacional "Cerro Azul Meambar" 1993
44.	Mapa de Uso del Suelo Montaña de Santa Barbara
45.	Mapa de Uso del Suelo Montaña de Santa Barbara
46.	Uso del Suelo Parque Nacional "Cerro Azul Meambar" 1986
47.	Mapa de Uso del Suelo Cerro Celaque
48.	Mapa de Uso del Suelo Cerro Celaque 1995
49.	Mapa Forestal de Honduras
50.	Imagen de Satélite Landsat TM Path 18 Row 49 1995
51.	Imagen de Satélite Landsat TM Path 16 Row 50 1994

52.	Imagen de Satélite Landsat TM Path 17 Row 51 1993
53.	Imagen de Satélite Landsat TM Path 18 Row 50 1993
54.	Imagen de Satélite Landsat TM Path 18 Row 50 1998
55.	Imagen de Satélite Landsat TM Path 18 Row 51 1995
56.	Imagen de Satélite Landsat TM Path 19 Row 49 1995
57.	Imagen de Satélite Landsat TM Path 19 Row 49 1998
58.	Imagen de Satélite Landsat TM Path 19 Row 50 1994
59.	Imagen de Satélite Landsat TM Path 19 Row 50 1998
60.	Imagen de Satélite Landsat TM Path 16 Row 49 1995
61.	Imagen de Satélite Landsat TM Path 17 Row 49 1994
62.	Imagen de Satélite Landsat TM Path 17 Row 50 1993
63.	Imagen de Satélite Landsat TM Path 18 Row 51 1998
64.	Imagen de Satélite Landsat TM Path 18 Row 49 1987
65.	Agricultura
66.	Imagen de Satélite Landsat TM Path 15 Row 50 1989
67.	Imagen de Satélite Landsat TM Path 16 Row 50 1986
68.	Imagen de Satélite Landsat TM Path 17 Row 51 1989
69.	Imagen de Satélite Landsat TM Path 18 Row 50 1986
70.	Imagen de Satélite Landsat TM Path 18 Row 50 1987
71.	Imagen de Satélite Landsat TM Path 18 Row 51 1989
72.	Imagen de Satélite Landsat TM Path 19 Row 49 1989
73.	Imagen de Satélite Landsat TM Path 19 Row 50 1988
74.	Imagen de Satélite Landsat TM Path 17 Row 49 1988
75.	Imagen de Satélite Landsat TM Path 17 Row 50 1988
76.	División Política Administrativa - Aldeas
77.	Precipitación Media Anual
78.	Temperatura Media Anual [Sistema de Información Territorial]
79.	Uso Recomendado
80.	Hipsometría [Rangos Altitudinales]
81.	División Política Administrativa - Departamentos de Honduras
82.	Mamíferos y Reptiles de Guajiquiro, Las Trancas y El Cedro, Honduras.
83.	División Política Administrativa - Municipios de Honduras
84.	Estado Actual de la Red Vial
85.	Guía de Campo de Los Mamíferos de Honduras
86.	Historia Natural de Iguana Verde - Honduras
87.	Serpientes Venenosas de Honduras
88.	Áreas Protegidas
89.	Capacidad de Uso
90.	Cuencas de Honduras
91.	División Política Administrativa - Nacional
92.	Mapa de Pendientes
93.	Datos de Población
94.	Datos de Población
95.	Datos de Educación
96.	Clasificación Geológica de Honduras
97.	Mapa Metalogenético de Honduras
98.	Herencia de Nuestro Pasado, La Reserva de la Biosfera de Río Plátano
99.	Imagen de Satélite 17-51 [Choluteca, parte de Nicaragua]
100.	Curvas de Nivel
101.	Imagen de Satélite 15-50 [Cabo de Gracias a Dios]
102.	Imagen de Satélite 16-50 [Gracias a Dios, Frontera con Nicaragua]
103.	Imagen de Satélite 18-51 [Golfo de Fonseca]
104.	Imagen de Satélite 18-51 Post Mitch [Golfo de Fonseca]

105.	Imagen de Satélite 19-49 Post Mitch [Frontera entre Honduras y Guatemala, en Santa Bárbara]
106.	Imagen de Satélite 19-50 Post Mitch [Occidente de Honduras]
107.	Imagen de Satélite 16-49 [Gracias a Dios]
108.	Imagen de Satélite 17-49 [Bahía de Trujillo, Roatán y Guanja]
109.	Imagen de Satélite 18-49 [Bahía de Tela, La Ceiba, Utila]
110.	Imagen de Satélite 18-49 Post Mitch [Bahía de Tela, Utila]
111.	Imagen de Satélite 18-50 Post Mitch [Centro de Honduras, Lago de Yojoa]
112.	Imagen de Satélite 19-50 [Ocotepeque, Santa Rosa de Copán]
113.	HONDURENSIS PLANTARUM VASCULARIUM CATALOGUS.PTERIDOPHYTA

Nicaragua – MARENA (109 metadatos)

1.	Nuevos Registros para la fauna malacológica terrestre y fluviatil de Nicaragua
2.	¿Qué es el centro de Malacología Universidad Centro Americana - UCA?
3.	Análisis comparativo preliminar de localidades notables de gastrópodos de Nicaragua
4.	Moluscos Panamicos de Nicaragua, Origen, evaluación, estudios
5.	Molluscan Fisheries of Nicaragua
6.	Proyecto Corredor Biológico del Atlántico
7.	Estudio de Zonificación ambiental para la exploración y explotación de los recursos hidrocarburos - Álbum de Mapas de Nicaragua
8.	Plan de acción de los recursos hídricos en Nicaragua - Sistema de información de los recursos hídricos en Nicaragua
9.	Contenido de proyecto para el establecimiento de la criba con fines comerciales y registro en la secretaria nacional CITES-NICARAGUA
10.	Decreto 8-98/ Normas y Procedimientos para la Exportación e Importación de Especies de Flora y Fauna Silvestres de Nicaragua
11.	Resolución Ministerial No.023.99 de Nicaragua
12.	Biodiversidad en Nicaragua - Un Estudio de País
13.	A new land snail of the genus GASTROCOPTA from Nicaragua (PULMONATA: VERTIGINIDAE), and its relationship to species from northeastern South America.
14.	Biblioteca del Museo Entomológico, León, Nicaragua
15.	Insectos benéficos de Nicaragua. Revista Nicaragüense de Entomología.
16.	Insectos de la Reserva de la Biósfera BOSAWAS en Nicaragua
17.	Insectos asociados a café y bosques en el Volcán Mombacho en Nicaragua
18.	Colección de insectos de Nicaragua
19.	Insectos de Nicaragua
20.	Insectos asociados a plantas de interés económico en Nicaragua. Revista Nicaragüense de Entomología.
21.	Catalogo de Mapas 1999 de Nicaragua
22.	Colección de mapas de las Áreas Protegidas de Nicaragua
23.	Provincia del Corredor Biológico del Atlántico - CBA
24.	Colección de Mapa de Quemadas en todo el territorio Nicaragüense de los Meses de Febrero a Mayo de 1999
25.	Hidrología de Nicaragua
26.	Provincia Geomorfológica del Corredor Biológico del Atlántico CBA
27.	Topografía de Nicaragua
28.	Cuencas de Nicaragua
29.	Mapas Forestales de Nicaragua
30.	Uso Actual del CBA
31.	Frontera Agrícola del Corredor Biológico del Atlántico - CBA
32.	Cuencas Hidrográficas del Corredor Biológico del Atlántico - CBA
33.	Mapa Canicular de Nicaragua
34.	Proyecto de Monitoreo de Recursos Naturales e Incendios en Nicaragua
35.	Mapa de Análisis de Conflicto: Áreas con Gran potencial para Hidrocarburos y de Alta Sensibilidad Ambiental de Nicaragua
36.	Mapa Individual de Idoneidad (MII) No. 2: Mapa de Recursos Pesqueros de Nicaragua
37.	Mapa Individual de Idoneidad (MII)No.3: Mapa de la Sensibilidad Ambiental de las Zonas Costeras de Nicaragua
38.	Mapa de Zonificación Ambiental de las zonas Costeras de Nicaragua para la Exploración y Explotación de Hidrocarburos.
39.	Uso actual de las áreas protegidas del Pacifico norte, Nicaragua
40.	Uso actual Parque Nacional Archipiélago Zapatera, Nicaragua
41.	Uso actual Parque Nacional Volcán Masaya, Nicaragua
42.	Uso Actual, Reserva Natural Isla Juan Venado, Nicaragua
43.	Uso Actual, Reserva Natural Laguna de Apoyo, Nicaragua
44.	Uso Actual, Reserva Natural Momotombo y Momotombito, Nicaragua

45.	Uso Actual, Reserva Natural Complejo Volcánico Pilas el Hoyo, Cerro Negro, Nicaragua
46.	Uso Actual, Reserva Natural Complejo Volcánico Telica Rota, Nicaragua
47.	Uso Actual, Reserva Natural Laguna de Tisma, Nicaragua
48.	Uso Actual, Reserva Natural Volcán Concepción, Nicaragua
49.	Uso Actual, Reserva Natural Volcán Madera, Nicaragua
50.	Uso Actual de las Áreas Protegidas del Pacífico Sur, Nicaragua
51.	Uso Actual, Recurso Natural Chocoyero El Brujo
52.	Uso Actual, Reserva Natural Complejo Volcánico San Cristóbal, Nicaragua
53.	Uso Actual, Reserva Natural Cosiguina, Nicaragua
54.	Uso Actual, Reserva Natural Estero Real, Nicaragua
55.	Uso Actual, Reserva Natural Refugio de Vida Silvestres La Flor, Nicaragua
56.	Uso Actual, Reserva Natural Padre Ramón, Nicaragua
57.	Proyecto "Manejo Integrado de los Recurso Hídricos y Desarrollo Sostenible de la Cuenca Río San Juan y su Zona Costera", Nicaragua
58.	Cartografié del proyecto "Manejo Ambiental y Desarrollo Sostenible de la Cuenca Río San Juan", Nicaragua
59.	Mapa de unidades topográficas y pendientes de Nicaragua
60.	Mapa de rango de altitud de Nicaragua
61.	Red Vial de Nicaragua
62.	Clasificación de los periodos caniculares de Nicaragua
63.	Mapa de drenaje de suelos de Nicaragua
64.	Limitaciones físico-químicas de los perfiles de suelo de Nicaragua
65.	Perfil de Suelo, clase sinóptica del perfil de suelos de Nicaragua
66.	Mapa de temperaturas medias anuales de Nicaragua
67.	Mapa de unidades de textura de suelos de Nicaragua
68.	Fauna Silvestre Protegida en Nicaragua, Manual para la identificación de especies en campo
69.	Biodiversidad en Nicaragua, Revista de la Universidad Centroamericana Encuentro
70.	Manual de Leguminosas de Nicaragua, Tomo I
71.	Manual de Leguminosas de Nicaragua, Tomo II
72.	Plantas Medicinales Utilizadas en la Comunidad SUMU EL PALOMAR, Nicaragua
73.	Estudio Dendrológico en los Sitios de la Lupe y Los Filos, Departamento de Río San Juan, Nicaragua
74.	Identificación Taxonómica de la Flora Arbórea en el Complejo Las Playitas - Tecompa - Moyua - Departamento de Matagalpa, Nicaragua
75.	Estudio Florístico y Palinológico de Plantas Acuáticas Emergentes y Flotantes en las Lagunas de Moyúa y Mirafior, Nicaragua
76.	Composición y Distribución espacial de la familia orchidaceae en un bosque tropical de tierras bajas en Río San Juan, Nicaragua
77.	Plantas Útiles de la Cordillera Los Maribios, Nicaragua
78.	Catálogo de Plantas del Bosque Secundario Río San Juan, Nicaragua
79.	New Record of The Mangrove Pelliciera Rhizophorae (Theaceae) on the Caribbean Coast Of Nicaragua
80.	Áreas Silvestres de Nicaragua
81.	Revisión Monográfica para Utilización del Material Genérico de las Leguminosas como Forraje Encontradas en Nicaragua
82.	Manual práctico para la identificación de las principales especies madereras de la zona del Río San Juan Nicaragua
83.	La Frontera Agrícola en Centroamérica: 4 años al descubierto
84.	Legislación Ambiental de Nicaragua
85.	El último Despale
86.	Propiedades y usos potenciales de 100 maderas Nicaragüenses
87.	Secado al aire de 37 maderas Nicaragüenses
88.	Preservación de 34 maderas Nicaragüenses
89.	Arboles Forestales Útiles para su propagación
90.	Especies para Reforestación en Nicaragua
91.	Arboles de Nicaragua

92.	Atlas de arboles Nicaragienses
93.	Humedales de la RAAS - Región Autónoma del Atlántico Sur, Nicaragua - "Plan de Manejo de los Humedales de Mahogany: primera propuesta de zonificación"
94.	Maderas: Glosario, términos utilizados en propiedades fisico-mecánicas
95.	Propiedades Físicas y Mecánicas de la Madera
96.	Secado de la Madera
97.	Características Microscópicas de la Madera
98.	Maderas Estructurales
99.	Maderas para Puerta y Ventanas
100.	Maderas para Durmientes
101.	Colección de Fichas Técnicas de Especies Maderables de Mes de Julio de 1992, en Nicaragua
102.	Colección de Fichas Técnicas de Especies Maderables de Mes de Agosto de 1992, en Nicaragua
103.	Colección de Fichas Técnicas de Especies Maderables de Mes de Septiembre de 1992, en Nicaragua
104.	Colección de Fichas Técnicas de Especies Maderables de Mes de Noviembre de 1992, en Nicaragua
105.	Colección de Fichas Técnicas de Especies Maderables de Mes de Noviembre de 1994, en Nicaragua
106.	Colección de Fichas Técnicas de Especies Maderables de Mes de Mayo de 1994, en Nicaragua
107.	Colección de Fichas Técnicas de Especies Maderables de Mes de Junio y Julio de 1994, en Nicaragua
108.	Curvas de Secado al Aire
109.	Estudio Tecnológico de la madera de Barazón, Mandagual, Mano, Roble y Roble encino

ANNEX VI - WORKSHOP AGENDA

Workshop Agenda Harmonizing Metadata Initiatives Throughout IABIN April 3-4, 2000 Hollywood, Fla

April 3

8:00-9:00	Continental Breakfast	
9:00-9:30	Introduction of Participants	
9:30-10:30	Overview of IABIN and Workshop Objectives	Martin
10:30-10:45	Break	
11:00-12:30	Country Efforts on Metadata Development: Review of Survey Report	Abreu
12:30-1:30	Lunch	
1:30-3:30	Mexico Colombia US Canada Brazil	Arriaga Bello Stitt/Anthony Lamb Pereira
3:30-3:45	Break	
3:45-4:30	Experience in Central America: Catalog Developed by IABIN Pilot Project.	Abreu
4:30-5:30	Dealing with existing metadata standards: Minimum requirements	Discussion

April 4

9:00-12:00	Draft Recommendation on Minimum Metadata Requirements for IABIN participation	All
12:00-1:00	Lunch	
1:00-3:00	Recommendations on Biodiversity Network All implementation requirements.	
3:00-3:15	Break	
3:15-5:00	Recommendations on other topics: Data Quality, Training, Keywords, etc.	All
5:00	Adjourn	