This article displays the very essence of what e-content is about. A complete, varied, and very important collection in its field, held in a variety of formats and media, and the need to make it all available electronically.

THE CHALLENGES
MANAGING SCIENTIFIC DATA:
DATABASE POLICY
The incentive to implement a device acting as a driver for access to, and the use of data for, marine research in Puerto Real, is provided by the Institute museum of fishes database, the crustacean decapoda in the Gulf of Cádiz database, and the microalgae collection database. The deep interest in the question of access to this data, the quality of the data found and the data standard used has attracted several international, European and Asian authorities. The work of the library has been tested at the National Centre for Marine Research (Athens, Greece), the Tsukuba Science City (Japan), the Academia Sinica (Taipei), and the Ifremer (Brest, France), in the period 1998-2001. The International Council of Scientific Unions Committee on Data for Science and Technology (ICSU, CODATA) has been involved, and the Eurasisc Newsletter (ISSN 1560-5299) October 2000 issue has reported on it.

The Librarian is the European Association of Aquatic Sciences Libraries and Information Centres (EURASLIC) National Representative for Spain. Interestingly, the early history of the Institute has been covered, at a Spanish History of Science Professional Meeting (1999), based on a paper authored by the Library.

With regard to the bibliographic production of the labs in the Institute, a database is available as far as the nineties providing complete résumés of all the scientists at work in the station. And the lean production² concept to optimise the use of these resources is the digital thesaurus.

The database design and integrity of the library occupied the Librarian of the Hungarian Academy of Sciences. Permission was obtained to construct a database with the Spanish translation of the abstract complete available from the journal Scientometrics (ISSN 0138-9130). The follow-up indexing work was done from the first issue (1978) onwards (nowadays its scope is 1978-1999), resulting in a keywords index which is intended to handle all kinds of retrieval requirements. Access is via the library of the Institut Pasteur (Paris), and from the Benchmarking Policy Unit (CSIC, Madrid).

Ultimately the possibilities of the library as a data provider for America, (following the technical leaflets produced for the European commission DG12 supported development project Aquaflow), have been taken up by the Brazilian virtual journal pescaventura (April 2001 issue) http://pescaventura.cosmo.com.br/menu15_abril_2001.htm.

This is an overall map of the library activities trying to fuse all the informative perspectives developed in the past 1998-2001 period. As a consequence, and because all the previously mentioned material is elaborated under the data management framework of Dublin Core meta-information, a specific access to the digital objects of the library of icman is previewed from Rediris (R + D Spanish academic network), at www.rediris.es/siiriis/index/coord/contactes.html, searchable by www.rediris.es/busquedas. the central searching robot sited in Madrid (developed but not yet openly available).

Considerable effort and care were required while designing and analysing the databases because of variability in the information of the contributing bodies, as well as ways in which the information had been collected, organised and stored.

The description of these innovative prototypes in the field of Marine Sciences bibliographic (and factual) information has been fully contrasted and documented with a schematic history of the congresses and conferences where their operative background has been exposed. (See Table).

MOBILIZING INVISIBLE ASSETS
COLLECTION DESCRIPTION
The library was created, in 1957, under the auspices of the Louis Roule literary tradition (1935). So are the first best books incorporated to the holdings basically French and coming from the Actualités scientifiques et industrielles (1937) collection and the Bibliothèque Scientifique Internationale (1949). Of special inter-
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www.euraslic.org/conf7.htm  
(The author’s permission is required to consult it.) |
‘Archive’s renewable value: Electronic insights in the past record. The biological memory of the ecosystem for the information society.’  
Species Analyst (Kansas Univ.) has required the data. (Via e-mail) The Linnean Society has linked to this Institute on its behalf:  
www.biosis.org.uk/zrodocs/zooninfo/fish_mus.htm |
‘An introduction to the database of the culture collection of marine microalgae sitet at the Oceanography Department of the Spanish Council for Scientific Research, Cadiz (Spain).’  
Species Analyst (Kansas Univ.) has required the data. (Via e-mail) |
‘Digital thesaurus: Metadata resources for marine biology’  
| ‘Scientometrics in Spanish’ Database              | 1996-| The Hungarian journal ‘Scientometrics in Spanish’ database Pasteur Institute (Paris) link:  
www.pasteur.fr/infosci/biblio/formation/etrie/index.html#iens  
Benchmarking Policy Unit (CSIC, Madrid):  
www.iesam.csic.es/biblio/recursos.htm |

Est for oceanographic purposes, and because of the institute expeditions along the African littoral, in the late fifties, are the publications of the Institut Français d’Afrique Noire (IFAN, Dakar), ‘Poisson de mer du Sénégal’ (1950), being the most useful book. Enquiries about plate-books would also focus on an initial French presence., an atlas on fishes from the Algerian littoral produced in Alger (1956). The first Spanish book located at the library is the ‘Dictionary of Fishery Devices in Spain and its Colonies’ (1923).

By way of leading into the library, the collection built around the Spanish representative at the World Scientific Meeting on the Biology of Tunas, and Related Species (FAO, ICES), at work in the period 1957-1985 (serving as director of the Institute), must be examined. Similarly the International Commission for the Conservation of Atlantic Tunas, and the International Commission for the Northwest Atlantic Fisheries publications are well represented and useful documents on the shelves.

An outstanding series of doctoral dissertations is maintained updated from 1975. In most cases they come from the Universities of Seville, Cadiz and Granada, although some form part of the French campus. Finally special relevant results refer to the Doñana National Park Aznalcollar catastrophe. Commercial resources available on aquaculture, and marine chemical investigations examining the Gulf of Cadiz and the Estuaries behaviours reap the benefits in terms of bibliographic production.

The resources are relatively developed in the crustacea. The ambitious scientific community, working with the library in this area, comprise almost all Spanish patrons and active members of the Crustacean Society, reviewers of the journal of the Society, and...
members of the editorial board of Springer's publications. So the adherence to the plans of this team, of the books in the collection, is quite fitting. Like the journal authored at the Institute (1994-1999), the Journal Zoa (ISSN 1133-9098), comes from this laboratory (in cooperation with the University of Seville), and is also owned by the library.

Marine chemical and Aquaculture novelties (congresses and andalusian products) are basically intended to be used in the postdoctoral courses (microalgae and pathogony) at the institute. They are also open to potential users coming from undergraduate courses in the university or contributors to marine science with free entrance to the library guaranteed. 45% of the staff is involved in aquaculture activities and Andalusia offers the best industrial panorama in the area, (therefore Andalusian government publications are heavily represented in the library, and the regional editorial business is also an arena for most of the users of the library.

The production of books authored at the Institute come basically from the Ichthyological laboratory. The early stages of fishes in the bay of Cadiz and a strategic vision of the Doñana National Park are the main topics. In terms of giving 'food for thought' content, several books with the results of one of the two postdoctoral courses_chained at the Institute have been published, both in Madrid and in Cadiz.

The total re-thinking of the scientific papers could be retraced to the oldest journal collection in the library. From the personal observations made fashionable in the XIX century to the style responding to the change of Millenium, the oldest journal in the library, the Journal of the Marine Biological Association of the United Kingdom, is almost complete starting with vol II issued on May, 1891. The economics of journal publishing also becomes evident looking at the editorial fate of the Bulletin of the Spanish Royal Society on Natural History (ISSN 0366-3272), starting on the shelves in 1903, and showing telling gaps. The first Spanish scientific journal admitted into the library the Annals of the Spanish Society on Natural History, was published in 1887 and included a paper on a new species (Ectocarpus lagunae) from the coast of Cadiz.

The journals catalogue is sent via email to any interested correspondent (written for web production into html format), with metadata to Dublin Core standards, according to the integrated database system policy adopted by the Library [3]. The standard main publications in the area of marine sciences are available, monitored through the search facility of the ALEPH (Automated Library Expandable Program Hebrew) installation at the Library Coordination Unit of the Spanish Council for Scientific Research (CSIC), in Madrid. Perhaps the best reported by panel experts ignore Spanish journal in the library was Histology and Histopathology Cellular and Molecular Biology (ISSN 0213-3911) from the University of Murcia. And among the very few books published in the States by Spanish marine scientists the recent 'An atlas of the brain of the Gillhead seabream' has recently contributed by staff in the campus and edited by the University of Maryland (Seagrant, 2001).

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The collection of Latin American, African and Asian serial material applies to the past competencies in international fisheries organisation. Specially appreciated were the data from north-African countries, and regular series of statistics could be extracted from the Tunisian, to the Sierra Leone area journals. A continuing presence of Portuguese material is assured through donations, in the framework of interchange between the programs of the University of Algarve and the Puerto Real (Cadiz) campuses. And some causal incorporation do afford for the supply of Latinamerican journals, and memos.

To sum-up the subject of non-book materials. The nautical charts refers mainly to the Gulf of Cadiz and Gibraltar sea and the historical charts used on the African oceanographic expeditions performed in the fifties and sixties are conserved and in the most part able to be retrieved using the search ALEPH robot engine. A CD-Rom collection offered to private industry in the area, scientists in the labos and general users concentrate resources where the French oceanographic results in the Pacific ocean are available.

World biodiversity databases (UNESCO) is able to be consulted, Iberian congresses on toxicology proceedings can be read and downloaded and the continual education needs for fishery professionals can be satisfied. Special mention requires the complete CD-Rom edition of the bilingual (Spanish-english) Ciencias Marinas (ISSN 0185-3880, included into the ISI database), published at the Baja California Autonomous University, storing all the original presentations in a database-format into two CD-Roms; the european editor of this journal is professor learning at the Campus. A video on icman is also available in CD-Rom format. The Video collection seeks to credit the library usage of the tv monitor available in the hall of the Institute, but all the videos are able to be lent and available via the general automated catalogue. Special examples of the collection are the Cretan Institute of Marine Biology video, the Marine Laboratory of Aberdeen device, and the Scripps Institution of Oceanography engines. Some Andalusian continuing education resources by fishery administrators are also available in video-format.

Among the librarians running the collection, in the interest of project prosecutors, the main work has been the elaboration of an enormous catalogue resulting from the indexing of the International Council for the Exploration of the Seas (ICES) working papers. Card retrieval tools were designed both under subject and topological criteria. It is not yet automated. The complete automation of the collection of books, journals, and non-library materials through the ALEPH engine installed in Madrid, is accomplished through several librarians and able to be consulted at: http://saucos.csic.es:4505/ALEPH/

A major pitfall suffered by the library holdings was the fire on 1-2 March 1972. A Bunsen burner misused in the presence of sulphuric acid result in an explosion, immediately followed by a fire. Several books were repaired and some among them are still on the shelves conserving their burnt binding as evidence of the past risk.

PROSPECTS

Because archives could also be at the beginning of a new value-added chain, as multimedia producer, as producer of services, which could also be offered to private industry, the completeness, integrity and authenticity of official records maintained at the Institute of Marine Science of Andalusia (Spanish Council for Scientific Research). In accordance to Spain’s presence at the International Council for the Exploration of the Sea (ICES) Working Committees, is planned to be achieved using authentic electronic records archiving procedures.

The classification framework begin in 1958 (Comité Atlantique records). Spanish presidency of committees is first detectable in 1965 (Committee III, General Assembly ICES). And Cadiz Institute involvement into ICES aquaculture scientific discussions pass through a meeting, in Brest 1974. Complete series of documents are available for the Pelagic Fish Southern Committee, Marine Mammals Committe, Shellfish Committee etc.

Behind the ICES scene, Cadiz CSIC Institute scientists do participate into steering committees (Scombridae) of the Food and Agriculture Organization of the United Nations meetings (1962) on the biology of tunas, and they attend to the International Commission for the Conservation for the Conservation of Atlantic Tunas and the International Committee for Scientific Exploration of the Mediterranean Sea Meetings. A perspective nowadays still at work through the close examination of tuna aquaculture in the atlantic andalusian littoral able to be pursue through the library facility: www.melodysoft.com/foros/atun (an internet forum managed from the library).

This relatively unstructured collection of documents is in need to be provided with facilities for management. Users’s perspectives are sufficient to justify the coordination of efforts aimed at the production of a global view over the archive.

The electronic records to be produced have to meet the requirements for recordkeeping in public administrations supplied by the ALEPH. The development of the procedures would permit, in a given case, an internet access through: http://saucos.csic.es:4505/ALEPH/-/start/archivos

REFERENCES


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