Centre for Marine Research - Zagreb
"Rudjer Boskovic" Institute, Zagreb

Mediterranean Action Plan
United Nations Environment Programme

Zagreb, 17 October 1989

REPORT OF THE CONSULTATION MEETING
ON
PROCESSING OF BIBLIOGRAPHIC DATA AND ON
THE PREPARATION OF THE ADRIATIC BIBLIOGRAPHY

UNEP
Athens, 1989

1. Mr K. Pisk, Director General of the "Rudjer Boskovic" Institute opened the Meeting at 9 a.m. He welcomed the participants on behalf of the Institute (List of participants is attached as Annex I to this report).

2. Ms D. Hrsak, Director of the Centre for Marine Research - Zagreb, "Rudjer Boskovic" Institute, also welcomed the participants of the Meeting, stressing the importance of bibliographic data processing and collaboration with UNEP/MEDU on developing a compatible computerized information system for this purpose.

3. Mr L. Jeftic, Senior Marine Scientist of the Co-ordinating Unit for the Mediterranean Action Plan (MEDU) of UNEP, chaired the Meeting.

4. He introduced the representatives of UNEP/MEDU, Mr A. Aksel and Ms A. Davaki and of UNEP/Nairobi, Mr K. Grose to the participants.

5. Mr L. Jeftic explained that the purpose of the Meeting was to discuss the "Terms of Reference" for the preparation of the Adriatic Bibliography and the use of Micro CDS/ISIS software as to ensure full compatibility with the UNEP's Oceans and Coastal Areas Programme Activity Centre (OCA/PAC) information network.

6. Mr L. Jeftic presented the "Bibliography on Effects of Climatic Change and Related Topics" containing approximately 1,500 references, which was published by UNEP/MEDU in June of 1989 as MAP Technical Reports Series No. 29. He also informed the Meeting that a second bibliography, "Marine Pollution by Organotin Compounds" is ready for publication, while two additional bibliographies, one on pollution by organophosphorus compounds and one on persistent synthetic materials are under preparation.

7. Mr K. Grose presented the Bibliographies/Directories Programme of OCA/PAC (Annex II).

8. Mr I. Ruzic, co-ordinator of the development of the Oceanographic Data Bank for the Yugoslav National Programme, of the Yugoslav/Italian collaboration programme, and in charge of the computerization of the multi-subject bibliographic database on the Adriatic, elaborated on the programmes and described the work done so far.

9. The collected bibliographic material, may be described in two sets of bibliographic references as follows:

    a. 1500 references collected mainly by research institutes, covering a time period from 1979 to present, with an additional 200 - 250 added each year. They are in bibliographic format, though not standardized and in many cases, incomplete, with no descriptors assigned. This database resides on an IBM 4341 mainframe computer at the Zagreb University Computer Centre. They are presently being transferred to PC through a communication link. They are mostly in English (some Croatian) and are physically available;

b. an additional approximately 2000 references, have been compiled through the Yugoslav/Italian collaboration programme. Coordinator of this activity is Ms Zdenka Konrad from the Yugoslav side (not present at this Meeting) and the National Research Council - Rome, from the Italian side. Bibliographic data have also been collected from different world databases such as:

- BIOSIS
- OCEANIC ABSTRACTS
- CHEMICAL ABSTRACTS
- MET/GEOASTRO ABSTRACTS
- AQUATIC SCIENCE ABSTRACTS
- POLLUTION ABSTRACTS

10. An approximate 1500 additional bibliographic references will be collected through computerized and manual literature searches.

11. Ms A. Davaki and Mr K. Grose presented the MEDLIB bibliographic database and elaborated on database design and structure. Search strategy and capabilities offered by Micro CDS/ISIS were also outlined. Screens were displayed of:

- Screen /data-entry formats;
- display/print-out formats; and
- examples of literature search print-outs (Author and Subject/descriptor).

Discussion followed on the usefulness, practicality and quality of standardized data entry and display formats.

12. The need for technical infrastructure (personnel, hardware/software) for the Adriatic Bibliography was outlined, and discussion was held on the availability of trained personnel. Ms A. Davaki stressed the need for full time trained personnel to ensure quality output. As a base for discussion the, "Notes on the conversion of the Adriatic records into machine readable form using Micro/ISIS", text prepared by UNEP and reproduced as Annex III to this report, was used.

13. Mr A. Aksel introduced the technical aspects of using IBM PC compatible hardware and Micro CDS/ISIS software, in particular:

- Data exchange within ISIS (Export/Import);
- data exchange to/from ISIS, to/from DOS environment (ISO 2709 format, reading/writing/preparing); and
- language (foreign characters) handling and sorting.

14. Mr I. Ruzic displayed and explained the screen/data entry format used, and the database structure. Discussion followed in reference to the development of a subject-descriptor list, the formating of bibliographic elements (standardization), and the assignment of indexing terminology.

15. The "Terms of Reference" and "Workplan and Timetable" for the preparation of the Adriatic Bibliography were discussed, and tentatively agreed upon (Annex IV).

Annex I

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Annex II

Development of Information Systems
for Oceans and Coastal Areas

The need for access to information in the field of marine sciences
was recognized by the UN system in the 1970s when FAO developed the
computer-based Aquatic Sciences and Fisheries Information System (ASFIS).
This global information system is probably the largest database in the
world devoted to the aquatic sciences and includes the involvement of
several United Nations organizations as well as commercial information
companies. With the advent of UNEP's Regional Seas Programme, however, a
new need appeared i.e. a need for a mechanism for improved communication
and the exchange of information on a regional basis. A project was
therefore developed with FAO that sought to do two things:

1. Put people in contact with each other through the publication
   of directories of individuals and institutions working on
   marine issues in any given region.

2. Increase the exchange and general availability of information
   in the region through the compilation and publication of
   bibliographies.

Having produced directories and bibliographies for each of the
regions, this project came to a close at the end of 1988. It is being
continued by a new project, co-ordinated and funded by the Oceans and
Coastal Areas Programme Activity (OCA/PAC) in Nairobi. This project
seeks to move beyond the large scale, general information activities and
focus on the development of regional information systems involving the
direct participation of regional institutions and focusing on topics of
regional interest.

As such, the project seeks to establish a set of standardized or
model databases that run on micro-computers using the Micro CDS/ISIS
software of UNESCO. The decision to use micro-computers is based on the
fact that they are rapidly becoming available in both developed and
developing countries, are inexpensive in comparison to mini and main
frame computers and can be easily programmed to suit local requirements.
The decision to use the Micro CDS/ISIS software is based on the fact that
it is an ideal software for the processing of textual data, is reliable
and can be obtained free of charge from UNESCO by regional institutions.
These databases will be fully compatible and will permit the electronic
exchange of data.

At present, two model databases are under development:

1. A database for processing information on regional institutions
   and individuals. This directory-type database will be used for
   maintaining up to date information on the activities of
   institutions and individuals. It will permit on-line searching
   as well as the production of printed outputs such as
   directories, mailing lists, mailing labels, etc.

2.   A database for processing bibliographic information needed by regional institutions. This database will facilitate access to information on the regional marine environment and will, like the directory database above, permit on-line searching as well as the production of printed outputs such as specialized bibliographies, catalogues of collections, etc.

As stated above, the project is regional in focus, that is, each regional co-ordinating unit or other designated institution or organization will decide, in consultation with the UNEP Library which is co-ordinating the project, upon the directories or bibliographies it feels are most important to its region. Using the model databases, they (the Regional Co-ordinating Units) will be responsible for collecting, analyzing, editing and entering the data. These data will be maintained locally and also exported to the UNEP Library in Nairobi. The Library will then import these data onto a set of global databases that can be used by OCA/PAC and others.

Annex III

Notes on the Conversion of the Adriatic Records to Micro ISIS

The creation of a database into which an existing set of records/cards are to entered requires one of two approaches:

1. If the records already exist in computer-based form, it may be possible to convert them electronically. Micro CDS/ISIS supports this type of operation through its ISISXCH programme, however, such a conversion requires the full time assistance of a computer programmer throughout the period of conversion (from one to three weeks full time depending on the complexity of the original database).

    To convert records from one database (having one set of definitions) to another having a different set of definitions requires the creation of a **parameter file**. This file, normally created by a computer programmer, instructs the computer to take the data contained in each field of the original database and insert it into the fields of the new database. For example, the computer would be instructed to take the data from the original database field no. 200- Title and insert it into the new database field no.56- Title. Depending on how complex the original database is in structure e.g. use of subfields, repeatable fields, etc. the creation of parameter file can be easy or very difficult. Further, if non-ASCII characters have been used to create special characters or diacritical marks (accents) a **gizmo file** may also be required. The gizmo file, like the parameter file, tells the computer to covert each special character used in the original database to an equivalent in the new database.

    Once these files have been created, the data (records) is then exported from the original database and is imported, through the parameter (and if required, gizmo) file to the new database. The old records will then appear in the new database and the conversion is complete. Each new record would require careful proofreading in order to make sure that all data/characters had been correctly converted.

2. The second approach applies to records that have been maintained manually e.g. card catalogue cards, index cards, book catalogues, etc. or are on a database that cannot, for some reason be converted electronically. In this case, the conversion requires that all data be entered onto the new database. This is, of course, a time consuming task as all data must be prepared for data entry, entered, proofread and corrected.

The amount of time required for the creation of the new database, therefore, depends on how the original data has been maintained. For the Adriatic Bibliography, the suggested plan below may serve as a guide to the number of individuals and the amount of time needed to convert 6-7000 references (records) to the new system. Final determination of the inputs required, however, can only be made once it is known in what form the records exist, how much work is required to convert them and how many records exist in total. The project will require, at least, a full time LIBRARIAN, a part time COMPUTER EXPERT and a full time DATA ENTRY person (clerical).

1. The librarian will be needed for 12 man-months to perform the following tasks:

   a. Establish a classification scheme covering all the subjects included in the records, develop a standardized indexing terminology that reflects the needs of the institution(s) involved and the potential users of the information and determine rules for citing names of individuals, corporate bodies such as institutes, government bodies and the use of acronyms.

   b. Edit each original record prior to data entry to ensure that all data is presented in a systematic and standardized way. This includes the editing of records to ensure that bibliographic elements such as titles and subtitles, references to journal articles and notes are cited in a consistent manner. It also includes the standardization of names of individuals, names of corporate bodies, use of acronyms according to the rules that have been determined.

   c. Provide subject descriptors (key words) that will facilitate searching of the database and provide for the creation of sorted printed outputs such as subject indexes.

   d. Each new record to ensure accuracy of data and consistency of citation.

   e. It may also be necessary that some records be verified. That is, that citation given is correct and would permit a user of the bibliography to locate the item desired in a library or other information centre.

2.   The computer expert, preferably one familiar with Micro CDS/ISIS and locally available,will be required for 1-2 man-months initially and an additional 16-18 days should be included (about once a month for 2-3 days) throughout the project to perform the following tasks:

a.   Set up the computer to operate the software e.g. config.sys files, etc. and install the software. Test hardware/software to ensure that it is functioning properly and that all peripherals, printers are working.

b.   Train the librarian in the general use of the software and establish routines for backing-up data and maintaining the database.

c.   Together with the librarian, design all required display formats and pre-defined sort and print worksheets.

d.   Prepare the following manuals:

i.   Reference Manual providing detailed descriptions of all database elements (FDT, FST, PFTs) and other issues related to the design and functioning of the database.

ii.   User Manual providing step-by-step guidance for the librarian and other users in creating records, editing data, searching, preparation of sorted outputs, backup, maintenance, etc.

iii.   A Short-Form Reference Manual that provides an overview of software, database design and functioning.

e.   In addition, the computer expert would be "on-call" throughout the project to provide for computer maintenance, revise display formats, worksheets, etc. and, if power fluctuations are a problem, correct or repair any damage that might occur. This would normally be required for once a month for 2-3 days.

3.   The data entry person (individual with typing skills and basic knowledge of computers) will be required for 8-10 man-months to perform the following tasks:

a.   After training in data entry techniques and under the supervision of the Librarian, the data entry person will enter prepared data, make needed corrections and be responsible for backing up entered data on a daily basis.

It is suggested that the project will take approximately 12 months to complete. The Librarian should begin work first in order to create the classification, subject terminology and rules for names, etc. The Librarian should then begin preparing the first batch of 100 records that can be used for testing the database and for initial data entry. In the second month, the computer expert may being work to install the software/database and work with the Librarian on required display formats, etc. In the third month, the data entry person should be brought in, trained and begin data entry. In general, it is felt best to process records in batches of 100 i.e. that 100 records should be prepared for data entry, and while they are being entered the second batch of 100 records prepared. When the first batch has been entered the records should be printed out and proofread while the second batch is being entered and so on. This permits finalization of the database as it is being created, allows corrections to be made while records are still fresh in the mind and avoids large scale editing at the end of the project.

In addition, for the project to proceed efficiently, it must have its own computer (min. 640KB RAM + 30-40MB hard disk + printer). If it does not, the project will take longer to complete and the chance of errors occurring in the database will be increased.

Annex IV

Terms of Reference

1. The Centre for Marine Research-Zagreb of the "Rudjer Boskovic" Institute, Zagreb, Yugoslavia will compile all citations related to the Adriatic Sea, as the Adriatic Bibliography as a part of the OCA/PAC programme for the development of directories and bibliographies. The estimated number of citations is 5,000 at least, of which, approximately 1,500 are already available in machine readable form; while an additional 2,000, available at the Centre, will be converted into machine readable form. It is also estimated that approximately 1,500 additional citations will be collected through computerized and manual literature searches. It is agreed that the period to be covered by this bibliography will be 15 years i.e. 1975-present.

2. This work will be done using an IBM compatible microcomputer, the Micro CDS/ISIS software (version 2.3) and the MEDLIB database already installed at the Centre. This hardware/software combination was chosen in order to ensure full compatibility with the UNEP Oceans and Coastal Areas information network. This will permit the transfer and exchange of scientific and technical information.

3. The Centre will assign responsibility for the overall coordination and implementation of the work to a staff member whose responsibilities will be:

    a. To develop a categorized list of subject descriptors (keywords describing subject, geographic and taxonomic content) in order that the subject content of the citations may be fully searchable and that any indexes produced will have a logical [broad term to narrow term] structure.

    b. To prepare a list of all databases searched so far and the period covered and send it to the UNEP Library, Nairobi and UNEP/MEDU, Athens for comments and suggestions for additional literature searches. Taking the comments and suggestions into account, to arrange for all needed searches that will provide maximum coverage of the subject for the period 1975-present. The citations extracted from these searches will be included in the Adriatic Bibliography.

    c. To verify the citations against the original or other sources for bibliographic completeness and accuracy.

    d. To format the bibliographic elements of each citation to conform to the rules/style outlined in the MEDLIB manual provided, and assign indexing terminology from the list of descriptors developed.

e. To supervise data-entry, proof-read entered data, and implement other quality control procedures that may be required and arrange for the production of the final outputs described below.

4. This work will cover a period from 15 November 1989 – 31 January 1991. The Centre may request UNEP to grant an additional 3 month extension should unforseen difficulties arise. It is, however, expected that such a request be accompanied by a full justification.

5. All of the data collected under this Contract will become the joint property of the Centre for Marine Research-Zagreb of the "Rudjer Boskovic" and the United Nations Environment Programme (Athens and Nairobi) and either party may use the data for publication or other purposes. Should additional citations be added to the database after the conclusion of this work, they also shall be made available to the UNEP Library, Nairobi and the UNEP/MEDU, Athens.

6. Progress reports will be submitted as per the agreed workplan and timetable attached.

7. Upon completion, the Centre for Marine Research-Zagreb of the "Rudjer Boskovic" Institute will supply the UNEP Library, Nairobi and UNEP/MEDU, Athens with the final outputs which are:

a. All finalized data exported onto diskettes.

b. A print file in ASCII format containing a copy of the bibliography, subject index and technical introduction.

c. A camera-ready copy of the Adriatic Bibliography.

8. It is understood that the Centre will acknowledge UNEP's contribution in any publication or other form of dissemination of the information.

9. UNEP shall pay US $ 7,000 for this work. A cash advance of US $ 4,000 will be paid after the signature of this Memorandum of Agreement by both parties. It should be noted that of this US $ 4,000, US $ 1,000 will be used exclusively to cover the costs of searching commercial databases [see point.3.b. above]. The Centre will be required to submit to UNEP a detailed expenditure record on the use this US $ 1,000 including: a listing of databases searched, costs incurred, attachment of receipts for payments made and reimbursement to UNEP of the unspent balance. UNEP will then pay US $ 1,500 upon the acceptance of the progress report and the balance of US $ 1,500 will be paid upon receipt of the final outputs described in point no.7 above.

Workplan and Timetable

1. **15 November 1989**

    The Centre and UNEP will agree upon and sign the Memorandum of Agreement.

2. **30 November 1989**

    UNEP and UNEP/MEDU will receive the proposed categorized list of subject descriptors (keywords) and index structure for review and comments.

3. **15 December 1989**

    UNEP and UNEP/MEDU will comment on the proposed categorized list of subject descriptors and index structure. Final version will be agreed upon.

4. **31 December 1989**

    UNEP and UNEP/MEDU will be sent, on diskette, at least the initial one-hundred records entered for review.

5. **31 January 1990**

    UNEP and UNEP/MEDU will comment on the initial 100 records.

6. **30 June 1990**

    UNEP and UNEP/MEDU will be sent a progress report on the project, together with diskettes containing the first 3,500 records representing half of the total output.

7. **31 July 1990**

    UNEP and UNEP/MEDU will comment on the progress report.

8. **30 November 1990**

    UNEP and UNEP/MEDU will receive the final draft output of the project for review.

9. **15 December 1990**

    UNEP and UNEP/MEDU will comment on the final draft.

10. **31 January 1991**

    The Adriatic Bibliography will be sent to UNEP and UNEP/MEDU.