

ASFA DATABASE : A TOOL FOR MARINE SCIENCE RESEARCHERS

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1. INTRODUCTION

The coastal areas are regarded as the interface between land and the sea. These areas contain three obvious habitats namely: i) maritime zone - a home for many terrestrial animals and plants, ii) sea itself, and iii) an intertidal or littoral zone at the sea-land interface with a specialized flora and fauna. In the littoral zone - where marine sediments and soil meets - a specialized community of terrestrial halophytic plants and associated animals develop to form different habitats like salt marshes - mostly in temperate to subpolar regions, and the mangrove swamps - of tropical to subtropical occurrence.

The biodiversity and economic importance of these areas have attracted the scientific community to probe into unknown, collect data and make predictions, inferences. This information is published in various reports, journals, books, etc. In order to disseminate this information, the bibliographic details of the same are published in secondary sources like abstracting and indexing journals. The storage of such information for quick search and retrieval from a database became possible with the advancements in computer technology. The researcher can now, without delay, get details of relevant published literature in few minutes.

This note highlights the use of a tool - the Aquatic Sciences and Fisheries Abstracts (ASFA) database on CD-ROM - at the National Institute of Oceanography (NIO) library for retrospective literature search and retrieval of required information.

2. ASFA DATABASE

ASFA is one of the principal products of the Aquatic Sciences and Fisheries Information System (ASFIS). It is a co-operative international information system supported and maintained by several United Nations agencies and a network of information centres in member countries of these agencies. It is an abstracting and indexing service covering the world's literature on the science, technology and management of marine and freshwater resources and environments, including their socio-economic and legal aspects. It currently reports more than 37,000 references per year. The literature on the salt marshes and mangrove swamps alone number to more than 4000 references on this database.

It is available in the following media and formats:

- Compact Disks (CD-ROM)
- Magnetic tapes
- Online Information retrieval systems
- Print products
 - ASFA 1 (Biological sciences and living resources)
 - ASFA 2 (Ocean technology, policy and non-living resources)
 - ASFA 3 (Aquatic pollution and environmental quality)

The system also publishes following spin-off products as print abstracting journals:

- ASFA Aquaculture abstracts
- ASFA Marine biotechnology abstracts

3. ASFA on CD-ROM

The Compact Disc (CD) is one of the optical storage device on which very large amount of information can be easily stored. A single CD has a capacity of storing around 370,000 pages of a printed book. It also facilitates in quick searching and retrieving the searched information. Compared with the other storage devices used on computers, this storage device is becoming extremely popular due to its capability of large storage capacity, data reliability, lowest cost, etc. ASFA database as mentioned above is also available on the compact discs.

The information recorded since 1978 on ASFA database has so far been put on the Compact Discs. The first disc stores information for first ten years (1978-1987) and the other from 1988 onwards. The other disc is updated every quarterly so as to have latest information for its retrieval and use.

4. DATA ELEMENTS

Each bibliographic record stored on this disc consists of many data elements. The very prominent ones are:

- Title of the document
- Author(s)
- Authors address
- Corporate authors
- Source of publication
- Series title/ information
- Languages of the text and abstracts
- Abstract
- Subject/ Taxonomic/ Geographic descriptors
- Publication type
- Publication numbers (ISSN, ISBN, Report Nos, etc.)

Each word in a record is indexed. This facilitates very fast searching of the relevant information.

5. LITERATURE SEARCH

5.1 Searching with terms (free text):

Literature search on the microcomputer demands the formulation of the search strategy. The 'search strategy' means the transformation of a specific subject (which is usually described in a simple sentence) in the form of key words along with their relationships. The relationships among these key words are established by using three types of 'search operators': i) AND, ii) OR and iii) NOT.

Suppose a researcher is interested in the literature on the topic 'Litter fall, decomposition and detritus dynamics in mangrove swamps'. This topic would give following terms:

litter
decomposition
detritus
mangrove

The use of search operators to establish their relationships would make the search strategy as follows:

mangrove AND (litter OR decomposition OR detritus)

The operator AND selects records where both the terms shown under relationships are occurring. Whereas the operator OR selects all those records where any of the terms under search are occurring. Thus the above search strategy, intends to select those records where any of the terms within parenthesis - litter, decomposition and detritus - are occurring alongwith the term mangrove.

The truncation of the term at appropriate place helps in maximising search results. In above example, if the term decomposition is truncated at 'decompos' it would retrieve decomposition as well as decomposing. Similarly, if detritus is truncated at 'detrit' it would retrieve the conceptually similar terms like detrital or detritic along with detritus. The truncation symbol (*) requires to be added at the variants of the roots of the terms like: 'decompos*' or 'detrit*', etc.

Computer is not an intelligent system. It cannot search for conceptually similar terms/ records. It can only search for a given term. Thus the search strategy needs to be padded with all conceptually similar terms. In the above example, the concept of the term decomposition is also likely to be expressed using terms like: 'degradation', 'biodegradation', 'bioremediation'.

For optimum results, the selection of appropriate terms from the subject, truncation of selected terms, addition of alternate terms to a given term, using appropriate search operators etc., matter much. Thus the final search strategy for the above topic would be:

'mangrove* AND (litter OR decompos* OR biodegrad* OR bioremediat* OR degrad* OR detrit*)'

5.2 Searching from the index :

Each word in an ASFA database, as mentioned above, is indexed. One can select terms from the index to search relevant documents.

5.3 Searching on non-subject areas:

It may be borne in mind that such databases are not used for the literature search on specific subject alone. They can also be used for various purposes exemplified below:

- contributions of a specific individual, organization or country, etc.,
- identifying research trends in a specific area (subject and / or geographic) on the basis of number of papers published,
- identifying specialists in a specific area,
- identifying number of institutions, personnel, etc., in a given country

6. INFORMATION RETRIEVAL

The searched information could be retrieved for further use. It could be viewed on the monitor of the computer for immediate reference or for checking the relevance of the searched results. It can also be copied on to the users storage devices like floppy diskettes so that he can carry them easily in the form of a 'file' from one place to other and refer at his leisure on any compatible computer available to him. These files could be read, edited or printed for future use.

7. NATIONAL INFORMATION SEARCH, RETRIEVAL AND INPUT FACILITY

The NIO library offers the facility of literature search without charge to all Indian nationals interested in any branch of marine science studies. For obtaining information on the work carried out in his area of study he may write to the librarian along with the search topic and a blank floppy diskette. This service has been widely recognised and found to be useful by the marine science researchers. More than 700 searches are carried out annually. The forest officers working on Indian mangrove areas may also make use of this facility.

The literature search and retrieval is not possible unless the information is stored in the database. The ASFA data base is referred in its various forms all over the world. As mentioned above, at present, there are more than 15 countries contributing their literature to this database on co-operative basis. India is one of such countries. The national input centre for this database is at the NIO library. The library keeps track of the

published literature by Indian researchers in various journals and other documents. While this is done, the library also expects a co-operation from the researchers by way of sending a copy of their publications for inclusion in this database. It is the duty of every Indian researcher to make known his research results to the rest of the world. ASFA is one of the best carriers of information in the field of marine sciences.