DAMS IN THE STREAM OF AQUATIC SCIENCE INFORMATION

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ABSTRACT

The problems facing a library and its users related to finding bibliographic references are examined. The costs of abstracting and indexing services, whether in printed form or on CD-ROM, are high. Searching online is also expensive. Training in the retrieval of material may be inadequate. Although the advent of the CD-ROM has made searching easier this medium is not without problems.

Once pertinent references have been retrieved, copies of the actual documents will be required. It may be difficult to locate sources of these documents since most abstracting and indexing services do not provide locations or document delivery services. The possible use of the CD-ROM as a medium for providing key documents is discussed.

INTRODUCTION

The barriers to obtaining marine science bibliographic information will be examined in two parts - first the problems related to finding references will be discussed and secondly those relating to document delivery will be addressed. Benning (1990) gives an overview of the technology available to the scientist who is searching for information. She pays particular attention to a recent user survey carried out at the Institute of Freshwater Ecology in the U.K.

FINDING BIBLIOGRAPHIC REFERENCES

Abstracting and Indexing Services

There are many tools available for those seeking information on marine science topics. Printed abstracting and indexing services (e.g. Aquatic Sciences and Fisheries Abstracts (ASFA), Biological Abstracts, Zoological Record) are usually very expensive. However ASFA and the Zoological Record are issued in sections so that users do not have to subscribe to the full service if their needs are covered by one or more sections. The FAO publications Marine Science Contents
Lists and Freshwater and Aquaculture Contents Lists are two where the price is right (i.e. they are free). However these are really only current awareness services. Fisheries Review is a relatively inexpensive indexing service of clear relevance although its coverage of freshwater material is stronger than that of marine topics. The major primary journal literature is generally well covered by most of these services. However, even some of the major services are not as complete as would be expected. Tapaswi (1989) notes that a number of issues of major marine science journals have not been covered in ASFA.

Although much important information is in primary journal articles, a comprehensive literature search should also cover dissertations, reports, conference proceedings and chapters in books. Coverage of these items is by no means comprehensive in the main indexing services. Specialized indexing services exist which cover certain forms of literature in greater depth (e.g. dissertations are covered by Dissertation Abstracts International and U.S. Government Reports by Government Reports Announcements and Index). However only the larger libraries can afford to carry these specialized indexes. Sea Grant Abstracts is an inexpensive guide to Sea Grant publications.

These services can be searched manually using their printed indexes. Some have better indexes than others. The indexes in Biological Abstracts are computer generated and not easy to use. However many of these services can be searched much more easily and quickly in electronic form which can be accessed either online or as CD.

Online

There are a number of different companies offering online search services. DIALOG is a major vendor in this area with over 200 different databases available including the major indexing services mentioned above.

Searches are usually made interactively using a microcomputer and the system output (a list of relevant references) can be downloaded for future use. However the output, an ASCII file, requires expert manipulation to be used in a personal file management system on a microcomputer. Some systems, such as DIALOG, do offer tagged output which aids this process.

There are some other barriers in the use of these online search services. The cost of searching is by no means cheap, especially if access is from a remote location. The DIALOG computers are in the USA and users have to cover the cost of communications to the computer as well as the costs of using the system and any royalties required by the database producer for the references retrieved. The search commands on most online systems are not "user-friendly" and each system has its own different set of commands. The search systems were designed to be used by trained staff. Because of the difficulties in using the different systems, software packages (front-ends) have been developed to assist searching. These
packages may allow you to search more than one system using the same command language (i.e. you can search the BRS system using DIALOG commands). A more user-friendly searching system, perhaps menu driven, may be offered. Some packages allow you to compose search strategies offline and then transmit them at high speed to the computer thus saving some costs. Some communications software also allow input of search strategies prepared off-line. I am sure we all appreciate not having to type in "Oncorhynchus tshwytshca" and similar phrases online. Software may also allow the user to easily convert the system output of files of references to the same format as those of a personal reference file. An example of such software is Pro-Search's Biblio-Links. A search on an online database may last five to ten minutes and cost (in North America) perhaps US$20 or US$30 depending on the number of search terms input, the database(s) searched and the number of references retrieved. For those on small budgets such costs can be very limiting.

A very large number of different databases are available for searching on systems such as DIALOG and one may wonder which database or databases should be searched for material on a specific topic. It may be possible to make a search of the indexes of a number of databases at once to see which are potentially useful (DIALOG's DIALINDEX allows this) and then one may be able to search a small number of the most useful databases at one time (DIALOG's ONE SEARCH). The DIALOG system now has introduced a system for identifying duplicate records and a means of removing them from the final output.

CD-ROM

Within the last few years a new format has become available - the Compact Disc - Read Only Memory. A single disc can hold over nine years of ASFA. CD search systems have been designed with the end-user in mind and in most cases are "user friendly".

However there are some problems faced by those operating CD systems. Most CD systems, at the moment, run on IBM-based microcomputers. If the end-user has a Macintosh then the output from the CD will not be readily usable. However, Brueggeman (1990) has described an elegant means of overcoming this barrier.

If you subscribe to more than one CD (from the same company) that use the same software, problems may arise when an update of the software is issued. It is important that suppliers issue updated CD's simultaneously if the new software will not read all the old ones.

If you have CD products from more than one company running on the same workstation each will have its own software and this may cause problems especially for the not-so-computer-expert among us. Newell (1989) describes such a situation and how she overcame the difficulties to provide a simple menu to
access some seven different systems.

There is an increasing variety of CD players available for use and currently some CD products are designed to run on certain models of players only. This may limit the range of CD’s that can be used in one location which has only one model of CD player. Jacobs (1990) in her review of CD-ROM hardware suggests that either a Philips or a Hitachi CD player be purchased as most CD’s will operate on these drives.

The ASFA CD installation procedures only support a limited range of drives currently (Philips, Sony, Toshiba and certain Hitachi models). Those CD’s which require the use of CD-ROM Extensions run on a wider range of different makes of drives. Allen (1990a) discusses this problem and points out that users of Compact Cambridge software (e.g. ASFA) can use Microsoft Extensions. He urges that Cambridge Scientific change the installation procedures to cover this option. I believe that there may be some loss of speed in operation when Extensions are used as opposed to using the supplied CD drivers. Allen (1990b) reviews the ASFA CD.

A relatively new CD is the NISC disc *Wildlife and Fish Worldwide Volume 1*. This contains references from *Wildlife Review* and *Fisheries Review* (formerly *Sport Fishery Abstracts*) from 1971 onwards. This has every appearance of being a potentially useful product. However, like most new products, there are some problems. Author’s names may not be in their proper sequence in the display and printout of multi-author papers due to the format of the author index tapes supplied to NISC. In a quick check of some 60 such references I found that only about 20 had the authors in the correct sequence. This certainly makes checking against an existing bibliography a very tedious task. A representative of NISC tells me that they hope to be able to correct this problem in the next update. I also noted that the ID at the top of each reference is not the same as that in the printed version.

In a large library with many CD products and many users the question of networking CD workstations may arise. Is it better to network so that any workstation can access any CD in the network or should each workstation be separate and only allow access to the CD’s on that station? Networks are expensive in both money and staff time to set up and maintain. Butcher (1990) estimates that 20 person hours are spent each month in keeping the Oregon State University CD Net system running properly. He also reports that the Meridian CD Net will not support both Compact Cambridge and Silver Platter products at the same time. Wilson products also cannot readily be run on the system as they require a large amount of RAM to operate. He also reports problems with suppliers over site licence fees for network use. Separate workstations are cheaper and if one breaks down only the one is out of service. However, users only have access to the CD on that machine. A breakdown of one component in a network may put the whole network out of service and such breakdowns are reported to be not infrequent (Butcher 1990). Some CD networks will allow dial-in access for remote
users (e.g. Dial-In on Silver Platter's Multi-Platter and Dial-Up on CD Plus).

As with online systems, each CD search system has its own set of commands. There is a sad lack of standardization in this area especially in the designation of function keys which are widely used for common commands such as display, print and download. Since most systems are reasonably user-friendly and may have menus on the screen to remind you of the commands you may use this may not be an important issue to some users. Although the software may be user-friendly it is quite easy for many important search opportunities to be missed. When using the printed version you can note in passing any special indexes present. For example, in ASFA there are the special sea area codes. These may well be completely missed by users of the CD who do not read through the manual.

The costs of CD's are quite high. The annual subscription is usually more than the corresponding paper product although there are usually discounts if you can afford both. Many CD's are only available on a lease and many users prefer to purchase such items. It may be possible to arrange a purchase even though the standard agreement only covers a lease. Although the cost of a CD may be high the overall cost of providing a CD may be less than the cost of maintaining the paper version when the costs of binding and reshelving and housing are taken into account. See Marshall (1989) for an analysis of this topic based on North American costs.

As with online searches, the output from a CD workstation will be an ASCII file but in a format that may not be compatible with a personal filing system. Suppliers could well look into either making the output compatible with a well-known package or providing conversion programs to do this. Tagged output would a useful option. ISI, the producers of Current Contents on Diskette, recently made an output option from this product (which is similar in many ways to a CD search system) compatible with Pro-Cite. The producers of Pro-Cite have announced the expected release of Biblio-Links to Silver Platter for the fall of 1990. Dataware, the software used on the NISC and WAVES CD's offers a variety of output formats (ASCII, WordStar, dBaseIII+, etc.).

Training

Unless some form of training is provided it is most unlikely that a user will be able to get the best quality results from any search system. It has often been reported that scientists are reluctant to use traditional library sources (i.e. abstracting and indexing journals) as major sources of information (Benning 1990). It is suggested that proper training might improve their satisfaction with libraries and information services.

Library staff receive training at library school and have probably attended training sessions on the use of online systems offered by the system vendors.
However those in remote locations may not have access to vendor training. DIALOG has recently produced training aids, both in the form of work books and as floppy diskettes, so that those who are not able to attend formal sessions can use these aids in conjunction with searching the ONTAP training databases to train themselves (de Stricker 1990). Regular training is needed as both systems and databases change with time and to be able to search in the most efficient way the latest techniques available must be used.

With the CD products little or no training is currently available. Granted the better systems offer good help screens to guide users who are not familiar with the system. Since end-users are the major users of CD search systems their needs are different to those of library staff. End-users often have difficulty in composing search strategies until they become familiar with the use of Boolean logic. Marshall and Allan (1990) discuss various aspects of training.

**FINDING THE DOCUMENTS**

The results of successful searches, whether made manually, online, or on CD, are lists of references and now the problem is how to obtain a copy of the actual documents. Most databases do not include information as to where the items listed are held. The new WAVES CD is an exception, but, as a contributing library, may I stress that users of the CD should try local sources before sending requests to the Canadian library listed on the CD.

If you have access to a large library you may be able to find many of the items there. However in a small organization with limited library resources you are faced with the question of where to obtain each item. Some means of mounting a list of serials held locally, which could be called up for viewing in a window, would be a useful option on a library workstation.

If the documents have been retrieved electronically it would be convenient to use the retrieval system directly for document ordering. Some online system vendors have made arrangements with various document suppliers to provide copies of items identified online directly to users. The orders are placed online during the search session. DIALOG and the Canadian system, CAN/OLE, offer this type of service. It may be necessary to set up deposit accounts with the suppliers to make use of this type of service. The WAVES CD will eventually have an ILL downloading option to facilitate the saving of records for subsequent ordering as ILL's.

I have recently (September, 1990) seen a demonstration of an interesting integrated approach via the EI Reference Desk (Regazzi 1989). This should be available in 1991 and has the potential to search CD's (Compendex Plus ON DISC and EI Page One) and Compdax online. Records can be downloaded during a search into a ready-to-order file. This file can subsequently be edited and
transmitted to Ei who will supply the documents, either by regular mail, courier or Fax. They may also be able to transmit the full text of some material, including the illustrations. Other ON DISC CD's will run on the system although Ei will not supply documents from these CD's. The system operates on "windows" and requires a sophisticated workstation (AT with 2 MEG RAM, laser printer, etc.). Perhaps other CD vendors will develop similar means of generating document requests as part of their search systems.

In the absence of such sophisticated systems we must use the traditional location aids. Union lists of serials exist but are expensive and not always accurate. An expanded and updated IAMSLIC Mussel Union List would have great potential value especially to libraries in remote locations. Many libraries issue lists of their serials (either holdings or titles currently received) and, since these are often free, it may be worth collecting those from libraries that carry the sort of material you may need. Also ISI, UMI and Chemical Abstracts offer to supply copies of articles from certain journals for a fee. Journal articles are the easiest type of document to obtain but the costs charged by many sources may be a real barrier, especially to those libraries in developing countries.

If the material required is a chapter in a book, unless one has access to OCLC or some similar system one can only use an educated guess as to which library to approach for a loan. The availability of MELVYL and other databases via OmNet does increase access to such sources.

Report literature also may be difficult to find (unless it is an NTIS report). In general try the organization that sponsored the report to see if they will lend a copy. SciTech Publications, which is issued by Communications Branch, Department of Fisheries and Oceans (Ottawa, ON, Canada, K1A 0H3), lists the various reports issued the the department and is available free of charge.

Dissertations can often be obtained from University Microfilms International if listed in Dissertation Abstracts International. Otherwise send a request to the University concerned.

Even when a location is known it may take some time to obtain a wanted item. Requests sent by electronic mail will expedite matters slightly but the dispatch of material via the normal postal services takes time, even within North America. When international mail is involved material can take months. It took six weeks for a package to reach Iceland from Winnipeg. What can be done to expedite matters? Air mail or air couriers can be used but are expensive. Fax is possible but again it is expensive especially if several pages are involved.

Electronic mail is quite widely used for requests. We often see messages on the IAMSLIC Bulletin Board on OmNet which start "Does anyone have....?". My enquiries show that responses to such requests are good.
Some journals are becoming available online in full text so, for these, it would be possible to download relevant sections, but again at some cost. Perhaps in time this means of transmission will become a viable means of getting information around the world.

There is discussion of using CD-ROM as a means of disseminating literature. The Main Library at Cornell University is identifying core agriculture literature with a view to making it available on CD (Olson 1990). The Consultation Group for International Agriculture Research (CGIAR) is planning a Compact International Research Library. The first discs will include some 5,000 of the more important publications from CGIAR centres and should be ready by October 1991 (Frierson and Paisley 1990). This format of distribution is viewed as especially useful in tropical countries where paper deteriorates rapidly. If a similar CD project could be developed covering specific areas of the aquatic sciences it would prove useful.

REFERENCES


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