NATIONAL PROFILE OF INFORMATION SERVICES IN AQUACULTURE:
PHASE II

Eileen M. McVey
Aquaculture Information Center
National Agricultural Library
Beltville, MD 20705-2451

ABSTRACT: In the fall of 1992, the Aquaculture Information Center at the National Agricultural Library began the second phase of an evaluation study on reference services and user profiles. This evaluation study tested the usefulness and efficiency of automated tracking of statistics on information activities at the Aquaculture Information Center of the National Agricultural Library. Statistics entered remotely from six selected pilot sites across the nation were also integrated and analyzed. The time for data collection covered approximately one year. Q & A, a database management software, HyperLAN, a hypertext knowledge construction software, and WordPerfect Office software, which provided the e-mail component, were integrated into a system called Aquaforum. Novell Netware Lite, a peer-to-peer network operating system, and Norton PcANYWHERE by Symantec, a remote communications software, provided the infrastructure for accessing the fileserver. Results of the study provided substantial information on aquaculture information services as well as the successful application of automated tracking of activities for statistical profiling and successful electronic networking with key aquacultural groups.

I. Introduction

During the past year, the Aquaculture Information Center (AIC) began work on a cooperative project with six pilot sites to apply new technologies to the tracking and profiling of aquaculture information needs and activities. The AIC hoped that analysis of such data could provide a comprehensive picture of the activities and information needs in the aquaculture industry. This information would be valuable for program planning, improving network activities, and publication/product development.
II. The Aquaculture Information Center

The Aquaculture Information Center is one of 11 information centers at the National Agricultural Library. Established in 1984, the Center was Congressionally mandated to serve as a repository of national aquaculture related materials in 1985. The National Agricultural Library provides the infrastructure for the collection of aquaculture information from around the world and offers document delivery service for agriculture related literature. The AIC additionally provides reference support, publication/product development, and serves as a clearinghouse for information delivery to the agricultural community by active participation in various interagency committees and other formal and informal networks.

III. The Aquaculture Industry

The aquaculture industry has grown sporadically over the last decade. There has been an average annual increase of 15 per cent in total value of world aquaculture output during the 1984-90 period and global per capita seafood consumption has risen nearly 19 per cent between 1980 and 1989 (Rhodes, 1993). In 1991, United States aquaculture production had a farm gate value of $880 million. The United States is the second largest importer of seafood products. In 1990, more than $9 billion worth of fish and shellfish were imported, $800 million of which was farm-raised (Hanfman, 1993) The Food and Agriculture Organization and Aquafood Business Associates have determined that the world total value for aquaculture in 1990 was over twenty-six billion dollars (Rhodes). In conjunction with this industry growth, the demand for information on aquaculture has also increased. The diversity of the industry, changing biotechnical practices, and various socioeconomic conditions place significant demand on providers of aquaculture information. Limited resources for delivery of aquaculture information has presented additional challenges. As a result, the AIC has placed continued emphasis on profiling information needs over the past few years to determine the most efficient and economic approaches to information delivery.

IV. Background to the Project

In 1991, the Center completed Phase I of an evaluation study funded under the Office of the Assistant Secretary for Science and Education, United States Department of Agriculture. This study profiled selected reference requests received by clients throughout the United States over a six-year period. Findings of this study clarified the need for daily electronic recording and tracking of aquaculture information requests and better electronic networking with other major aquaculture facilities. It was also determined from the results of this study that an assessment of the services and resources of those institutions that provide aquaculture information was needed.
V. Phase II

In March of 1992, the AIC received authority by the Office of the Assistant Secretary, to begin Phase II of this study. Set up of a Local Area Network (LAN) and set up of a remotely accessible fileserver for data entry was completed. Phase II included the development of a flexible template for statistical recording and tracking of daily reference transactions of the AIC and daily reference transactions of six selected pilot sites. AI Resources of Baltimore Maryland was awarded the contract for database development, computer software/hardware configuration, set-up of the LAN and technical information support for one year.

Participants

Six pilot sites were selected for remote electronic data entry of their aquaculture information services. The pilot sites were selected based on geographic location and their role in aquaculture information dissemination in the aquaculture community. Pilot sites that participated represented: USDA Cooperative Extension Service at Louisiana State University, Sea Grant Marine Advisory Service at University of Delaware, State Aquaculture Coordinator at the Agriculture Department of Washington State, Land-Grant libraries (Hamilton Library, University of Hawaii; Ralph Brown Draughon Library, Auburn University) and the North Central Regional Aquaculture Center, Iowa State University. In addition Hamilton Library developed a subdatabase that linked remote island sites through Hawaii to the AIC.

The AIC entered into Specific Cooperative Agreements with each of the above pilot sites. Pilot sites received communications software and documentation for both communications and database use as well as some support for other expenses incurred. Technical support to the pilot sites was provided through telephone and e-mail by the project coordinator at the AIC and by the contractor.

Hardware

A LAN peer-to-peer system was installed connecting four personal computer workstations to a Dell 486 Microcomputer fileserver with 8mb of memory and a 9600 baud modem. Novell Netware Lite software and Ethernet cabling and cards were selected to support compatibility with future National Agricultural Library plans for a library-wide LAN.

Software

Communications software selected was pcAnywhere by Symantec Corporation. This software allowed the remote users to control the fileserver via modem. The AIC established an 800 number telephone line for efficient and economical dial in.
Aquaforum was the name selected for the system. All software was loaded on the 
files server. WordPerfect Office provided the shell interface for all users and this shell 
allowed individualized screen menus for each of the AIC workstations. Within the shell 
an e-mail component was provided for daily communication between the pilots sites, 
AIC, and the contractor.

A separate module, named NAL Hypertext System, was created for loading ASCII text 
files of directories and publications from AIC and the pilot sites. HyperLAN, a 
hypertext knowledge construction system by MaxThink, was used to provide full text 
search capabilities of the ASCII files. This hypertext module was broken into four 
sections: 1) Bibliographies, 2) Contacts, 3) Documents and 4) Events and Activities. 
A user could obtain an ASCII version of an out-of-print AIC publication or a current 
listing of important contacts. Due to staff and time constraints, limited use was made of 
this module, but the potential of this software application was found to be significant.

The Database

Q&A 4.0 for DOS database software by Symantec was selected by the contractor. The 
database permitted ease in search and updating of separate files, performed calculations, 
tabulated values, allowed mass update and backup, allowed customized help screens, 
allowed easy edit of template during initial project, allowed designation of keyword 
fields for thesaurus construction and provided field level security. Fields could be 
variable in length and their location changed on the template as testing was done. 
Searching could be done using Boolean operators, truncation, and range searching as 
well as "plain" English sentences. Up to 50 variables could be accessed and compared. 
Unlike the database used in Phase I of the project, Q&A allowed keyword searching and 
required fewer screens. Q&A allowed two types of reports, columnar or cross tabulated, 
and provided the ability to use special fonts and headings for more formal presentations 
of data.

A template of three computer screens (pages) with a special fourth screen (for the AIC 
file only) was designed. Fields for date, name, address, affiliation, staff name, type of 
request, subject area(s), species, and materials provided were some of the fields for data 
entry. Several of the fields were automatically calculated by the files server based on data 
entered. Name and address fields were security protected. Survey of the pilot sites and 
AIC staff provided the development of keywords for certain fields of the database to 
allow standardized terms for searching. The fields having keyword access were Client 
Affiliation, Species, and Subject. Due to the broad geographic diversity of the pilot 
sites, it was difficult to make the keyword subject and species lists as complete.

A total of seven geographically distinct databases was created. One master database was 
defined for the merged data using the template. Each site had full access to its own 
database, no access to the databases of other remote sites, and limited access to the 
aggregate database. Each site was able to authorize additional users to enter, delete, and 
update data, as well as create and write reports based on the information contained in
their database. The pilot sites were also able to generate reports from the Master file or aggregate database.

Results and Conclusions

Based on reports generated from the AIC file and the merged Master file, the AIC was able to determine highest volume species requests and highest volume subject requests. Data was analyzed by State and region as well as by client affiliation in both files. The final reports from each of the pilots sites are being evaluated currently.

Advantages

Advantages of the system included the following: The database provided the Center with a comprehensive picture of our activities and those of the pilot sites regarding the provision of aquaculture information. This tells us “what we do” and may provide some guidance in “what we should do.”

The system certainly provides the opportunity for greater accuracy and greater comprehensiveness in data collection. Since it is automated, we were able to collect data over more fields and able to tabulate more data.

The system illustrated a potential for broader applications within our program. The hypertext module allows immediate delivery of our updates to directories and lists as well as new bibliographies. It also supports delivery of out-of-print materials.

Aquasforum supports the move in libraries toward greater application of technology in the delivery of information.

The project also provides the avenue for better communication between geographically separate entities within a broad aquaculture information network. Several of the pilot sites want to continue data entry for a better profile of their programs and services.

Difficulties Encountered

There were several difficulties and drawbacks in the project. Initially it was hoped that the staff at the Center could be doing direct data entry as the requests came in on the telephone to avoid paperwork. Due to the loss of some clerical support shortly after the initiation of the project and the difficulty for staff to remain at a single desk site, this effort was somewhat abandoned in the early stages. In addition, due to the fact that a LAN system and several software packages were introduced at the same time, there was a substantial learning curve.

The software allows up to 200 report formats to be stored on the database. Generation of the monthly report statistics was automated as much as possible using macros to run 57
reports that had been designed on the database. This still required the systems operator to monitor the fileserver for 4 to 8 hours depending on the file accessed and the data needed. File merges took substantially longer to complete.

A lag in getting the project implemented on schedule placed some constraints on the participation of the pilot sites. One site had to drop out early due to funding cuts at their facility and so data entry was limited.

Creating a thesaurus of keywords and keeping it as tight as possible was a difficult test due to the broad scope of regions and types of facilities entering data as well as the multidisciplinary nature of aquaculture. The final list of keywords for subject contained 183 terms.

BIBLIOGRAPHY


