

COLLABORATIVE ACCESS TO AQUACULTURE AND FISHERIES SCIENCE INFORMATION: MALAWI'S EXPERIENCE

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Abstract

There is a lot of information on aquaculture and fisheries in the world. Most of this information is generated through research conducted by scientists and scholars, among others. The information is available in electronic and printed forms. The use of information and communication technologies (ICT) has eased the access of aquaculture and fisheries science information in electronic form through the use of the Internet, intranets, CD-ROMs or computer databases. Printed information is still available, but with limited accessibility because the information is often located on one place. Accessing aquaculture and fisheries science information has its challenges especially in Malawi. Some of the challenges are lack of locally generated information available online, inability by libraries and information centres to acquire all the needed information, reluctance by researchers, scientists and students to deposit information generated to libraries and information centres, unavailability of ICT equipment for accessing online information; and lack of knowledge by users on where and how to find the information they need. These challenges could be resolved if there could be a close working relationship between librarians on one hand and aquaculture and fisheries scientists on the other. This would ensure that all the information generated by scientists is captured and collated into well-known locations. At the same time information, that scientists are not aware of could be unearthed by librarians for their use.

Keywords: Information, information and communication technology, online information, printed information, Internet, and electronic information, information literacy skills, digital repositories.

Introduction

Aquaculture and fisheries science information in Malawi is mostly used for teaching, learning, decision making and research for increasing knowledge. The information is available in libraries and information services and also online. Researchers need the information for literature review among other things; scholars also need it for teaching and learning. Accessing such information by users varies from one institution to another for a number of reasons.

Some Sources of Aquaculture and Fisheries Science Information

In Malawi most users access the following information resources:

- *Printed Library Materials*

Malawi has about eight institutions that work directly in the aquaculture and fisheries science sector and have libraries. Their collections vary for a number of reasons, some of which are the size and availability of budgets for the purchase of books and subscribing to periodicals.

Library	Total Collection	Aquaculture and Fisheries Science materials (%)
Chancellor College	550,376	0.15
Chitedze Research Station	20,944	1
Fisheries Research Unit (Monkey-Bay)	9,098	72
LUANAR Libraries	80,500	5.1
Malawi College of Fisheries	15,223	67
Malawi Marine College	8,653	81
Mzuzu University	47,987	4.5
National Aquaculture Centre	12,870	75

Table 1: Libraries and Their Collections.

- **CD-ROMs (Mostly Abstracts)**

ASFA (Aquatic Sciences and Fisheries Abstracts) and ABAFR (Aquatic Biology, Aquaculture & Fisheries Resources)

- **E-resources**

There are a number of electronic resources available online accessible by scientists and others. They contain peer reviewed full text journal articles. Some of them are:

i) [Fishbase](#)

A global biodiversity information system on finfishes. Its initial goal to provide key facts on population dynamics for 200 major commercial species has now grown to having a wide range of information on all species currently known in the world: taxonomy, biology, trophic ecology, life history, and uses, as well as historical data reaching back 250 years.

ii) [Fishes of Malawi](#)

This is a scientifically oriented, noncommercial site devoted to a fascinating trove of tropical biodiversity — both the largest lake-fish fauna and the largest vertebrate species group on earth — the cichlids of southeastern Africa's Lake Malawi. (It is Lake Nyasa or Niassa to the people of Tanzania and Mozambique, who share this giant rift lake with Malawi.)

iii) [Aquatic Commons](#)

A thematic digital repository covering the natural marine, estuarine /brackish and fresh water environments. It includes all aspects of the science, technology, management and conservation of these environments, their organisms and resources, and the economic, sociological and legal aspects. It is complementary to OceanDocs, which is supported by the Intergovernmental Oceanographic Commission (IOC)/ International Oceanographic Data and Information Exchange (IODE) specifically to collect, preserve and facilitate access to all research output from members of their Ocean Data and Information Networks (ODINS).

iv) [Research4Life](#) a collective name for the four programs

– Hinari, AGORA, OARE and ARDI – that provide developing countries with free or low cost access to academic and professional peer-reviewed content online.

1. [AGORA](#) (Access to Global Online Research in Agriculture)

Access to Global Online Research in Agriculture (AGORA) is a program by Food and Agricultural Organization (FAO) aimed at providing free or low cost access to major scientific journals in agriculture and related biological, environmental and social sciences to public institutions in developing countries. Launched in October 2003, AGORA provides access to 1900 journals from the world's leading academic publishers.

2. [HINARI](#) (Access to Research in Health Programme)

HINARI Programme set up by World Health Organization (WHO) together with major publishers, enables developing countries to gain access to one of the world's largest collections of biomedical and health literature. More than 8,000 information resources (in 30 different languages) are now available to health institutions in 105 countries (including Malawi), areas and territories benefiting many thousands of health workers and researchers, and in turn, contributing to improve world health.

3. [OARE](#) (Online Access to Research in the Environment)

Online Access to Research in the Environment (OARE), an international public-private consortium coordinated by the United Nations Environment Programme (UNEP), Yale University, and leading science and technology publishers, enables developing countries to gain access to one of the world's largest collections of environmental science research.

Over 2,990 peer reviewed titles owned and published by over 340 prestigious publishing houses and scholarly societies are now available in more than 100 low income countries. Research is provided in a wide range of disciplines.

iv. [TEEAL](#) (The Essential Electronic Agricultural Library)

The Essential Electronic Agricultural Library is a digital collection of research journals for agriculture and related sciences. Researchers, students, faculty and librarians can discover and access thousands of full-text PDF articles without the use of the Internet. TEEAL is available to institutions in low income-eligible countries.

Local Digital Repositories

Some libraries in Malawi such as LUANAR, Mzuzu University, National Archives and National Library Services; and other institutions such as Pact–Malawi have created 20 digital repositories. These collections have a total of about 5,000 documents, mostly scanned from printed copies. Some of these collections are available online and contain certain percentages of aquaculture and fisheries information.

Challenges in Accessing Aquaculture and Fisheries Science Information

There are a number of challenges that hinder users accessing aquaculture and fisheries information in Malawi.

The first challenge is the limited amount of locally generated information available online. Most of the scientific information is available in printed form that needs digitization. However, not all libraries and information centres have appropriate and adequate equipment for digitization. They may also not have any platform to publish the electronic information. Others grapple with some issues to do with intellectual property rights for the materials to be scanned or put them online.

There are some initiatives aimed at increasing locally generated information accessible online. One of these is on a joint project known as '*Situation analysis of conservation, management and dissemination of institutional knowledge*' by Bunda College Library and CAB International of United Kingdom; it is aimed at locating and collating locally generated scientific materials for

digitization and creating a full-text database online. Scientific materials are located and collected from six scientific institutions, namely Chitedze Agriculture Research Station (CARS), Forestry Research Institute of Malawi (FRIM), LUANAR, National Aquaculture Centre (NAC), Tea Research Foundation (TRF), and World Fish Center (WFC). These institutions were chosen based on the number of scientific publications they produce. The end product is a database called: [Global Agricultural Research Archive \(GARA\)](#) which so far has 484 full-text publications from Malawi, some of which are on aquaculture and fisheries collected from local aquaculture and fisheries science institutions.

Another initiative to increase local content online is the creation of digital repositories mentioned above.

The other challenge is the inability of libraries and information centres to acquire relevant information because of limited or lack of funding. In a survey of eight research and academic libraries such as Chancellor College, Chitedze Research Station, LUANAR Libraries, Malawi College of Fisheries, Malawi Marine College, Fisheries Research Unit, Mzuzu University and National Aquaculture Centre, 50% of them have annual budgets for acquiring books and subscribing to periodicals. However, having a budget is one thing and utilizing the funds on the budget is another.

Library	Books and Periodicals Budget
Chancellor College	YES
Chitedze Research Station	YES
Fisheries Research Unit (Monkey-Bay)	NO
LUANAR Libraries	YES
Malawi College of Fisheries	NO
Malawi Marine College	NO
Mzuzu University	YES
National Aquaculture Centre	NO

Table 2: Libraries with and without budgets for books and periodicals.

For locally produced publications, librarians are supposed to visit scientific institutions to solicit publications in aquaculture and fisheries. Most institutions give out their publications for free, but they may sell some.

Reluctance by researchers, scientists and students to deposit information in libraries and information centres is another challenge. It seems there is no law that mandates scientists to deposit their work; the only existing law is the one which compels publishers and producers of local publications to deposit copies in the National Archives of Malawi. However, it is not easy to enforce the law. Some scientists do not receive any incentives if they deposit materials in libraries and information centres.

Unavailability of reliable Internet connectivity and expertise in online information searching and retrieval skills due to lack of or limited funding is also a challenge in Malawi. For users to be able to access online information in aquaculture and fisheries, they need to be connected to an Internet. Most scientific institutions are connected to the Internet, but most have slow connections due to inadequate bandwidth, or the Internet is not accessible by all who need it. High bandwidth calls for more monthly subscriptions which most institutions do not afford. As an

example, LUANAR pays a monthly subscription of US\$15,200 for 45mbps symmetric downlink and uplink. Low bandwidth leads to difficulties in searching and downloading scientific information available online. Some information users may not have the expertise to search and retrieve quality information online.

Finally, lack of knowledge by information users on where and how to find the information they need is a challenge. Most libraries do not conduct information literacy skills sessions to impart knowledge and skills to users on how to search and retrieve information they need in the shortest time possible. Users are sometimes overwhelmed with the amount of information that they get on the Internet or when they visit libraries or information centres. Others may not know where to start from searching and retrieving the information they need because they lack information literacy skills. In a questionnaire administered to 14 postgraduate students and academic staff in the field of fisheries at the then Bunda College of Agriculture, Kaunda and Limuwa (2007) found that more than 50% of the respondents stated identification of articles related to their work was the number one problem while 38% identified sourcing of journal articles to be their major problem.

Collaborative Effort for Accessing Information

Collaborative access to information in aquaculture and fisheries science was an answer to the challenges outlined above. First, there is a close collaboration between scientists or researchers and librarians who are either producers or users of information. Each one of them has a role to play.

Scientists' or Researchers' Roles

Scientists are required to voluntarily deposit their work in libraries and information centres so that they are widely accessible. However, from time to time librarians also go to scientists to collect the papers. Some scientists have given permission to librarians to digitize their works and make them available online. Scientists as producers of aquaculture and fisheries information own intellectual property rights for their work.

Scientists or researchers are required to attend information literacy skills sessions conducted by librarians. They also do seek assistance from librarians on how to search and retrieve information.

Librarians' Roles

Librarians collate and organize all the scientific information. They use their skills to sift through the information based on the mandates of their libraries, taking into consideration the needs of their users.

Librarians are required to seek permission from owners of intellectual property rights to create digital libraries and put them online. As stated above, there is not much information on Malawi's aquaculture and fisheries available online. Creating digital repositories increases access to electronic resources.

Considering that most users may not have the skills to search and retrieve information, there is a need to regularly conduct information literacy skills sessions. Information literacy skills sessions guide library users how and where to find information they are looking for in the shortest time possible. Users are also able to evaluate the information they retrieve. Librarians are always available to assist their users to search and retrieve information they need.

If a similar study to the one mentioned above (Kaunda and Limuwa, 2007) were repeated today, the results will definitely be different because there has been a lot of collaborative effort amongst librarians and scientists in information literacy skills.

Secondly, there is strong collaboration among librarians working in aquaculture and fisheries science institutions in Malawi. They share documents produced by respective institutions both in printed and electronic form; and has strengthened LUANAR's role of being a national focal point for aquaculture and fisheries science information. The librarians assist each other in searching and retrieving information as requested by users from respective institutions. The collaboration among these librarians has facilitated the creation of two digital repositories with local content. The repositories are [LUANAR Digital Repository \(LDR\)](#) and [Pact – Malawi Repository](#) respectively.

	Received from other institutions	Sent out to other institutions
Requests	47	12
Requests satisfied	38 (84%)	9 (75%)

Table 2: Requests to and from LUANAR Libraries in 12 months.

Finally, librarians from the eight institutions enhance their information literacy skills through regular contacts such as physical meetings and training workshops. In the meetings, the librarians sharpen their information literacy skills and share knowledge, skills and any other new information sources. In the last 12 months they have met twice.

Conclusion

Collaborative information access has assisted both scientists and librarians alike to enhance their information literacy skills and increased their knowledge of the various information sources. It has also assisted in collating and managing locally generated information through the creation of repositories.

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