

INFORMATION FOR FISHERIES MANAGEMENT IN NIGERIA: THE ROLE OF LIBRARIES AND NETWORKING

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ABSTRACT: A brief overview of the marine and freshwater resources of Nigeria is provided. Despite extensive fisheries, Nigeria imports over two thirds of the fish demanded by consumers. The need to improve fisheries production capacity is important to the national economy and efforts are being made to put in place sustainable fisheries management policies and to extend the contribution of aquaculture through modern techniques. The paper discusses the opportunities and challenges facing libraries and information specialists, in particular in freshwater fisheries and aquaculture, and the role they play in these efforts.

Strategies are proposed for improving access to and dissemination of information for the Nigerian fisheries sector. These include improving the publication, management and dissemination of information produced by Nigerian fisheries scientists and providing access to regional and global scientific information. Some of the mechanisms employed are covered i.e. Nigerian Fisheries and Aquatic Science Abstracts and associated special library collections; higher visibility in peer-reviewed literature and international databases such as ASFA and ABAFR; access to full-text journals via AGORA; and library networking to share available resources and expertise.

The major constraints to implementation are discussed and include: the level of bibliographic scatter in fisheries; the high mortality rate of Nigerian journals; a poor level of bibliographic control; and last but not least, poor library funding. The paper advocates for better interaction between librarians and the publishers of Nigerian journals to map out strategies for their coverage in both local and international databases. To achieve effective information provision, the paper advocates for sustainable funding of libraries.

FISHERIES RESOURCES AND PRODUCTION IN NIGERIA

Nigeria is located in West Africa bordering the Gulf of Guinea between Benin and Cameroon. It is a coastal state with a coastline of ca. 853km and a 200 nautical miles Exclusive Economic Zone (EEZ), in which it has exclusive rights to the fish and other natural resources. The brackish and coastal waters of Nigeria support harvests at the artisanal level, while the industrial sector operates only outside the 5 nautical miles. Nigeria has a total land area of 923,768 sq. km. and 13,000 sq. km. of inland water bodies. Generally, the climate varies from South to the North ranging from equatorial in the South, tropical in the centre and arid in the North. The population of the country is put at about 137 million.

In addition to the marine and brackish water resources, Nigeria has massive freshwater systems, including lakes, rivers, reservoirs, dams and floodplains which support extensive artisanal fisheries (Fig. 1). The River Niger which rises in Sierra Leone and has a total length of 4,184 kilometers, flows through West Africa, enters Nigeria in the northwest and runs southwards to join the River Benue at Lokoja, before traveling the remaining 547 kilometers to the sea. These two major rivers and the many smaller rivers support large freshwater artisanal fisheries in the country. A study by the National Special Programme for Food Security (NSPFS) (2004) identified about 2,658 fish farms and 937 Dams and Reservoirs in Nigeria. Ita (1985) has identified about 365 lakes and reservoirs and 687 ponds and floodplains totaling over 13 million hectares of water bodies. Despite this potential, the current annual demand for fish is 1.5 million tonnes, whereas local production stands at about 0.4 million tonnes. In 2000, the fish import bill exceeded ₦30 billion naira i.e. US\$241.1m.¹ (Dada 2004). This relatively low production and the impact on the economy of high imports, is of concern and a challenge to all in the fisheries sector.

The collection of accurate data is most difficult for inland fisheries but there is thought to be great potential for increased fish production in freshwaters. Because of the artisanal nature and the rural location of the inland fishermen and the rivers, most of the freshwater catches are not accounted for. For example Lake Chad has been well studied for the past five years and production statistics kept. Thus it has been established that the potential yield of the lake is 200,000 m.t. while current actual production is only half of that. The Nigerian side of the Lake produces 60,000 m.t. annually, with a monetary value in excess of \$22 million (ca. 2.95 billion Naira). Lake Chad currently produces about 33% of Nigerian freshwater fish production. Unfortunately, this type of data is not available for other water bodies.

Ezenwa (1994) asserted that accurate estimates for aquaculture production in Nigeria are difficult to obtain due to logistical reasons. Many private fish farmers do not keep statistics and, when they do, are not always ready to give actual production figures.

¹ 1 USD = 133.750 NGN (June 2005)

However, the national production figures show a yearly increase, which suggests that the government is putting some emphasis on aquaculture. Madu (1995) showed that more private individuals are becoming involved in fish farming and government policy is to empower them through assistance from relevant government departments.

In order to reduce and possibly eliminate the deficit in fish production, a sound and sustainable fisheries policy, which is broad based with realizable objectives, is required. In 1988 the Federal Ministry of Agriculture, Water Resources and Rural Development produced a comprehensive “Agricultural policy for Nigeria”, with fisheries as a major component (FMAWRRD, 1988). As a result of this policy framework, the Federal Government promulgated two decrees – The Inland Fisheries Decree and the Sea Fisheries Decree of 1992. These decrees harmonized the administration, management, protection and improvement of the fisheries resources. In 2000, a draft of a new National Fisheries Policy was presented for discussion at the National Fisheries Development Committee (NFDC) meeting. This revision was necessitated by the perceived failure of previous fisheries policies (Ladu and Ovie, 2001). The various States are currently evaluating the new draft proposal and will provide inputs at the next NFDC meeting. Miller (2004) observed that the National Special Programme for Food Security (NSPFS) of the Federal Government includes enhancement of aquaculture production in the private sector, with advice from Chinese aquaculture experts. This also reflects Government policy to empower private fish farmers.

FIG 1: MAP OF NIGERIAN RIVERS



NIGERIAN FISHERIES ORGANIZATIONS AND THEIR LIBRARIES

Nigeria has two major fisheries research institutes, one specializing in freshwater fisheries (National Institute for Freshwater Fisheries Research in New Bussa) and one for marine fisheries (Nigerian Institute for Oceanography and Marine Research, NIOMR, in Lagos). The Lake Chad Research Institute in Maiduguri works mainly on environmental studies of the Lake. Affiliated to NIOMR is the African Regional Aquaculture Centre, a regional training centre established with the assistance of FAO in 1980. There are three Federal Colleges of Fisheries and over thirty-five fisheries or fisheries-related departments in Nigerian Universities. In addition, each of the 36 States has a government Department of Fisheries. Ibeun (2004) provided further details of these institutions and their programs. Information on their libraries and publications is maintained in the FAO Directory of Fisheries and Aquaculture Information Resources in Africa <www4.fao.org/fishdir>.

There are seven specialized fisheries libraries in Nigeria (Ibeun, 1995). Four of these are attached to training institutions, two are at the fisheries research institutes and one is attached to the Federal Department of Fisheries in the capital, Abuja. It must be admitted

that these libraries are not well developed and the primary reason is poor and unreliable funding. The collections are poor and outdated. Issues of any foreign journals published after 1997 held by any of these libraries must have been acquired through gift or exchange. The departmental libraries in the universities are the worst off. Both fisheries students and lecturers rely on the libraries of the two research institutes, which are relatively better in terms of collections and they now have access to Internet facilities. Most of the university departmental libraries are more like reading rooms, where students go with their own books and lecture notes to read in an atmosphere of serenity.

In addition to the fisheries research and governmental institutions in Nigeria, there are several fisheries societies and associations. Most important from the point of view of their scientific activities and publications are the professional societies, in particular the Fisheries Society of Nigeria (FISON). Examples of associations in the commercial sector are the Nigerian Trawlers Ownership Association (NITOA), a body of industrial fishing trawler operators; the Nigerian Association of Fish Farmers and Aquaculturists (NAFFA); the Nigerian Association of Ornamental Fish Exporters; the Nigerian Union of Fishermen and Seafood Dealers and many Fishermen's Cooperative Societies. These would tend not to have their own information resources and services but rather rely on the extension and information services provided by the research institutes.

National Institute for Freshwater Fisheries Research (NIFFR)

The National Institute for Freshwater Fisheries Research (NIFFR) was founded in 1968. Its initial mandate was to carry out multidisciplinary activities on the Kainji Lake and other man-made lakes in Nigeria, including: fisheries, wildlife, aquaculture, limnology, public health, sociology, economics, and range management. In 1987 the mandate was changed by government to cover single commodity and research activities centered on freshwater fisheries and aquatic resources in Nigeria. The mandate is executed by the following technical divisions: Environmental Studies; Artisanal Fisheries; Aquaculture and Biotechnology; Fisheries Technology; Socio-Economics and Extension Services. The support divisions are: Library, Information & Documentation and Finance & Supply and Administration. There are over fifty research scientists at NIFFR.

NIFFR interacts with NGO's such as the fishermen's associations in the area of extension services. For this purpose, NIFFR has a well-established outreach program. The activities include visits to fish farm sites to provide advice and training. For example, in recent years, many fish farmers have been trained in the production of indigenous zooplankton as a starter diet for fish to replace the imported *Artemia*.

NIFFR Library

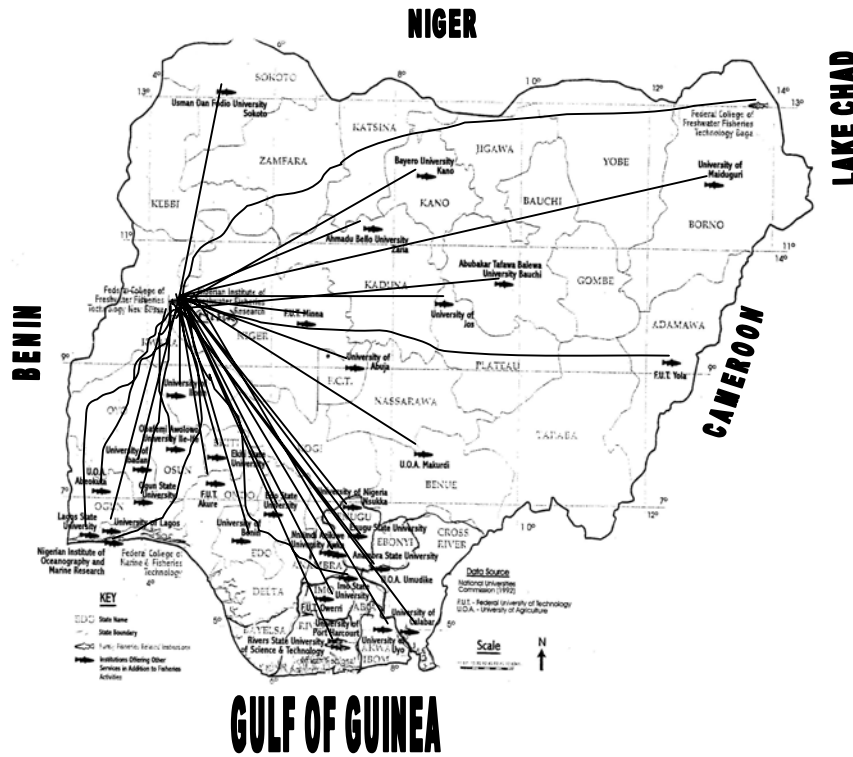
Attached to the major research institution for freshwater fisheries in Nigeria, NIFFR Library is responsible for providing access to information in all areas relevant to the sector. Primary users are the research and development staff of the Institute but because of the poor library collections elsewhere, in reality it serves the whole country. The major categories of users are researchers and students with only indirect contact with the fishing communities themselves. Usually this takes the form of providing extension publications to the cooperatives, associations and other NGO's.

Figure 2 shows the location of NIFFR and some of the routes taken by students and scientists who have traveled distances of up to 2500 km to find the information they need. One can frankly say that *access to information in Nigeria is not only time-consuming but also very expensive* (Ibeun, 2004).

Despite the poor level of funding for NIFFR Library and the challenges we face, for the users of freshwater fisheries information in Nigeria we are considered “a centre of excellence” in trying to meet their needs. To enable us to meet some of the challenges, as early as 1980 the NIFFR Library embarked on building a specialized collection of literature, the Nigerian Fisheries and Aquatic Sciences Collection, which has the following aims:

- To acquire and make available both current and retrospective literature on Nigerian fisheries and related disciplines;
- To catalogue and index them in a dedicated database for ease of retrieval, and
- To publish the *Nigerian Fisheries and Aquatic Sciences Abstracts* as a means of dissemination.

FIG 2: Access to and dissemination of freshwater fisheries information in Nigeria



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The Nigerian Fisheries and Aquatic Sciences database was not primarily intended for current awareness but served as a tool in building a gradual, purposeful and comprehensive collection of publications on Nigerian fisheries and aquatic sciences. The structure of the database and indexing are based on the AGRIS methodology. Our document delivery services are, to a large extent, based on the database and related special collection. Current articles are added on a continuous basis and we continue to search and try to obtain retrospective articles and documents. From the library statistics, it gladdens one that the effort has yielded good results and the Nigerian fisheries and aquatic sciences collection is the most heavily consulted part of NIFFR Library. This special collection has served as a great impetus in managing Nigerian fisheries information on a continuous basis. There are presently over 2,500 documents in the

special collection. Publication and distribution of the annual Nigerian Fisheries and Aquatic Sciences Abstracts serves as a means of informing scientists and policy-makers of the collection and recent additions. The channels of dissemination are roughly the same as the nodes shown in Figure 2. Obviously the library also provides access to information other than the Nigerian collection and this material is processed through the normal library catalogue.

Providing access to global fisheries information brings its own set of challenges, mainly because fisheries libraries in Nigeria have not had access to international databases nor, until very recently, the Internet. In 1999 FAO, on behalf of the ASFA partnership, started a project to make available the ASFA database to Low Income Food Deficit Countries (LIFDC), which could not otherwise afford access. The database was made available either as the Silver platter CD ROM, the ABAFR CD ROM produced by NISC or via the CSA Internet version. NIFFR Library benefited from this project and has since received the quarterly updates of the ABAFR CD ROM, which is made available via the project primarily to freshwater institutions in Africa.

The availability of ABAFR and the possibility to identify relevant documents and download informative abstracts has greatly enhanced the services provided by NIFFR Library. The scientists often borrow the CD ROM to conduct their own searches and as a result have a much greater awareness of existing literature in the discipline. The Library also conducts searches and maintains statistics of usage and follow-up. For example of 38 searches carried out in 2004 there were 788 hits for which 340 (43.15%) extended abstracts were printed out. NIFFR scientists find that some of the extended abstracts are very useful, particularly those containing methodologies and results. Out of these hits only 78 documents i.e. 9.9% were found in NIFFR library. The number of articles found in NIFFR library reflects the poor collection and also explains why such a large percentage of abstracts are printed out for internal use. However, of note is that searches combining Nigeria, recorded a much higher number of articles found in the institute's library. This gives credence to our efforts in developing the Nigerian Fisheries and Aquatic Sciences Database and collection. In addition, the ABAFR CD-ROM is used to track down articles on Nigerian fisheries published in foreign journals which we then try to acquire for inclusion in the Nigeria special collection.

Another recently available resource in NIFFR Library is AGORA which provides access to over 700 full text scientific journals free of charge, including over 50 core fisheries journals <www.aginternetwork.org>. Unfortunately, access to broadband Internet at NIFFR is still very recent and the cost is very high. In the statistics above for 2004 only 11 i.e. 1.4% of the requested articles could be downloaded using AGORA due to the very high cost of Internet access. The number of registered users of AGORA in Nigeria is relatively high and the most recent statistics from FAO show a total of 48 institutions. These include 28 universities, 18 research institutes and 2 government departments. The fisheries institutes so far registered are NIFFR, NIOMR, the Federal College of Fisheries and Marine Technology and the Lake Chad Research Institute.

NIGERIAN FISHERIES PUBLICATIONS

As was discussed at the African fisheries libraries Workshop in Grahamstown, November 2003, one of the biggest problems facing fisheries scientists in Africa is being able to publish the results of their research, especially in peer-reviewed and widely disseminated journals (FAO, 2004). Although Nigeria publishes several fisheries and aquatic science scholarly journals, there is still a tendency for fisheries research to be published as grey literature. This also applies to fisheries management and policy papers, which are most often published as institutional or governmental reports.

Appendix 1 lists some of the Nigerian serials publishing articles on fisheries, aquaculture and aquatic sciences. The list shows that 23.3% are core journals, 50% are not core while 26.7% are institutional publications i.e. the category known as grey literature. The list of journals was also evaluated for coverage in AGORA (Access to Global Online Research in Agriculture <http://www.aginternetwork.org>), AJOL (African Journals Online <http://www.ajol.info>) and ASFA (Aquatic Sciences and Fisheries Abstracts <http://www.fao.org/fi/asfa/asfa.asp>). These are the systems and services which create awareness and accessibility to scientific journals. AJOL is particularly relevant for Africa as it provides access to African published research with the aim of increasing worldwide knowledge of indigenous scholarship. The analysis shows that none of the Nigerian journals is covered by AGORA, whilst only five titles are covered in AJOL. Fourteen are covered by ASFA. The low coverage in services like AGORA and AJOL constitutes a major problem in fisheries information management in Nigerian libraries, where we have to rely on these alerting services. How do you manage what you are not aware of? This explains why most of the journals are unknown even in Nigeria. The journals covered in AGORA are mainly those from commercial publishers in industrialized countries. This explains the absence in AGORA of most Nigerian scholarly journals, most of which are published by institutions or associations. The forging reason cannot be true for AJOL which gives greater visibility to African journals. One possible reason for poor coverage of fisheries and aquatic sciences related journals by AJOL could be that the publishers are unaware of the efforts of AJOL and vice versa. Librarians should take up the challenge of introducing these new information services to Nigerian publishers, for example at workshops, conferences and meetings. This gives credence to the need for good communication between librarians and publishers within the country.

Improved coverage of Nigerian journals in ASFA is encouraging because of the establishment of a Nigerian input centre in 2003. However there are gaps to be filled. The list of Nigerian journals in Appendix 1 is by no means exhaustive and tracking their existence, let alone being able to obtain copies, is difficult and time-consuming even inside the country. Creating awareness and being able to make them available to the international community is constrained by many factors:

The level of scatter of fisheries literature in Nigerian journals:

Of the twenty two journal titles identified in Appendix 1, only seven can be described as core journals i.e. their primary focus is on fisheries and aquatic sciences. The remaining fifteen journals, or 50%, have a wider subject focus, showing the high level of scatter of fisheries information. This has serious implications for fisheries libraries in Nigeria, which cannot afford to subscribe to all of the journals. There is no mechanism or funding to be able to request individual articles on demand. Many of the journals have little visibility nationally, the situation has not improved for fisheries and aquatic sciences journals despite the recent availability of Internet based services such as AJOL. Given that many of the Nigerian fisheries institutions do not yet have reliable and affordable Internet access, we may be in a situation where the international community has better access to Nigerian literature than we ourselves. In my situation, the majority of these journals are discovered accidentally. Therefore, the level of scatter of fisheries articles and the relatively poor coverage in national and international alerting services makes it difficult for fisheries libraries to acquire them and make them available to users.

The high mortality rate of Nigerian journals:

Commercial publishers publish most scholarly journals produced in developed countries. This promotes the process of peer review and high quality articles. The reverse is the case in most developing countries, where Professional Associations, University Departments and even some individuals publish most journals. In such a situation, the marketing strategy is substandard with the consequence of low patronage. Also noticed is that the journals produced by these associations are often provided free to members but are not subscribed to by non-members. Thus there is inadequate funding to be able to produce the journals regularly. Only very few of the journals listed in Appendix 1 are produced regularly. Most die after the maiden or second issue only to be resurrected two or three years later, when a new source of funding is found. Some are never resurrected. This mortality rate constitutes a serious constraint to information harnessing and management in Nigeria.

Poor bibliographic control:

There is no national reference tool in Nigeria that covers scholarly journals published in the country. Some attempts have been made to publish one but inevitably the price is prohibitive for most libraries. In 2004, a company compiled a list of journals produced in Nigeria and offered it for the subscription price of \$747.66. This would be a useful tool for any Nigerian library, but probably only the university libraries would be able to acquire it. In effect, there are no indigenous alerting services to create awareness for the publications being produced in Nigeria. We have to rely most of the time on foreign tools, which in most cases do not have comprehensive coverage of Nigerian publications. Ideally foreign alerting services should rely on Nigerian services in order to ensure better bibliographic coverage of Nigerian publication. This has been a major constraint to fisheries information management. It is often two to three years after publication that many libraries become aware of a journal, often relying on information from conferences or professional meetings to disseminate the details.

MECHANISMS FOR MANAGING AND DISSEMINATING NIGERIAN FISHERIES INFORMATION

Identifying the information resources:

In preparation for the Grahamstown Workshop (FAO, 2004), fisheries libraries identified and provided details of the relevant institutions and publications produced in their own country. This information is compiled in a database and maintained as a tool for improving access to information published in Africa, in particular the grey literature of fisheries. This exercise showed the difficulties of maintaining current information on fisheries publications even at national level.

Specialized local collections and databases:

Particularly for the high proportion of grey literature which characterizes fisheries, even in developed countries libraries which are geographically closer to the source of publication have a better opportunity to identify and obtain copies of locally produced publications. In developing countries, they may have not only a better but in some cases a unique opportunity to identify what is being published and give it a wider dissemination via their library services (Webster and Collins, 2005). As was mentioned in the section on NIFFR Library, the collection on Nigerian fisheries is the most heavily used part of the collection. The publication of the Nigerian Fisheries and Aquatic Science Abstracts is an effective mechanism for dissemination.

A Nigerian ASFA partner:

In 2003, the National Institute for Freshwater Fisheries Research (NIFFR) became an ASFA partner and input centre. Until that time, the Nigerian input to ASFA was done by FAO. The participation of NIFFR Library in ASFA will not only ensure our long-term access to the database but will also hopefully ensure more comprehensive coverage of the Nigerian literature. As shown in Appendix 1, 76.7% of publications listed are currently covered in ASFA, while the remaining 23.3% are now earmarked for coverage. Participation of NIFFR Library in ASFA provides a mechanism for disseminating Nigerian fisheries publications to a truly international audience. In addition it reinforces the Nigerian fisheries special collection as we now have two reasons to monitor recent Nigerian literature on fisheries. At the time of the ASFA Board meeting in 2005, NIFFR Library has submitted over 250 records. As an additional mechanism to disseminate current Nigerian fisheries information, brief details of the journal articles submitted to ASFA are circulated to over 70 institutions in Nigeria.

SOME SOLUTIONS FOR IMPROVING ACCESS TO FISHERIES INFORMATION IN NIGERIA

Library Networking at National Level

Whilst we hear that information resource sharing is the norm in developed countries, it is definitely not the case in most developing countries – where in fact there is a greater need. Rosenberg (1993) attributed this to inadequate information infrastructure and lack

of a functional national information policy to guide development. The success of a national library and information network depends upon coordination but a major pivotal role has to be played by government. This pivotal role is not forthcoming in our setting.

In order to map out strategies for harnessing and sharing information in the areas of fisheries and aquatic sciences, a meeting of the librarians working in fisheries institutions in Nigeria was organized in 2004. Hopefully, this could be a way of maximizing the usage of nationally available information. It was during this meeting that we decided to identify journals publishing articles on Nigerian Fisheries and Aquatic Sciences. This is an on-going project and we hope to identify more journals and other grey literature. The true situation is that each library is not developed enough to meet all of the demands for information needed by Nigerian scientists. As librarians, we have to develop mechanisms to maximize the usage of all of the information resources available within the country.

The meeting resulted in the conclusions and decisions shown in Appendix 2, which it was agreed would be forwarded to the management of the individual institutions. From the resulting communiqué, it is evident that we are still dreaming and the dream will never become a reality without the pivotal role of government in terms of better funding and the development of an information policy.

Regional Library Networking

Two Nigerian fisheries libraries work with regional networks to improve access to information for their user communities. The Nigerian Institute for Oceanography and Marine Research (NIOMR) in Lagos is an ODINAFRICA (Ocean Data and Information Network for Africa) focal point. ODINAFRICA is an initiative of the Intergovernmental Oceanographic Commission (IOC) of UNESCO with the support of the Government of Flanders. The aim is to train librarians and scientists in the field of marine information and data management. As a result of ODINAFRICA, NIOMR Library has Internet access and has been able to digitize the card catalogue using the INMAGIC software.

Since 2002, NIFFR Library has been working with a small group of fisheries libraries in Africa in an informal network, coordinated by the South African Institute for Aquatic Biodiversity (SAIAB) and the FAO Fisheries Library. This project is building upon the availability of the ASFA and ABAFR databases to investigate ways of providing access to the documents identified as bibliographic references. The project has been gathering data and statistics on the number and types of documents requested and their availability either full text via systems like AGORA, in Open Archives or in print format in SAIAB or other African fisheries libraries.

It became apparent at an early stage in the project that the range of subjects and journal titles requested extended far beyond the core fisheries literature. For example, many of the general, environmental and veterinary sciences, economics and social sciences journal articles requested were not held by either SAIAB or FAO Libraries. This was one of the findings of the project which led to the promotion of networking at national level,

particularly for the peripheral subjects, and concentrating on core fisheries titles in the regional network.

Table 1: Documents received through the project

Year	Total request	Supplied by SAIAB	Supplied by FAO	Total received	Total not supplied
2002	400	130	105	235	165
2003	52	28	12	41	11
2004	168	81	37	118	50
Total	620	239	155	394	226
%		38.55%	25%	63.55%	36.45%

Table 1, shows the breakdown of requests made by NIFFR under the project. In all 620 documents were requested 38.5% was supplied by SAIAB and 25% by FAO. The table shows a high number of requests in 2002, very low in 2003 and picked up a little in 2004. The reason for these variations is due to poor E-mail services. The commercial E-mail in use broke down for months in 2003 and 2004. This is an indication that communication could be a serious constraint to accessing fisheries information even when it is available free of charge. However, it is heartening that there is daily improvement in communication in Nigeria and hopefully such a problem will soon be a thing of the past for libraries in rural areas.

The fact that 36.45% could not be supplied confirmed the fact that fisheries as a subject draws from broad based disciplines (Ibeun 2004). It also confirmed the fact that no library can be self-sufficient and justifies the efforts in information sharing initiated by organizations like IAMSLIC.

MAJOR CONSTRAINT

Poor funding of libraries: Apart from university libraries which have about 10% of the capital allocation set aside for the library by law, other libraries do not enjoy such provision. The interest of the Chief Executive in other types of library and his relationship with the Librarian, in most cases influence budgetary allocation to the library. Even when a budgetary allocation is made for the library, it is the first to be cut in the event of financial crisis. Lack of budgetary provision has been a major problem in managing fisheries information in Nigeria.

As an example, Volume 9 of the Nigerian Fisheries and Aquatic Science Abstracts was published and distributed in 2000. Volumes 10 and 11 were compiled and ready for publication for three years but unfortunately there was no funding available. In fact the two volumes were produced in 2004 and 2005 with assistance from FAO in support of improved access to fisheries and aquaculture information and documentation in Nigeria.

CONCLUSION

For many years to come, managing fisheries information in Nigeria will depend on the information systems and services produced in developed countries. Librarians need to actively participate in these international databases and systems to boost the dissemination of Nigerian information and improve access to global fisheries information. Affordable and reliable Internet access is a *sine qua non* to free access to information. It is essential for the utilization of information sources such as AGORA and other full text opportunities.

To improve the production, dissemination and management of fisheries information in Nigeria, there should be a better interaction between librarians and the scientists who generate the information. Such an interaction could provide advice as to where they could publish their works to enhance international visibility and to ensure free and open access to their work. Also, there should be an interaction between librarians and publishers. Such an interaction could lead to better coverage of what is published in the country in international databases as well as its availability in libraries. Links between publishers and libraries are also essential for the negotiation of costs and licenses.

All of these interactions depend upon sustainable funding for libraries. We will have made great progress if we can ensure sustainable funding - rather than some of the gigantic, expensive, grandiose, virtual and unrealistic projects we have seen in many parts of Africa.

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APPENDIX 1

NIGERIAN JOURNALS INCLUDING FISHERIES AND AQUATIC SCIENCES: COVERAGE IN SOME INTERNATIONAL ALERTING SERVICES

Category A: Core Fisheries and Aquatic Sciences Journals

Title	AGORA	AJOL	ASFA
1. Journal of Aquatic Sciences ISSN 0189-8779, Jos	X	√	√
2. Journal of Arid Zone Fisheries ISSN Maiduguri	X	X	√
3. Journal of Fisheries Technology	X	X	√
4. Nigerian Journal of Fisheries ISSN New Bussa	X	X	√
5. Tropical Freshwater Biology ISSN 0795-0101, Benin City	X	√	√
6. Journal of West African Fisheries ISSN 0794-3520, Ibadan	X	X	X
5. Aquafield: Journal of field aquatic studies ISSN 1596- 6062	X	X	√

Category B: Non-Core but publishing fisheries and aquatic sciences articles

Title	AGORA	AJOL	ASFA
1. Bioscience research communication ISSN 0795-8072, Ilorin	X	X	X
2. Global journal of environmental Sciences ISSN 1596-6194, Calabar	X	√	√
3. Global journal of Pure and Applied Sciences. Calabar	X	√	√
4. Journal of applied sciences and environmental management ISSN 1119-8362, Port Harcourt	X	√	√
5. Journal of sustainable tropical agricultural research ISSN 1596- 079x	X	X	√
6. Journal of tropical science Zaria	X	X	√
7. Nigerian Journal of weed Sciences ISSN 0794-4950	X	X	X
8. Journal of experimental applied biology ISSN 0795-9362	X	X	X
9. Science Forum: journal of pure and applied sciences ISSN 1119-4618, Bauchi	X	X	√
10. Nigerian journal of Botany ISSN 0795-0128	X	X	X
11 Nigerian journal of biotechnology ISSN 0189-1731, Jos	X	X	√
12. Nigerian journal of genetics ISSN 0189-9686, Ilorin	X	X	√
13. Nigerian Journal of Science	X	X	X
14 Water resources: Journal of Nigerian Association of Hydrogeologies ISSN 0795-6495	X	X	X
15. The Zoologist ISSN 1596-972x, Ibadan	X	X	√

Category C: Institutional Publications

S/No	Titles	Covered by ASFA
1	Annual report National Institute for Freshwater Fisheries Research, New Bussa, Nigeria ISSN 0331-9296	√
2	Annual report, Nigerian Institute for Oceanography and Marine Research, Lagos, Nigeria	√
3	Newsletter: National Institute for Freshwater Fisheries Research, New Bussa, Nigeria	√
4	Occasional Paper: Nigerian Institute for Oceanography and Marine Research ISSN Lagos, Nigeria	√
5	Occasional paper: National Institute for Freshwater Fisheries Research, New Bussa, Nigeria ISSN	√
6	Proceedings of Annual Conference of Fisheries Society of Nigeria FISON	√
7	Technical Report Series: National Institute for Freshwater Fisheries Research ISSN	√
8	Technical report series: Nigerian Institute for Oceanography And Marine Research, Lagos Nigeria ISSN	√

Key

√ Covered
X Not covered

APPENDIX 2

Nigerian Fisheries Librarians Meeting, November 2004. Communiqué

- Access to and dissemination of fisheries information in Nigeria is not well coordinated. Active participation is essential in ensuring full coverage of Nigerian fisheries literature in the ASFA Database and the ODINAFRICA system;
- ODINAFRICA will enhance harnessing and collating Nigerian marine fisheries and aquatic sciences literature, thereby promoting nucleolus for resource sharing among the fisheries libraries.
- No library can be self-sufficient and it was agreed that a network of the fisheries libraries in Nigeria would enhance bibliographic control, acquisition and dissemination of fisheries literature. This networking should start with the compilation of a list of Nigerian journals publishing articles on fisheries and aquatic sciences. It was agreed that NIOMR, FCFMT and ARAC would cover the Southern states while NIFFR and FCFFT at New Bussa and Baga would cover the Northern states.
- Publications of the different fisheries institutions in Nigeria are not exchanged. It was agreed that librarians of each institution should make it a duty to exchange institutional publications. Where possible this should be retrospective.
- NIOMR and NIFFR should regularly publish accession lists of input to the ODINAFRICA and ASFA databases which should be circulated to Nigerian fisheries institutions.
- It was recommended that institutions which are not yet registered with AGORA should do so. This source of information should be brought to the notice of scientists and training in how to search provided where necessary.
- The meeting noted the relatively small distribution of the Nigerian Fisheries and Aquatic Science Abstracts produced by NIFFR and requested that the publication be given wider circulation.
- The meeting observed the important role that publishers of Nigerian fisheries related journals can play in harnessing fisheries information, and agreed that the advantages in including their journals in ASFA and ODINAFRICA databases should be brought to their attention. The interaction may pave the way for receiving complimentary copies or reduced prices.
- It was agreed that the success of this meeting depends on funding and therefore call on the Directors of NIFFR, NIOMR and the Provosts of the Fisheries Colleges to ensure that their libraries acquire all relevant local journals. The meeting is of the opinion that the sum of \$1,869 (₦250, 000) yearly will go a long way to achieve the above aspirations.