

Characteristics of Tropical Fisheries Literature

"Core" Literature

Recently we made a search of the computer databases *Scisearch* and *Social Scisearch* of the Institute of Scientific Information (ISI) in Philadelphia, U.S.A. to measure the impact of ICLARM's literature.

These databases can tell you who has been citing a scientific paper you have published, as long as the article and its citations appear in a "core" body of some 4,000 scientific journals. The "core" journals are those most frequently cited by the world's scientific community. The database also includes a number of conference proceedings, monographs and multiauthored books.

Citation analysis within this "core" literature is often used to measure the performance of a particular paper or of an author or an institution. Citation analysis is used to measure the performance of candidates for university appointments; it is used as the basis for inclusion in "Who's who" in the field of economics. There are many caveats in simple numerical citation analysis; for example, a paper may be cited often to refute its contents.

As a whole, fisheries do not constitute a significant subject area within the "core" literature. Only one journal, the *Canadian Journal of Fisheries and Aquatic Sciences*, appears in ISI's top 300 cited or impact journals. An analysis by ISI of 15 "core" marine biology journals in 1977 revealed that less than half the references cited by authors in those journals were within the "core" literature. The analysis further revealed that there is no marine biology literature *per se*. Instead an "aquatic science" discipline seems more appropriate.

We were not surprised that our search showed little reference to ICLARM or its authors in the ISI databases—most of our works have been published in "non-core" serials, particularly our own technical series. ICLARM author Daniel Pauly, who was most cited, analyzed citations of all his tropical research articles and found only 10% of the citations were in *Scisearch* (see p. 6).

Primary Literature

ISI's "core" journals represent the most heavily used (cited) primary litera-

JAY MACLEAN
ICLARM

ture. The primary literature in a subject area includes those serials and books containing peer-reviewed (refereed) papers. In the case of tropical aquatic literature, there are many primary but "non-core" serials. For example, ICLARM's "Studies and Reviews" and "Conference Proceedings" series are carefully reviewed and extensively distributed primary literature. In fact, their distribution has exceeded that of most other primary periodicals in tropical aquatic science.

Grey Literature

Many fisheries institutions, both temperate and tropical, publish much of their own material in what is broadly termed "grey", "report" or "non-conventional" literature. There are many definitions of this kind of literature. A rather nice one says that it is that part of the literature which would present a non-specialist library, as opposed to a specialist library (like ICLARM's), with more than average difficulty in its acquisition. A more commonly-used definition includes meeting papers, project reports, preliminary research results and theses.

Grey Begets Grey

The ICLARM library has begun a search of the broad range of incoming bibliographic material for papers citing ICLARM material—a paper-and-pencil citation analysis. The work is at an early stage but the results are encouraging.

Proportion of types of publications in two computer databases compared with that in some ICLARM literature and the publications in which ICLARM literature has been cited.

	Journal articles	% Types of publication			
		Proceedings	Monographs	Reports	Theses
ICLARM literature cited (N = 37)	38	16	16	30	—
Publications citing ICLARM literature (N = 169)	17	32	6	25	20
ASFA database	71	21	3	5	—
<i>Scisearch</i> database	94	6*		—	—

*Some published proceedings, monographs and multiauthored books are included in this database.

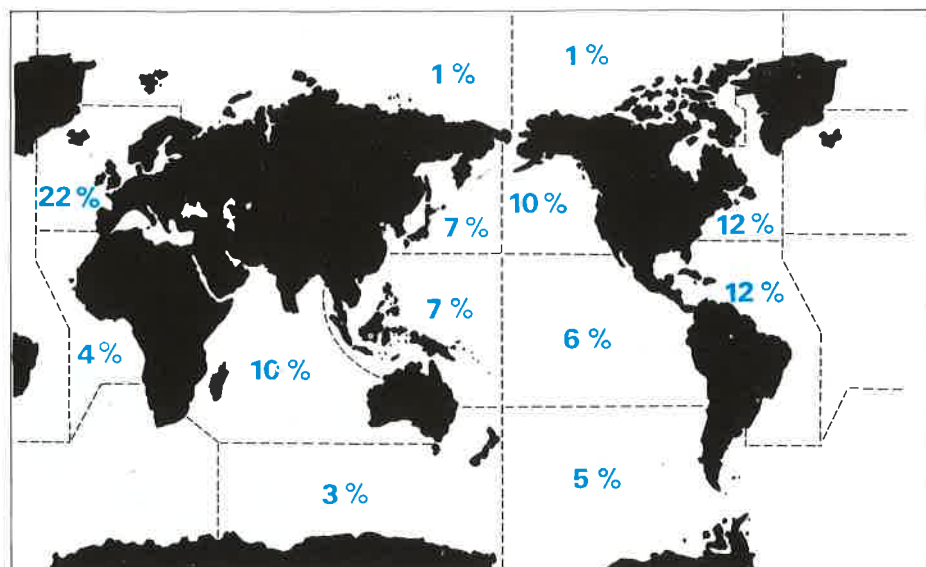
So far we have found some 169 references to 37 ICLARM articles published between 1979 and 1982. About one-third of the publications cited were journal articles, one-third report or grey literature and the rest equally divided between conference proceedings and monographs. Only 12 journal articles turned up in *Scisearch*.



The 169 citations of these publications were 45% grey literature (see Table). Grey begets grey. The citations of ICLARM literature are even a darker shade of grey than their source! I find it quite gratifying that ICLARM publications are finding their way into reports and theses.

How does this example of the use of tropical fisheries publications measure up to the global situation?

ASFA (Aquatic Science and Fisheries Abstracts) is the standard of comparison. This database has attempted to capture the world's aquatic literature in a single source. Of the material supplied to the various ASFA inputting centers, only 5%



Distribution of geographically designated articles on living aquatic resources according to ocean sectors in the ASFA database as of February 1984.

is strictly "grey," that is report literature. The ASFA database also differs from our tropical example in that 71% of ASFA is composed of journal articles as opposed to 38% of ICLARM's cited publications. These differences and a comparison with *Scisearch* are shown in the Table.

Southeast Asia, A Case Study

The ASFA database is a good source for comparison of aquatic research activity around the world. ASFA's geographic descriptors allow classification of relevant articles into one or more of a number of ocean sectors. I made a computer search of the 100,000 items in the living (as opposed to non-living) resources section of the ASFA database for the six years 1978-1983. The result of this search is shown in the map.

In the ASFA partitioning, Southeast Asia is combined with northern Australia and southern China as well as the South Pacific countries. Although there are a number of assumptions involved, this broad region was the subject of 7% of more than 20,000 geographically indexed articles to date. How much of that concerns Southeast Asia? From other cues in the database, I would guess about 5%, equivalent to some 800 entries per year in the living resources section of ASFA.

In 1978-79, ASFA was monitoring regularly some 3,000 serial titles. Their regional distribution showed that only

162 titles came from Asia and only 30 were from Southeast Asia. ASFA now covers 5,500 titles. Presumably the coverage from Southeast Asia has increased proportionally. If so, Southeast Asian journals make up about 1% of ASFA's coverage. In another search I found that the proportion of references that include the name of one or other country of the region in the title, abstract or descriptors is 1.3%, close to the proportion of Southeast Asian journals. Now, if 5% reflects the coverage of Southeast Asian articles and 1% reflects the journal coverage in ASFA, the difference (4%) constitutes material written about the region in journals outside the region.

One implication of this is that most papers are going outside the region for publication, which immediately makes them more expensive to retrieve for the region, particularly where European publishing is involved. A recent comparison of prices of softbound biological books showed averages of 4.49 cents/page in the U.S.A., 7.90 cents/page in the U.K. and 20.36 cents/page in the Netherlands where a number of aquatic journals and monograph series are being produced. ICLARM's book prices, by the way, are 2-4 cents/page.

From other sources (see April 1982 Newsletter, p. 4) the number of aquatic science articles from Southeast Asia should be about 1,600 per year. The

various plans to capture the remaining "fugitive" literature in this region (see articles on AIBA, SEAFIS, AQUIS, PASFIS, Indonesia, etc.) should certainly close the information gap.

In Latin America, the input to ASFA has been up to 1,300 items per year since 1981 (see p. 10). It is difficult to allocate this total amongst the ocean regions involved, since they include parts of the U.S.A., but it appears to be a broadly comparable region to Southeast Asia. One can expect that there is much "fugitive" literature yet to be covered by the ASFA umbrella in this region also.

No doubt the "fugitive" literature is in fact, grey literature.

A Paler Shade of Grey

Grey appears to be the operative word for tropical aquatic science literature. Indeed, one ICLARM author finds that extracts of his publications often turn up unreferenced in term papers of students at American universities. Such recognition is in some ways commendable but unquestionably "grey."

However, if the grey-becomes-greyer nature of citations to ICLARM publications is representative, one can legitimately ask of tropical fisheries literature "which is the grey and which is the black and white?" In general, information needs in developing countries are for applied rather than basic research. The trend to production and utilization of what is now termed grey literature will be even more pronounced in the future. From a tropical perspective, it is often primary literature—the esoteric, basic and theoretical research papers produced in developed countries—that constitute the "grey" literature, even if such papers are unobtainable only by their expense rather than obscurity.

Tropical fisheries literature is akin to "big brother" agriculture literature (see p. 12), which in Asia is about 70% non-conventional or grey. The message is, as in other spheres of science and culture, that developing countries should look to their own existing resources for the best approach to solving information needs. CICH (see p. 10) and AIBA (see p. 8) are salutary examples. ●