

Asian Aquaculture Journals : Problems and Possibilities

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Abstract

Global status of aquaculture and aquaculture scientific journals is briefly described. Asia is the centre of fishing and aquaculture activities but most publishers, editors and editorial board members of fisheries and aquaculture journals are from Europe and/or USA. The contribution by Asian aquaculture scientists to these journals remains low. Language barriers and requirement for monetary investment seem to inhibit Asian participation in this realm of scientific activity. The need for globalization of aquaculture scientific journal is emphasized. Selected strategies, which are adopted by the Western journals to improve their image and management, are indicated.

Aquaculture

Honourable President, Esteemed colleague Dr. D.S. Kim, Learned members of the Korean Aquaculture Society, and Distinguished invitees and colleagues.

I am indeed very happy to record my sincere thanks for the opportunity to serve your journal and participate in the annual meeting of the Society. Please permit me to avail a few minutes of your precious time to briefly dwell upon the problems and possibilities opened to aquaculture journals of Asia.

With the global population projected to increase to 8 billion by 2,025, the production of aquatic food will have to be increased from the present 100 to 165 million tonne (mt) to maintain the existing per capita fish availability (New, 1995). However, the global fish production has begun to stagnate since 1990 at around 90 mt and it is likely that sustainable fish harvest may not exceed 100 mt, even with all the technical advancement, additional financial input and increased human efforts (Nair, 1995). Moreover, with progressively declining per capita land

availability, scientists all over the world are looking upon water as a major source of food production. Firstly, the need for finding ways and means to produce at least 50 mt or more fish by aquaculture is obvious. With a 30 billion dollar investment in global aquaculture, and with the 10 % annual growth rate (DeSilva and Anderson, 1995), the contribution to fish production through aquaculture is in the range of 36 mt and Asia's contribution to production is 85 % (FAO, 1999). Understandably, about 60 % of Asians derive more than 30 % of their animal protein from fish (Pandian 1998). Secondly, Asia is the centre of Fishing and Aquaculture activities. Fisheries and aquaculture constitute a highly productive venture, a source of food and employment, and a net contributor to the balance of payment to many Asian countries. For instance, India ranks second in culture and third in capture fisheries (Pandian, 1999). South Korea's contribution to aquaculture production is in the range of 0.4 mt, but its fishes fetch two times higher price than that of India (FAO, 1999). Thirdly, aquaculture is a growing enterprise in many developing Asian countries, as it is characterized by (i) high productivity, (ii) high food conversion ratio, (iii) putting agricultural and animal waste to good use, iv) offering healthy protein-food at the cheapest cost and (v) high employment, especially in rural areas. The returns from aquaculture is 2-15 times higher than that of traditional agriculture.

As in any productive activity, the development of aquaculture has to have a strong scientific and technical support. Without scientific input, profitable aquaculture cannot be initiated, and sustained for long. Let me cite a couple of examples from India. 1. The then Central Inland Fisheries Research Institute (Barrackpore) published the first report on successful induced breeding of carps in 1957. Subsequently, technologies on induced breeding and larval rearing were developed for a number of carp species. These research developments paved the way for the current annual carp production of > 1 mt. 2. The Central Marine Fisheries Research Institute (Kochi) developed the hatchery technology of penaeid shrimps in 1973, and by 1978, larval rearing technologies for several shrimps were successfully developed and documented. In 1999-2000, India exported farmed shrimps worth about a billion dollars.

The need for scientific research on aquaculture by Asians is even greater in the light of the following: Firstly, aquaculture is more complex than agriculture/animal husbandary owing to

the diversity of the taxonomic groups and the environment/medium involved; for instance, while scientific knowledge is required for just 4 species in aviculture (chicken, turkey, duck & goose) and 5 species in animal husbandary (cattle, buffalo, swine, goat and sheep), aquaculture science has to be developed for over 300 fish species, which are presently farmed (Kutty, 2000). In fact, the species-wise diversification even preferred to sustain eco-friendly aquaculture. Incidentally, the Korea must be complimented for having developed the science and technology for mass culture of as many as 52 aquatic species, whereas the Chinese, who are responsible for 67 % of global aquaculture productivity, have done so for 29 species only. Secondly, Table 1 shows that the aquaculture productivity during the last 10 years has begun to decrease in the developed Asian countries like Japan, Korea and Taiwan, while many other Asian countries have registered more than 100 % increase. Therefore, the Korean Aquaculture Society has an additional responsibility to sustain the level and diversification of aquaculture in the years to come.

Aquaculture journals

Scientific journals are universally recognized as an effective medium of communication of research activities. They play a vital role in maintaining permanent records of research findings and in certain cases, directing future research. The publication process comprises production of the research manuscript, quality control, i.e. manuscript evaluation by referees, improvement and selection, dissemination and consumption of knowledge (Fig. 1). Its links are represented, respectively, by author, editor and referees, publisher and user. The formalized publication process provides the foundation for orderly worldwide communication among scientists and for establishing priority in scientific findings and ideas (Kinne, 1988). The very first scientific periodical in the English language, namely, '*Philosophical Transactions*', was published by the Royal Society, London on 6th May, 1665 (Houghton, 1976). The production and publication of scientific journals were initially one of the major functions of the scientific societies and academies. Subsequently, commercial publishers undertook the responsibility of publishing journals on behalf of some of these scientific bodies. Today there are scientific journals that are totally managed by the publishers alone. With this kind of expanding history of scientific journals, there has been a tremendous increase in the number of publications of papers and journals. In

the 1950s, there were about 600 journals publishing 80,000 articles per annum and by 1990s these numbers increased to 3,000 for journals and 6,00,000 for articles per annum (Pandian, 1992).

In general, most scientific journals are published from the Western countries and are managed by editors, who are Europeans and/or Americans. Aquacultural Science is not an exception to this. Table 2 lists selected scientific journals, which regularly publish articles relevant to mostly aquaculture and fishery science. A classification of aquaculture journals clearly indicates that most publishers, or editors of aquaculture journals are from Europe and/or USA. Whereas European-American dominated publications are expected for many disciplines of sciences, it is fondly awaited that the Asians, who dominate aquaculture activity, also do the same in publishing and/or editing aquaculture journals or at least a large number of Asians experts serve in the editorial boards of these journals. Unfortunately, less than 10 % editorial board members of aquaculture journals hail from Asia (Table 3, 4); even the few, who serve as editorial board members, are Japanese. Perhaps language could be a plausible reason for the non-inclusion of Koreans and Chinese in the editorial boards of some of the aquaculture journals.

An analysis was made on the contributions published in the journal '*Aquaculture*' during the last 10 years. Clearly, western scientists publish a larger proportion of scientific articles relevant to aquaculture in indexed journals like *Aquaculture*. At this juncture, two aspects have to be considered. Firstly, many Asian countries can ill-afford to invest adequate finance on aquaculture research proportionate to aquaculture productivity. This would call for more investments, more personnel and more dedicated research work by Asians in aquaculture. Secondly, most Asians may publish their findings in their respective national journals, though they may not be indexed. This kind of "nationalization" may be due to problems related to language, finance and quality. Contributions to fishery science and aquaculture by the Japanese, Chinese, Korean and Indian scientists are amazingly large and in many cases they are of good quality. For instance, 5.5 % of the world literature on fisheries and aquaculture are from India (Jayashree and Arunachalam, 2000). However, language still remains a big barrier to Chinese, Koreans and Japanese, as most of the western journals accept articles written in English only.

Many society journals like '*Progressive Fish Culturists*', '*Copeia*' demand page charges, which cannot be afforded by scientists from India, Indonesia and other Asian countries, who are not relatively rich. Lastly, many Asian scientists do not relish or appreciate the comments and suggestions made by critical, Western, peer-reviewers.

At this juncture, I would like also compliment the Korean Aquaculture Society for their endeavour to globalize their Society journals. The Japanese did this a decade ago. For instance, the Japanese bifurcated one of their prime journals, *Nippon Suisan Gakkaishi*. The first one continues to remain as *Nippon Suisan Gakkaishi*, publishing articles in Japanese and the second one, "*Fisheries Research*" accepts articles written in English. A glance over the papers published in these twin journals clearly indicates that *Fisheries Science* has grown dramatically. Incidentally, the Indian Academy of Sciences, Bangalore integrated their publication series in Plant Science and Animal Science into '*Journal of Bioscience*' a decade ago; improving the quality of production, the journal opened its door to foreign authors. Contributions from foreign authors began to trickle in but a couple of years ago, the new Editor globalized the Editorial Board, which was earlier dominated by Indian experts alone. With this kind of open door policy and globalization of editorial boards, there has been a progressive increase in contributions by foreign authors.

From my association and experience, I wish to elaborate a few strategies for improving the image of aquaculture journals published from Korea or Asia. Some of the attributes of a good journal are : 1. Quality of scientific papers published, 2. Punctuality of appearance and the period elapsed between the receipt and publication of an article, 3. Quality of peer-reviewing, 4. Quality of production, printing, cover design etc and 5. Wide international circulation.

Scientific quality of publications: Originality and novelty are two important ingredients that confer credit to a scientific publications. For instance, a relatively unknown Chinese fishery biologist Z. Zhu reported a short communication in English in a not so popular German journal called *Journal of Applied Ichthyology* (*Z. Angew. Ichtyol*, 1985, 31-34). Irrespective of the visibility of the author and/or the journal, the publication made a wide impact and became visible. Hence, the visibility of a publication depends more on the quality rather than the visibility of the scientist

or journal. In recent years, citation index is regarded as a measure of the impact a publication has made (e.g. Pandian, 1983). There have been repeated and extensive discussions on the reliability of citation index. Although citation index may not be the sole source for one to look into measure the impact, it does give a measure, from which one can judge the quality. To attract good quality articles, especially from younger scientists, the journal *Chromosoma* confers an annual award to the author(s), who have made, in the judgement of *Chromosoma*, the best paper published in the journal for the year.

Another strategy used by editors of journals *Hydrobiologia* is such as to invite a "guest-editor", who is an expert or an organizer of a symposium to bring the best publication in that subject or the geographical region, in which the symposium is held. A third strategy adopted by journal like *Current Science* is to include book reviews. A fourth strategy adopted by journals like *Comparative Biochemistry and Physiology* is to include reviews by leading experts and thereby enhance the visibility of the journal. It is well known that a large number of reviews have become classics owing to the fact that progress in research is beginning to suffer acutely from hypertrophied production of articles. Hence, the frequent citation of reviews in fields, in which articles are 'fast raining' is expected (Pandian, 1988).

While quality must be the hallmark strategy, a journal supported by a society or the government of a country may have to consider other priorities. For instance, some 3000-4000 active scientists in India working about 200 laboratories publish annually 10,000 articles, of which more than 60 % are published in foreign journals, which copy right them (Ramaseshan, 1992). Of these, a large number is published abroad, where the foreign journals copyright them. Thus many Indian scientists, like in the colonial past, when cotton was exported and textiles were imported, presently export scientific articles and import scientific journals. However, Indian fishery biologists publish 460 articles per annum (Jayashree and Arunachalam, 2000) and many are published in invisible Indian journals. Perhaps the situation may be true for other Asian countries also. Therefore, there is a need to globalize Asian journals of aquaculture and fisheries and to improve their visibility.

Periodicity: Punctuality of appearance is an important criterion, considered by Institute for Scientific Information, Philadelphia for indexing a journal. For want of adequate financial support, many journals supported by societies and governments do not keep up punctuality. In this computer epoch, fax, e-mail and on line services have enormously increased the speed of communication. Consequently, the authors, who are anxious about the seniority of their publications, expect minimum time loss between communication and appearance of their articles. This can be achieved by adopting one or more of these modern facilities. For instance, Dr. D.S. Kim, the editor of *Korean Journal of Aquaculture* sends me several articles by e-mail for peer-reviewing and language correction, and receives them within 48 hrs by e-mail. Alternatively, a journal can have several editors for different disciplines as in *Aquaculture, Journal of Experimental Zoology*, or reviewing editors, who receive and process the MSs for publication in their areas of expertise. The standard of a journal is determined largely by its editor(s), members of the editorial board and peer-reviewers. Indeed, peer-reviewers are the backbone of a good journal. *Marine Ecology Progress Series*, the highest impact-making journal in marine sciences celebrated the appearance of 200th volume in less than 17 years, an astounding feat of achievement. The journal has about 100 review editors, who respond quickly by peer-reviewing a large number of MSs received by the journal.

Peer Reviewing: An aspect, which must be considered by Asian peer-reviewers is the average age of references cited in the recommended MSs. Table 5 is an example of a random survey of citations referred to in publication of selected biological journals. An analysis indicates that the percentage of recent references cited is higher for *Marine Ecology Progress Series* than that of some of the Indian journals. Not surprisingly, O. Kinne, the editor of the journal, has achieved the highest recognition for his journal in the shortest span of time.

Circulation: Adequate finance is required to sustain quality of a journal. An aspect that must be given priority by non-English speaking Asians is to have a Consultant Editor or a Table Editor, who will be responsible for the language. When quality is assured, the journal will become visible and will have a wide circulation. To ensure financial support a strategy adopted by *Current Science* is to secure institutional membership, which guarantees subscription for 10

years or longer. For instance, to ensure financial support. *Asian Fisheries Science* secures sponsorship by a rich scientist or an organization to bear the entire production cost of an issue, but the Society retains the profit to its benefit. *Limnology and Oceanography* copyrights tables and figures, which appeared in it and accord permission for reproduction on payment of a nominal sum. When limited to academic relevance, advertisements, like those appearing in *Science* and *Nature* may also serve as a source of revenue.

Friends, I earnestly hope that some of these ideas and strategies may globalize your *Journal of Korean Aquaculture*. May I wish you, the Society and the journal a great success.

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