MARINE SCIENCE INFORMATION AND NETWORKING
IN THE USSR

Ivan Bukhanbevich
VNIRO Informcenter
17 U. Krasnoselskaya
Moscow B140 107140 USSR

The end of the twentieth century is seeing the beginning of the information revolution. We are witnessing the transition from the industrial era of goods production to the era of INFORMATION, wherein, the pre-eminence of business activity will shift towards the creation, distribution, and utilization of information. It is fair to consider information as the most valuable intellectual product. It is indispensable for normal vital activity of mankind. Its value is now comparable to that of natural resources.

In the field of fisheries and aquatic sciences comprehensive information is necessary for estimation of modern situation and future trends of commercial utilization of hydrobionts, as well as for elaboration of the system of data on the environment.

In order to accomplish this our country is collecting huge masses of factual information. In fisheries and aquatic sciences there is a comprehensive network of scientific research institutes, with information centers and scientific libraries attached to them.

In Moscow, the leading institution, All-Union Scientific-Research Institute of Marine Fisheries and Oceanography (VNIRO), incorporates the Informcenter and Scientific Library. Similar systems are incorporated into the scientific-research institutes located on all the seas of the Soviet Union. They are:

Polar Scientific-research Institute of Fisheries and Oceanography (PINRO) in Murmansk;

Atlantic Scientific-Research Institute of Fisheries and Oceanography (Atlant-NIRO) in Kaliningrad;

Baltic Scientific-Research Institute of Fisheries (BaltNIRH) in Riga¹.

Azov Scientific-Research Institute of Fisheries (AzNIRH) in Rostov-on-Don;

¹ After proclaiming the independence of the Latvian Republic their institute was removed from the network and is now a scientific research institute of the Latvian Republic. Nowadays, other alterations in subordination of the institutes to various government bodies are possible.
South Scientific-Research Institute of Fisheries and Oceanography (YugNIRO) in Kerch;

Caspian Scientific-Research Institute of Fisheries (CaspNIRH) in Astrakhan;

and

Pacific Scientific-Research Institute of Fisheries and Oceanography (TINRO) in Vladivostok.

It should be noted here that many of the above scientific-research institutes have branches and sub-divisions, which are actually regional scientific-research institutes themselves with their own information branches and scientific libraries. For instance, TINRO has Sakhalin Branch (SakhTINRO) in South Sakhalinsk; Anur Branch (AOTINRO) in Khabarovsk; Magadan Branch (NoTINRO) in Magdan; Kamchatka Branch (KoTINRO) in Petropavlovsk-on-Kamchatka.

In addition, PINRO has branches in Arkangelsk (YoungNIRO) in Odessa; A2NIRKH in Berdyansk; CaspNIRH in Guryev, Makhachkala and Krasnovodsk.

A special place in the research structure is allotted to the Republic Institutes of Fisheries, situated in all the Republics. These institutes have information centers and scientific libraries. Included in this type of institute is, for instance, in Kiev -- Ukrainian Scientific-Research Institute of Fisheries (UkrNIRH), in Belorussia in Minsk -- Belorussian Scientific-Research Institute (BelNIRH), in Kazakhstan in Alma-Ata -- Scientific-Research Institute (KazNIRH), etc.

One of the oldest institutes (established 1928) in Russia is the Scientific-Research Institute of Lake and River Fisheries (GOSNIORH) in Sanct-Petersburg. The Institute has branches on all of the large rivers and reservoirs of the country. There are similar institutes in the other Republics.

A regular network of marine and freshwater scientific-research fisheries institutions covering the entire country has been established. As I have already stated all of these institutes have scientific libraries and most of them have information centers as well.

Along with specialized scientific-research institutes within the framework of the USSR Academy of Sciences, other institutes undertake research in the fields of oceanography, zoology, general biology, protection of the environment, and other areas. To these institutions belong the Institute of Oceanology, the USSR Academy of Sciences and its branches on the biggest seas of the USSR (IOAN), the Institute of Zoology of the USSR Academy of Sciences (ZIN USSR) and other institutes related to the branches of the USSR Academy of Sciences in the Far East, in the North and other regions of the country. All these institutes also have scientific libraries and information departments.
Our universities and the scientific-research institutes attached to them play a very important role in the estimation of the problems relevant to the environment. The most important, the University of Moscow (MGU), is also the biggest and oldest. There is also Leningrad University (LGU) and the Far East University (DGU). All of these universities have good scientific libraries and information centers.

So one can easily see that the Soviet Union has sophisticated information networks, information depositarium, and scientific libraries pertinent to different branches of scientific activity scattered over one sixth of the globe.

In the present report I shall dwell upon the information network of marine fisheries institutes only. The global task of these institutes activities consists in the investigation and mastery of the biological resources of the World Ocean, and the protection of the environment. At present, this process is characterized by the increasingly clear transition from extensive to intensive forms of global exploitation of hydrobionts. So, this is why the task of elaboration of the comprehensive measure for creation of control and management systems for rational exploitation of bioresources in the hydrosphere and protection of their habitat becomes very important.

During the last decade, on the way towards the solution of this problem, there appeared one important point, the actuality of which becomes quite essential. There is a necessity for radical improvement of information procurement pertaining to the process of control and management of rational exploitation of the living resources of the aquatic medium. The essence of this point consists in that along with fast growth of information and deepening of our knowledge about bioresources of the hydrosphere, there develops differentiation and disfunction of this knowledge, as well as their cost value.

The USSR Ministry of Fisheries alone sponsors more than 250 scientific marine expeditions annually to the various regions of the World Ocean. In the course of these expeditions massive amounts of information on aquatic bioresources and their habitat are accumulated.

This massive amount of information on bioresources, accumulated over a long period of time, requires proper arrangement in structure, contents, correlation, treatment and direction to be accessible to the end user. This will give access to the information resources of our national programs of mastering the World Ocean reserves and protection of the hydrobiont's habitat.

We have already accumulated unique data on aquatic sciences and protection of the environment, fisheries management and control, reproduction of fish resources, etc. The main objective of my colleagues and myself consists in making these gigantic volumes of information already collected, and those which are now being collected, accessible to scientists of the U.S.A. and other countries, so that it might serve the whole of mankind. In order to reach integration of the Soviet informcenters and scientific libraries within the world-wide community we rely upon friendly
understanding and cooperation of the international and national organizations, and, naturally, on IAMSLIC colleagues.

The structure of our database system is given in the supplement to this paper.

In conclusion, I would like to state that the VNIRO Informcenter and the Scientific Library with the support of IAMSLIC will be able to make this database accessible to all members of IAMSLIC all over the world. Together with you we might issue a specialized magazine on aquatic sciences in the Russian and English languages. This might be financed through appropriate advertisements. With your assistance we might also start from 1992 to issue abstracts of Soviet articles, published and submitted for publication, in the fields of marine and aquatic sciences, similar to Abstracts of Manuscripts Submitted for Publication in 1990, Technical Report WHOI-91-08, Woods Hole Oceanographic Institution.

In these ways we shall make the closed Russian language practicable, with the help of English, for everybody. Moreover, we are prepared to discuss with you other possibilities in respect to utilizing the intellectual potential of the USSR for the benefit of the world community.

I would like to express my cordial gratitude to IAMSLIC for the chance given to me not only to participate in the 17th session of IAMSLIC, but for the financial support of my trip and for the personal concern shown me by my dear colleagues Kay Hale and Kristen Metzger. I appreciate this friendly attitude by all means.

I now have the honor of inviting the members of IAMSLIC to hold their 20th annual meeting -- the jubilee session of this esteemed organization -- in September/October of 1994 in Moscow with visits to the informcenters and scientific marine libraries in other towns of my country. Thank you.
SUPPLEMENT

GENERAL STRUCTURE OF THE DATA BASE OF VNIRO INFORMCENTER, MOSCOW, USSR

1. Catches according to species of fishes and other fisheries objects:
   1.1 Catches according to region;
   1.2 Catches according to countries.

2. Estimation of fish resources, biological condition of populations, and prognosis of allowable catches:
   2.1 Basic biological indices;
   2.2 Population structure;
   2.3 Quantity and reserves;
   2.4 Allowable catch;
   2.5 Basic environmental conditions.

3. Reproduction of fish resources:
   3.1 Fish cultivating plants, their technical facilities, biotechnology;
   3.2 Cultivation and release of youngsters;
   3.3 Acclimatization.

4.1 Mariculture:
   4.1 Sea fishes;
   4.2 Invertebrates;
   4.3 Sea weeds.

5. Specification of the main types of fishing vessels and refrigerator transport facilities.

6. Fisheries economy:
   6.1 General indices of the branch;
   6.1.1 Macro economic indices,
      6.1.1.1 Share of fisheries in national income,
      6.1.1.2 Total and per capital consumption of fish and fish products,
      6.1.1.3 Demographic indices,
      6.1.1.4 Supply and demand,
      6.1.1.5 Price deflators,
      6.1.1.6 Export and import price indices,
6.1.1.7 Indices of internal wholesale prices and of the reference prices,
6.1.1.8 Indices of internal wholesale and retail prices.

6.1.2 Fish products production area:

6.1.2.1 Investment process;
6.1.2.2 Condition of basic sub-branches of fisheries economy;
6.1.2.3 Labor availability, employment, and productivity of labour;
6.1.2.4 Government procurements;
6.1.2.5 Government and private sponsoring.

6.1.3. Area of internal and external turn-over:

6.1.3.1 Wholesale and retail turn-over;
6.1.3.2 Foreign trade turn-over;
6.1.3.3 Auctions.

6.1.4. Credit monetary and currency-financing relations area:

6.1.4.1 Company profits, exchange rates;
6.1.4.2 Population income and expense rate;
6.1.4.3 Commercial, consumer credit;
6.1.4.4 Exchange rates.

6.1.5. Structure of companies:

6.1.5.1 Fishing companies;
6.1.5.2 Fish processing companies;
6.1.5.3 Ship repair and shipbuilding companies;
6.1.5.4 Companies working in the field of food technology, tare and packing;
6.1.5.5 Companies manufacturing fish culture equipment and instruments;
6.1.5.6. Export-Import companies;
6.1.5.7 Trading and agency companies.

6.2 Production areas:

6.2.1 Raw material delivery for processing;
6.2.2 Production of actual goods;
6.2.3 Supply and demand;
6.2.4 Consumption of actual reserves;
6.2.5 Goods reserves.
6.3 Areas of internal and external turn-over:

6.3.1 Export of goods;
6.3.2 Import of goods;
6.3.3 Deliveries to the local market;
6.3.4 Goods reserves in internal and foreign trade sphere (wholesale and retail).

6.4 Credit-monetary and currency-financing relations in internal and foreign trade:

6.4.1 Prices of goods, markets, actual deals;
6.4.2 Prices of auctions;
6.4.3 Production costs, price indices, and profit.

7. Fisheries science and scientific-technical potential:

7.1 Fisheries scientific organizations;
7.2 Developments in the field of biotechnology and fish culture;
7.3 Developments in the field of commercial fishing technology;
7.4 Developments in the field of fish processing technology;
7.5 International scientific organizations

8. Fisheries legislation and other legal aspects:

8.1 Legal fishing management;
8.2 Legal control of scientific research works in the economic fishing zone;
8.3 Limited company legislation.

9. Trade and economic policy and international cooperation in the field of fisheries:

9.1 Policy of international and regional organizations;
9.2 Intergovernmental relations;
9.3 Foreign fishing activity in the zone;
9.4 Export and import of fish products;
9.5 Joint-venture companies in fisheries;
9.6 Other forms of international cooperation;
9.7 Foreign partners efficiency.

10. Cooperation between the USSR and other countries in the field of fisheries:

10.1 Government agreements and their implementation;
10.2 Agreements signed by the Ministry of Fisheries and their implementation;
10.3 Fishing fleet operation results in foreign waters;
10.4 Scientific research;
10.5 Maintenance of ships;
10.6 Training of local personnel.