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**FUTURE OF THE INLAND FISHERIES AND AQUACULTURE IN  
THE ENLARGED EUROPE.**

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The European freshwater fisheries play a minor role in World fisheries as regards to quantity of catches or the volume of fish produced in farms. Nevertheless, methods and management objectives are the most diversified among all the fishing areas of the World.

For proper reviewing of the state and perspectives of European inland fisheries in the light of recent international conferences and publications we should accept the terminology and definitions internationally used. For this reason we should divide the sector into three sub sectors. These are: commercial fisheries, recreational fisheries and aquaculture. At the same time we have to mention that it is a characteristic European phenomenon that these sub sectors are becoming more and more interlinked with each other.

*Commercial fisheries*

The international definition of the sub sector is as follows: natural fisheries where the stock is exploited for commercial gain either through provision of food fish, fish for further rearing, fish for stock enhancement or provision of brood stock . Included in this definition are fisheries where the natural stocks are supported by stocking to overcome bottlenecks in recruitment. Activities of fishermen employed to regulate the stock are also included.

Commercial fisheries in waters of our continent show a downward trend in catch. This is due to the following factors:

- decreasing importance of fish as an essential local source of food,
- increasing operational costs which lead to decreased profitability,
- increasing alternative uses of water,
- pollutions and habitat degradations,
- constrains of nature conservation character,
- increasing international trade in freshwater fish, by the help of which fish from aquaculture is supplied to traditional markets of commercial capture fisheries.

The only positive trend is the increasing importance of fish as local gastronomic specialties, especially for tourism.

The rate of reshaping of traditional fisheries depends on relative abundance of freshwater fisheries resources. For example in France between 1970-1990 number of commercial fishermen decreased from 4000 to 730, while at the same time changes in Sweden, Finland and Poland were minimal. Among actual members of the European

Union there is no commercial capture fisheries in Belgium and Luxembourg. If we look at the situation in accession countries we can state that there is no commercial inland fisheries in Cyprus and Malta – because of the lack of natural endowments – and this activity has disappeared in the Czech Republic, Slovakia and Slovenia.

In spite of these tendencies international experts agree that commercial fisheries in European waters should be maintained and - in some regions - even expanded for the following reasons:

- as the only practical way of exploiting the resources in larger water bodies,
- as means of maintaining balance within the fish community and in the wider ecological system,
- as means of improving environmental quality by removal of excess cyprinid biomass in highly eutrophic waters,
- as an important tool in the protection and management of aquatic environment,
- for the creation of improved conditions for the recreational fisheries,
- to provide local gastronomic and tourist interest.

It should not be neglected that in many cases data from commercial fishing constitute the only practical way of monitoring the state of the water body that provides basic information for the management of the aquatic environment.

Among the interactions between different types of fishery the impact of commercial fisheries on recreational fishing is widely perceived to be negative. In reality, the conflict is limited and commercial fisheries generally have beneficial effects on the fish stock as a whole, thereby improving the conditions for recreational fishing. Aquaculture makes an important contribution to commercial fishing through the supply of stocking material.

The strategy for the future should be to reorient commercial fisheries of Europe towards a more integrated approach under which the fisheries will assume a place in the holistic management of water resources and the environment.

### *Recreational fisheries*

According to international definition: those fisheries where the stocks are exploited either for an individual's personal consumption or for leisure. This implies the fishermen did not undertake the activity for the purposes of commercial gain.

Recreational fisheries, which are a generally accepted term in the international literature, are generally translated into Hungarian as angling which is the narrowing of the term to only one form of activities included. We should not forget that fish can be caught for leisure not only with rod and line but also by the help of other gears, as examples we can mention millions of recreational fishermen in Sweden and Finland using gillnets, fyke-nets, pots and baited lines, but also in Hungary about 3000 people are fanatics of sportfishing with small utensils as dipnets or fyke-nets. Instead of the type of gear used for fish catching the motivation of the activity is the important point when dealing with this special sub sector of fisheries.

Increase of the number of sportfishermen in Europe ceased in the last decade. This is partly because of overestimates in the past (e.g. France, Germany) and difficulties in distinction between marine and inland fishermen (Italy). The other reason is the transition of anglers from natural waters to „put and take” fish ponds (France, Hungary, Poland) operated in many cases by the fish farmers. This is favorable as angling pressure on natural waters can be moderated this way but makes more difficult to estimate the percentage of population directly involved in fisheries. Nevertheless, according to different estimates there are about 20-25 million freshwater sportfishermen in Europe and this figure does not include the very large number of children and young people who also enjoy recreational fishing but for whom no data available.

In order to properly evaluate the role played by recreational fisheries in national economies of the European countries, we should take into consideration also the fact that it support employment for a wide range of people including those involved in fishing tackle manufacture and sales and as well as many others in rural economies.

The frequency of visits to recreational fisheries by fishermen for some countries is known to average about 20 visits per year. For 25 million recreational fishermen, this gives a total of about 500 million visits per year to a wide range of freshwater aquatic habitats. From mathematical point of view number of participants and frequency of visits are equally important, but the latest is easier to increase.

#### *FUTURE OF INLAND FISHERIES*

Beyond all question the creation of better conditions for sportfishermen will be the first priority in the management of inland waters in the enlarged Europe. Proper management result in more satisfied sportfishermen who visit the sites more frequently contributing to higher economic value of inland fisheries resources.

Stock regulations serving partly the improvement of recreational possibilities but at the same time environmental purposes would be the second priory if we can find the proper organizational forms. It seems especially difficult in countries where the traditional capture fisheries disappeared.

Supply of different fish species for the local gastronomy helps to maintain fisheries traditions as a cultural heritage. In this field subsidiary fishing and different form of „semi-recreational” fishing might find also their place.

#### *Aquaculture*

Let us start also here with the international definition: the farming of aquatic organisms, including fish, molluscs, crustaceans and aquatic plants. Farming implies some form of intervention in the rearing process to enhance production, such as feeding, protection from predators or regular stocking of managed pond systems.

Farming also implies individual or corporate ownership of the stock being cultivated. This discriminates aquaculture from those inland fisheries which have been stocked to improve fisheries yield and which are exploited as a common property resource.

Growing of freshwater aquaculture in Europe is much slower than that of the marine aquaculture. In the post-socialist countries a general dramatic decrease of production were observed in the first half of 1990-ies. Besides other factors, this might be because of the fact that in Eastern-Europe freshwater aquaculture means almost entirely pond farming of carp. This form of production has developed rather slowly which did not allow the adjustment to the changed, market oriented economies. It was characteristic, that the decrease of production was especially marked where the elements of market economy played only a minimal role.

There are actually about 50 species of fish cultured in European freshwater aquaculture facilities.

Products of the aquaculture sub sector in Europe meet the requirement of a very wide market. There is a core range of conventional species for human consumption and, increasingly, processed, "added value" forms.

A wide range of species is produced for stocking in support of commercial and recreational fisheries. Even in the case of the species produced in the highest quantity this marketing purpose plays a very important role as it can be illustrated with the figures from Hungary shown in the table.

A further range of species is produced for ornamental purposes. Freshwater aquaculture can have an important role in rural development, in supporting tourism, and in conserving endangered species.

#### *FUTURE OF INLAND AQUACULURE*

The role of inland aquaculture as a source of fishery products has been undervalued in many European publications. In the danger of shortage of marine fishery products it is not allowed to neglect land-based fish production.

As a result of enlargement not only facilities and possibilities for inland aquaculture production will be increased but at the same time also the number of potential consumers who are inclined to eat freshwater fish.

In this situation the most important purpose of inland aquaculture in the enlarged Europe will be the supply of freshwater fish for special consumer groups.

Supply of healthy food fish can be regarded as the second priority. This includes also the organic production in both extensive and intensive aquaculture units, as in marine fish farming it is much more difficult to create a completely controlled environment for the production.

Recreational fishing should be further supported by stocking material from aquaculture production as well as by creation new sites for sportfishermen in the aquaculture units.

For the development of marine fish farming intensive land-based aquaculture units are also needed.

There are important wetland habitat management issues to which pond management can be a significant contributor. However, problems of bird predation, particularly by cormorants, have highlighted the difficulties of combining economic production with habitat conservation.

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### Status and trends of recreational fisheries in Europe

<b>Country</b>	<b>Population million</b>	<b>Estimated recreational fishermen million</b>	<b>Recreational fishermen % in population</b>	<b>Trend</b>
Austria	7.5	0.22	3.0	Stable
Belgium	10.0	0.30	3.0	Decreasing
Bulgaria	9.25	0.18	1.9	Not known
Cyprus	0.6	0.003	0.5	Increasing
Czech Republic	10.5	0.288	2.7	Increasing
Denmark	5.2	0.25	4.8	Stable
Estonia	1.5	0.05	-	Increasing
Finland	5.0	2.1	42.0	Stable
France	56.0	5.0	8.9	Stable
Germany	79.1	1.4	1.8	Increasing
Hungary	10.3	0.32	3.1	Decreasing
Ireland	3.9	0.14	3.6	Stable

<b>Austria</b>	<b>7.5</b>	<b>0.22</b>	<b>3.0</b>	<b>Stable</b>
<b>Belgium</b>	<b>10.0</b>	<b>0.30</b>	<b>3.0</b>	<b>Decreasing</b>
<b>Bulgaria</b>	<b>9.25</b>	<b>0.18</b>	<b>1.9</b>	<b>Not known</b>
<b>Cyprus</b>	<b>0.6</b>	<b>0.003</b>	<b>0.5</b>	<b>Increasing</b>
<b>Czech Republic</b>	<b>10.5</b>	<b>0.288</b>	<b>2.7</b>	<b>Increasing</b>
<b>Denmark</b>	<b>5.2</b>	<b>0.25</b>	<b>4.8</b>	<b>Stable</b>
<b>Estonia</b>	<b>1.5</b>	<b>0.05</b>	<b>-</b>	<b>Increasing</b>
<b>Finland</b>	<b>5.0</b>	<b>2.1</b>	<b>42.0</b>	<b>Stable</b>
<b>France</b>	<b>56.0</b>	<b>5.0</b>	<b>8.9</b>	<b>Stable</b>
<b>Germany</b>	<b>79.1</b>	<b>1.4</b>	<b>1.8</b>	<b>Increasing</b>
<b>Hungary</b>	<b>10.3</b>	<b>0.32</b>	<b>3.1</b>	<b>Decreasing</b>
<b>Ireland</b>	<b>3.9</b>	<b>0.14</b>	<b>3.6</b>	<b>Stable</b>

(after Pintér and Wolos, 1998)

### **Production of stocking material for natural waters Carp farming in Hungary**

<b>Year</b>	<b>2001</b>			<b>2002</b>		
<b>Yearclass</b>	<b>Production MT</b>	<b>For stocking MT</b>	<b>%</b>	<b>Production MT</b>	<b>For stocking MT</b>	<b>%</b>
<b>C1</b>	<b>1400</b>	<b>131</b>	<b>9.4</b>	<b>1812</b>	<b>200</b>	<b>11.0</b>
<b>C2</b>	<b>3249</b>	<b>991</b>	<b>30.5</b>	<b>4132</b>	<b>854</b>	<b>20.7</b>
<b>C3</b>	<b>8226</b>	<b>2211</b>	<b>26.9</b>	<b>7735</b>	<b>2648</b>	<b>34.2</b>