

## TRENDS IN WORLD YIELDS FOR INLAND WATERS

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## Summary

Catches from inland waters throughout the world have risen steadily since 1950 and reached 7 554 763 tons in 1996. Most of the increase comes from Asia and particularly from China. The magnitude of the increase in Asia is such that it conceals decreases in almost all other continents, although catches from Africa have remained stable over the last few years. The species composition worldwide has shown a drift towards smaller species indicating that the fish populations are being exploited at levels, which are possibly not sustainable in the long term. The widespread decline in quantity and quality of catch over most of the world can be traced variously to environmental degradation arising from the pressures on water as a resource, excessive levels of exploitation, and, in some cases, use of fisheries for recreation rather than food production. Rises in yield in the face of the general decline in environmental quality can be traced to increasing use of enhancement techniques to improve productivity.

## 1. Introduction

Knowledge of the trends in the quantity and type of fish being caught is essential for management and for the assessment of the fishery. At the national level, such information is required to evaluate the social and economic significance of the inland fisheries sector, to monitor effects of management policies, and to assess impacts of other users of the inland water systems. At the global level, assessment of trends contributes to an appreciation of global food supplies and the conservation status of aquatic systems. In inland waters, such knowledge is especially difficult to acquire both globally and nationally. The major sources of data for such assessments are the FAO Fishstat and Aquastat databases that act as repositories for data provided by Governments on their fisheries and aquaculture. Difficulties in the interpretation of this data arise for several reasons:

- Inland fishery statistics are rarely collected separately and have to be derived by subtracting the aquaculture statistics from total reported inland production.
- Catches recorded by national authorities are usually derived from landing statistics and thus tend to miss minor, subsistence, and recreational fisheries. This is particularly true where fisheries are dispersed throughout large river systems or over a range of small lakes. There is therefore a tendency to underestimate the amount of fish actually landed.
- The interface between inland and coastal brackish water fisheries is often ill-defined, particularly with regard to diadromous fishes.
- The interface between inland fisheries and aquaculture is equally ill-defined and many enhanced fisheries, which are based on stocking, may be included in aquaculture rather than inland fisheries.
- The classification of species is inconsistent and incomplete. Thus the largest categories of fish reported are general ones such as Inland Fishes NEI, which do not allow for detailed analysis of trends in the composition of catches.

All these potential sources of error will be addressed in future collecting systems, but until they are rectified, trend analyses will remain somewhat general and speculative.

Conclusions drawn from the existing data sets are probably correct relatively although their accuracy as far as magnitude may be questioned.

## 2. Global Trends in Catch

### 2.1 Tonnage Caught (Figure 1)

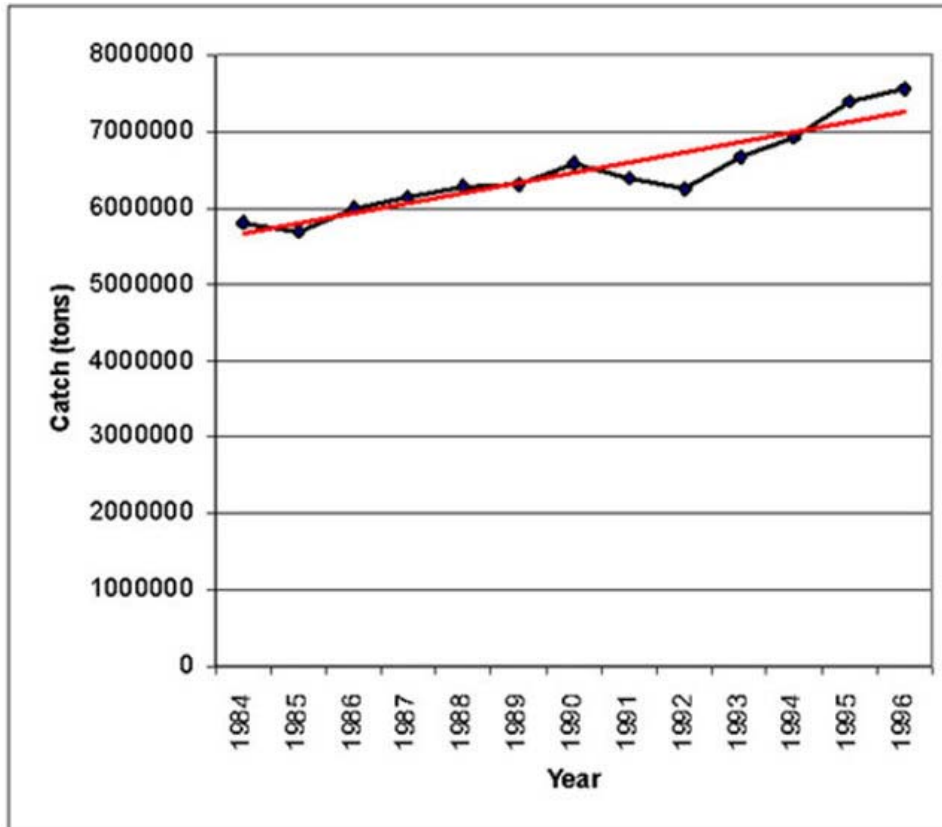


Figure 1. Total world catch of fish from inland waters 1964 – 1996. X Axis = year: Y Axis = catch in tons.

Catches from inland waters have increased steadily since the beginning of record collection in the early 1950s. Since detailed records of aquaculture catches were started in 1984, permitting a more accurate assessment of catches from natural inland waters, fish catches have increased at an average of 2.5% a year.

### 2.2 Proportion of Catch by Region (Figure 2)

Catches are very unevenly distributed among continents. In 1996 Asian countries caught 62% of the world's inland fish and 24% was caught in Africa.

In 1984 the equivalent proportions were 51% for Asia, the African proportion not having changed from 24%.

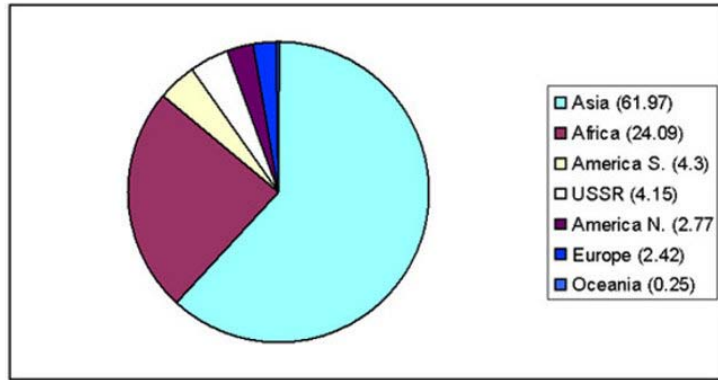


Figure 2. Percentage production of fish by region.

### 3. Regional Trends in Catch

#### 3.1 Africa

##### 3.1.1 Total Production (Figure 3)

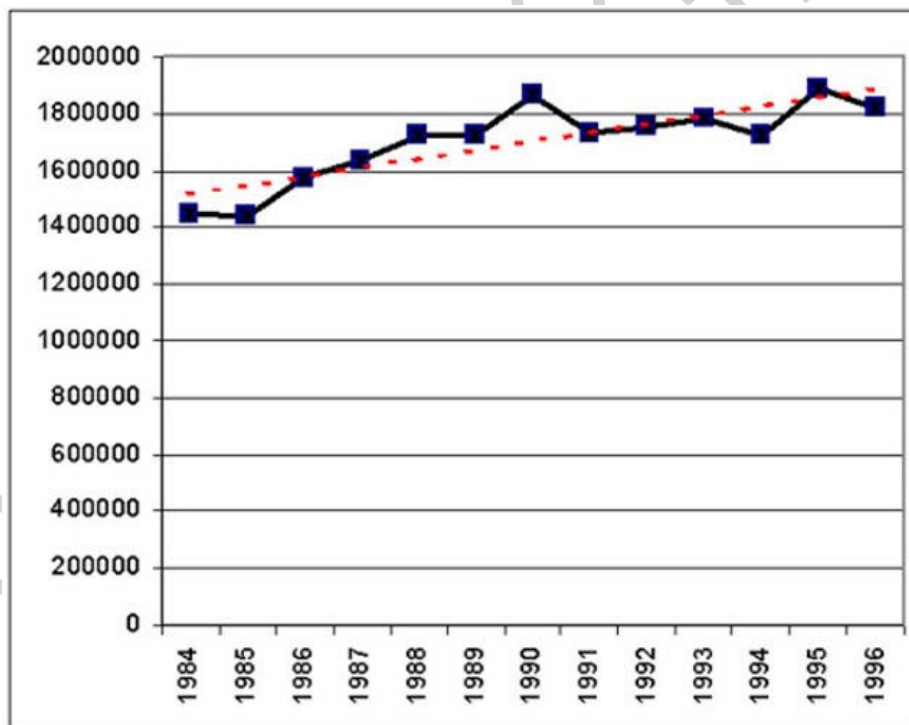


Figure 3. Trends in production from African inland waters 1984 – 1996. X Axis = year:  
Y Axis = catch in tons.

Catches from African inland waters have increased throughout the period under review. Although the trend line indicates a steady rate of increase of about 2%, the rate of increase has slowed and catches have remained relatively stable over the last seven years.

### 3.1.2 Regional Production (Figure 4)

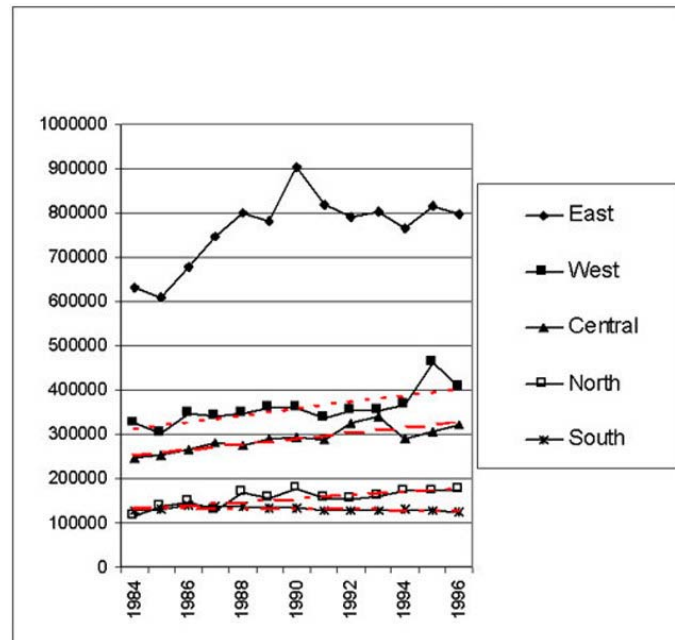


Figure 4. Trends in production from the regions of Africa 1984 – 1996. X Axis = year:  
Y Axis = catch in tons.

East Africa (Burundi, Ethiopia, Kenya, Malawi, Rwanda, Somalia, Sudan, Tanzania, Uganda) makes by far the largest contribution to the catch (43% in 1996) and thus tends to influence the trend for the continent as a whole. Catches in this region rose sharply between 1984 and 1990 because of the rapidly expanding Nile perch fisheries of Lake Victoria. Catches from this source have since stabilised or even declined.

Catches in West Africa (Benin, Burkina Faso, Burundi, Cote d'Ivoire, Equatorial Guinea, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo) are dependent on the climatic conditions in the Sahel that influence the productivity of the main river systems.

The prolonged drought of the 1970s and early 1980s resulted in falling catches throughout the region but these recovered with the improved conditions of recent years permitting a growth in total catch in some countries of the region.

Catches in Central Africa (Cameroon, Central African Republic, Chad, Congo Democratic Republic, Congo Republic, Gabon) also rose on average although a sharp fall was recorded between 1993 and 1994

Nearly all the catch from Northern Africa (Algeria, Egypt, Morocco, Tunisia) comes from Egypt where increasingly intensive fishing and the development of fisheries on Lake Nasser has allowed yields to rise steadily.

The majority of the catch from Southern Africa (Angola, Botswana, Lesotho, Madagascar, Mozambique, Namibia, South Africa, Swaziland, Zambia, Zimbabwe) comes from Zambia and Madagascar, both of which have shown substantial declines over the last ten years.

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This study is based on FAO fisheries statistics. Readers are referred to the FAO website: <http://www.fao.org/WAICENT/FAOINFO/FISHERY/statist/statist.htm>

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### Biographical Sketch

**Dr. Robin Leon Welcomme** was born in London, England in 1938. He was educated at Birkbeck College, University of London and later obtained a PhD at Makerere College, University of East Africa for a thesis on the effects of climatic change on the biology and ecology of certain fishes of the Lake Victoria basin. He began his scientific career in 1963 as a Scientific Officer at the East African Freshwater Fisheries Research Organization, Jinja (Uganda) and was later employed as Fisheries Biologist in Benin, West Africa. until 1971 He then took up employment as a Fishery Resources Officer in FAO, Rome (Italy). He was promoted steadily to achieve the rank of Chief, Inland Fishery Resources and Aquaculture Service, and became Secretary of the European Inland Fisheries Advisory Commission as well as Technical Secretary to other regional fishery bodies until his retirement from the Organization in 1997. Dr. Welcomme is now a Senior Research Fellow, Renewable Resources Assessment Group, T.H. Huxley School of Environment, Earth Sciences and Engineering, Imperial College, London where he continues his work on inland fisheries management, on river fisheries and inland water biodiversity. In his career Dr. Welcomme has published Approximately 110 scientific works including 4 books. He has travelled to and worked in over 70 different countries both advising member governments and local institutions on conservation and sustainable development of fisheries resources in rivers, lakes and associated wetlands. He has also organized numerous meetings of commissions, working parties and technical networks particularly in Europe, Africa and Latin America.