

## Climatic and anthropogenic effects on fish diversity and fish yields in the Central Delta of the Niger River



For last 20 years, the fish communities in the Central Delta of the Niger River have been subjected to: (i) two drought periods in 1973 and 1984, (ii) a dramatic increase of fishing and, (iii) the building of an electric-power dam in 1984. At different levels, these various factors modified the biological cycle of the fish which are adapted to the former hydrological cycles of the Niger and the Bani rivers. The Sahelian drought is responsible for a decrease in both flood duration and of the inundated area of floodplain which varies from 20 000 km<sup>2</sup> to 5 000 km<sup>2</sup>. From 1968 to 1989, fish landings declined from 90 000 metric tons to 45 000 metric tons. During the same period, as fish catches fell, yields per hectare increased from 40 kg in 1968 to 120 kg in 1989. This phenomenon is linked to the decrease of the average age of the fish (69% of fish catches are under one year old) in response to the increased fishing mortality and natural mortality which is higher during the drought period. The increase in fish productivity is characterized by a depletion of species such as *Gymnarchus niloticus*, *Polypterus senegalus*, *Gnathonemus niger*, whose reproduction are linked to

the floodplains and of species like *Citharinus citharus* and *Clarotes laticeps* which visit frequently flooded areas. Concurrently, families such as the Cichlidae or Clariidae, which are resistant to low oxygen concentration, increase. Species which are under one year old at first reproduction and have several spawning periods per year, are the more abundant in fish communities.

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