

## THE ABUNDANCE OF LARVAE OF THE GILT SARDINE OF THE NORTHWEST AFRICAN STOCK IN RELATION TO THE FISHERY

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Since 1968 studies on *Sardinella aurita* larvae have been carried out in Senegal and are continuing. The adult stock which was estimated by acoustic methods in 1974 at 700 000 metric tons migrates seasonally between 22°N and 11°N along the Northwest African coast (Boely, 1979). Off Senegal several spawning periods of unequal importance are observed, concerning various parts of the stock of different ages. A major spawning occurs at the beginning of the warm season in June deriving from migrating fish 2 years old and more, and young, still sedentary fish 12 to 18 months old. A secondary spawning of young fish only, occurs at the end of the warm season. Several minor ones occur during the cold season when the migratory group comes back to the south. The relative importance of these spawnings was estimated for 1970-71: the secondary spawning was equal to 1/10 of the major spawning, and these occurring during the cold season to 1/20.

In the area of the Petite Côte, south of Dakar, the abundance of larvae of 6-11 mm from the major spawning was estimated for the years 1971-76 (Conand, 1977). This value can be considered to be an index of the spawning potential of the stock and was compared with the yield of the fishery. The information on the catch was available only for a small part of the exploited stock so a cohort analysis was not possible, therefore we compared larval abundance with the catch per unit effort (CPUE) of the Dakar sardine fishery for the 6 months preceding the major spawning. No obvious relation was evident: only that larval recruitment was higher in 1975, and 1976 while the CPUE was low these two years. One might suppose that we have a larval mortality dependent on the density of adults, eggs and larvae being particularly

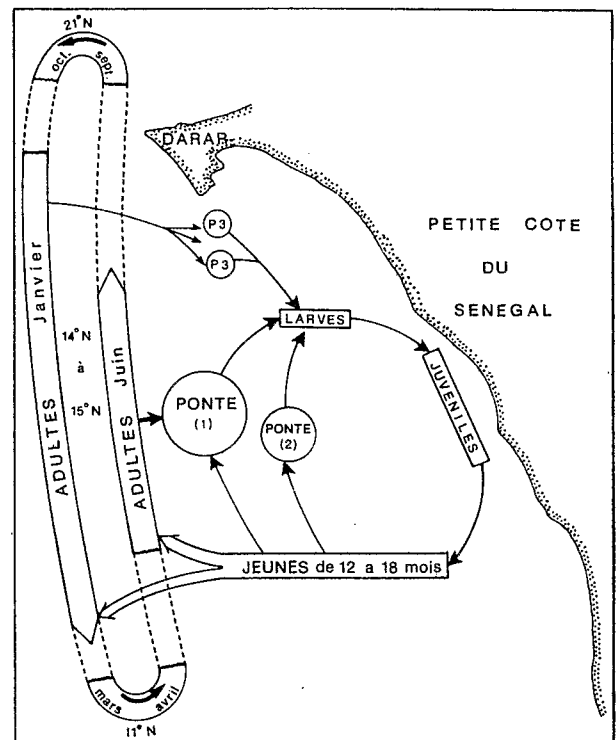


Figure 1. Spawning of *S. aurita* off the Senegalese Petite Côte.  
Ponte (1): major spawning at the beginning of the warm season  
Ponte (2): secondary spawning at the end of the warm season  
Ponte (3): sporadic spawnings of the cold season.

affected by cannibalism. However, we do not conclude this because the Dakar sardine fishery exploits a limited area and it is impossible to determine if the variations of the CPUE are the result of a real change

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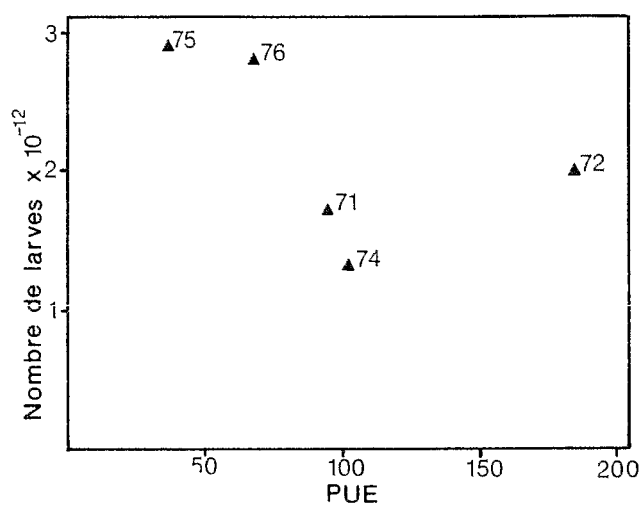


Figure 2. Larval abundance in relation to the catch per unit effort C.P.U.E. in 100 kg per 10 h) of the Dakar sardine fishery during the 6 months preceding the major spawning (December-May).

in abundance of the stock, or only of its availability due for example to special hydrological conditions.

In the case of this gilt sardine stock where fishery statistics are very incomplete, the quantitative study of fish larvae is a very good method for measuring changes in the spawning potential of the stock. The recruitment in the Petite Côte area could also be estimated by the spawning intensity at the end of the warm season which is produced only by the young fish from the previous year.

#### REFERENCES

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