NOTES

ON THE INDEX OF ABUNDANCE OF FLYINGFISH POPULATIONS IN THE INSHORE WATERS OF TAMIL NADU AND PONDICHERRY

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ABSTRACT

In the narrow coastal belt extending from Muthukadukuppam to Point Calimere in Tamil Nadu-Pondicherry region, the flying fish form an important seasonal fishery. The total landings fluctuate from year to year. The weighted index of abundance of flyingfish fishery was calculated for the years 1966 to 1970 and compared with the trends in the yields of the fishery during those years. The weighted index of abundance was the highest during 1967 and lowest during 1970, whereas, the landings were higher in 1968 and lower in 1970.

Marked annual fluctuations in the fisheries of the flying fish have been observed by Hornell (1923), Nayudu (1923), and Arora and Benerji (1957). The flyingfish fishery in India is mainly confined to the narrow belt of Tamil Nadu and Pondicherry coasts extending from Muthukadukuppam to Point Calimere although, some stray catches have been reported from the other parts of these two coastal states (Arora and Banerji, 1957). The catches in this area comprise mostly of species belonging to the genera *Cypsilurus* and *Exocoetus*. The fishing season starts in the middle of May and lasts up to the middle of July, sometimes extending to the middle of August. Though the fishery is of a short duration, hardly extending three months, it is of economic value to the fishermen of that region. The method of fishing of flying fish has been described by earlier authors (Hornell 1923, Nayudu 1923, Arora and Banerji 1957). The catch data of flying fish, for the years 1950 to 1954, were analysed by Arora and Banerji (1957) for studying the causes of annual variations in the landings. They concluded that no correlation exists between the annual variation of catch and the simple biological characters like the size of the fish, sex ratio, etc. In the present paper a relation between fishing effort and the relative index of abundance has been worked out for the years 1966 to 1970.

The Central Marine Fisheries Research Institute is collecting routine survey data at different landing centres along the coastline of India on the basis of a suitable sampling design (Banerji and Chakraborty 1968) for the estimation of marine fish production and fishing effort in India. The present study is based on the data collected from landing centres along the coast of Tamil Nadu and Pondicherry during 1966-1970.

Let C_i be the catch of flying fish in the ith landing centre in a centre two day group during the fishing season in the region and E_i, the correspoding fishing effort in man-hours expended to get the catch C_i. Then $C_i|E_i = U_i$ gives the catch per unit effort for the ith landing centre which is the relative index of abundance of the flying fish. The relation $U = a\,E^b$ was calculated for the five years separately along with the weighted index of abundance $\bar{U}$.

TABLE 1. *Landings of flying fish in tonnes.*

Year	Tamil Nadu	Pondicherry	Other states	All India
1966	3,180	323	196	3,699
1967	2,702	381	44	3,127
1968	4,009	454	82	4,545
1969	3,768	218	53	4,039
1970	2,103	253	488	2,844
Average	3,152	326	173	3,651
Percentage	86.33	8.93	4,74	100.00

From Table 1 it is seen that during the 5-year period, the total landings fluctuated between 2,844 and 4,545 tonnes, the average catch during the period being 3,651 tonnes. Tamil Nadu and Pondicherry coasts contributed about 95% of the total flyingfish landings in India. It is also seen that the catch was the highest during 1968 and lowest during 1970.

The relation between E and U for the years 1966 to 1970 calculated for the region under study are:

$$1966 \quad \ldots \quad U = 37.70\,E^{-0.3113} \quad \ldots(1)$$

$$1967 \quad \ldots \quad U = 15.65\,E^{-0.1326} \quad \ldots(2)$$

$$1968 \quad \ldots \quad U = 71.17\,E^{-0.4306} \quad \ldots(3)$$

$$1969 \quad \ldots \quad U = 30.35\,E^{-0.3455} \quad \ldots(4)$$

$$1970 \quad \ldots \quad U = 312.00\,E^{-0.7834} \quad \ldots(5)$$

The weighted index of abundance $(\bar{U})$ along with the total flyingfish catch (C) in the region under study are given in Table 2.

TABLE 2. *Weighted index of abundance* $\bar{U}$ *(in* kg*) and the total flyingfish catch* C *(in tonnes) during* 1966 - 1970.

Year	C	$\bar{U}$ (in kg)
1966	3,503	7.13
1967	3,083	8.18
1968	4,463	6.94
1969	3,986	6.02
1970	2,356	6.20

A comparison of catch (C) and the weighted index of abundance ($\bar{U}$), as shown in Table 2, reveal that, while the total flyingfish catch was the highest in 1968 and lowest in 1970, the corresponding $\bar{U}$ was the maximum during 1967 and minimum during 1969 and 1970. The same trend is seen from the b values in the equations (1) to (5). The decrease in abundance from 1968 to 1970 may be due to several factors. viz (a) decrease due to natural mortality and (b) decrease due to fishery-independent factors like salinity, temperature, ocean currents and availability of food. The present study offers scope for further work on the above aspects for the proper understanding of the status of flyingfish fishery in the region of Tamil Nadu and Pondicherry coasts.

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