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An assessment of the Div. 3M cod stock

by

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INTRODUCTION

In the present paper, an assessment of the cod fishery of ICNAF Div. 3M is presented. A generalized production model is used in order to determine the MSY level.

The cod fishery in this area started in 1957 with a total catch of 17,800 metric tons and the highest catches were 60,000 metric tons in 1965 and 57,000 metric tons in 1972. Since then, total catches have been in the order of 22,000 to 25,000 metric tons. The maximum effort value was reached in 1972 with a total of 3,681.62 OTB<sub>16</sub> days fished. Since 1973, the fishery was regulated at a level of 40,000 metric tons and catches were below the TAC level. Due to this fact, the TAC for 1977 was set at a level of 25,000 metric tons. For 1978 the TAC was set again at a level of 40,000 metric tons, due to the extremely abundant 1973 year-class.

MATERIALS AND METHODS

We have used the data published in the ICNAF *Statistical Bulletin* from 1966 to 1976. The abundance index used was the catch per unit effort of the Portuguese side trawlers of 1,000-1,999 GRT (OTB<sub>16</sub>). We thought that this way was the best index since the catch for this type of vessel constitutes 20-30% of the total catch in Div. 3M, and they have been in the fishery throughout the period considered.

A good correlation ( $r = 0.855$ ) has also been found between the OTB<sub>16</sub> CPUE and the abundance index used by Mari and Terré (1977) (Fig. 1), and also with the Spanish vessels of the same category (Fig. 2,  $r = 0.904$ ). The 1974 data for Spain was not considered since there was only one vessel with a 1-ton catch during that year.

We have used the Schaefer (1954) model with the Gulland (1961) modification using a 3-year average, taking into consideration that cod in this area is fully recruited at 4 years of age.

DISCUSSION

Fig. 3 shows the adjusted line of OTB<sub>16</sub> CPUE against the average 3-year effort, and the resultant parabola of total yield against effort. The resultant value for MSY is 33,600 metric tons and the MSY effort is OTB<sub>16</sub> 2,300 days fished. The equilibrium CPUE at the MSY level is 14.60 metric tons. The Portuguese catch per unit effort in 1977 was 14.88 tons/day fished, indicating that the stock is in a healthy situation, probably due to the input of the strong 1973 year-class.

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REFERENCES

- Cadima, E.L. 1977. Les modèles d'évaluation des stocks halientiques. FAO, Circulaire des Pêches, No. 701.
- Gulland, J.A. 1961. Fishing and the stocks of fish at Iceland. *Fish. Invest. Lond.* (2), 24(4): 52 p.
- Mari, A., and J.J. Terré. 1977. An evaluation of the status of Flemish Cap cod fishery. *ICNAF Res. Doc.* 77/VI/28, Serial No. 5053. (mimeographed)

Mari, A., and R. Dominquez. 1978. An update of Flemish Cap cod assessment. *ICNAF Res.Doc.* 78/VI/51, Serial No. 5216. (mimeographed)

Schaefer, M.B. 1954. Some aspects of the dynamics of population important to the management of the commercial marine fisheries. *Bull. Inter-Amer. Trop. Tuna Comm.*, No. 1, p. 26-56.

Wells, R. 1973. Virtual population assessment of the cod stock in ICNAF Div. 3M. *ICNAF Res. Doc.* 73/105, Serial No. 3068. (mimeographed)

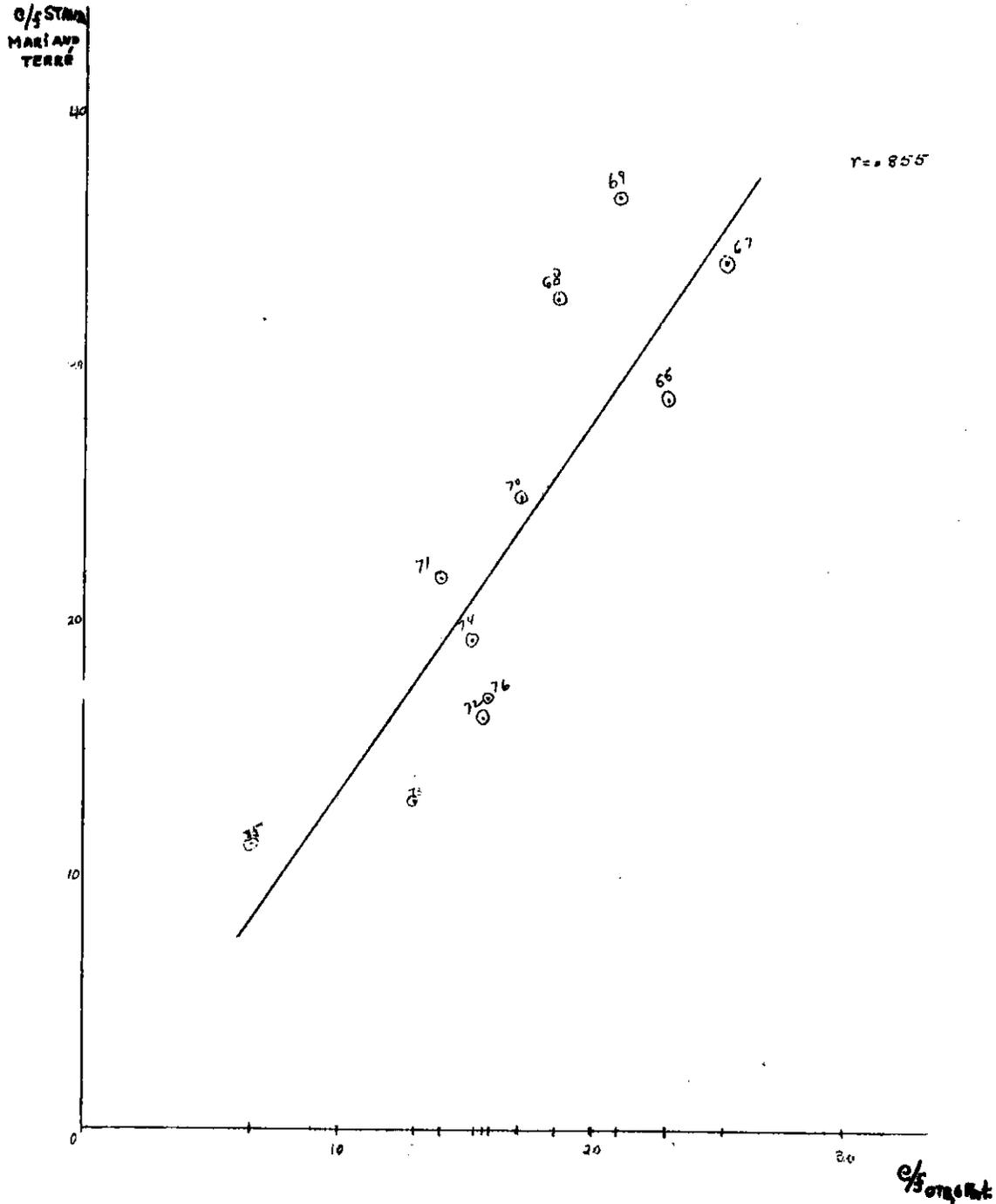


FIG 1

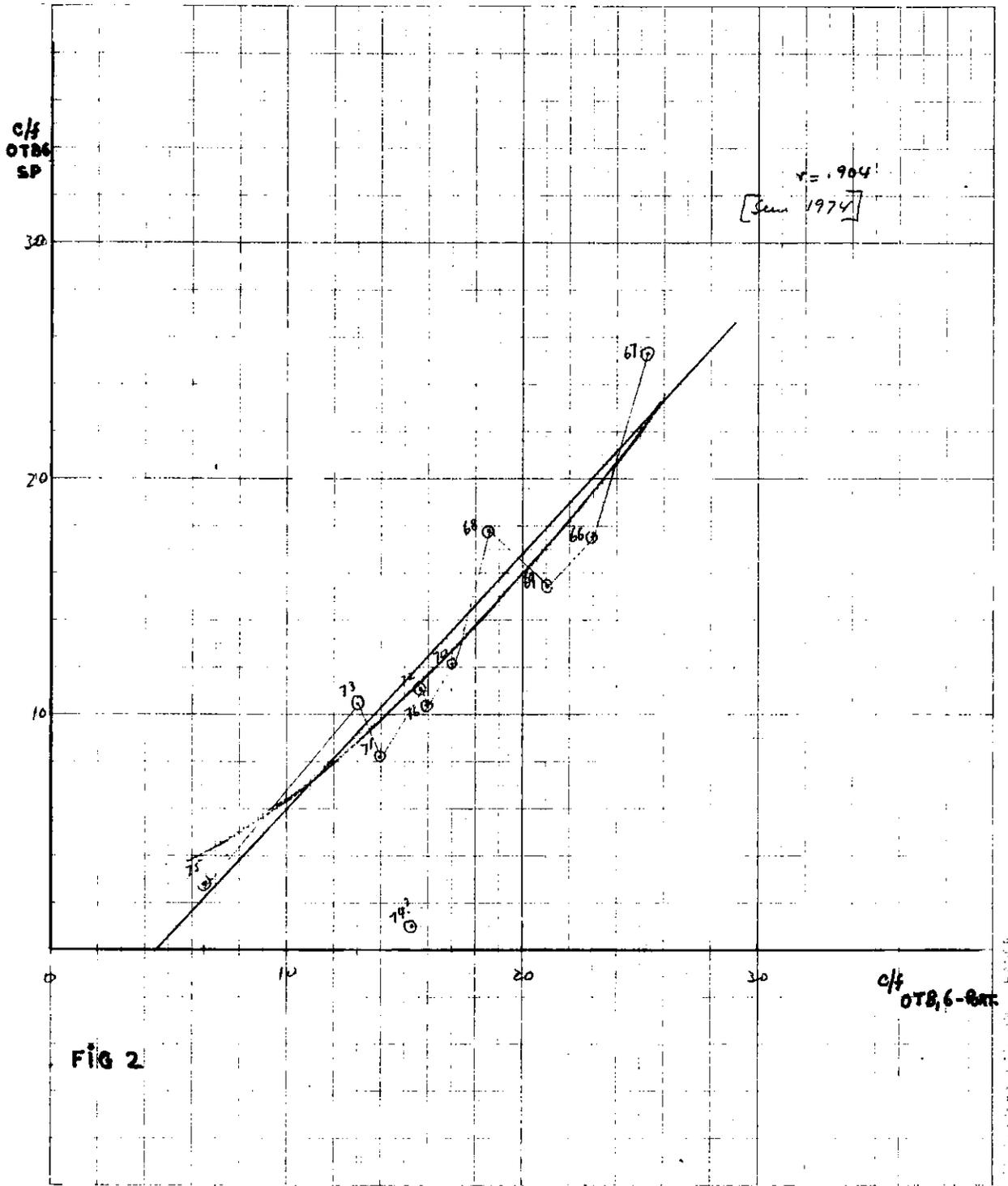


FIG 2

