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AGE DETERMINATION AND GROWTH OF RED EMPEROR SNAPPER (*LUTJANUS SEBAE*) IN THE ARAFURA SEA OFF NORTH AUSTRALIA

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ABSTRACT

This paper, deals with the determination of age and growth of *Lutjanus sebae* in the Arafura Sea off northern Australia by ring-reading method on the vertebra. From March 1982 to November 1988, a total of 1,116 specimens were collected from the catches of the Taiwanese pair trawlers returned from the fishing ground. The anterior portion of the 18th vertebra was used as the age character in this study.

The results show that: (1) there is no significant difference of centrum-radius vs. fork length between sexes; (2) one annuli (opaque zone) is formed per year in the period from October to November; (3) the parameters of von Bertalanffy's growth equation estimated by Walford's plot method and Nonlinear Regression procedure are as follows:

1) by Walford's plot method
L_∞=84.109 cm; k=0.1662; t_0=−0.378
2) by Nonlinear Regression procedure
L_∞=79.775 cm; k=0.1797; t_0=−0.403

INTRODUCTION

The continental shelf off northern and northwestern Australia has been one of the most important trawling grounds for Taiwanese pair trawlers since the early 1970s. In 1977 Australian government proclaimed a 200-mile Exclusive Economic Zone which had a great impact on Taiwanese fishing activities there (Yeh, 1984). Since that time, the catch of Taiwanese trawl fishery in the region has decreased continuously but still contributes to a significant portion of the total catch of groundfish in Australian waters. According to the catch statistics of Taiwanese trawl fisheries (DFRC 1970-1989), the yearly catch from the northern shelf region composed at least 40% of the total yearly catch of groundfish in the Australian waters.

The groundfish species are multitudinous in this area (Liu and Yeh 1978; Liu and Yeh 1982), which is one of the profound characteristics of the tropical groundfish community. The red emperor snapper, *Lutjanus sebae* is one of the most abundant and economically valuable species in the waters off Australia. Yeh *et al.* (1986) have already studied the age and growth of *L. sebae* in the northwestern Australia area. However, the study on the age determination and growth of this species in the Arafura Sea off northern Australia is still absent. The main purpose of this study is thus to elucidate the age and growth of the species, which shall provide valuable information for advanced analysis of population dynamics in the future.

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