

## **DECLARATION**

### **Candidate's Declaration**

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature..... Date.....

Name: .....

### **Supervisors' Declaration**

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature..... Date.....

Name:.....

Co-Supervisor's Signature..... Date.....

Name: .....

## ABSTRACT

Aspects of the biology of *Sardinella aurita* and *Sardinella maderensis* in the coastal waters of the Central Region of Ghana were investigated from October 2013 to September 2014. The study mainly provides information on the reproductive biology, recruitment pattern, growth and mortality parameters and exploitation rates of the species. FiSAT was used extensively in the estimation of the growth and mortality parameters and exploitation rates of the stocks. The overall sex ratios of both species were not statistically different from 1: 1 ratio. The lengths at 50 % sexual maturity of male and female *S. aurita* were estimated at 16.40 and 16.74 cm TL and that of *S. maderensis* were 15.43 and 15.56 cm TL respectively. *S. aurita* fecundity ranged from 4,834 to 63,917 whilst that of *S. maderensis* ranged from 7,597 to 33,984. *S. aurita* species spawned over 7 –8 months, with minor and major spawning seasons from February to May and July to October respectively. *S. maderensis* spawned over a relatively short period of 6 –7 months, with a minor and major spawning season from March to May and September to October. Both species were determinate spawners producing a single batch of yolky oocytes prior to spawning. The sardines experienced recruitment throughout the year with high proportions at different periods. The stocks exhibited isometric growth. *S. maderensis* was found to have a faster growth rate than *S. aurita* with a longer life span in the latter (6 years) than the former (5 years). The sardinella stocks are not exploited sustainably. Recommendations to achieve sustainable exploitation are made.

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## **DEDICATION**

This thesis is dedicated to my mother Mrs. Beatrice Osei and to the memory of my late father Mr. Samuel Osei Yao.

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