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**Study of the metamorphic changes of *Abudefduf vaigiensis* (Indo-Pacific Sergeant) during larval recruitment.**

**R.M.K.S. Gimhani<sup>1\*</sup>, K.Radampola<sup>1</sup>, R.D.N.Wijesinghe<sup>1</sup>**

<sup>1</sup>Department of Fisheries and Aquaculture, Faculty of Fisheries and Marine Sciences & Technology, University of Ruhuna, Sri Lanka

**Abstract**

*Abudefduf vaigiensis* is a highly exploited reef fish species for the marine ornamental fish industry. The morphological and histological transitions during the metamorphosis of *A. vaigiensis* are important to study their life cycle. Samples are collected from Dodanduwa area in May 2022. The fish were classified into three size categories, with 10 fish collected for each category. Specifically, the size categories were Small-SC (less than 9cm), Medium-MC (ranging from 12cm to 15cm), and Large-LC (greater than 16cm). Fish were examined to find out the differences in external morphology, gut composition, and histology in the stomach and intestine. Morphometric parameters (Total Length, Standard Length, etc.) increased with the body size but the meristic counts were independent of body size except for the number of transverse bands. Length-weight relationship for MC ( $ts=2.754$ ,  $b=3.934$ ,  $p<0.05$ ) and LC ( $ts=4.112$ ,  $b=5.238$ ,  $p<0.05$ ) groups depicts allometric growth, while fish in small size class showed an isometric growth ( $ts=-1.0214$ ,  $b=2.893$ ,  $p>0.05$ ). Fulton's condition factor (K) in SC ( $1.11 \pm 0.19$ ) showed significantly better condition of fish compared to that of fish in MC and LC groups. Individuals from different size stages undergone a difference in pigmentation and showed more black strips in MC and LC (6 stripes) than in SC (5 stripes). The terminal mouth and the incisor-type teeth forming a cutting plate indicated scraping feeding habits. Gut component analysis suggested that larger fish scrape on harder substrates. Relative gut length (RGL) denoted that gastrointestinal tract undergoes rapid remodeling and the RGL of larger fish ( $2.83 \pm 0.13$ ) was higher than smaller fish ( $1.83 \pm 0.13$ ). Histological studies revealed that the thickness of tissues in the stomach and intestine increases with the growth of the fish. This study showed that histological and morphological changes occur in accordance with the development of *A. vaigiensis* from juveniles to adults.

**Keywords:** *A. vaigiensis*, Larval recruitment, Morphology, Ontogeny

**\*Corresponding Author:** [kalani.rathnayakes@gmail.com](mailto:kalani.rathnayakes@gmail.com)