

## ABSTRACT

### Age Validation and Growth Rate Determination for the Flyingfish

#### *Hirundichthys affinis* in the Eastern Caribbean

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Age determination of the commercially exploited flyingfish *Hirundichthys affinis* (Günther) in the eastern Caribbean is a prerequisite for determining feasible approaches to stock assessment and management of the resource, and understanding growth rate variation of flyingfish may assist in understanding inter-annual variation in stock abundance. A study of otolith aging and growth rate variation in the flyingfish *H. affinis* was therefore conducted in the eastern Caribbean (10 - 16 °N, 58 - 62 °W) in 1987 - 1989. Daily otolith increment formation was validated in laboratory reared larvae, confirming the usefulness of otolith increment counts for age determination of *H. affinis* juveniles (<150 mm FL). A mark-recapture program to validate increment formation in wild adults was unsuccessful due to tetracycline-linked mortality and insufficient tetracycline uptake in slow-growing adult otoliths. A von Bertalanffy growth curve fitted to juvenile size at age data gave preliminary growth curve parameters of  $t_0 = 2.85$  days and  $k = 0.00854$  on a daily basis with  $L_{\infty} = 245$  mm FL, for eastern Caribbean flyingfish. The

estimated growth rate for *H. affinis* would allow individuals to reach sexual maturity in 7-8 months and maximum size within a year, and is consistent with the contention that *H. affinis* in the Caribbean is essentially an annual species. This is critical information in the context of determining the most appropriate approach to stock assessment of flyingfish. Juvenile growth rate in *H. affinis* was sensitive to spatial and temporal variation in temperature. Growth rates were higher where sea surface temperatures were higher, and were higher for juveniles hatched in warmer months (April - July) than those hatched in colder months (November - March). Growth rates were also higher near islands than at more oceanic locations. Variation in juvenile growth rates may influence the spatial and temporal variation in spawning frequency observed in *H. affinis*, and juvenile sensitivity to temperature variation could contribute to observed patterns of inter-annual variation in stock abundance of *H. affinis* in the eastern Caribbean.