

Early age and growth of skipjack tuna in the central Pacific as indicated by daily growth increments of otoliths.

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Pannella (1971, 1974) provided circumstantial evidence that the smallest observable growth increments in fish otoliths (sagittae) observed by earlier workers represent daily growth increments. Experiments at the Honolulu Laboratory with the endemic engraulid Stolephorus purpureus provide direct evidence that otoliths grow by daily increments.

Similar structures are apparent in the otoliths of skipjack tuna. Assuming that the increments represent daily growth lamellae, counts for 46 specimens 3.6-75.2 cm FL were plotted as functions of length (Figure 1). The largest specimen had an indicated age of slightly less than 27 months. Two linear growth stanzas are indicated, although the two largest specimens provide some evidence that the growth curve is becoming asymptotic at an age of about 2 years. Skipjack growth was calculated to be 0.78 mm/day between the 6th and 22nd months of life. Central Pacific skipjack reach a calculated length of 42.6 cm at an age of 1 year. A few otoliths from the Papua New Guinea and eastern Pacific indicate slower grow rates of skipjack in these regions (Figure 2). Aging of skipjack by otoliths shows good agreement with previous methods of aging this species (Figure 2). A few otoliths from yellowfin tuna (Figure 3) also show good agreement of other methods of age determination for this species.

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Figure 1.

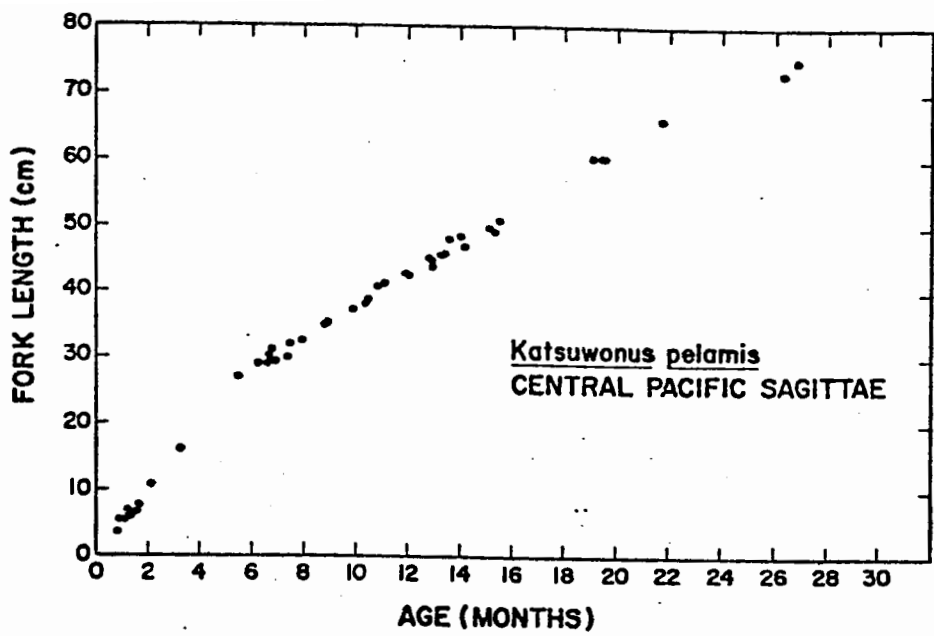


Figure 2.

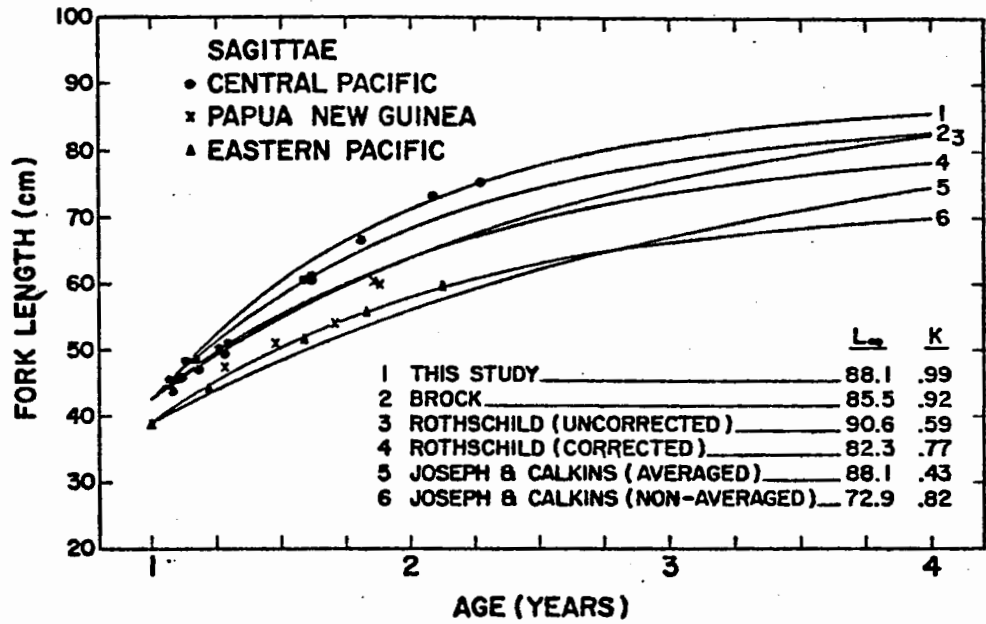


Figure 3.

