

Aspects of the Biology and Artisanal Fishery
of Three Caribbean Clupeids (Pisces; Clupeidae)
in Jamaican Waters

The bionomics, life history and aspects of the commercial (artisanal) fishery of three species of commonly occurring Caribbean clupeids, Opisthonema oglinum, Harengula jaguana and Harengula humeralis from Jamaica were studied from January 1979 to May 1983.

Catch rates of adult specimens of each species sampled in Kingston Harbour and adjacent waters using gill nets, simulating those in operation by artisanal fishermen, indicate that these species are available all year round.

Continuous biological sampling for three consecutive years indicate that O. oglinum, H. jaguana and H. humeralis are seasonal spawners having only one spawning period per year during March to July/August. Evidence of several year classes spawning together was suggested by fecundity data, gonad indices, preliminary ova diameter measurements and length-frequencies. Back-calculating lengths at earlier ages using scales in combination with length-frequency data suggests that local populations of O. oglinum may attain 278 mm TL, ($L_{\infty} = 203$ mm) in $3\frac{1}{2}$ years.

Estimation of total mortalities suggests high mortality for O. oglinum due to the intensive artisanal gill net fishery, and also suggest heavy predation of H. jaguana and H. humeralis by a considerable number of neritic, pelagic and benthic predators, which are apparently dependent on clupeids as a major food source.

Results of studies on schooling behaviour in aquaria are probably a realistic indication of the schooling conditions in open water in relation to activity and behaviour of predators, and in association with submerged obstacles. Unique artisanal thread herring catch data over a period of 712 nights, April 1980 to May 1983, indicate a mean catch rate of 30.5 Kg/night for O. oglinum in Kingston Harbour and adjacent waters. An estimated total catch was calculated at between 325 tonnes and 458 tonnes/year for three years, 1980 to 1983. The factors affecting the artisanal fishery and the variety of techniques employed are considered, in addition to the marketing systems currently in use.

The artisanal herring fishery can be improved by deployment of floating and submerged fish attracting devices in appropriate neritic zones, and by proper management of the existing fishery including use of recommended minimum mesh sizes, by designation of

fish sanctuaries, by instituting closed seasons, and by instituting closed areas, and by effectively prohibiting the use of destructive fishing methods currently employed in nursery areas, such as dynamiting and beach seines.