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ABSTRACT

Gillnet Selectivity for Carite (*Scomberomorus brasiliensis*)
Fishery of Trinidad and Tobago

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Gillnets are widely used in the artisanal fisheries of Trinidad and Tobago and are currently unmanaged and uncontrolled. Carite (*Scomberomorus brasiliensis*) is the target species and small meshes in gillnets have contributed to the overexploitation of stocks. In this study, a comprehensive investigation of size selectivity for carite (*S. brasiliensis*) gillnets was undertaken to inform management strategies in order to facilitate the sustainability of this fishing practice. Industry compliance requires sound scientific substantiation of prescribed measures.

The size selectivity for carite (*S. brasiliensis*) gillnets was derived by using experimental nets of 11 different mesh sizes, fished simultaneously on the south coast of Trinidad. The Kawamura/Matsuoka method was used to calculate theoretical selectivity curves based on information about length/girth relationships from catch data. Bycatch was characterized in meshes and tested for differences with respect to target species and total catch. Finally, genetic analyses were performed on carite samples to determine population structure in waters of Trinidad and Tobago.

The linear relationship between maximum selectivity lengths and mesh sizes was statistically significant. Calculated L_{50} minimum selection lengths when compared with biological data approximated a 12.06 cm mesh for regulatory purposes. Mean fork lengths increased with increasing mesh size and were not significantly different. Socio-

economic studies are required to monitor impacts of mesh regulations on fishermen's earnings.

The simple linear regression for variables year and net type showed statistical significance which indicated that these variables were useful predictors of bycatch to total catch ratios of weight and numbers. Mesh sizes showed no differences in bycatch to total catch ratios of weight and numbers.

Tests of homogeneity showed that carite samples off Cumana, Venezuela were genetically divergent from carite at other localities on the north, west and south coasts of Trinidad and in Isla de Margarita, Venezuela. A weak isolation-by-distance effect up to 120 km, suggested that carite sampled off Trinidad differed from Isla de Margarita samples. There was no genetic evidence of overall stock depletion over the past several millennia, and the carite fishery is not necessarily on the verge of total collapse but overfishing may be localised and exploitation, in particular on the south coast, should be effectively managed.