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THE BIOLOGY OF *Solea bleekeri* (TELEOSTI : SOLEIDAE)
IN LAKE ST LUCIA

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INTRODUCTION - *Solea bleekeri* is a common estuarine sole whose biology has to date not been investigated, it shows a preference for estuaries with muddy substrates and high turbidities (Cyrus & Blaber, 1987), as a result it forms an important component of the Lake St Lucia System.

MATERIALS AND METHODS - Due to salinity variations at St Lucia samples were collected for a year on a monthly basis, during 1981/82 when salinities were around that of seawater (32 - 44,5‰) and 1986/87 when salinities were of an intermediate range (16 - 35‰). Fish were caught by seine netting, at the same time benthic samples were collected using a Zabalocki-type Ekman grab. In the laboratory gut contents were analysed and used to determine diet, in addition sex and gonad condition were established.

RESULTS - During 1981/82 the siphon tips of the bivalve *Solen cylindraceus* dominated the diet of *S. bleekeri*, comprising >80% in terms of 'Points' (= rough volumetric) and numerical analysis. The benthos during this period was stable (Blaber et al., 1983), and dominated by five groups which made up 90% of the total benthos, these were; *Apeudes digitalis* (38%), polychaetes (26%), *Grandidierella lignorum* (13%), Cumacea (7%) and *S. cylindraceus* (6%). During 1986/87 the diet was found to be fairly diverse with five dominant groups making up 79%, these were; *G. lignorum* (36%), *S. cylindraceus* - siphon tips (17%) & whole animals (6%), polychaetes (8%), *Pseudodiaptomus stuhlmanni* (7%) and fish, mainly *Glossogobius* spp. (5%). Analysis of the benthos showed that the mean number of animals m⁻² was 5785 compared to 8734 in 1981/82, however, during 1986/87 the benthos was not considered to be fully developed due to the system having been 'flushed out' and still being subjected to rising salinities. The five groups of 1981/82 still dominated, comprising 87% of the total benthos, their percentage contribution were as follows; *A. digitalis* (50%), polychaetes (15%), *S. cylindraceus* (10%), *G. lignorum* (9%) and Cumacea (3%).

Reproductively active individuals ranged from 55 to 115 mm Standard Length in males (\bar{x} = 81,1 mm) and 50 to 128 mm in females (\bar{x} = 92,3 mm). Gonad activity patterns during the two sampling periods were essentially similar, they started developing in June, were maturing from July and ripe by August. Almost ripe running individuals occurred from September to November and spent gonads dominated from February to May. Recruitment started in September, with individuals <30 mm S.L. being present to March.

DISCUSSION - Under stable salinities *S. cylindraceus* densities are apparently sufficient for *S. bleekeri* to selectively search for siphon tips. Alternatively the mode of prey location, tactile- and chemo-sensory, may favour the 'capture' of siphon tips which are to be found protruding just above the surface of the substrate. The changed diet during 1986/87 was directly related to the state of the benthos and this contributed to the greater variety of food items taken, *S. bleekeri* fed mainly on groups which were dominant in the benthos.

Although the exact spawning location has not been confirmed, results from this study indicate that around October/November *S. bleekeri* move in large numbers into the southern half of the lake. Actual spawning probably takes place in the shallow relatively sheltered areas of Makakatana Bay where numerous aquatic macrophytes occur, and not at sea as previously believed. It is hoped at a later stage to fully establish this theory.

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