Tympanotonus fuscatus - ITS POTENTIAL AND ABUNDANCE IN THE MANGROVE SWAMPS OF THE UPPER BONNY RIVER, RIVER STATE.

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ABSTRACT

The Shellfish Tympanotonus fuscatus Fisheries was studied in the upper Bonny River of River State Abundance and Size distribution were evaluated through collection of the Shellfish from 4 Sampling Stations along the River System. Shell size differences were observed between the sampling stations. The periwinkles, which were harvested heavily by local women, were smaller. The results do suggest that the population of Tympanotonus fuscatus in the Mangrove swamps of the upper Bonny River Creeks are strongly influenced by the harvesting.

INTRODUCTION

Tympanotonus fuscatus is a prosobranch gastropod common in many brackish water creeks, estuaries and mangrove swamps within the Niger Delta. The genus Tympanotonus known locally as "Periwinkle" comprises of a single species, which has two varieties. Tympanotonus fuscatus var fuscatus and Tympanotonus fuscatus var radula (Egonmwan, 1983).

T. fuscatus var fuscatus is characterized by turreted, granular and spiny shells with tapering ends T. fuscatus var radula is distinguished from the other variety by absence of spiny tubercle on the shell The genus of Tympanotanus is abundant in the coastal areas of West Africa (Nickle, 1950) It is a relatively cheap source of animal protein and its shell can be used as a source of calcium in animal feeds It is a delicacy especially in the Niger Delta area where the collection and marketing of Periwinkles form an important industry. Sizes of 25mm – 50mm shell length are collected everyday at low tides. The present investigation observes that excessive harvesting appears to be leading to a marked reduction in abundance of shell sizes in local population

MATERIALS AND METHODS

The population density of the species at the different locations was estimated by the quadrat method. One-metre square quadrats were marked out in the mudflat and 0.3mm sieves were used in collecting all snail specimens within the quadrat. Data from 4 quadrats were used. Shell length was measured with a vernier calliper to the nearest millimetre. Data was collected for the following physical and chemical parameters: Salinity, Temperature, pH, nature of Substratum and dissolved oxygen content

Salinity of the water sample was determined in the laboratory by titrating 10ml of the water sample against silver nitrate solution (27.09g/c) using 3 drops of 10% potassium chromate solution as indicator (Harvey, 1945). The air and bottom water temperatures were measured with a centigrade thermometer. Samples of the bottom deposits were collected from the mangrove swamps and analysed for size of soil particles, using the method described by Hill and Webb (1958). Samples for dissolved oxygen content were collected from the bottom with an insulated water bottle and was analysed in the field using the Winkler's method (Clark, 1966).

RESULT

The variation in Shell length of the sampling station is shown in fig. 1. The lowest mean Shell length of 28.5mm was recorded at slaughter sampling station while the highest mean shell length of 38.0mm was recorded at Oba/Kalio Sampling Station. Population density at one-metre square quadrat for slaughter sampling station gave 30-50 individuals with the largest size of 40.0mm. Azuabie zone recorded 100-130 individuals at one-metre square quadrat with the largest size of 41.0mm. Population density for Okujagu area was 60-100 individuals and the largest size was 48.0mm. But at Oba/Kalio zone, one-metre square quadrat gave 250-300 individuals the largest size was 48.0mm.

The lowest salinity of 8.4% was recorded for slaughter sampling station, while the highest of 20.9% was recorded for Oba/Kalio zone. The hydrogen ion concentration (p^H) varies between 6.83 and 7.32 (Table 2). The amount of dissolved oxygen was between 3.63 and 6.4.

RESULTS

Table 1:

Shell Lengths (mm)

S/No	Months	Slaughter	Azuabie	Okujagu	Oba/Kalio
1	April	29.3	31.1	35.1	38.6
2	May	29.6	31.4	34.8	38.2
3	June	28.9	32.3	34.3	36.1
4	July	26.6	28.4	33.4	38.1
5	August	29.8	31.8	35.8	39.1
6	Sept.	26.5	31.5	36.1	37.9
	Mean	28.5	31.1	34.9	38.0

Table 2

POPULATION DENSITY AND SOME PHYSICOCHEMICAL PARAMETERS.

S/No	Sampling station	No. of Snails collectors	Abundancy sq/m	Largest Shell Length (mm)	Salinity %	pH	Do mglc
S1	Slaughter	2	30-50	40.0	8.4	6.83	3.63
2	Azuabie	5	100-130	41.0	8.8	7.07	5.98
3	Okujagu	8	60-100	48.0	17.9	7.34	7.36
4	Oba/Kalio	10	250-300	48.0	20.9	7.32	6.44

Mean Shell Length (mm)

DISCUSSION

There is a noticeable difference between the population of the snails and size of individuals within the sampling stations. The population density at slaughter sampling station, which is the lowest, comprises mostly of small individuals. This could be as a result of the following: (1) Over-fishing by the local women owing to the easy accessibility to the sampling station, hence making it difficult for the snails to grow to a sizeable population. (2) The effluent discharge from the abattoir and industries within the vicinity also impacted negatively on the population and size.

(3) The river course is another factor considered here as the slaughter sampling station is at the end of the stream and as such do not receive enough fresh sea water from the Bonny River.

However, there is a tremendous increase in size and abundance in Azuabie, Okajagu and Oba/kalio sampling stations. Here the thick mangrove vegetation limits easy access to the fishing of the snails, the toxic effect from the abattoir and the industries are reduced as the river course is followed downwards. Oyenekan (1975) and Dambo (1992) described T fuscatus as euryhaline surviving in waters with wide range of salinities between 0.1% and 25%.

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