FSN-FP 0005

EVALUATION OF TRUNK AS THE MOST FLESHY REGION OF SOME FISH SPECIES FROM THE WARRI RIVER, DELTA STATE, NIGERIA

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This paper was prepared for presentation at the 25th Annual International Conference and Exhibition in Administrative Staff College of Nigeria (ASCON), Topo-Badagry, Lagos, Nigeria, 25th – 29th October, 2010.

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ABSTRACT

Major sections (head, trunk and tail) of six fish species from the Warri River were measured in order to determine which was the largest and most fleshy. Besides Ethmalosa fimbriata (37.31%) the trunk length was over 40% of the standard length in the fish species. Based on the length and breadth the trunk was larger than the tail and head in all species and could be the bulkiest and most fleshy region. The sequence of the trunk surface area was Brycinus macrolepidotus > B.nurse > Pellonula leonensis> Liza grandisquamis> Mugil cephalus> Ethmalosa fimbriata.

Keywords: Head, trunk, tail, surface area, flesh, fishes, Warri River.

INTRODUCTION

The families Characidae (Order Characiformes) Clupeidae (Clupeiformes) and Mugilidae (Perciformes) though diverse were selected for this study because they have certain features in common. They are elongated fishes with silvery-white sides and belly. They have cycloid scales and no spines; they are friendly to handle. They are shore and surface water dwellers. The characids and

clupeids are compressed while the mugilids are cylindrical (Fischer *et al.*,1981; Idodo- Umeh,2003). The fish body consist of head, trunk and tail (Bond, 1979) but only the head length is frequently measured and used for fish description though it contains insignificant portion of flesh, contrasting to the bulky trunk and tail. There are few studies (Araoye,2004; Adedeji and Araoye, 2006; Olele and Obi, 2006) that have considered the trunk for their studies.

The fish muscle is very rich in high quality protein (Eyo 2001). Therefore evaluation of the part of the body which has the greatest spread of flesh is extremely important for choice of fish for human consumption and marketing. This study attempts to evaluate the head, trunk and tail sizes of six selected members of characidae, clupeidae and mugilidae which are of commercial significance from the Warri River.

MATERIALS AND METHODS

The Warri River is located within Latitude 5°21'- 6°00'N and Longitude 5°24'- 6°21'E. It flows from its source at Utagba-Uno through Otorho-Abraka, Agbarho to Warri and continues to Forcados to join the Forcados River estuary which enters the Atlantic Ocean. The vegetation consists of fresh water and mangrove swamp forest. The multipurpose industrialized river and tributaries have artisanal fishing grounds and the main market beach is a fresh-fish landing and commercial place in the environ.

Fish samples were obtained from fishermen at the Warri main market beach in Warri from February to September, 2007. They were immediately stored in a

cooler containing ice blocks and transported to the laboratory. They were identified with standard guides (Fischer *et al.*, 1981, Egborge, 1994; Olaosebikan and Raji, 1998; Idodo-Umeh, 2003). Length of fish parts (head, trunk and tail) were measured in centimeters according to Bond (1979) and Olele and Obi (2006) expressed as percentage of standard length. Each fish was chopped into head, trunk and tail pieces with a sharp knife, weighed in grams and expressed as percentage of standard length weight. Area of trunk was determined by multiplying trunk length by body depth.

RESULTS AND DISCUSSION

Two hundred and eighty eight (288) specimens of six species: *Brycinus macrolepidotus* Valenciennes, *B. nurse* Ruppel (characidae), *Ethmalosa fimbriata* (Bowdich), *Pellonula leonensis* Reagan (clupeidae) and *Liza grandisquamis* Valenciennes, *Mugil cephalus* Linnaeus (Mugilidae) were studied.

The morphometric data are shown in tables 1-7. The results revealed that the trunk was greater in length than the caudal part and the head in all the six fish species. Besides *Ethmalosa fimbriata* (37.31%), the trunk was over 40% of the standard length in all the fish species. In terms of weight, the trunk in the six species was above 55% of the standard-length weight. Except *E. fimbriata* (caudal 30.84%) and *B. macrolepidotus* (24.57% somewhat equal to head 24.90%) the caudal (30.06%) was

longer than the head (24.71%) in the fish species studied.

Therefore in all the six species, the trunk had the largest area for attachment and carriage of flesh muscles, judging by the rectangular shape (table 7). This is explicable in terms of the nearly uniform body trunk depth which extended to the anal fin insertion, from where the tails tapers posteriorly like a cone to the base of its fin. It is the tapering that reduced the tail-flesh content of these fishes. Anteriorly the head of each of them is largely a bony cranium and gills apparatus with little flesh.

Though we recognise that preserved canned fish (sardines and pilchards) and Stockfish are headless, heads of fish are served in meals in eateries (restaurants), hostels and homes at celebrations, ceremonies and entertainment in Nigeria. In many cultures, much food-importance is attached to fish head. Hence fish-mongers and marketers gain more from sale of whole fish and fish head than headless fish. Gills may be discarded in wet fish but in dry fish they are eaten. Once the gills are removed, the heads of fish species in this study which are not extraordinarily ossified can be masticated.

This study revealed the sequence of surface area of the trunk of *B. macrolepidotus* > *B. nurse* > *P. leonensis* > *L. grandisquamis* > *M. cephalus* > *E. fimbriata* and absolutely confirmed the trunk of these selected fish species as the largest flesh region of the body.

Table 1: Body proportions of *Brycinus macrolepidotus* from Warri River expressed as percentage of standard length.

Parameters	N	Mean	SE	Min	Max
HL	81	24.90	0.24	21.04	30.57
TrL	81	50.54	0.33	42.04	54.67
CL	81	24.57	0.24	20.25	29.18
BD	81	26.19	0.38	18.75	37.19
HWt	81	21.09	0.54	3.16	30.99
TrWt	81	63.74	0.73	44.77	80.78
CWt	81	15.17	0.35	10.25	24.26

Table 2: Body proportions of *Brycinus nurse* from Warri River expressed as percentage of standard length (SL)

Parameters	N	Mean	SE	Min	Max
HL	37	23.34	0.14	21.66	25.24
TrL	37	47.96	0.26	46.31	52.10
CL	37	28.69	0.35	22.69	30.77
BD	37	25.12	0.30	22.40	29.56
HWt	37	9.16	0.25	15.06	21.55
TrWt	37	66.06	0.45	63.95	73.98
CWt	37	14.78	0.22	11.25	16.52

Table 3: Body proportions of *Ethmalosa fimbriata* from Warri River expressed as percentage of length (SL).

Parameters	N	Mean	SE	Min	Max
HL	36	31.84	0.36	23.89	34.38
TrL	36	37.31	0.43	32.71	45.63
CL	36	30.84	0.29	28.13	33.64
BD	36	33.19	0.28	30.70	38.89
HWt	36	30.26	0.93	14.29	38.73
TrWt	36	57.37	0.96	50.23	76.80
CWt	36	12.37	0.53	5.42	18.44

Table 4: Body proportions of *Pellonula leonensis* from Warri River expressed as percentage of standard length.

Parameters	N	Mean	SE	Min	Max	Mean	SE	Min	Max
HL	40	24.41	0.23	21.45	27.27	HWt	15.63	0.64	8.81
TrL	40	45.79	0.43	40.00	50.68	TrWt	67.10	0.71	57.85
CL	40	29.81	0.45	23.29	34.74	CWt	17.28	0.72	12.71
BD	40	20.35	0.60	13.16	28.03				28.55

Table 5: Body proportions of *Liza grandisquamis* from Warri River expressed as percentage of standard length.

Parameters	n	mean	SE	Min	Max	Mean	SE	Min	Max
HL	35	25.24	0.19	22.73	27.48	HWt	17.54	0.33	14.32
TrL	35	43.41	0.32	38.17	47.55	TrWt	62.75	0.58	55.41
CL	35	31.34	0.32	27.97	35.82	CWt	19.71	0.35	15.48
BD	35	25.77	0.27	22.44	28.24				26.11

Table 6: Body proportions of *Mugil cephalus* from Warri River as percentage of standard length (SL).

Parameters	N	Mean	SE	Min	Max	Mean	SE	Min	Max
HL	59	25.86	0.11	25.70	29.70	HWt	21.58	0.21	15.06
TrL	59	41.75	0.16	38.89	43.45	TrWt	56.71	0.30	47.34
CL	59	30.39	0.15	28.28	32.46	CWt	21.70	0.28	19.12
BD	59	25.85	0.30	19.81	29.47				34.84

Key:

HL	Head length	TrL	Trunk length	CL	Caudal length	BD	Body depth
HWt	Head weight	TrWt	Tail weight	CWt	Caudal weight		

Table 7: Length, depth and area of trunks of six fish species from the Warri River.

Fish taxa	Dimension of trunk (% of standard length)				
	N	Length		Depth	Area
<i>Bryanus macrolepidotus</i>	81	50.54	x	26.19	= 1,323.64
<i>Brycinus nurse</i>	37	47.96	x	25.12	= 1,204.76
<i>Ethmalosa fimbriata</i>	36	37.31	x	33.19	= 1,238.32
<i>Liza grandisquamis</i>	35	43.41	x	25.77	= 1,118.68
<i>Mugil cephalus</i>	59	41.75	x	25.85	= 1,079.24
<i>Pellonula leonensis</i>	40	45.79	x	20.35	= 931.83

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