RIBBONFISH FISHERY OF KAKINADA AREA DURING 1977-80

Y. APPANNA SASTRY

Central Marine Fisheries Research Institute Research Centre, Waltair, Visakhapatnam.

ABSTRACT

Annual landings of ribbonfish at Kakinada by small commercial trawlers varied from 787 t to 2,223 t during 1977-80 forming on an average 10.5% of the all-fish catch. Catch trends and length-frequency distribution of six species of ribbonfish, namely, *Trichiurus lepturus, T. susselli, Lepturacanthus gangeticus, L. savala, Eupleurogrammus muticus and E. glossodon* are dealt with. Seasonal fishing trends and the age composition in the landings of *T. lepturus*, the most dominant species, are discussed. A brief account of the ribbonfish fishery by these indigenous gears, for the year 1980, at Uppada, a major landing centre near Kakinada, is also given.

INTRODUCTION

In India an average of 63,558 t ribbonfish was landed during 1977-80 (CMFRI-MFIS. No. 41, 1982) accounting for 4.8% of the total marine fish catch and occupying the sixth position. In Andhra Pradesh an estimated annual average of 9009 t, forming 9.2% in the total catches, was recorded for the period. The ribbonfish has an important place in the fishery of Kakinada area. Information on this is available up to 1976 (Narasimham 1976, Sastry 1980). The fishery, species composition, length frequency, growth and seasonal fluctuations for the period 1977-80 are discussed in the present account.

MATERIAL AND METHODS

Details of the mechanised craft and gear in use at Kakinada have been published (Anon 1981). At Uppada, the catamarans use boat seines and smaller nylon gillnets, the Masula boats use shore seines and the plank-built boats use bigger nylon gillnets.

About 20% of the boats landed were examined every week for information on catch, effort (in terms of hours the boats were away for fishing) and species composition. Mainly two types of trawlers, namely, the 'Royyas' (OAL 32.5', HP 45-60) and the 'Sonrahs' (OAL 37', HP 60-75) were in operation. Since there was no significant difference found in the catch rates between these boats and as the majority of the boats were Royyas the details of them were

combined and dealt with. On each observation day a ribbonfish sample of about 5 kg was collected to analyse the species composition and length-frequency distribution. The age-length data reported by Narasimham (1976) for *T. lepturus* have been utilized for finding out the percentage composition of the different age groups. Indigenous-gears' landings from Uppada for the year 1980 were also analysed in the present study.

The Fishery

Trawler landings: The ribbonfish catches by trawlers during 1977-80 were estimated at 2,223 t, 1071 t, 1414 t and 787 t, and the average annual c.p.h. at 5.4 kg, 2.8 kg, 3.5 kg, and 2.4 kg, respectively. The ribbonfish comprising six species formed about 10.5% of the total fish catch during the period. *T. lepturus* was the most dominant species forming 83.9%, followed by *L. savala* 5.5%, *T. russelli* 4.1,% *E. muticus* 2.6%, *L. gangeticus* 2.2% and *E. glossodon* 1.7%. The success of the ribbonfish fishery mainly depended on the abundance of *T. lepturus*, the only species that had year-round occurrence.

Ribbonfish was available throughout the period but with the peak season varying from year to year. Good catch rates (2.5-17.8 kg|h) were generally during March, May-June and September-October, and occasionally during July. The monthwise catches, effort, and catch rates, in respect of *T. lepturus* and the ribbonfish as a whole, for the period 1977-80 are shown in figure 1.

Indigenous-gear landings: The ribbonfish caught by indigeneous gears during 1980 were estimated at 420.2 t. Boat-seines landed 70.6%, big nylon gill nets 17.3%; small nylon gill nets 6.8%, and shoreseines 5.3%. The monthly landings by the different gear and the catch rate of each are given in figure 2.

Shore-seines were operated during January-May and November-December. The catch rate varied from 2.0 to 231.2 kg|net with fair catches in February-April. On an average ribbonfish constituted 14.1% of the total catches of this gear and the average catch rate was 74.2 kg|unit.

Boat-seines were operated throughout the year. The catch rate fluctuated between 0.2-60 kg|unit, with good catches during January, (36.2 kg|unit), April (60.0 kg|unit), September (28.1 kg|unit) and December (43.5 kg|unit). On the whole, 47.2% of the total catches by these gears were ribbonfish, with the average rate of 24.1 kg|unit.

Big nylon gillnets (length 60-68 m, width 10-12 m with 5-6 cm mesh) were operated throughout the year and they landed fairly good catches of ribbonfish during July, August and November, with the catch rates (per unit) 7.3 kg, 9.5 kg and 14.6 kg, respectively.

Small nylon gill nets (length 45-55 m, width 3-3.5 m with 3.5-4 cm mesh) were operated throughout the year but the ribbonfish catch was poor;

0.04 kg/unit during November and 4.8 kg/unit during December. On an average, ribbonfish constituted only 6.9% of the total catches with the meagre catch rate of 07 kg/unit.

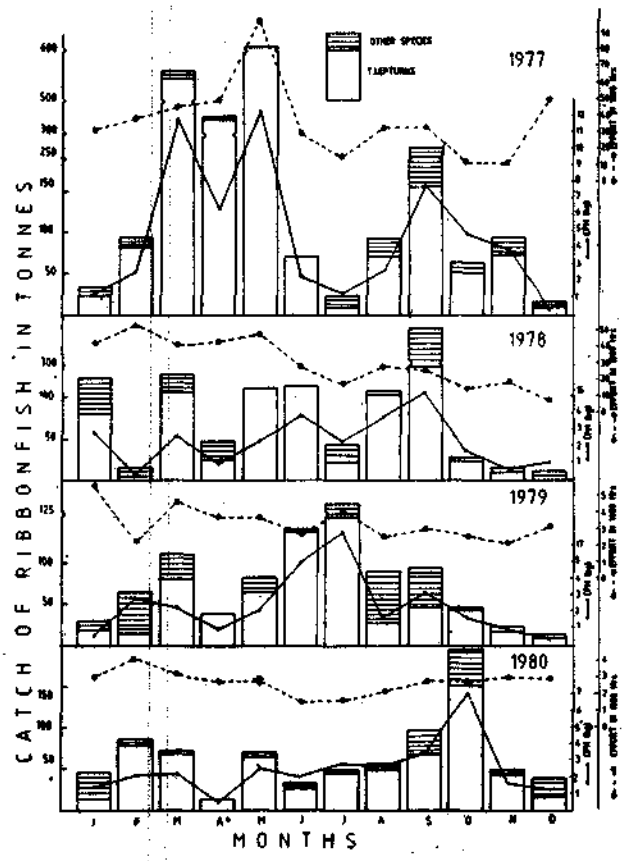

FIG. 1. Monthly variations in the fishing effort, catch and catch rates (kg/hr) for ribbonfishes by trawlers at Kakinada during 1977-80.

SIZE-FREQUENCY DISTRIBUTION

Trawlers: The annual length-frequency distributions for 1977-1980 for all the six ribbonfish species are shown in figure 3.

For *T. lepturus*, a total of 5891 fish ranging in total length from 151-1050 mm were examined. The annual major modal lengths of the fish in the fishery during the four years ranged between 315 mm and 405 mm total length. It may be seen that the most dominant size groups in the four successive years were 315 mm, 345 mm, 405 mm and 405 mm. The next modal sizes during the ame period were at 765 mm, 645 mm, 615 mm and 645 mm. Studies made on

the age estimates of *T. lepturus* by Tampi et al (1971), Narasimham (1976), Dawson (1967), Tsukahara (1964), Misu (1964) and Hamada (1971) show the length of 1-year-old fish to range widely from 240 to 247 mm and 2-year-old fish from 568 to 700 mm. Based on these age-length estimated the present ranges at 315-405 mm and 615-765 mm would represent the O-year and 1-year classes.

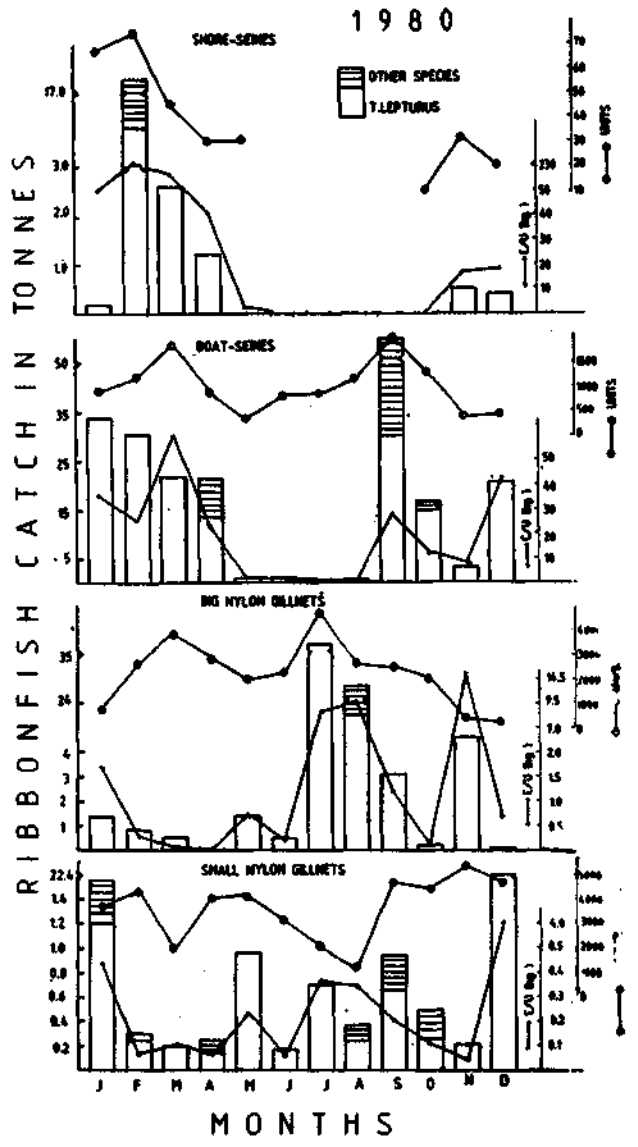

FIG. 2. Monthly varations in the fishing effort catch and catch rates (kg/unit) for ribbonfish by indigenous gears at Uppada during 1980.

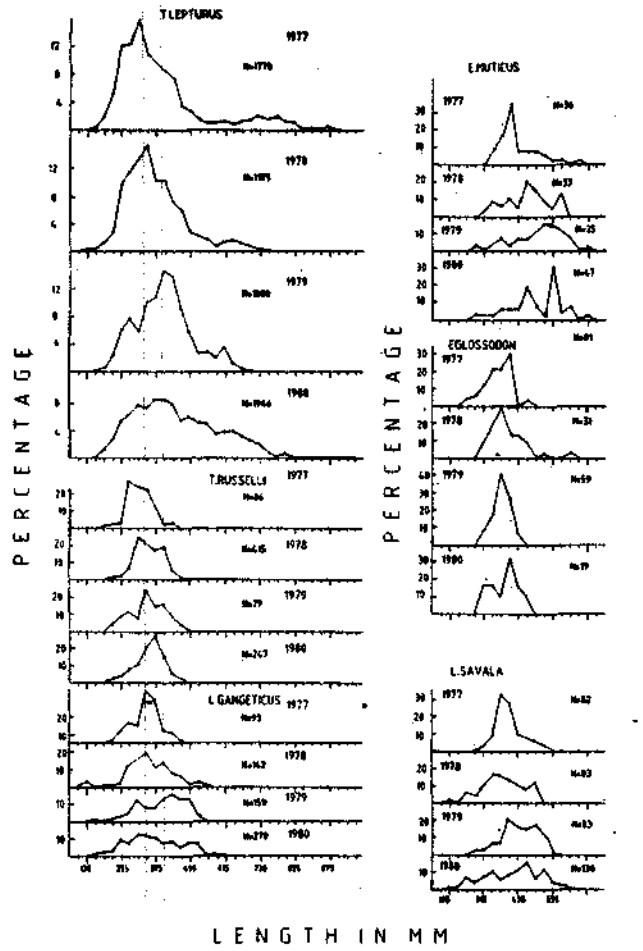

FIG. 3. Length frequency distributions for 1977-80 for the six ribbonfish species landed by the trawlers at Kakinada.

On the analysis of the data on the basis of Narasimham's (1976) age-length estimates for *T. lepturus* it is found that the fishery of *T. lepturus* during 1977-80 constituted five year classes as given below:

	No. of fish	length in mm	*Percentage distribution of year classes*				
			year 0+	year 1+	year 2+	year 3	year 4
1977	1770	151-1050	72.9	17.5	8.8	0.7	0.1
1978	1175	121-780	74.5	24.4	1.1	—	—
1979	1000	151-750	53.5	45.5	1.1	—	—
1980	1946	121-1050	46.7	45.3	7.4	05.	0.1
over the period			61.3	32.8	5.5	0.4	0.1

By these estimates 61.3% of the trawler catches of *T. lepturus* consisted of 0^+ year-class fish and 32.8% 1^+ year-class fish.

T. russelli occurred in the range of 121-510 mm total length with the major modes shifting from 285 mm to 375 mm during the four-year period. *L. gangeticus* in the fishery had a length range of 121-600 mm, and annual major modal length between 345 mm and 435 mm. *E. muticus* had length range of 271-690 mm, with the annual major modal length between 405 mm and 555mm. *E. glossodon* occurred in the range 241-630 mm, and the annual major modal length was between 375 mm and 405 mm. *L. savala* had length range of 181-660 mm, and the annual major modal length between 375 mm and 465 mm.

Indigenous gears: Length-frequency distributions of *T. lepturus* based on 2,254 fish collected from the four indigenous gears at Uppada were also studied (Figure 4). Since the catches of other groups of ribbonfishes are insignificant in these gears they were not dealt with.

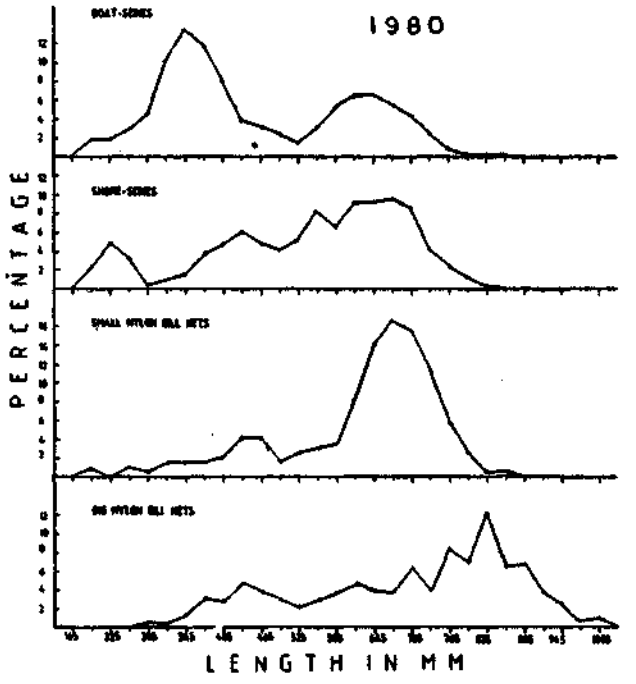

FIG. 4. Size-frequency disribution of *T. lepturus* for 1980 by the different indigenous gears landed at Uppada.

Based on Narasimham's (1976) age data, the different age groups comprising the catches by indigenous gear are:

	No. of specimens measured	Size range in mm	Modes in mm	Percentage of year-class distribution			
				year	year	year	year
Boat seines	1005	151-870	345,645	55.4	35.5	9.1	—
Shore seines	587	181-840	225,435 545,675	23.0	58.9	18.1	—
Small nylon gillnets	199	181-870	675	10.1	57.8	32.1	—
Big nylon gillnets	463	271-1020	435,615,	8.8	30.5	47.7	13.0
Over the period for all gears			825	33.4	42.5	21.4	—

It may be seen that the boat-seine fishery also is sustained by the 0+ year class, while the shoreseines and small nylon gillnet fishery by 1 + year class, and the big nylon gillnet fishery by the 2 + year class. However, on pooling the data of all the gears it is seen that the artisanal fishery has mainly depended on the 1 + year-old fish, followed by 0 + year and 2 + year classes in that order. The large-sized (885 mm) 3 + year class fish occurred only in the big nylon gill net probably because of his large mesh-size.

General Remarks

Investigations on the ribbonfish fishery of the Kakinada area during the last fourteen years (Muthu et al 1975, Narasimham et al. 1979, Sastry 1980) indicate that with an increase in trawl effort is a corresponding increase in catch of this fish. The annual landings have increased from 60 t in 1967-70 to 1374 t in 1977-80, the slight fluctuations between years notwithstanding, following the increase in the annual effort from 34,358 h to 3.79,258 h. The catch rates too had increased from 1.3 kg|h to 3.6 kg|h with a consequent increase in the contribution to the total fishery from 4.4% to 10.5% during this period. Thus the study confirms the observations of Narasimham (1983) that the yield of ribbonfish of Kakinada area could be increased by stepping up the fishing effort.

Among the six species occurred, *T. lepturus* formed the mainstay of the ribbonfish fishery, as is the case all along the coasts of India. At Kakinada, the species accounted for 73% of the ribbonfish landings during 1975-76, increasing to 84% during 1977-80. The percentage contributions of the other five species during 1977-80 were *L. savala* 5.5, *T. russelli* 4.1, *E. muticus* 2.6, *L. gangeticus* 2.2, and *E. glossodon* 1.7. *L. gangeticus* alone showed a declining trend, 2.2% during 1977-80 as compared to 12.9% during 1974-76.

The main seasons of ribbonfish fishery remained more or less same as in the past. Good catches of ribbonfish were obtained during March-October| November with peak during August-September. The winter period (December-February) is the slack season for this fishery.

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