

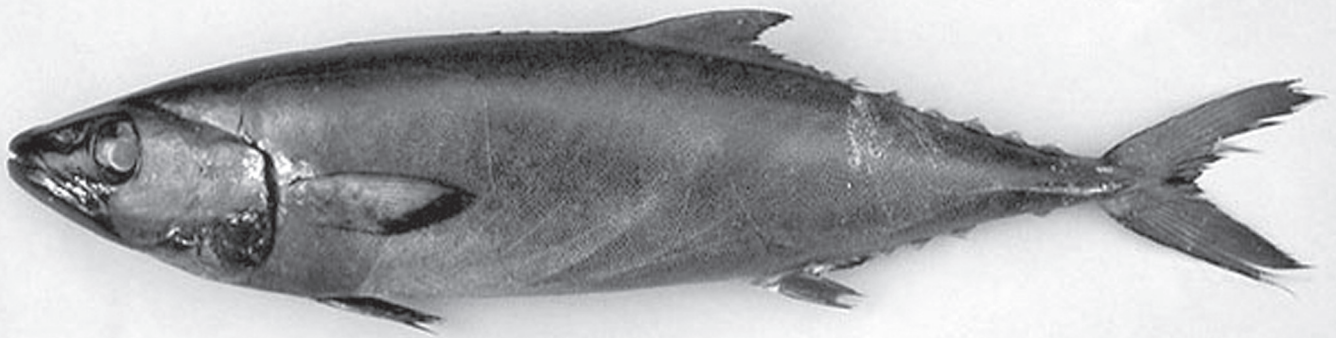
ISSN 0254-380 X



# MARINE FISHERIES INFORMATION SERVICE

No. 191

January, February, March 2007



TECHNICAL AND EXTENSION SERIES

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE

COCHIN, INDIA

(INDIAN COUNCIL OF AGRICULTURAL RESEARCH)

1220

## On the juvenile fishery of *Euthynnus affinis* and *Sarda orientalis* along the Tuticorin Coast in Gulf of Mannar

An estimated 2882 t of tuna were landed by gillnets and hook and line at Tuticorin during the year 2006. They were exploited by small meshed gillnets locally known as podivalai with 3.3 to 7.5 cm mesh size, large meshed gillnets known as paruvai with 8-16 cm mesh size and hooks and line operated from mechanized boats and motorized vallams. Small meshed gillnets operate in shallow waters within 10-15 m depth and land tunas along with other medium sized pelagics. Podivalai accounted for 8.3% tuna landings. Large meshed gillnets and hooks and line operate in 50-150 m depth zone beyond 10 km from the coast and land large tunas and pelagics. Large meshed gillnets contributed 90.3% of the total tuna catch. Fishery was supported by seven species, dominated by *Euthynnus affinis* in all gears.

Peak season of tuna fishery was June to September. Stray catches of the juveniles of *E. affinis*, *Auxis thazard* and *Sarda orientalis* used to occur during this period. Juvenile fishery of these species along Tuticorin coast has been reported earlier. But they never formed a fishery.

During 2006 large meshed gillnets landed 2601 t of tuna, small meshed gillnets landed 239 t and hook and line landed 42 t. Fishery by former gear was represented by seven species and catch by smaller mesh gillnet were

comprised of *E.affinis*, *A. thazard* and *S. orientalis* of which nearly 11.6 t was by juveniles of *E. affinis* and 12 t by *S.orientalis* of 14-20 cm and 12-20 cm size respectively. They formed nearly 5.2 and 25.8% of the respective species catch. (Table I).

Juveniles entered the fishery during June to August period which coincides with the peak season of tuna fishery. Juvenile fishery prevailed all along the coast. Samples were drawn and studied for their biological parameters such as length, weight, gut contents and sex ratio. The size ranged between 14 and 20 cm in *E.affinis* and 12-20 cm in *S.orientalis*. (Table 2 and 3). Their weight ranged between 40 and 100 gm for *E.affinis* and 20 and 90 gm for *S.orientalis*. Their food during the period was constituted by *Stolephorus* spp., squids and skeletal remains of fish, fish eggs and larvae. All specimens were with gonads at indeterminate stage. The observation indicates that juveniles migrated to coastal water for food.

Previous study on recruit pattern of these species indicated that young recruits enter the stock during most part of the year with peak during August-December. Main loss from the stock up to 43 cm size was by natural causes. Fishes become more vulnerable to fishing gears after this size and mortality due to fishing increased and outnumbered natural losses.

Table 1: Month-wise adult and juvenile fish composition of *E.affinis*, *A.thazard* and *S.orientalis* landed in tons by smaller mesh gillnet at Tuticorin during 2006.

Months	<i>E.affinis</i>		<i>A.thazard</i>		<i>S.orientalis</i>		Total
	Adult	Juvenile	Adult	Juvenile	Adult	Juvenile	
Jan-Apr	Nil	Nil	Nil	Nil	Nil	Nil	Nil
May	10.6	Nil	Nil	Nil	Nil	Nil	10.6
Jun	9.8	0.6	0.4	Nil	Nil	Nil	10.8
Jul	4.6	4.1	0.9	Nil	4.0	8.8	22.4
Aug	41.1	5.1	0.3	Nil	22.1	0.5	69.1
Sep	12.2	Nil	Nil	Nil	0.7	Nil	12.9
Oct	74.0	Nil	Nil	Nil	Nil	Nil	74.0
Nov	38.0	0.7	Nil	Nil	Nil	Nil	38.7
Total for Jan to Dec	190.3	10.5	1.6	Nil	26.8	9.3	238.5
Percentage	94.8	5.2	100	Nil	74.2	25.8	

Table 2: Month-wise estimated size distribution of *E.affinis* juveniles in percentage

Size group(cm)	Centre : Tuticorin												Total
	Year : 2006												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
14-15.9	—	—	—	—	—	—	13	—	—	—	—	—	69
16-17.9	—	—	—	—	—	—	293	64	—	—	—	—	155
18-17.9	—	—	—	—	—	—	300	382	—	—	—	—	310
20-21.9	—	—	—	—	—	100	27.7	55.4	—	—	100	—	466

Table 3: Month-wise estimated size distribution of *S.orientalis* juveniles in percentage

Size group (cm)	Centre : Tuticorin												Total for Jan to Dec
	Year : 2006												
	Jul	Aug											
12-13.9	4	---											4.0
14-15.9	24	---											23.1
16-17.9	36	---											34.5
18-19.9	12	---											11.4
20-21.9	24	100											27.0

The present observation reveals loss in the stock below 43 cm would be by natural loss as well as by fishing mortality during this year.

Most of the previous studies reported that exploitation of juvenile fish in huge quantity may lead to decline in the production in the ensuing season. Moreover removal of large

quantities of juveniles may adversely affect the future recruitment also. Hence more attention is to be paid in this regard to evaluate its impact on the regular tuna fishery.

---

*Prepared by* : T.S. Balasubramanian and E.M. Abdussamad, TRC of CMFRI, Tuticorin.