

Executive Summary of the Status of the Bullet Tuna Resource

New document to be submitted for consideration by the SC in Nov06

BIOLOGY

Bullet tuna (*Auxis rochei*) is a highly migratory species with a strong schooling behaviour. Adults are principally caught in coastal waters and around islands that have oceanic salinities.

Adults can grow to 50 cm fork length. Bullet tuna mature at around two years old — about 35 cm (FL). It is a multiple spawner with fecundity ranging between 31,000 and 103,000 eggs per spawning (according to the size of the fish). Larval studies indicate that bullet tuna spawn throughout its range.

Bullet tuna feed on small fishes, particularly anchovies, crustaceans (commonly crab and stomatopod larvae) and squid. Cannibalism is common. Because of their high abundance, bullet tuna are considered to be an important prey for a range of species, especially the commercial tunas.

No information is available on the stock structure of bullet tuna in Indian Ocean.

FISHERIES

Bullet tuna is caught mainly by gillnet and line across the broader Indian Ocean area (Figure 1). This species is also an important catch for artisanal purse seiners. The catch estimates for bullet tuna were derived from very small amounts of information and are therefore highly uncertain¹ (Figure 2). The catches provided in Table 1 are based on the information available at the Secretariat and the following observations on the catches cannot currently be verified. Estimated catches of bullet tuna reached around 1,000 t in the early 1990's and peaked at 2,600 t in 2000. Current catches are around 1,600 t. In 2005, the countries attributed with the highest catches of bullet tuna were India (962 t or 68% of the total catch), Indonesia (233 t, 17%) and Sri Lanka (206 t, 14.5%) (Table 1).

Two countries reported catches of bullet tuna in the IOTC region in year 2005. Catches for other countries known to catch bullet tuna are estimated by the Secretariat according to the species composition per gear declared during the previous year or by the major fishing countries of the region (Figure 3).

The fisheries in the Indian Ocean mainly catch bullet tuna ranging between 15 and 25 cm.

AVAILABILITY OF INFORMATION FOR STOCK ASSESSMENT

There is no information on the stock structure of bullet tuna in the Indian Ocean.

There is some age and the growth information available for bullet tuna in the Indian Ocean.

Possible fishery indicators:

¹ The uncertainty in the catch estimates has been assessed by the Secretariat and is based on the amount of processing required to account for the presence of conflicting catch reports, the level of aggregation of the catches by species and or gear, and the occurrence of unreporting fisheries for which catches had to be estimated.

1. **Trends in catches:** The catch estimates for bullet tuna are highly uncertain. Catches fluctuate from year to year but have been steadily increasing since the early 1980's.
2. **Nominal CPUE Trends:** data not available
3. **Average weight in the catch by fisheries:** data not available.
4. **Number of squares fished:** CE data not available

STOCK ASSESSMENT

While some localised, sub-regional assessments may have been undertaken, no quantitative stock assessment has been undertaken by the IOTC Working Party on Neritics.

MANAGEMENT ADVICE

No quantitative stock assessment is currently available for bullet tuna in the Indian Ocean, therefore the stock status is uncertain.

The SC notes the catches of bullet tuna are typically variable but relatively low compared to the other neritic species. The reasons for this are not clear: it may be problem related to reporting, or it may be a normal fluctuation in the fishery. Bullet tuna is a relatively productive species with high fecundity and rapid growth and this makes it relatively resilient and less prone to overfishing. Nevertheless, bullet tuna appears to be an important prey species for other pelagic species including the commercial tunas, therefore it should be reviewed every 2 to 3 years by the IOTC Working Party on Neritics.

BULLET TUNA SUMMARY

Maximum Sustainable Yield :	-
Current (2005) Catch:	1,400 tonnes
Mean catch over the last 5 years (2001-05)	1,600 tonnes
Current Replacement Yield :	-
Relative Biomass ($B_{\text{current}}/B_{\text{MSY}}$) :	-
Relative Fishing Mortality ($F_{\text{current}}/F_{\text{MSY}}$):	-

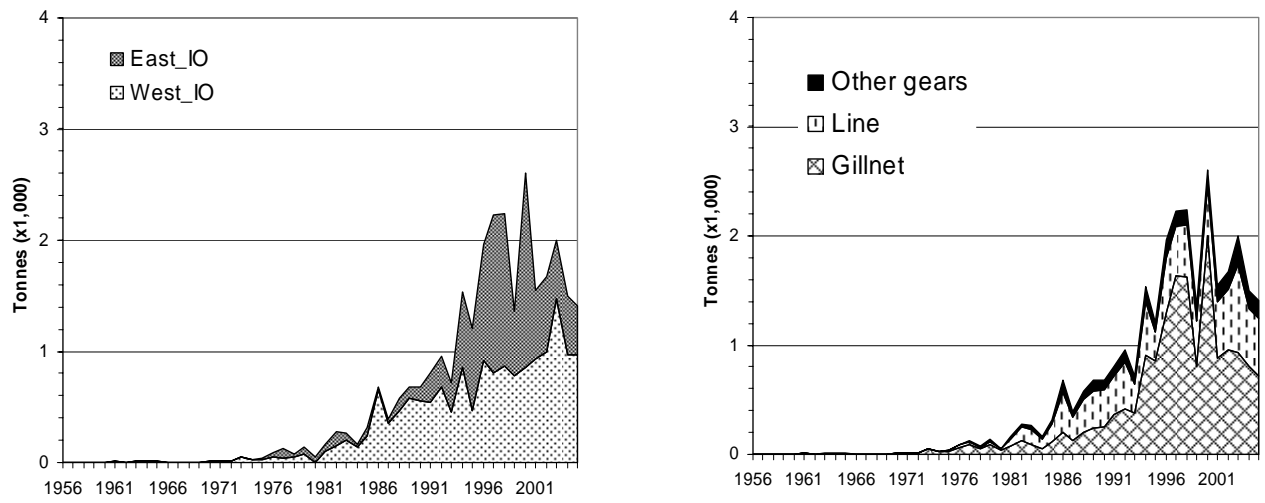


Figure 1. Bullet tuna: annual catches from 1956 to 2005 by area (left) and gear (right). Data as per October 2006

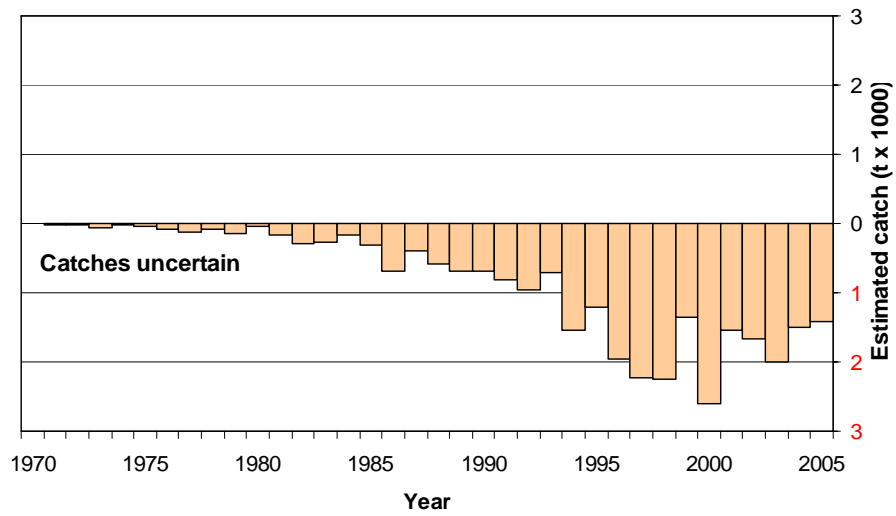


Figure 2. Bullet tuna: uncertainty of annual catch estimates. The amount of the catch below the zero-line has been categorised as uncertain according to the criteria given in the text. Data as of October 2006

Table 1. Catches of bullet tuna by gear and main fleets for the period 1956-2006 (in thousands of tonnes). Data as of 9 October 2006

Gear	Fleet	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82		
Gillnet	India	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Indonesia																0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	
	Other Fleets	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	
Line	India																											0.1	0.1	
	Indonesia																0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Other Fleets	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
Other gears	India																												0.0	0.0
	Other Fleets	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total																											0.0	0.0	
All	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.2	0.3			

Gear	Fleet	Av01/05	Av56/05	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05
Gillnet	Sri Lanka	0.3	0.2				0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.5	0.5	0.8	1.2	1.1	0.3	1.5	0.4	0.4	0.3	0.3	0.2
	India	0.3	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.3	0.3
	Indonesia	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2
	Other Fleets	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.9	0.3	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.3	0.4	0.4	0.4	0.9	0.9	1.3	1.6	1.6	0.8	2.0	0.9	1.0	0.9	0.8	0.7
Line	India	0.6	0.2	0.1	0.1	0.1	0.4	0.2	0.3	0.3	0.3	0.3	0.4	0.2	0.5	0.3	0.5	0.4	0.5	0.4	0.5	0.5	0.5	0.8	0.5	0.5
	Indonesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Other Fleets	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.6	0.2	0.1	0.1	0.2	0.4	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.5	0.3	0.5	0.4	0.5	0.4	0.5	0.5	0.5	0.8	0.5	0.5
Other gears	India	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.2
	Total	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.2
All	Total	1.6	0.6	0.3	0.2	0.3	0.7	0.4	0.6	0.7	0.7	0.8	1.0	0.7	1.5	1.2	2.0	2.2	2.2	1.4	2.6	1.6	1.7	2.0	1.5	1.4

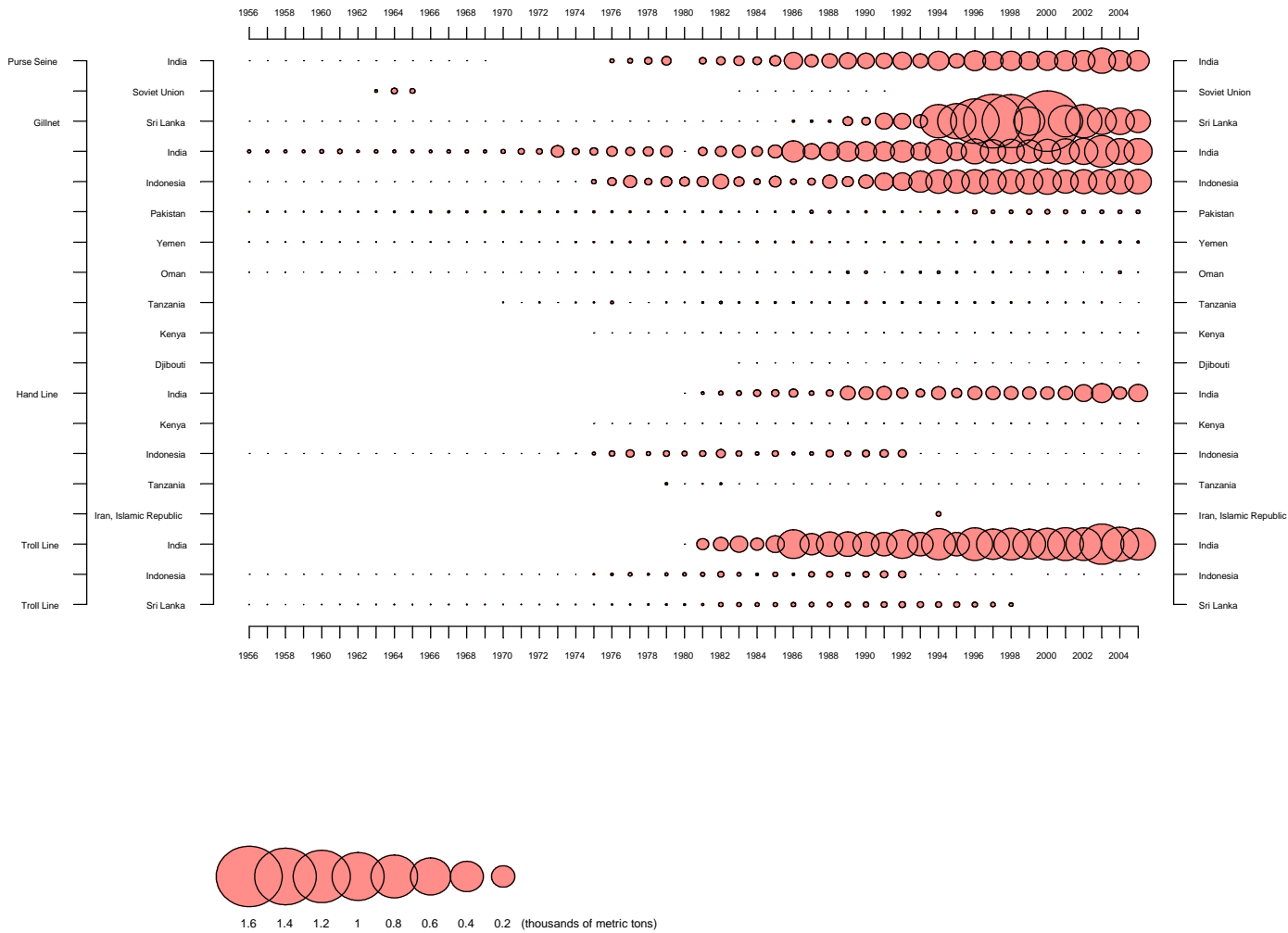


Figure 3. Bullet tuna: catches by gear and main fleets for the period 1956-2006 (in thousands of tonnes). Data as of October 2006