

The fishery for Tomato hind along Coromandel Coast of Tamil Nadu

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Cephalopholis sonnerati (Valenciennes, 1828) is a protogynous grouper of the family Serranidae, widely distributed in the Indo-Pacific and abundant in reefs and areas with rocky substratum. It is commonly called as Tomato hind and locally known as *thakkalimeen* (tomato fish) in Tamil Nadu due to the brilliant red colouration of the fresh fishes. A group of fishers from Karaikal, Nagapattinam, Tharangambadi and Kaveripattinam of Tamil Nadu have been exclusively involved in targeted fishing of Tomato hind. The present study summarizes the observations from these parts of Coromandel Coast (CC) along Tamil Nadu during 2017 to 2022. The landings data, marketing and utilization of the fish were gathered from field visits and personal inquiry with fishers and traders associated with the fishery at Karaikal, Nagapattinam, Tharangambadi and Kaveripattinam Field Landing Centres (FLC). The Tomato hind was not targeted until 2004 as the fishers and traders were unaware about the availability of *Cephalopholis sonnerati* in the rocky substratum off Karaikal until discovered by a group of twenty fishers operating fibre boats of 9-11m overall length (OAL) fitted with outboard motor, doing hook and line fishing. All fish catches that were landed at Nagapattinam FLC shifted to Karaikal FLC after its construction in 2006. The ground is located within 50 to 70 km away from Karaikal FLC at depth of 70 to 120 m. The substratum is rocky and hence other mechanised vessels are unable to fish there. If the Tomato hind catch is poor, they operate gillnet within 2-3 km from the shore for other fishes such as lesser sardines (*Sardinella albella*, *S. gibbosa*) and scads (*Selaroides leptolepis*, *Decapterus* spp.) that may be available.

Fibre boats of 9, 10, and 12 m OAL fitted with outboard motors (10, 12, 24 hp) are involved in Tomato hind fishing. Each boat has 4 to 6 persons to operate 100 to 300 hooks and lines. Some fishers operate 1 or 2 long lines bearing 90 hooks. The hooks of nos. 7, 8 and 12 are tied to nylon

fishing lines (0.25 to 5 mm) of 100-150 m length. Sliced *Loligo singhalensis*, *Selaroides leptolepis*, *Sardinella albella*, *Decapterus kurroides* etc. are used as bait. Presently, 150 units from Karaikal, 8-10 from Tharangambadi, 4 from Nagapattinam and 5 from Kaveripattinam are involved in Tomato hind fishery. The landing of *C. sonnerati* along CC was compared for 6 years from 2017. The catch increased to 350 t in 2018 from 272 t in (2017) and then reached an all-time low of 87 t in 2020. Later it showed an abrupt increase and the highest landing of 822 t in was recorded in 2022.

Even though hook and line fishing targets *Cephalopholis sonnerati*, other groupers and some carangids caught as bycatch include *Epinephelus coioides*, *E. areolatus*, *Rachycentron canadum*, *Scomberomorus commerson*, *Caranx ignobilis* and *C. sexfasciatus*. (Table 1). The boats set sail by 3 pm with actual fishing restricted to the day time between 6 am and 6 pm during the next two days. The boats return and land the catches by 6 am of 4th day. Each boat carries ice and baits procured from local markets. The landings are auctioned to traders from Kanyakumari, Nagapattinam and Chennai. The net profit from each trip is shared among



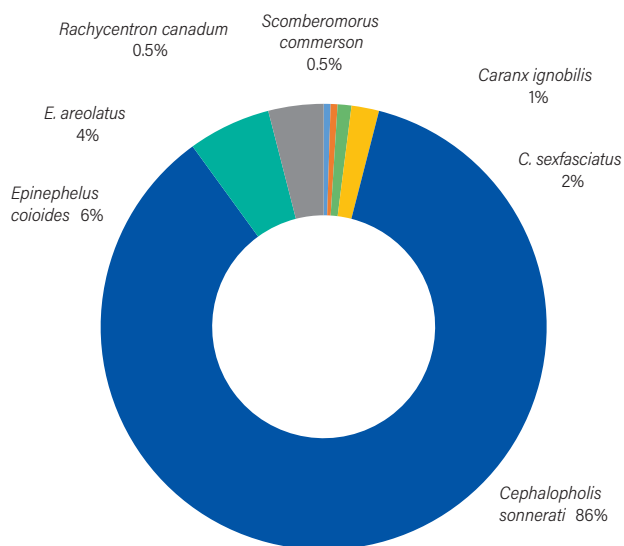


Fig. 2. Species composition of the catch

fishers in such a way that five shares go to the fishers, 2 for the engine operators, 1 for the gear operators and half for the boat owner. The economic analysis indicates an estimated profit of ₹31000 per fisher per trip (Table 2).

The crafts carry ice to the fishing grounds and store the catch in the hull as soon as possible. There is no gutting or drying of the fish onboard or at landing centres as it has good demand as fresh/iced form both in export and domestic markets. Fish of above 400 g weight are auctioned to traders from Kanyakumari and Chennai, and exported to China, Dubai, U.K. and Oman. The rest are usually marketed either within Tamil Nadu or Puducherry (Thiruchirapilly, Chennai, Nagapattinam, Karaikal) or transported to Kerala in ice. At present there are no restrictions on catch, fishing trips or other efforts imposed on Tomato hind landings in the Coramandel Coast. Even though the catch trend in the region showed an increasing trend, an assessment of *C. sonnerati* fishery has not been done to determine the stock health status. Biological studies to determine gonad maturity, fecundity and spawning season are also needed to understand spawning aggregation of Tomato hind in the region as the unique reproductive nature of the species limits applicability of existing conventional management measures. Catch quota, seasonal closure, and MLS may be required to ensure a sustainable harvest of Tomato hind based on observations of this study which is a baseline information.

Table 1. Size composition of fishes caught in the hooks and line fishery

Scientific name	Length range (mm)	Weight range (g)
<i>Cephalopholis sonnerati</i>	200-500	260-4000
<i>Epinephelus coioides</i>	250-570	250-1500
<i>E. areolatus</i>	210-420	200-900
<i>Rachycentron canadum</i>	550-840	3500-13000w
<i>Scomberomorus commerson</i>	400-680	2500-8000
<i>Caranx ignobilis</i>	250-670	500-12000
<i>C. sexfasciatus</i>	240-540	500-1500

Table 2. Economic analysis of Tomato hind fishery

Particulars	Values in Rupees
1. Initial investment	
i. Craft	325000.0
ii. Engine	68000.0
iii. Gear and accessories	15000.0
iv. Battery/ Generator	7000.0
Total	415000.0
2. Fixed cost	
a. Depreciation	
1. Craft and engine (20%)	74.9
2. Battery/ Generator (10%)	2.5
b. Interest on investment	304.3
c. Repair and maintenance	553.3
Total	935.0
3. Operating cost	
I. Fuel	9000.0
ii. Crew wages	52279.4
iii. Food	2500.0
iv. Ice	900.0
v. Bait	3500.0
Total	68179.4
4. Total cost (2+3)	69114.4
5. Gross Revenue (Catch sale price)	337500.0
6. net operating income (5-3)	269320.6
7. Net profit (5-4)	268385.6
8. profit margin (7/5) *100	79.5
9. Annual days of operation	150.0
Average catch (kg)	750.0
Manpower	5.0
10. Productivity measures	
a. Labour productivity (kg)	150.0
b. Remuneration (₹)	31574.8
c. Fuel efficiency (kg/l)	8.3