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TECHNICAL SPECIFICATIONS OF MEDIUM SIZE WOODEN PURSE SEINERS OF RATNAGIRI, MAHARASHTRA (INDIA)

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Abstract:

For the medium size wooden purse seiners ranging from 15 to 18 m in overall length in operation from Mirkarwada Fishing Harbour, Ratnagiri, Maharashtra, breadth at midship ranged from 2.28 to 7.90 m, depth of vessel 1.77 to 3.04 m, length of freeboard 0.72 to 1.21 m, draught 1.04 to 2.0 m and length of keel 12.46 to 13.68 m. Gross tonnage recorded was between 30.15-103.31 tons. Medium sized wooden purse seiners were fitted with Ashok Leyland six cylinder inboard diesel engines having average horse power of 120 hp with an average fuel consumption of 15.76 l/hr.

Key Words: Purse-Seining, Wooden Purse Seiners & Technical Specifications

Introduction:

The present study is an attempt to document the technical specifications and design of medium size wooden purse seiners ranging from 15 to 18 m in overall length operated from Mirkarwada fishing harbor of Ratnagiri, Maharashtra.

Bardarson (1971) studied the deck equipment for purse seine operated with Icelandic type purse seining. Hamuro (1971) studied on automation of fishing with Danish seines, purse seines and design criteria for mid water type purse seine. Hellevang (1971) observed the method of operation of Peruvian purse seines. He observed the shooting of the gear was similar to any conventional one boat seine operation. A power skiff was used for the operation. Balsubramanyam (1973) has discussed that the chemical, physical and mechanical properties of some of the best Indian woods with their easy workability have won them a time honored place in the construction of fishing boats. Verghese (1976) studied the introduction of purse seine fishing along Indian coasts from 36 ft and 57 ft vessels for sardine and mackerel. Mukundan *et al.* (1980) studied results of purse-seining from 13.27m vessels. They presented the design details of net, its costs, deck arrangements for purse-seining and results of operation. Levi (1981) described two-boat purse seine, 75.76 m long and 6.97 m deep with two 4.24 m purse boats to fish in shallow estuaries for Menhaden (Brivoortia). Fyson (1985) has suggested the position of deck fittings and deck machinery to ensure an efficient and safe operation of the fishing gear. Panikkar *et al.* (1991) has recorded data from selected units of purse-seiners of size 12.8m with 110-120 hp engines operating at Cochin Fisheries Harbor during 1989-90. Ben-Yami (1994) observed that Tuna purse seiners vary considerably in size. Industrial tuna purse seiners are usually large vessels whose length ranges between 45 and 85 m, sometimes over (up to 100-110 m). Sainsbury (1996) has described the purse seiners operating along west coast of Africa where vessels of 105 m (350 ft) or more operate nets of 1600 m (5350ft) long by 100 m (330 ft) deep. Sreekrishna and Shenoy, (2001) reported the typical deck arrangement of one boat purse seiners with forward wheelhouse arrangement. Jadhav (2010) studied the wooden purse seiners operated from Ratnagiri which had an overall length of 13.5 to 16.7 m, breadth 6.6 to 7.2 m, where as the depth was 1.82 to 3.03 m. The tonnage of vessel ranged from 15 to 25 t. Yingyuad (2010) has described that the Thai purse seiners are made of wood, sized between 10 to 120 gross tonnages and had overall length between 12 to 24 m.

Materials and Methods:

Mirkarwada minor fishing harbor situated on the west of the Ratnagiri city about 2 km away from Ratnagiri was chosen for the present study. The detail information regarding the design of wooden purse-seiners were undertaken by physically sampling the units and by collecting the information from purse-seine operators. Collected data was analyzed for the required parameters with the appropriate statistical procedures wherever required (Snedecor and Cochran, 1967).

Results and Discussion:

The detailed technical specifications of medium size wooden purse seiners ranging from 15 to 18 m in overall length, operating from Mirkarwada landing center, Ratnagiri are stated in Table 1.

Table 1: Specifications of Medium Size Wooden Purse Seiners (15 To 18 M Loa) Operating From Ratnagiri

Sr. No.	Specifications	Ratnagiri			
		Mean	Minimum	Maximum	Standard Error
1	Overall length (m)	16.1684	14.97	17.9	± 0.1005
2	Breadth at midship	6.3476	2.28	7.9	± 0.1304
3	Depth of vessel (m)	2.4915	1.77	3.4	± 0.0401
4	Freeboard (m)	1.0259	0.7288	1.4	± 0.0165
5	Draught (m)	1.4656	1.0411	2.0	± 0.0236
6	Length of keel (m)	13.0204	12.464	13.68	± 0.0416
7	horse power (hp)	121.34	85	350	± 5.3417
8	GRT (t)	58.85	30.15	103.31	± 2.2761

The purse seiners of Ratnagiri are mostly constructed of wood Aini (*Artocarpus hirsuta*) and Teak (*Tectona grandis*). Generally the material used for construction depends on the cost, durability and availability. The wheelhouse of the wooden purse seiners was located at amid ship (2.4 m length, 2.1 m breadth and 3.30 m height). Berthing arrangement was made with wheel house. The engine room was located beneath the cabin. Fish holds were located in front of the winch and 9 to 16 fish holds each of 1 to 2 t capacity were observed for above 18m LOA purse seiners. Mechanical type of winch was observed, fitted athwart ship. For hauling the purse line metal purse davit was attached on the port side of the vessel. A wooden / steel mast of 5.40 m height with a boom fitted at aft side of the deck was observed. Purse rings were stored within stowing gutter, made by batten strips on the bulwark on port side of the vessel.

As per the geographical location, the availability of fish species and according to the needs of the local fishermen, diversifications in the design of the fishing vessel have been incorporated. For medium sized wooden purse seiners ranging from 15 to 18 m in overall length operating from Mirkarwada landing center, Ratnagiri, breadth ranged from 2.28 to 7.09 m while the depth ranged from 1.77 to 3.40 m. Levi (1981) reported the depth of purse boat of two-boat purse seiners operated at Menhaden was 6.97 m which was higher as compared to the present study.

The freeboard recorded for wooden purse seiners operated along the Ratnagiri coast for length class of 15 to 18 m was 1.02 m which was higher than the 0.6 m (Levi, 1981) of two-boat purse seiners operated at Menhaden. The average draught observed

during the present study was 1.46m which is higher than 1.26 m recorded by Ghatge (2006) while the average keel length was 13.02 m. None of the researcher has studied the keel length so the result of the present study cannot be compared with the other reports.

Purse seiners in the length class of 15 to 18 m operating from Ratnagiri, were fitted with 6 cylinders inboard engines having average horse power 120 hp and a average fuel consumption of 15.76 l/hr. Hellevang (1971) reported the Peruvian purse seiners were maneuverable with engines ranging from 250 hp to 850 hp which had very high power than the purse seiners used in Ratnagiri. Sadanandan *et al.* (1975) observed the engine power of the purse seiners of Goa, ranged from 67 to 100 hp, purse seiners of Cochin were fitted with 93 to 110 hp engines (Mukundan *et al.,* 1980), vessel along the west coast of India were fitted with 48 hp engine (Varghese,1976). Panikkar *et al* (1991) reported engine power of purse seiners operating from Cochin Fisheries Harbour was 40-45 hp. Yingyuad (2010) studied the Thai purse seiners of medium scale boat were fitted with 700 hp engine which was found to be higher as compared to the present study.

The gross tonnage of wooden purse seiners operating at Ratnagiri in the length class of 15 to 18 m was recorded in the range of 30.15 to 103.31 t. Ben-yami (1994) reported that the tuna purse seiners had a gross tonnage of 300 to 400 t. Yingyad (2010) studied the Thai purse seiners having gross tonnage of 10 to 120 t.

Conclusion:

The documented information on the design and technical specifications of the medium sized wooden purse seiners of Ratnagiri, Maharashtra would serve as a base line information for the technological modifications the vessels may undergo to increase their efficiency in the coming years.

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