

# Comparative study of engine horse power of wooden purse seiners of Ratnagiri, Maharashtra

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■ **ABSTRACT** : For the wooden purse seiners fitted with below 100 hp engine in operation from Mirkarwada Fishing Harbour, Ratnagiri, Maharashtra, overall length ranged from 11.88 to 16.02 m, breadth at midship 3.63 to 7.2 m, depth of vessel was between 1.77 to 2.09 m, length of freeboard 1.0376 to 1.1941 m, draught 1.0411 to 1.7058 m, length of keel 10.64 to 14.28 m and gross tonnage 30.15 to 8.44 tons. Whereas, for wooden purse seiners fitted with 100 to 200 hp engine, overall ranged from 11.39 to 19.1 m, breadth at midship 2.28 to 7.7 m, depth of vessel 1.96 to 3.4 m, length of freeboard 0.8070 to 1.2147 m, draught 0.8941 to 2 m, length of keel 8.81 to 14.28 m. and gross tonnage 32.11 to 78.44 tons. All wooden purse seiners were fitted with Ashok Leyland make six cylinder inboard diesel engines with their fuel consumption ranging from 15 to 17 lit/hr.

■ **KEY WORDS** : Purse-seining, Wooden purse seiners, Horse power, Technical specifications, Engines

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Purse-seining is one of the most advanced and efficient fishing methods in the world over with its origin in United States in 1920. The present study was an attempt to compare the technical specifications of wooden purse seiners fitted with engines with varying capacity of horse power, operated from Mirkarwada fishing harbor of Ratnagiri, Maharashtra.

## ■ METHODOLOGY

Mirkarwada minor fishing harbor situated about 2 km on the west of the Ratnagiri city was chosen for the present study. The detail information regarding the specifications of wooden purse-seiners and the engines fitted on them were undertaken by physically sampling the units and by collecting the information from purse-seine operators. Collected data were analyzed for the

required parameters with the appropriate statistical procedures wherever required (Snedecor and Cochran, 1967).

## ■ RESULTS AND DISCUSSION

The detailed technical specifications of wooden purse seiners categorized according to their engine horse power ranging from below 100 hp and between 100 to 200 hp, operating from Mirkarwada landing center, Ratnagiri are stated in Table 1 and 2, respectively. Correlation of the engine horse power with the specification of the wooden purse seiners of Ratnagiri are stated in Table 3.

Ziener (1958) studied more than 50 boats along Kathiawar coast which have been equipped with inboard engines, whereas on the Konkan coast more than 950

indigenous fishing crafts were engine powered. Similarly, along the Ratnagiri coast 117 wooden purse seiners were fitted with inboard marine diesel engine.

Hellevang (1971) reported the Peruvian purse seiners were maneuverable and 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 engine (Mukundan *et al.*, 1980), vessel along the west coast of India were fitted with 48 hp engine (Verghese, 1976). Panikkar *et*

*al.* (1991) reported engine power of purse seiners operating at Cochin Fisheries Harbour ranged from 110 to 120 hp. Somewhat similar results were found in the present study of the purse seiners operating from Ratnagiri as compared with the observations of other scientist. Yingyuad and Chanrachkij (2010) studied the Thai purse seiners of medium scale boat fitted with 700 hp engine which was found to be higher as compared to the present study.

All the wooden purse seiners were fitted with six cylinder Ashok Leyland engines. Five models were observed *viz.*, AL- 400 (48), AL-402 (41), AL-412 (13),

**Table 1: Specifications of wooden purse seine vessels fitted with below 100 hp engine**

Sr. No.	Specifications	Ratnagiri			Standard error
		Mean	Minimum	Maximum	
1.	Overall length (m)	15.3752	11.58	19	± 0.2438
2.	Breadth at midship (m)	5.892	3.63	7.2	± 0.11343
3.	Depth of vessel (m)	2.322	1.77	2.9	± 0.3154
4.	Freeboard (m)	0.9561	0.7288	1.1941	± 0.0129
5.	Draught (m)	1.3658	1.04118	1.7058	± 0.0185
6.	Length of keel (m)	12.2147	8.81	14.28	± 0.1833
7.	Horse power (hp)	98.2906	85	99.37	± 0.4059
8.	GRT (t)	48.3306	30.15	78.44	± 1.30134

**Table 2 : Specifications of wooden purse seine vessels fitted with below 100 to 200 hp engine**

Sr. No.	Specifications	Ratnagiri			Standard error
		Mean	Minimum	Maximum	
1.	Overall length (m)	15.6370	11.39	19.1	± 0.1596
2.	Breadth at midship (m)	6.4118	2.28	7.9	± 0.1163
3.	Depth of vessel (m)	2.4837	1.52	3.4	± 0.0374
4.	Draught (m)	1.4610	0.8941	2	± 0.0220
5.	Freeboard (m)	1.0227	0.6258	1.4	± 0.0154
6.	Length of keel (m)	12.36	8.81	14.28	± 0.1245
7.	Horse power (hp)	124.24	102	198	± 3.0715
8.	GRT (t)	60.1089	32.11	103.31	± 1.7729

**Table 3 : Correlation of specifications of wooden purse seiners with engine horse power**

Sr. No.	Specifications	Horse power (hp)	
		100	100-200
1.	Overall length (m)	0.1909	-0.2168
2.	Breadth at midship (m)	0.0839	0.4306*
3.	Depth of vessel (m)	-0.0766	0.3995*
4.	Draught (m)	-0.0766	0.3995*
5.	Freeboard (m)	0.0672	0.3995*
6.	Length of keel (m)	0.2436	-0.0640
7.	GRT (t)	-0.002	0.5544*

\* indicates significance of value at P=0.05

AL-680 (15) and AL 680 TC (05). Unnithan *et al.* (2005) along Kerala coast have reported three models of Ashok Leyland engine but their horse power were different from that recorded during present study. Same horse power were recorded for purse seiner by Boopendranath and Hameed (2007) along Kerala coast and higher power recorded by Boopendranath and Hameed (2013) along Cochin coast.

In the wooden purse seiners operating along the Mirkarwada landing center average the speed of the engine based on the engine horse power *i.e.* below 100 hp (1961 rpm), 100-200 hp (2000 rpm). The average fuel consumption of wooden purse seiners based on the engine horse power below 100 hp and 100-200 hp was 15 lit/hr and was 17 lit/hr, respectively. Unnithan *et al.* (2005) studied that average one litre of fuel can generate the power of 5 hp in medium and large vessels along Cochin coast. For 50-60 ft vessels low fuel consumption were noted by Unnithan *et al.* (2004) along Cochin coast and Jeeva *et al.* (2008) along the Andhra coast.

#### Conclusion :

The comparative analysis of the engine horse power with the technical specifications of the 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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