

An appraisal of marine fish landings in Maharashtra - 2016

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The estimated total landings of marine fishery resources of Maharashtra in the year 2016 was 292354 tonnes (t) which was 10.4 % higher than the landings in the previous year for the state. The domination of mechanised sector has been bolstered by an additional landing to the tune of 11% compared to 2015. The outboard sector's contribution increased by 45% while the inboard sector contributed only one-third of what it did in 2015. The non mechanised sector too witnessed a drop to the tune of 32% as compared to 2015.

The major gears and the estimated number of units in deployment during the year were mechanised gillnet (203643 units), mechanised *dolnet* (176431), mechanised multiday trawl (76559), mechanised trawl (55305), mechanised purse seine (19551), motorised outboard gillnet (10437) and non mechanised gillnet (28346).The

mechanised gears had total sway over the landing of resources followed by non mechanised gill nets.

The growth as compared to 2015 figures are given in Table 1. The hefty increase in the share of mechanised *dolnet* and the palpable dip in the quantity of resources landed by mechanised trawlers and motorised gill netters is highlighted.

Table 1. Gearwise landings and growth rate

Gear	Landings (tonnes)	Growth %
Multiday trawl	154648	21
Mechanised <i>dolnet</i>	57971	48
Mechanised purse seine	46916	13
Mechanised gillnet	19555	-27
Mechanised trawl	10146	-53
Nonmechanised gillnet	358	-44
Outboard (Motorised) gillnet	355	-47

With inputs from P. S. Salvi, M.P. Jadhav, D.D. Sawant, K.R. Mainkar, S.P. Hotekar, Albert Idu K.A., D.G. Jadhav, J.S. Hotagi, B.S. Ramachandra, B.A.A. Shiledar and S.K. Kamble, FRAD field staff in Maharashtra.

The major finfish and shell fish resources landed during 2016 off Maharashtra coast are given below (Table 2). It indicated significant dip in oil sardine and catfish landings compared to 2015. Squid landings showed a phenomenal jump to the tune of 130% and became one of top ten resources (in volume) landed. Non-penaeid prawns, bombayduck and ribbon fishes too showed increase.

Table 2. Major fishing resources landed

Group	2015	2016	Growth %
Penaeid prawns	33763	32262	-4.45
Non-penaeid prawns	20098	31160	55.04
Croakers	28897	28334	-1.95
Squids	9418	21684	130.24
Indian mackerel	14550	19123	31.43
Ribbon fishes	12214	18190	48.93
Bombayduck	13416	17658	31.62
Threadfin breams	12435	14567	17.15
Oil sardine	16841	12466	-25.98
Catfishes	13378	7598	-43.21

Seven high intensity landing centres/ fishing harbours in eight contiguous zones were present (Table 3). The zonal landing pattern showed varying degrees of fluctuation in total landings as compared to the previous year.

In 2016, the peak landings were experienced in New Ferry Wharf (NFW) and Sassoon Docks New (SDN) amongst harbours and in the MH1 zone in the second level, landing centre agglomeration. October and November months witnessed intense landings

Table 4. Species diversity in zone-month matrix

Zone/ Month	1	2	3	4	5	6	7	8	9	10	11	12
ARN - ARNALA	33	16	34	33	42	24	22	19	25	61	53	44
BAS - BASSEIN KOLLIWADA	25	32	11	33	24	16	11	23	32	32	40	38
MH1	40	29	37	45	60	19	9	10	10	51	39	35
MH2	45	16	49	63	27	17	8	39	11	39	39	19
MH3	31	11	24	28	23	4	NS	20	18	21	22	16
MH4	23	18	17	23	38	4	NS	7	NS	25	28	28
MH5	26	13	28	22	15	12	18	46	39	50	55	34
MH6	28	32	26	35	31	NS	4	11	15	38	36	29
MH7	28	19	23	31	39	24	16	37	23	27	46	31
MH8	11	7	15	31	28	21	15	NS	8	8	27	14
NFW - NEW FERRY WHARF	125	71	152	123	143	22	28	121	156	167	153	144
SAT - SATPATI	29	19	21	47	39	19	23	NS	59	37	61	53
SDN - SASOON DOCK NEW	29	29	37	39	33	NS	9	51	43	62	58	71
SDO - SASOON DOCK OLD	126	123	173	151	149	34	49	135	164	153	174	161
VER - VERSOVA	84	62	88	89	101	37	8	50	90	132	106	102

NS - No sampling

in most of the zones. A comparison with the profile for the year 2015 revealed the sustained preeminence of NFW in influencing the total landings throughout the year. In majority of zonal months the landings were around 200- 5000 tonnes range. The landings profile juxtaposed with effort profile (effort in estimated units and actual fishing hours) for 2016 indicated that maximum zonal month efforts were in the range of 5000 units or 50-100 thousand hours. But interestingly these profiles also indicated more peaks than the landings profile, especially in zones like MH1, MH2, MH5 and MH6 indicating less catch rates over all.

Table 3. Districtwise landing centres

District	Zone	Landing centres
Sindhudurg	MH1	19
Sindhudurg	MH2	15
Ratnagiri	MH3	13
Ratnagiri	MH4	22
Raigad	MH5	38
Greater Mumbai	MH6	21
Thane	MH7	14
Thane	MH8	16

The species composition of the samples used for estimation of landings indicated maximum alpha diversity amongst the catch spectrum was in the NFW, a major trawl centre, reaching a peak of 167 in the month of October (Table 4). The nominal average catch rate per boat and the variability were computed for the year 2016 (Fig. 1).

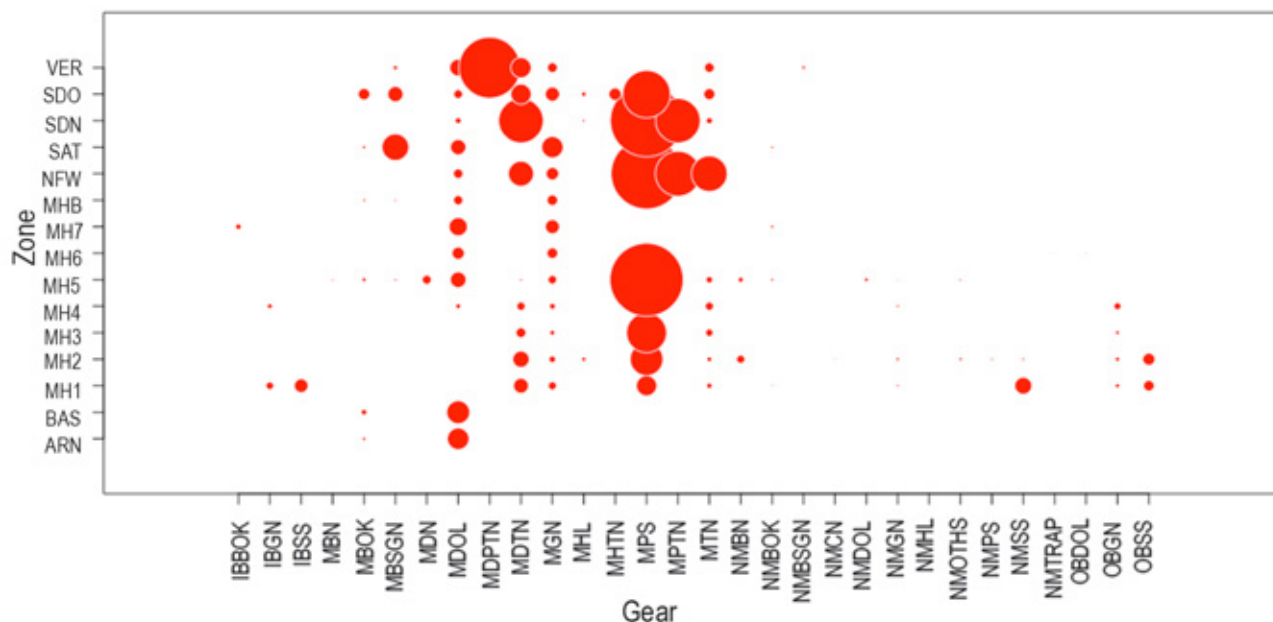


Fig. 1. Variability in catch rate of zone- gear combinations in 2016

IBBOK - inboard bokshi net, IBGN - inboard gill net, IBSS - inboard shore seine, MBN - mechanised bag net, MBOK - mechanised bokshi net, MBSGN - mechanised bottom set gill net, MDN - mechanised drift net, MDOL - mechanised *dol*net, MDPTN - multiday pair trawl net, MDTN - multiday trawl net, MGN - mechanised gill net, MHL - mechanised hooks & line, MHTN - mechanised hand trawl net, MPS - mechanised purse seine, MPTN - mechanised pair trawl net, MTN - mechanised trawl net, NMBN - non mechanised bag net, NMBOK - non mechanised bokshi net, NMBSGN - non mechanised bottomset gillnet, NMCN - non mechanised cast net, NMDOL - non mechanised *dol*net, NMGN - non mechanised gillnet, NMHL - non mechanised hooks & line, NMOTHS - non mechanised others, NMPS - non mechanised purse seine, NMSS - non mechanised shore seine, NMTRAP - non mechanised trap, OBDO - outboard *dol* net, OBGN - outboard gill net, OBSS - outboard shore seine

The landings sampled from mechanised purse seine crafts were showing high standard error in the MH5, NFW and Sassoon Docks (New) zones. The trawl landings too showed considerable deviation amongst sampled crafts, especially in Versova, Sassoon Docks (New) and NFW. Amongst zones MH5 showed significant variation in catch rates of MPS. Towards getting a more incisive view of the landing pattern across the zones, standardized average per boat mean total catch across various gear, month, day and season combinations were computed and the result is given below (Fig. 2). The plot revealed that the most productive harbor, NFW, comes second in the standardised per boat average catch, while Sassoon Docks (New) takes the top position. The influence of the mechanised boats landing centres can be well seen by the fact that just three centres with maximum trawl landings between them offset the below average rates of 11 other zones.

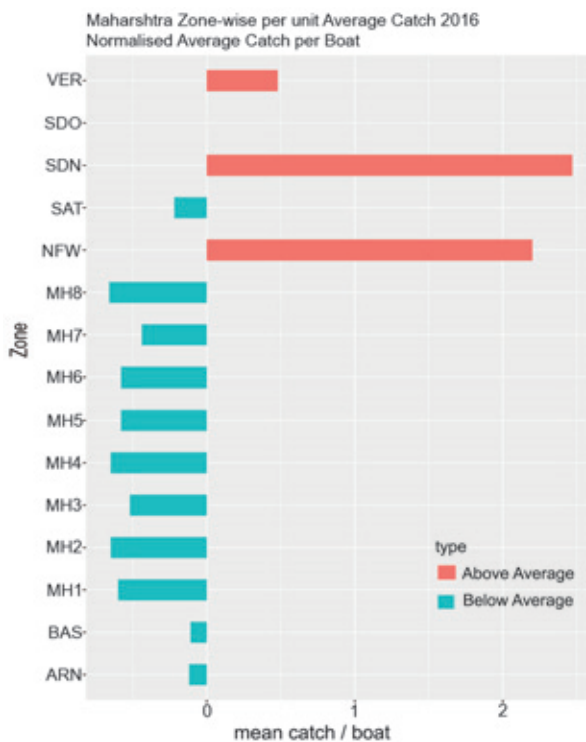


Fig. 2. Ranking of fishing harbour based on landing patterns across zones