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Demographic and socio-economic changes in the coastal fishing community of India

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ABSTRACT

The spatial and temporal changes in the demographic and socio-economic indicators of coastal fishing community of India were studied using data collected during the national level census on marine fishermen population in 2005 and 2010, covering 11 maritime states and union territories of the country. Information on population growth, sex ratio, literacy level and educational status, poverty level, sectoral dependency and occupational categories of the coastal fisherfolk were analysed and compared with analogous figures of national averages on these socio-economic indicators. The marine fishermen of India, who depend on fisheries for their subsistence, were significantly below the national averages in many of key demographic indicators. The results of correspondence analysis carried out for visual description of the association of economic status with the key indicators showed that, the below poverty class among fishermen were more associated with low family size compared to large sized families, which implicates to labour supply in a labour demanding socio-economy of marine fisheries. Different dependency ratios were computed as a simple summary measure for comparison of age structure of fisherfolks.

Keywords: Coastal fishing community, Correspondence analysis, Demographic changes, Dependency ratio, Marine fishermen census, Poverty line

Introduction

India is one among the top marine fish producing countries of the world and stood at 7th position in global marine capture fish production (FAO, 2014). Marine fisheries census is a vital source of information for planners and administrators. The primary aim of marine fisheries census is to provide updated information on size, composition and distribution of fishermen households and population, fishing gears, fishing crafts and fishing related infrastructure facilities as well as on the social and educational status of fisherfolk in the coastal villages in the country. The data and information generated form the basis for planning services, education, health, employment, water, electricity, communication facilities, roads and infrastructure facilities for the sector. Also, it forms the basis for apportionment of available funds and other resources between areas. The ICAR-Central Marine Fisheries Research Institute (ICAR-CMFRI) has been involved in the quinquennial census on marine fishermen population and infrastructure facilities in the country since its inception.

Many of the world's fisheries have experienced series of environmental shifts in recent decades involving collapse or fluctuations in the dominant fish assemblages and as a result, many fisheries-dependant human communities have lost majority of their population, while the respective countries in general were growing (Hamilton and Otterstand 1998). While addressing the sustainable management of marine fisheries, inclusion of demographic information along with the stock status of the resources will provide apposite depiction to formulate the required policy measures. The management options offered to sustain the natural resources are greatly influenced by the changes in demographic structure of the stakeholders (Villareal *et al*., 2004). In a tropical country like India, wherein the marine fisheries is supported by multispecies assemblages, severe collapses in fishery are unlikely and the marine fish production of the country has been increasing from a meager of 0.05 million t to 3.94 million t over the last 62 years. However, during the formulation of policies and subsequent resource allocations, the incorporation of demographic information of the fishing community is a prerequisite. This is imperative, as the marine fisheries sector in India is characterised by the dominance of small scale subsistence based fishery. In many of the societies, small-scale fishermen suffer the greatest deprivations as they have low social status, low incomes, poor living conditions and little political influence (Pomeroy and Williams 1994). Implementation

of regulations in the fishery for the sustained production from the sector have to take into account its impact on the livelihood of the considerably poor fisher population. The information necessary for such inference are generated through census.

In India, the first systematic and well organised marine fisheries census was carried out by CMFRI in 1980, covering all the maritime states of India except the state of Maharashtra, where a similar exercise was carried out by the state fisheries department. In this census, micro level information on different aspects of marine fisheries was collected covering 2,132 marine fishing villages (Table 1), 1,438 marine fish landing centres and 333,038 fishermen households (CMFRI, 1981). The next marine fisheries census was conducted by ICAR-CMFRI in 2005 covering all the maritime states of India, in which, information about 756,212 marine fishermen households were collected from 3,202 marine fishing villages apart from the information on fishing crafts from 1,332 marine fish landing centres all along the Indian coast (CMFRI, 2006). In 2010, the marine fisheries census was conducted during April - May, covering all the maritime states and union territories of India with the objective to provide an overview of the demographic changes that has been taken place over the years in the marine fishermen villages in terms of population size and structure and other socio-economic indicators. The present analysis was carried out to delineate the temporal and spatial changes in the demography of coastal fishermen population and to decipher the status of fishermen of India by comparing the selected socio-economic indicators of fishermen and national population of the country.

Table 1. Details of marine fishermen census conducted in India in 1980, 2005 and 2010

Year of census	No. of fishermen villages	No. of landing centres	No. of fishermen households	Total fishermen population
1980	2132	1438	333038	1892916
2005	3202	1332	756212	3519116
2010	3288	1511	864550	3999214

Materials and methods

The basic frame used for the marine fisheries census in 2010 was the list of marine fishing villages provided by the Fisheries Departments of respective maritime states/union territories of India, which were verified, validated and updated through field visits prior to the commencement of census operation. The maritime states and union territories covered for the census were West Bengal, Odisha, Andhra Pradesh, Tamil Nadu and Puducherry along the east coast and Kerala, Karnataka, Goa, Maharashtra, Gujarat and Daman & Diu along the west coast of India. Detailed information on fishermen family, educational status, occupation and pattern of ownership of crafts and gears by the fishermen were collected from individual households, in each marine fishing village using a questionnaire (Schedule-I), which was prepared in eight regional languages, in addition to English and Hindi. Data on infrastructure facilities available in the marine fishing villages were collected using Schedule-II and detailed information on the fishing crafts existing in the fishery in and around the fishing villages were collected using Schedule III.

Three-factor ANOVA with two-way interactions were used to examine the significant differences in gender-wise age-distribution over time. For visual description of the association of economic status of fishermen such as BPL (below poverty line) and APL (above poverty line), with craft ownership, educational status and occupation and family size, correspondence analyses (Beh, 2008) were carried out using Brodgar (version 2.7.2) software developed by Hiland Statistics Ltd., UK. Correspondence analysis is a highly versatile tool for understanding the structure of the association between attributes of data in a two-way contingency table to depict the results in easily comprehensible visual format. It is capable of revealing the extent of association between the attributes of the factors considered displayed geometrically as closeness of points in geometric space. Dependency ratios provide a simple summary measure to compare age structure for populations. The child dependency ratio measures the number of children for every hundred persons of working age population (Hoque, 2012). The aged dependency ratio measures the number of aged population for every hundred working age population. The overall dependency ratio (dependency ratio) is the sum of child and aged dependency ratio. Another dependency ratio worked out was the fisheries dependency ratio which is the number of children and aged population per every hundred persons occupied in fisheries and allied activities. The terms fishermen, fishermen households and fisherfolk, used in this article pertains only to the marine fisheries sector. In order to compare the key social indicators of fishermen population with the national averages, all India census data for 2011 were collected from the official website of the population census 2011 (Population Census 2011).

Results and discussion

The coastline of India, excluding the island territories of Lakshadweep and Andaman and Nicobar, stretches to

about 6,068 km along the nine maritime states and two union territories of the country with 1,511 major and minor marine fish landing centres. The total number of marine fishing villages in India increased from 3,202 in 2005 to 3,288 in 2010 and the total number of marine fish landing centers in the country amplified from 1332 in 2005 to 1511 in 2010.

Population

There were about 4.0 million marine fisherfolk all along the coastline of India, residing in 0.864 million households registering an increase of about 14% in their population as well as in number of households over the last half a decade. Fig. 1. indicates the distribution of fishermen population in different maritime states of India in 2010. All the maritime states recorded significant increase in fishermen population except Karnataka and Goa. Tamil Nadu along the south-east coast of India, with a coastal length of 1,076 km, continued to be in the foremost position accounting for 20% of the

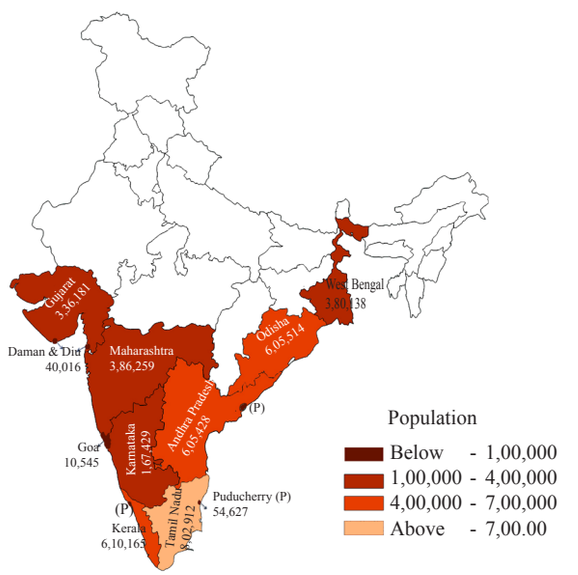

Fig. 1. Distribution of fishermen population in different maritime states as per the National marine fisheries census 2010

total fisherfolk population of the country. The smallest state Goa, has the lowest number of marine fishermen households as well as population. The average number of households per village increased by 11% from 236 to 263 during the last five years. Nearly 35% of the population was constituted by children of age below 15 years. There is not much change in the average family size which is 4.63 compared to 4.70 in 2005 and Karnataka continued to be the state with maximum average family size of 5.7. According to marine fisheries census 2010, the sex ratio (number of females per 1000 males) among fishermen population was 928 whereas in 2005, it was 948. The sex ratio had gone down in all the states and union territories except in Puducherry where it slightly increased from 980 to 982. West Bengal had the least sex ratio both in 2005 and 2010. The sex ratio among children up to 5 years of age was 944 and that among children above 5 years of age was 864. Fig. 2. depicts the details of gender-wise distribution of marine fishermen population in different age groups as per 1980, 2005 and 2010 marine fisheries census. Analysis of variance carried out using data on proportions (with angular transformations) for sex-wise age groups in 1980, 2005 and 2010 revealed that there is no significant difference in age distribution between sexes ($p = 0.887$) and over the years ($p = 0.991$).

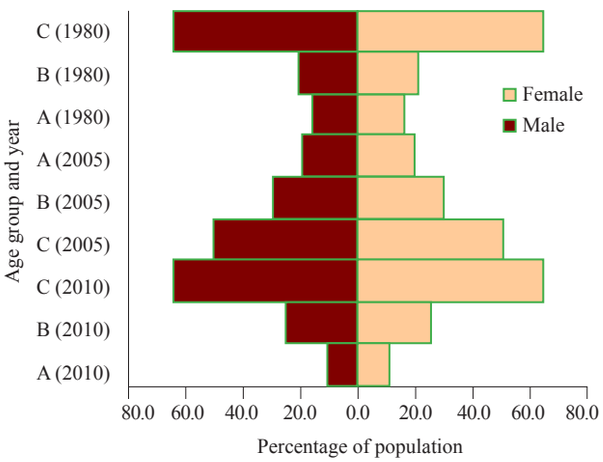

Fig. 2. Gender-wise distribution (%) of fishermen population in different age groups (A: 0-5 years, B: 6-14 years and C: 15 years or more) in 1980, 2005 and 2010

Poverty status and dependency ratio

Nearly 0.865 million fishermen households were visited during 2010 census of which, 91.3% were traditional fishermen families. Fishing as an occupation was confined to traditional fishing communities all along the coast where traditional fisherfolk formed more than 90%, except in Odisha and West Bengal where they formed only 77 and 70% respectively. At national level, nearly 5.24 lakh (61%) fishermen households belonged to BPL category in 2010, with Andhra Pradesh having the highest proportion of BPL fishermen families (97%) and Daman and Diu (5%) the least (Fig. 3).

Correspondence analysis carried out to examine the association of family size with economic class revealed that, fisherfolk in the BPL category had family size mostly below five members, whereas the APL (above poverty line) category had 8 to 10 members in the family (Fig. 4). It was observed that people living in larger

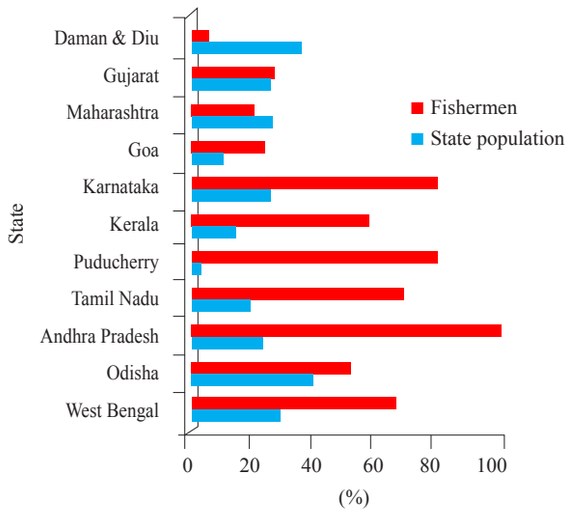

Fig. 3. Percentage of population below poverty line (BPL) in the maritime states and union territories of India during 2010-2011

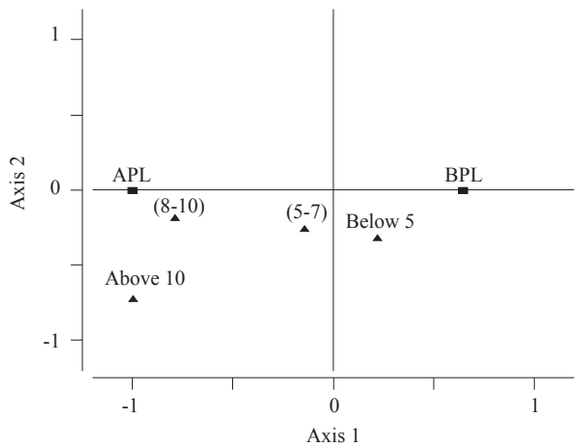

Fig. 4. Correspondence analysis plot on the association of family size with poverty status of marine fishermen families in India

and younger households were typically poor. There is considerable evidence of a strong negative correlation between household size and consumption or income per person in developing countries (Lipton and Ravallion 1994). In contrast to this, Lanjouw and Ravallion (1995) observed that the correlation between poverty and family size vanishes, which was mainly due to the scope for size economies in consumption. Further, less poverty with higher household size as evidenced in this study, implicates labour supply in the labour demanding socio-economy of marine fisheries. Similar observations were made by Kamuzora and Gwalema (1998), who noted lower proportion of poor households with higher household size and they attributed labour supply as the most important reason for this, which is the understandable in a labour intensive socio-economy.

Various dependency ratios calculated for different maritime states of India indicated that the child dependency was only 44 for Goa, whereas it was as high as 106 for Daman and Diu (Table 2). Aged dependency was low for Andhra Pradesh, Odisha and Maharashtra and high for Kerala, Tamil Nadu and Puducherry. The overall dependency was high for all the states with maximum for Kerala (190) and the least for Maharashtra (100).

Dependency with respect to employment in fisheries sector was found to be high for Daman & Diu (228) and Kerala (200) while it was low for Maharashtra (103) and Andhra Pradesh (104). The child dependency ratio among the marine fishermen of India was much higher (83) compared to that of the aged dependency (57), with an overall dependency of 140. A high dependency ratio is supposedly indicative of the dependency burden on the working population, as it is assumed that the economically

Table 2. Dependency ratios estimated for the coastal fishermen population in different maritime states/union territories of India

Maritime State/UT	Total working population	Working in fishery and allied field	Total child population	Total aged population	Child dependency	Aged dependency	Overall dependency	Fisheries dependency
West Bengal	146191	142559	147733	86214	101	59	160	164
Odisha	260210	252072	250117	95187	96	37	133	137
Andhra Pradesh	301956	290957	223404	80068	74	27	101	104
Tamil Nadu	295452	285605	244980	262480	83	89	172	178
Puducherry	19490	18219	18642	16495	96	85	181	193
Kerala	210496	199803	173743	225926	83	107	190	200
Karnataka	79819	75033	45874	41736	57	52	109	117
Goa	5101	3971	2266	3178	44	62	106	137
Maharashtra	193278	187621	119843	73138	62	38	100	103
Gujarat	138917	134695	137803	59461	99	43	142	146
Daman and Diu	14432	11244	15281	10303	106	71	177	228
All India	1665342	1601779	1379686	954186	83	57	140	146

active proportion of the population will need to provide for the health, education, pension and social security of the non-working population, either directly through family support mechanisms or indirectly through taxation. Ingham *et al.* (2009) reviewed and expressed concern over the increase in aged dependency in some of the European countries. However, among the coastal fisherfolk of India, the aged dependency was found to be comparatively low in most of the maritime states.

Literacy and educational status

Gender-wise information on the educational status of fisherfolk under different categories such as primary, higher secondary and above higher secondary levels was collected during 2010 census. Children up to 5 years of age have been excluded in this as they do not start their formal schooling. Only 57.8% of the fishermen were found literate on a national level, showing only slight improvement in the literacy level of 56.5% recorded in 2005. The rate of literacy was higher among males (59.6%) than females (55.8%). Literacy rate was found higher among fisherfolk of Goa (86.0%) followed by Kerala (72.5%) and was low in Andhra Pradesh (34.3%) and Gujarat (43.7%). Both male and female literacy rates were high in Goa (89.1 and 82.5% respectively) and low in Andhra Pradesh (37.1 and 31.2% respectively). In 2005, the literacy rate was highest for Kerala (72.8%) followed by Karnataka (69.9%) and Goa (69.1%) while it was low in Andhra Pradesh (32.5%) and Gujarat (40.9%).

About 29% of the fisherfolk had primary level education, 24% had higher secondary level and 5% had above higher secondary level of education while the rest 42% of the population was unschooled. Literacy levels were more even amongst males and females in Kerala, Tamil Nadu and West Bengal while the difference widened substantially in other states/union territories. Correspondence analysis carried out to describe the association of educational status with economic category revealed that educational status of fisherfolk of BPL category was limited to primary level, whereas the APL category had higher secondary and above levels of education (Fig. 5).

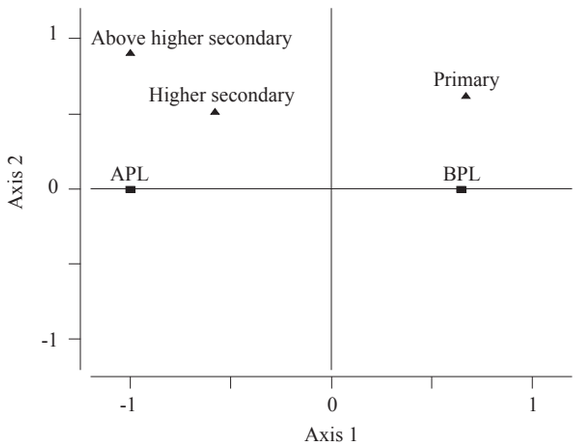

Fig. 5. Correspondence analysis plot on the association of educational status with poverty status of marine fisherfolk in India

Occupation

The information on occupational status of fishermen population were collected under two major categories namely 'active fisherfolk' and 'those involved in fishery allied activities'. Depending on the core activity, the active fisherfolk were further divided into two subgroups *viz.,* 'actual fishing' and 'fish seed collection'. Nearly 38% of the marine fisherfolk were engaged in active fishing with 83% of them having fulltime engagement against that of 26 and 81% respectively in 2005. Only 2% of fisherfolk were engaged in fish seed collection, of which 57% were females. Tamil Nadu, along the south-east coast of India, accounted for the highest number of active fishermen (22%) followed by Odisha (16%) and Andhra Pradesh (15%) while Goa, along the west coast, had the least (0.2%). In 2005, Tamil Nadu (23%) and Kerala (16%) were the states with the highest number of active fishermen.

Nearly 61% of fisherfolk in the country were engaged in fishing and allied activities with Andhra Pradesh topping the list (76%) and Kerala (46%) recording the minimum. About 23% of fisherfolk were engaged in fishing allied activities with a maximum of 42% in Maharashtra and a minimum of 13% in Tamil Nadu. In 2005, about 54% of the fisherfolk were engaged in fishing allied activities of which 20% each belonged to Odisha and Andhra Pradesh and 14% belonged to Tamil Nadu. Nearly 82% of fisherfolk were engaged in marketing of fish and about 88% in curing and processing were women. Almost 90% of fisherfolk engaged in peeling operations were also women. Correspondence analysis revealed that both BPL and APL category of males were more engaged in actual fishing whereas APL females were more associated with fish seed collection as well as marketing of fish and the female members of BPL category were more associated with curing/processing works (Fig. 6).

Nearly 66% of the marine fishermen households in the country had *pucca* houses and the remaining 34% had only *kutcha* houses. During 2005, the overall percentage of households with *pucca* houses was 62%

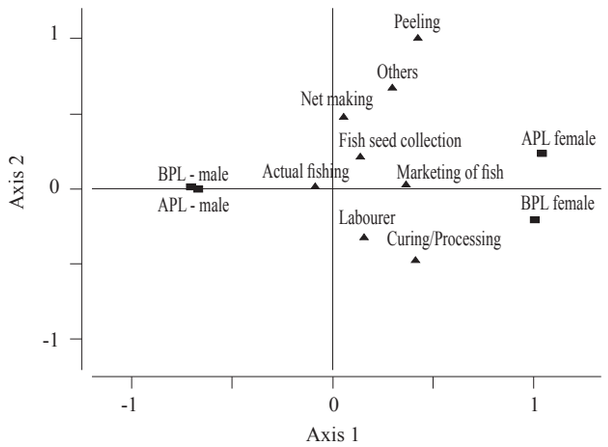

Fig. 6. Correspondence analysis plot on the association between occupation and poverty status of marine fisherfolk in India

showing 4% increase in improved housing during the last five years. More than 70% of the fishermen households had *pucca* houses in all maritime states and union territories except in West Bengal (14%) and Odisha (24%).

The total number of adult males in marine fishermen population has increased from 11.70 lakhs in 2005 to 13.43 lakhs in 2010. Nearly 76.1% of them in 2005 and 69% in 2010 were engaged in actual fishing meeting 50.1% and 56.7% respectively of the manpower requirements to operate the existing fishing fleet. This indicates that, of the total manpower requirements in the country for fishing operations using various craft-gear combinations, about 8.87 lakhs in 2005 and 7.08 lakhs in 2010 were met from non-fishermen populations. The manpower requirements for the existing fleets in 2005 was higher for motorised sector (63%) followed by non-mechanised sector (25.5%) and mechanised sector (22.1%). However, the manpower requirements for the motorised sector decreased to 57.6% in 2010 where as that for the mechanised sector increased to 30%. A drastic reduction in manpower requirement (50%) was experienced in the non-mechanised sector during the five year period. In both 2005 and 2010, the adult male populations were not sufficient to meet the manpower requirements for the operation of the existing fleets as, 65.8 and 82.1% of the requirements will only be met even if all the available manpower is diverted towards this. For harvest of the marine fishery resources at sustainable levels, the size of different fishing fleets has to be reduced to the optimum levels as per the recommendations of an expert committee (Anon., 2011). The requirement of manpower to operate the fishing fleets at the optimum level is about 13.02 lakhs and the number of active fishermen in 2010 accounts for 71.2% of this requirement, indicating that bringing sustainability into the marine fisheries sector by maintaining the fishing fleets at optimum level through the reduction of excess fleets in a phased manner will not adversely affect the occupation level of marine fishermen population.

Fishing crafts

The fishing crafts existing in the marine fishery sector in India were 72,559 (37%) in the mechanised sector, 71,313 (37%) in the motorised sector and 50,618 (26%) in the non-mechanised traditional sector (Fig. 7). There was an addition of about 13,600 mechanised crafts into the fishery recording 23% increase during the last half a decade, registering an annual growth rate of 4.6%. In the motorised sector and non-mechanised sector, there is reduction of about 4,300 (6%) and 53,600 (51%) crafts respectively. As per the 1980 census, there were only 9,289 mechanised crafts in the country and there were no motorised crafts. The number of non-mechanised crafts was 1,34,741 in 1980. With the introduction of outboard engines, most of the non-mechanised crafts were converted to outboard vessels and over the years, the number of non-mechanised crafts in the fishery reduced to 1,04,270 in 2005 and further to 50,612 in 2010. In the mechanised sector, the number of trawlers increased by around 6,000 (20%), purseseiners by 230 (23%), gillnetters by about 6100 (43%) and dolnetters by about 2900 (33%). There is marginal reduction (3%) in the number of mechanised liners being operated in the country. During the last five year period, the increase in mechanised crafts was maximum in West Bengal (109%), followed by Gujarat (40%) and a reduction in their number was observed in Odisha (37%) and Kerala (14%).

The ownership pattern of fishing vessels by the coastal fisherfolk indicated that maximum number of mechanised trawlers are owned by fisherfolk of Gujarat

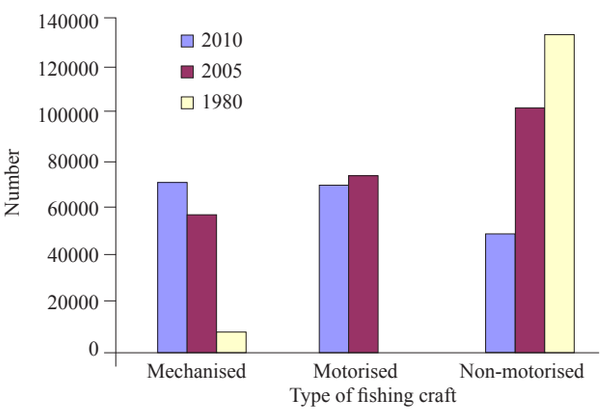

Fig. 7. Changes in the number of fishing crafts in the marine fisheries sector of India

(31%) followed by Tamil Nadu (27%) and mechanised gillneters are mainly owned by the fisherfolk of West Bengal (21%) followed by Tamil Nadu (18%). The ownership of trawlers by fisherfolk have decreased over the last five years by 21% with the maximum reduction in Maharashtra (56%) followed by Gujarat (20%), whereas the number of trawlers owned by fisherfolk increased in Andhra Pradesh (67%) as well as in Daman & Diu (72%). The number of mechanised gillneters owned by fisherfolk increased in Tamil Nadu by six fold, whereas in West Bengal, it reduced by 20%. Similar increase was observed in Gujarat (86%) as well as in Odisha (64%). The number of motorised fishing crafts owned by fishermen decreased during 2005-10 period by around 23.1% with maximum reduction in West Bengal (100%), followed by Maharashtra (60%) and Andhra Pradesh (55.9%). In Gujarat, the ownership of motorised crafts increased by 27.1% during the same period while the ownership of non-mechanised crafts by fishermen decreased marginally (8.6%) during the last 5 year period. However, a substantial decline in the ownership of non-mechanised crafts to the tune of more than one lakh was noticed in Odisha (73.5%) and Tamil Nadu (42.9%) during this period.

The correspondence analysis carried out to examine the association of ownership of vessels with poverty categories showed that the ownership of non-mechanised crafts was more with BPL where as that of mechanised vessels was more associated with APL fishermen families (Fig. 8).

The optimum fleet size recommended for motorised sector is 60219 (Anon., 2011). There are 71313 motorised fishing crafts operating in the fishery of which 40718 are owned by fisherfolk and 30515 owned by other

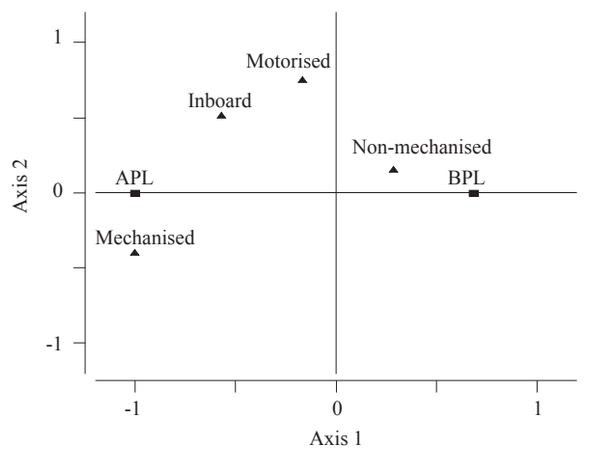

Fig. 8. Correspondence analysis plot on the association of ownership of vessels with poverty status of marine fisherfolk in India

entrepreneurs in the sector. The reduction of about 11094 from the existing motorised fleet size to reach the optimum level, if implemented by reducing from that owned by other entrepreneurs will not affect the livelihood of fisherfolk. Similarly, the optimum fleet size recommended for mechanised sector is 32231 and there are 72559 mechnaised vessels existing in the fishery of which 38867 are owned by fishermen and 33692 are owned by other entrepreneurs. If the recommended fleet size is implemented in this sector by removing the crafts owned by other entrepreneurs, it will still affect 17% of the fishers who owns mechanised fishing crafts.

Key demographic and socio-economic indicators of marine fisherfolk vs national population in India

The number of marine fishermen households as per marine fisheries census 2010 is 0.865 million, which is only 0.35% of the total number of households in the entire country as per the population census of India 2011. The annual increase in marine fishermen households was 2.87% during the last half a decade. Even though fisheries sector contributes about 1% to the nation's GDP and 5% to the GDP of agricultural sector, the coastal fishermen population forms only about 0.33% of the total Indian population. The rate of population growth among fishermen is about 55% higher than that reported for the entire population of India. During the last half a decade, the fishermen population in India increased at an annual rate of 2.73%, while the entire Indian population showed an annual growth rate of only 1.76% (Table 3).

The marine fishermen, who are involved in fishery and allied activities, mainly at subsistence level, were found to be much below the national average with respect to many of the demographic indicators. At national level, 84.9% of people lived in '*pucca'* houses, whereas only 65.5% of marine fishermen were dwelling in '*pucca*' houses. The total literacy rate recorded for fishermen population was 16.2% less compared to the national average literacy rate. Also, the male and female literacy rates (22.5 and 9.7% respectively) of fisherfolk were lower than that of the national male and female literacy rates. However, the male female gap in literacy rate was only 3.8% among fishermen population, where as the gap was 16.6% at national level. This is a constructive indication among the fishermen population in a social perspective. Even though the male female gap in literacy rate was found to be much lower among fishermen compared to the national average, the sex ratio was only 928, which is 12 units lower than the national average. Sex ratio is an indicator of the health and social status of women in a society which has direct bearing on other indicators like child mortality. Sex ratio among marine fishermen population has declined over the last five years from 948 to 928. The sex ratio among children up to

Table 3. Comparison of key demographic and socio-economic indicators of coastal fisherfolk with entire population of India (Population Census, 2011) during 2010-11

Parameter	National level	Fishermen	Variation from national level
Annual growth rate in population	1.76	2.73	0.97
Family size	4.91	4.63	-0.28
Percentage living in *Kutcha* houses	15.1	34.0	+19.4
Percentage living in *Pucca* houses	84.9	65.5	-19.4
Male literacy rate	82.1	59.6	-22.5
Female literacy rate	65.5	55.8	-9.7
Total literacy rate	74.0	57.8	-16.2
Male female gap in literacy	16.6	3.8	-12.2
Annual growth in literacy (%)	0.92	0.80	-0.12
Sex ratio	940	928	-12
Annual growth in sex ratio (%)	0.08	-4.0	-4.08
Sex ratio among child population	914	944	+30
Percentage of child population	13.1	10.8	-2.3
Percentage of people below poverty line	29.5	61.0	+31.5
Percapita marine fish production (kg)	3	830	827
Percapita marine fish production per household (kg)	14	3871	3857

5 years of age was 944 and that among children above 5 years of age was 864. Child sex ratio as per 2011 national census for the entire population was 914 (0-6 age group). Although the overall sex ratio among coastal fishermen was 12 units less compared to the national population, the increased sex ratio by 30 units among the child population of fishermen is a notable indicator. However, the fraction of child population in the total population was found to be lower among marine fishermen (10.8%) compared to the national level (13.1%). The average estimated family size was also found slightly lower than that of the national average family size.

Annual per capita fish production by the marine fishermen was estimated at 830 kg, which was 178 kg higher than that in 2005, registering an average increase of 35.6 kg per annum. Annual fish production per fishermen household was estimated at 3.871 t which was 0.835 t more than that of 2005, registering an annual increase of 167 kg. This indicates the production capacity of the coastal fishermen are increasing over the years, resulting in the per capita availability of 3 kg annum^{-1} of marine fish for the entire Indian population. Though there is increase in per capita fish production at the rate of 35.6 kg, the fishermen are not directly benefited by this, as a major chunk of the revenue are shared among middlemen and other players in the sector.

Data pertaining to poverty status of the coastal fishermen population of India indicates that 61% of the fishermen are below the poverty line, which is 31.5% more compared to the national average. Poverty among the global fishermen population has been addressed by various organisations. FAO (2002) reported that 5.8 million small-scale fishers earn less than US$ 1 a day and stated that, if the poverty among small-scale fishermen continues, the problem should be dealt with caution. Small-scale fisheries employ nearly 50 million people worldwide, *i.e.,* about 99% of the global strength of the fishermen, virtually all of them are from developing countries (Berkes *et al.,* 2001; Van Santen 2003), contributing 40% of the world's annual marine and inland fish catch (Whitmarsh *et al.*, 2000). Freire and Allut (2000) pointed out that the small-scale coastal fisheries have a greater social significance than industrial fishery. However, yet small-scale fisheries have been neglected and marginalised over the years, in both developing and developed countries, leading to great deprivations to the people who depend on the fisheries (Berkes *et al.,* 2001). Although there is not much depletion in the small scale marine fisheries of India as evident from the increased catches from marine fisheries sector as well as the increased per capita marine fish production, many of the critical socio-economic indicators pertaining to the coastal fishermen community of the country are much below the national averages and need to be addressed with concern.

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