

Job Satisfaction in the Coastal Pelagic Fisheries of Senegal

Aliou Sall

Accepted: 30 March 2012 / Published online: 5 July 2012
© Springer Science+Business Media B.V. 2012

Abstract The marine fishery in Senegal, West Africa, is a major source of employment and food security. It currently faces the consequences of ecological degradation. This paper examines job satisfaction among small-scale purse seine fishers, who constitute one of the dominant fishing métiers in Senegal. The research sample consists of 80 purse seine fishers in three locations along the coast with varied degrees of urbanisation. The findings suggest that purse seine fishers are generally satisfied with the extent to which the fishery meets their Social Needs and Self-Actualisation. They are dissatisfied, however, with the degree to which Basic Needs are met, with the way in which Management is carried out, and—to a lesser extent—with the condition of the natural environment. However, the study shows significant differences between the more rural and urbanised settlements. These are most pronounced with regard to the willingness to change fishing type, move to another profession or advise a young person to enter fishing.

Keywords Senegal · Coastal pelagic fisheries · Self-actualization · Job satisfaction

1 Introduction

This paper examines aspects of job satisfaction among small-scale purse seine fishers in Senegal, West Africa. The fishing sector in this country employs 600,000 people, 15 % of the working population, and contributes in large part to food security. Fish provides an important source of animal protein for the local population and has therefore become a mainstay of governmental policy for food security and poverty alleviation (CRODT-ECOST 2009). The majority of Senegalese small-scale fishers focus on catching *Sardinella* (or sardines). The species plays an important role in food security as well as in Senegalese culinary tradition, mainly due to its very low market price.

The study of job satisfaction among fishers was pioneered in North America by Pollnac and Poggie (1988), Apostle et al. (1985), Gatewood and McCay (1988), and Binkley

A. Sall (✉)
Centre de recherches océanographiques de Dakar Thiaroye (CRODT), Institut Sénégalais
de Recherches Agricoles, Route des hydrocarbures, Bel-air, 3120 Dakar, Senegal
e-mail: badousall2005@yahoo.fr

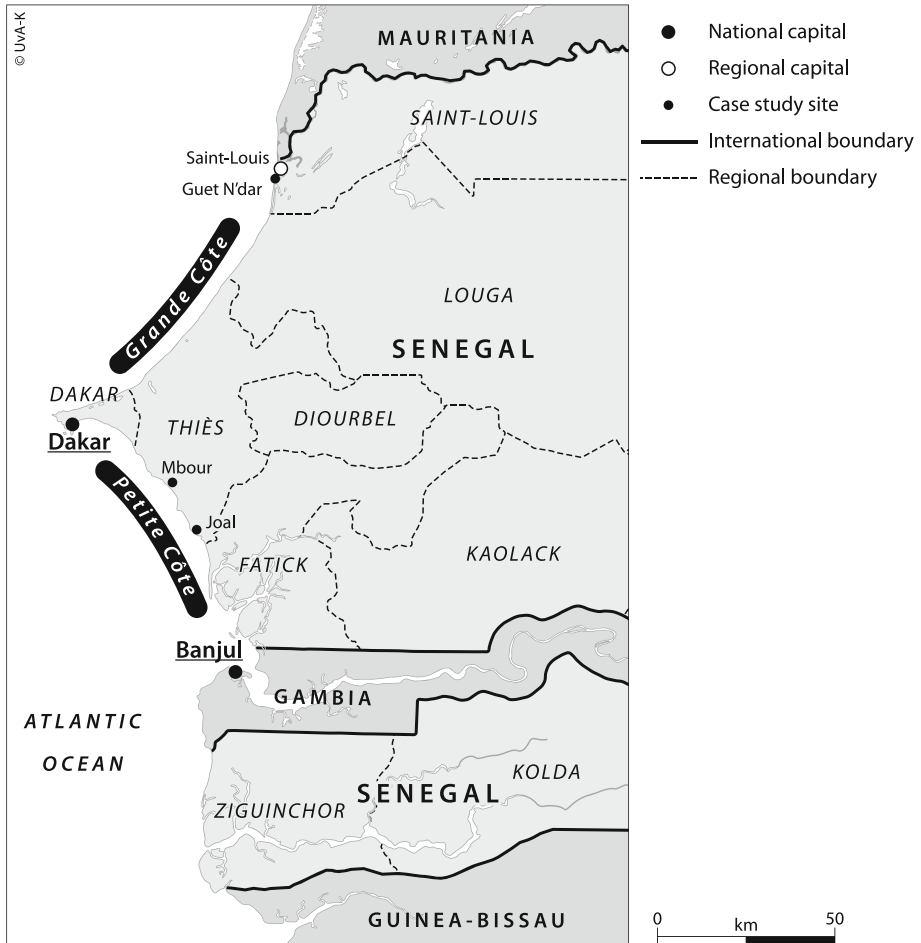


Fig. 1 Research locations Senegal. *Source:* UvA Kaartenmakers

(1995). The present research is part of a larger effort to apply the job satisfaction methodology to fisheries in other regions of the world examining variations that occur with regard to the appreciation of fishing practices. The Senegal case focuses on the *métier* of inshore purse seining for *Sardinella*, making use of large canoes. This gear combination is operated mainly by members of the Lebou ethnic group and the Guet Ndarian in two fishing regions: the Grande Côte in the St Louis area, and the Petite Côte between the Dakar peninsula and the border with Gambia (see Fig. 1).

The paper commences with a short description of the fishery and the research methodology. It subsequently discusses and evaluates the research findings, focusing on the results regarding fishers' willingness to change fishing *métier* and occupation.

2 Research Context

The study took place in three fishing settlements: two on the Petite Côte, Mbour and Joal villages; and one on the Grande Côte, the village of Guet Ndar. Whereas the Lebou ethnic

group is the majority in Mbour, they constitute a migrant community in Joal. The people of the Guet Ndar region are called Guet Ndarians.

Fishers in the three locations use small-scale purse seining nets to catch *Sardinella*. This technology was introduced in Senegal by the FAO in the early 1970s, and has since spread. Each purse seine is operated by two canoes, many of which are now propelled by Yamaha outboard engines. The crew working on each canoe consists of 18–22 men. *Sardinella* is one of the few species in West Africa whose stocks are in relatively good health (subject to regional variations. See below). Since the stocks are readily available in coastal waters, this fishery has low operating costs. Purse seine catches are landed on the beach and invariably channeled to a supply chain orientated to national and West African markets.

The *Sardinella*'s migratory pattern between the waters of northern Mauritania and southern Senegal affects opportunities for this fishery. Between November and July, the fish migrate from north to south, after which—when Senegalese waters warm up—they move north again. Some locations, such as Guet Ndar, enjoy a protracted fishing season, while others, such as the locations on the Petit Côte, have more limited fishing opportunities.

Wider societal developments have had an important effect on the coastal fisheries of Senegal. The rural crises and droughts that occurred in the 1970s caused a large influx of labour from the countryside to the coast. This, combined later with the advent of purse seining—which almost exclusively requires physical strength, thus raising a demand for unskilled labour in the fishery—resulted in two distinct demographics in the small-scale purse seine labour force: people with a recent history and fishers with a long tradition in the profession. This study focuses on the latter.

The village of Joal is located 120 km south of Dakar. Farmers make up a large part of the native population. The fishing profession was introduced by migrants belonging to two different ethnic groups: the “Guet Ndarian” from La Grande-Côte and previously from Saint Louis, and the “Lebou” from La Petite-Côte. Chauveau and Samba (1990) situate the first migratory settlements from La Grande Côte at the end of the 1950s. Many of these early migrants are now settled permanently in Joal.

Located 36 km north of Joal, Mbour's fishers and fish processors depend largely on sardine landings. Mbour is home to one of the highest concentrations of small-scale sardine purse seiners. Unlike Joal, the native population of Mbour dominates the fishing profession.

Located approximately 300 km north of Dakar, Guet Ndar is one of the oldest fishing villages in Senegal. The surrounding Saint-Louis area has some interesting characteristics. Although it is far from the main national fish markets, there are few alternative activities to fishing. The fishing season in this region is longer than in other areas due to the migration trajectory of *Sardinella*. The population takes pride in their fishing occupation, and fishing units are composed on a kinship basis.

In Guet Ndar, and to a certain extent in Joal, there is a strong ‘fisher culture,’ and fishing is organised on the basis of kinship relations. Hierarchy on board is age dependent; elder fishers own the equipment and control the operation of the fisheries. Apprenticeships commence at a young age. Customary mechanisms for regulating conflicts at sea and on land persist.

Organisational differences between fishers in Guet Ndar and the two other villages have an impact on the loyalty young fishers have towards equipment owners. In Guet Ndar, the crews are generally made up of fishers from the same lineage, which limits mobility. Young fishers in Joal and Mbour do not have strong extra-professional relationships with equipment owners and it is instead financial incentives that affect their mobility.

3 Research Methodology

The job satisfaction survey applied in Senegal was based on a format developed for the ECOST project in 2006 (see Bavinck and Pollnac, this volume). The English-language questionnaire was translated into French and tested between May and June 2007. The final version of the questionnaire was administered in the first quarter of 2010 to a sample of 80 small-scale fishers as follows: 20 fishers in Joal, 30 fishers in Mbour and 30 fishers in Guet Ndar.

The survey is comprised of two sections. Part 1 consists of 32 questions, divided into five sets of indicators to measure job satisfaction (see Table 2 for the list of items). The first three sets correspond loosely to Maslow's (1954) hierarchy of needs and investigate the fulfillment of basic life requirements, social requirements and requirements related to Self-Actualisation. Pollnac and Poggie's (1988) list of items constitutes the basis for this section of the survey. In addition to this, two brief sets of indicators were added that capture perceptions of the state of the natural environment, including fish stocks, and perceptions of fisheries management. Respondents were asked to choose from five answer categories ranging on a scale of 1 (very dissatisfied) to 5 (very satisfied).

Part 2 of the questionnaire inquired into the respondent's attachment to his *métier* and the fishing profession. It consisted of three yes/no questions:

- Would you like to give up fishing and move to a different occupation?
- Would you stay within the fishery but move to a different *métier*?
- Would you advise a young adult to enter the fishing occupation?

These questions gain relevance from international concern about the state of marine fish stocks (FAO 2011) and the widely endorsed need to shift fishers to alternative occupations.

The researcher selected respondents through purposive sampling on the beach or in the respective fishing settlements. All respondents were male and active in purse seine fishing. Moreover, they all had a long history of involvement in the fisheries. Recent entrants to the fisheries were excluded from the sample, the assumption being that they would demonstrate a different pattern of job satisfaction. The researcher also made an effort to involve canoe owners as well as crew members in the survey.

Depending on fisher availability, the survey was conducted at different times of day during the small coastal pelagic fishing season, which lasts from November to May. In order to increase the validity of the data, information was triangulated with other research methods, such as observation and unstructured interviews with key informants.

4 Analysis

4.1 Sample Characteristics

Table 1 presents demographic characteristics of the research population. The age of respondents varied from 20 to 65 years, with a high mean of approximately 40 years. This is a consequence of the focus on long-time fishers and the exclusion of recent entrants, who are more likely to be young. Education levels vary from no schooling to college education, with a mean of 6.4 years of school attendance. Note that the survey did not distinguish regular (Western) schooling from Koranic schooling. In northern Senegal, many children begin Koran schools at 5 years of age and continue this schooling into adulthood. As oppose to regular schools, Koran schools do not prepare children for alternative

Table 1 Distribution of demographic variables

	N	Min.	Max.	Mean	SD
Age	80	20	65	38.26	12.168
Education	80	0	16	6.41	4.443
Years fishing	80	5	50	22.28	11.545
Household size	77	2	45	11.10	8.433

livelihoods, although they do teach some basic skills. Respondents had been in the fishing profession for a high average of 22 years. This correlates with the selection criteria of a long history in the profession and with the exclusion of new entrants in the sampling method.

In line with a preponderance of extended families, polygamy and high fecundity in coastal Senegal, the average household consists of 11 members (with size ranging from 2 to 45 members). Fishermen in Guet Ndar tend to get married at a younger age than their counterparts in the other two villages. The strong lineage ties in Guet Ndar cause many young fishers in this area to say that, despite being married and a father, they often do not enjoy much autonomy at home. If their own fathers were still alive, they would bear responsibility for the entire family.

4.2 Central Tendencies for Job Satisfaction Items

Table 2 presents the mean and median scores for the various job satisfaction indicators, with the best and worst scoring items highlighted. It is interesting to note that three of the five highest scoring items are in the realm of Social Needs. They express satisfaction with the quality of the community, the limited time spent at sea and their ability to be their own boss. The other two high-scoring items are in the category of Self-Actualisation and relate to the feeling of doing something worthwhile and to the challenges posed by purse seine fishing.

The lowest-scoring items all fall in the categories of Basic Needs and Management. Respondents are particularly dissatisfied with the level and predictability of earnings and with the fatigue caused by fishing. They are also unhappy with the overall quality of management and the performance of government officials in this regard. Their own influence on management is viewed with dissatisfaction.

4.3 Job Satisfaction Categories

The distribution of mean job satisfaction category scores and their confidence intervals are illustrated in Fig. 2. Mean values for all scores, except Social Needs and Self-Actualisation, fall below the mid-point of 3 indicating general dissatisfaction with the other three components of job satisfaction among Senegalese fishers. As a first step in the analysis, we look at the relationships between basic background, social data and the job satisfaction categories (Table 4).

As shown in Table 3, scores on the Basic Needs and Self-Actualisation categories of job satisfaction increase as age, education and years of experience in fishing increase. Although the correlation is much weaker, but statistically significant, scores on the Social Needs category increase as level of education increases. Age and education are negatively

Table 2 Distribution of scores on job satisfaction items

	N	Min.	Max.	Mean	SD
Safety	79	1	5	3.05	1.250
<i>Predictability of earnings</i>	80	1	5	2.45	0.953
<i>Earnings</i>	79	1	5	2.24	1.123
Mental pressure	80	1	5	3.28	1.147
Cleanliness	80	1	5	2.94	1.554
Hours fishing	79	1	5	2.96	1.160
Healthfulness	80	1	7	2.81	1.137
<i>Fatigue</i>	80	1	5	2.11	0.795
Time to fishing grounds	77	2	5	2.99	1.153
Food security	76	1	5	2.70	1.307
Catch Level	76	1	5	2.51	1.456
Time at sea	78	1	5	3.78	.989
Time away from home	77	1	5	2.49	1.047
Being your own boss	78	1	5	4.19	1.007
Community in which you Live	77	2	5	4.30	0.889
Time for recreation with family	77	1	5	3.47	1.283
Challenge of Job	79	2	5	3.95	.861
Adventure of Job	79	1	5	3.25	1.138
Doing something worthwhile	78	2	5	4.04	0.729
Conflict in fishery	79	1	5	2.81	1.292
Conflict resolution	79	1	5	3.10	1.653
<i>Overall management</i>	78	1	4	2.33	1.147
<i>Performance of gov. off.</i>	78	1	4	2.27	0.976
Rules and regulations	79	1	5	2.46	0.958
<i>Influence over management</i>	74	1	5	2.45	1.049
Condition of landing place	80	1	5	2.90	1.308
Condition of fish stocks	80	1	5	2.77	1.441

Bold = 5 highest; *Italics* = 5 lowest (shared 5th and 6th place)

correlated with the Management score, indicating that older and more educated fishers are more negative towards management. This can be explained by the fact that people with longer life experience and a broader perspective will be more critical towards governance efforts. Finally, scores on the Nature category increase along with age, years fishing and household size and decrease as educational level increases.

Table 4 indicates that there are statistically significant differences in levels of satisfaction with all the job satisfaction categories across the three villages in the sample. Figure 3 indicates that the direction of the differences varies across the different categories. It is interesting that despite holding the most negative views toward Management and relatively low views of Nature, fishers in Guet Ndar are generally positive on the other job satisfaction categories.

Table 5 examines mean values on job satisfaction categories across marital status. Married fishers score higher on the Basic Needs and Self-Actualisation categories. The other differences are not statistically significant.

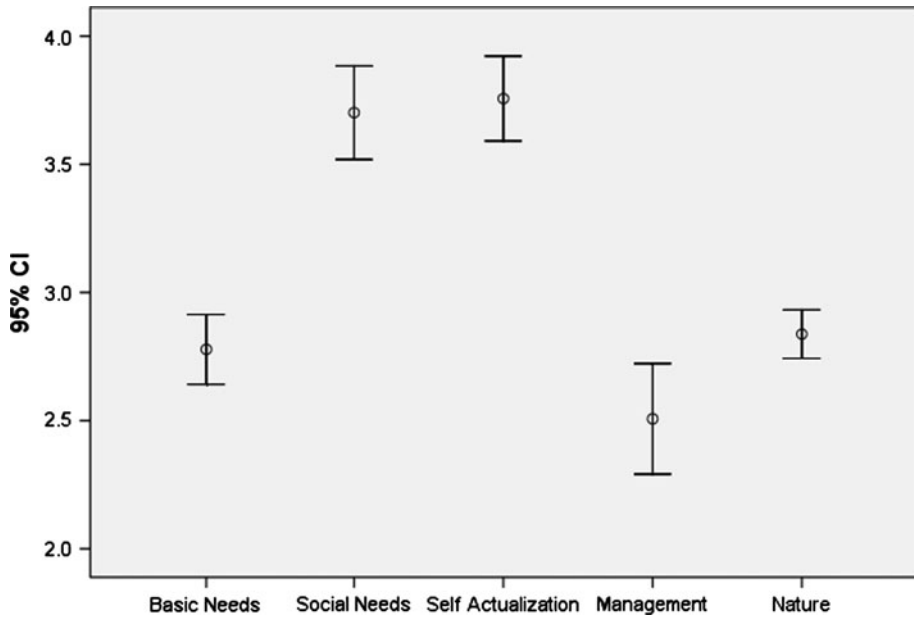


Fig. 2 Mean values and confidence intervals for job satisfaction categories

Table 3 Correlations between job satisfaction categories and selected social variables

	Basic Needs	Social Needs	Self-Actualise	Manage	Nature
Age	0.613*	0.223	0.491*	-0.0240*	0.267*
Education	0.603*	0.291*	0.528*	-0.642*	-0.278*
Years fishing	0.582*	0.223	0.450*	-0.158	0.308*
Household size	0.217	-0.096	0.129	0.089	0.329*

* $p < .05$

4.4 Satisfaction with Management and Nature

Previous studies of job satisfaction did not include the items in the Management and Nature categories. We therefore thought it would be revealing to examine relationships between these two categories and the other three categories that have traditionally been included in job satisfaction research. The results of this analysis are found in Table 6. Table 6 indicates that scores for the Management category decrease as scores for Basic Needs and Self-Actualisation increase. This is counter-intuitive and bears further study. Finally, satisfaction with Social Needs decreases as scores for the Nature category increase. Here again further study is needed to explain the results.

5 Willingness to Change

This section of the paper examines factors influencing willingness to change fishing type, leave the occupation of fishing or advise a young person to fish. The percentage distribution of responses across the three villages can be found in Tables 7, 8 and 9.

Table 4 Job satisfaction category mean values by village

	N	Mean	SD	F value
<i>Basic Needs</i>				
Joal	10	2.37273	0.255158	
Mbour	30	2.53939	0.293303	
Guet Ndar	30	3.15152	0.640752	16.845*
<i>Social Needs</i>				
Joal	11	2.56364	0.265604	
Mbour	30	4.05333	0.457680	
Guet Ndar	30	3.76667	0.757643	26.245*
<i>Self-Actualisation</i>				
Joal	18	3.35185	0.351881	
Mbour	30	3.67778	0.483310	
Guet Ndar	30	4.07778	0.953651	6.627*
<i>Management</i>				
Joal	12	3.27778	0.320458	
Mbour	30	3.08889	0.638385	
Guet Ndar	30	1.61667	0.442368	76.080*
<i>Nature</i>				
Joal	20	3.22500	0.499342	
Mbour	30	2.65000	0.233046	
Guet Ndar	30	2.76667	0.365148	15.917*

* $p < .05$

While overall about one-third (34 %) of fishers said they would be willing to change fishing type, and a little less than two-thirds (63 %) said they would leave the occupation, about the same amount (63 %) said they would not advise a young person to enter the occupation of fishing. The analyses of the distributions in Tables 10, 11, 12, 13, 14, and 15 indicate that the differences between villages in response to all three questions are statistically significant. Overall, the fishers from Guet Ndar are more positive concerning the occupation of fishing than those in Mbour and Joal.

The difference in scores between Guet Ndar and Mbour and Joal may be explained by a combination of two factors. First, there are differences in attachment to fishing. As we noted before, crew members on a canoe typically belong to a single patrilineage in Guet Ndar, and fishing is considered a 'way of life' there. In Mbour and Joal, on the other hand, the recruitment process for fishing has recently changed, and labour derives more and more from outside the family. Urbanisation explains some of these variations. Guet Ndar is located far from metropolitan agglomerations and has maintained a rural character. Mbour and Joal, however, are heavily influenced by the proximity of cities such as Dakar, which causes economic diversification and cultural change. The beach tourism site called 'Saly,' which is located close to these fisher settlements, has a considerable impact.

Secondly, compared to Mbour and Joal, resource scarcity has not emerged as an important concern in Guet Ndar. This is due to the proximity of the village to Mauritanian waters—which possess large stocks of underfished coastal pelagics—and also to the more favourable location of Guet Ndar along the migratory route of *Sardinella*. Combined, these factors result in a longer fishing season.

Table 7 suggests that the majority of purse seine fishers are not willing to change fishing métier. This can be explained by a combination of a few different factors. First, purse

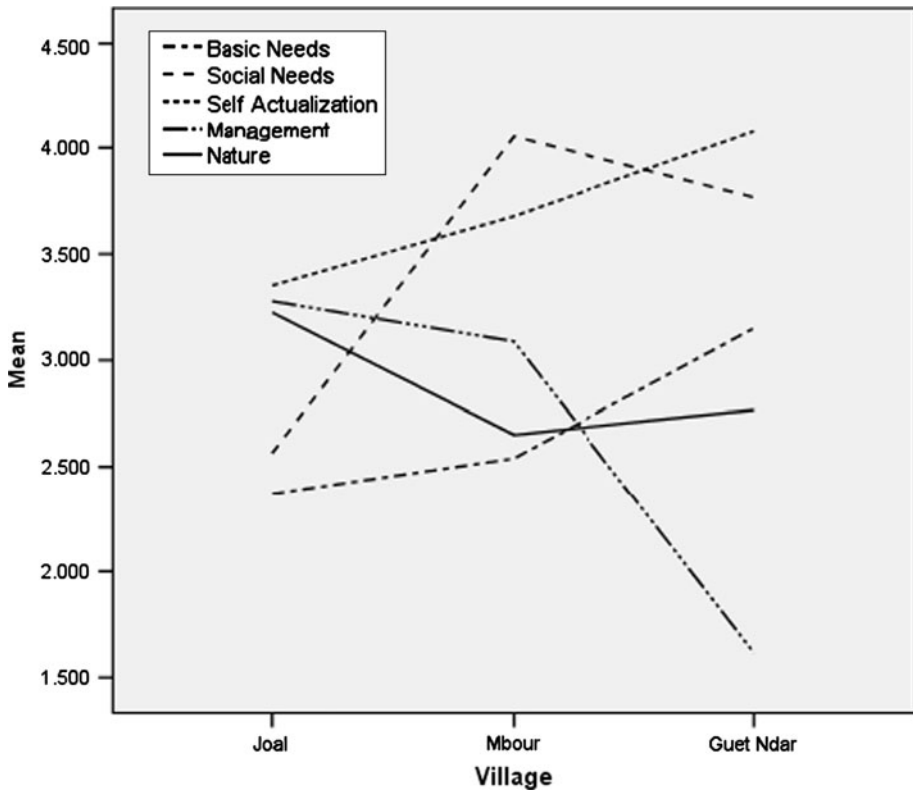


Fig. 3 Mean values for job satisfaction categories across villages

Table 5 Job satisfaction category mean values by marital status

	Marital status	N	Mean	SD	t value
Basic Needs	Single	14	2.54545	0.298332	
	Married	56	2.83604	0.609324	2.550*
Social Needs	Single	13	3.47692	0.826795	
	Married	58	3.75172	0.755156	1.166
Self-Actualisation	Single	14	3.38095	0.726273	
	Married	64	3.83854	0.715148	2.163*
Management	Single	14	2.34524	0.943861	
	Married	58	2.54598	0.914361	0.733
Nature	Single	16	2.71875	0.363719	
	Married	64	2.86719	0.438632	1.249

* $p < .05$; Bold = equal variance not assumed

seining is an active form of fishing that requires less skill and patience than, for example, hook and line fishing. A shift to another fishing métier is therefore not always easy for purse seine fishers to make. Second, equipment owners make significant financial

Table 6 Correlations between job satisfaction categories and attitudes towards management and nature

	Management	Nature
Basic Needs	-0.466*	-0.076
Social Needs	0.150	-0.286*
Self-Actualisation	-0.281*	0.007

* $p < .05$ **Table 7** Per cent distribution of willingness to change fishing type by village

	Joal	Mbour	Guet Ndar	Total	N
No	40.000	93.333	56.667	66.250	53.000
Yes	60.000	6.667	43.333	33.750	27.000
N	20.000	30.000	30.000		80.000

 $\chi^2 = 17.237$; $df = 2$; $p < .05$ **Table 8** Per cent distribution of willingness to change occupation by village

	Joal	Mbour	Guet Ndar	Total	N
No	35.000	13.793	60.000	36.709	29.000
Yes	65.000	86.207	40.000	63.291	50.000
N	20.000	29.000	30.000		79.000

 $\chi^2 = 13.585$; $df = 2$; $p < .05$ **Table 9** Per cent distribution of willingness to advise young to fish by village

	Joal	Mbour	Guet Ndar	Total	N
No	60.000	86.667	40.000	62.500	50.000
Yes	40.000	13.333	60.000	37.500	30.000
N	20.000	30.000	30.000		80.000

 $\chi^2 = 14.009$; $df = 2$; $p < .05$ **Table 10** Mean values of social background variables by willingness to change fishing type

	Change Type	N	Mean	SD	t value
Age	No	53	39.09	11.717	
	Yes	27	36.63	13.083	0.855
Education	No	53	6.57	4.466	
	Yes	27	6.11	4.466	0.431
Years fishing	No	53	23.64	11.594	
	Yes	27	19.59	11.174	1.495
Household size	No	51	11.02	7.622	
	Yes	26	11.27	9.998	0.122

* $p < .05$

Table 11 Mean values of social background variables by willingness to change occupation

	Change occupation	N	Mean	SD	<i>t</i> value
Age	No	29	45.97	13.116	
	Yes	50	33.96	9.221	4.346*
Education	No	29	8.24	4.933	
	Yes	50	5.34	3.842	2.910*
Years fishing	No	29	30.14	11.984	
	Yes	50	17.88	8.668	4.825*
Household size	No	28	14.21	9.492	
	Yes	48	9.35	7.359	2.492*

* $p < .05$; Bold = equal variance not assumed

Table 12 Mean values of social background variables by willingness to advise a young person to fish

	Advise young to fish	N	Mean	SD	<i>t</i> value
Age	No	50	33.92	9.198	
	Yes	30	45.50	13.180	4.233*
Education	No	50	5.60	4.005	
	Yes	30	7.77	4.861	2.160*
Years fishing	No	50	17.84	8.522	
	Yes	30	29.67	12.246	4.656*
Household size	No	49	9.49	7.380	
	Yes	28	13.93	9.506	2.282*

* $p < .05$; Bold = equal variance not assumed

Table 13 Mean value of job satisfaction categories by willingness to change fishing type

	Change type	N	Mean	SD	<i>t</i> value
Basic Needs	No	47	2.78530	0.577586	
	Yes	23	2.76285	0.570854	.153
Social Needs	No	48	3.95833	0.621540	
	Yes	23	3.16522	0.785441	4.247*
Self-Actualisation	No	52	3.83974	0.684374	
	Yes	26	3.58974	0.812719	1.428
Management	No	49	2.64626	0.915171	
	Yes	23	2.21014	0.866342	1.917*
Nature	No	53	2.74528	0.334300	
	Yes	27	3.01852	0.527722	2.825*

* $p < .05$, (1-tailed test); Bold = equal variance not assumed

investments in purse seine fishing and giving up this métier would amount to a loss of capital. Third, in a context of a general depletion of demersal fish stocks, pelagic stocks in Senegal are relatively healthy. Purse seining therefore seems to offer more future perspectives than other métiers.

One observation needs to be made, however. The average score on the willingness to change fishing métier in this study is significantly influenced by the scores deriving from one village (Guet Ndar) where fishers are more satisfied with resource conditions. Generally speaking Senegalese fishers tend to question the return on investments in coastal

Table 14 Mean value of job satisfaction categories by willingness to change occupation

	Change occupation	N	Mean	SD	t value
Basic Needs	No	24	3.18939	.602377	
	Yes	45	2.56364	.426225	4.521*
Social Needs	No	24	4.04167	.530723	
	Yes	46	3.51739	.824703	3.219*
Self-Actualisation	No	28	4.19048	.604704	
	Yes	49	3.50340	.694297	4.372*
Management	No	26	2.12179	1.016046	
	Yes	45	2.71111	.790090	2.546*
Nature	No	29	2.86207	.375513	
	Yes	50	2.82000	.460257	0.418

* $p < .05$, (1-tailed test);
 Bold = equal variance not assumed

Table 15 Mean value of job satisfaction categories by willingness to advise a young person to enter the occupation of fishing

	Advise young to fish	N	Mean	SD	t value
Basic Needs	No	46	2.55731	0.377809	
	Yes	24	3.20076	0.645045	4.501*
Social Needs	No	46	3.53478	0.794486	
	Yes	25	4.00800	0.628437	2.754*
Self-Actualisation	No	49	3.51020	0.670482	
	Yes	29	4.17241	0.652350	4.258*
Management	No	46	2.68478	0.795999	
	Yes	26	2.19231	1.042105	2.090*
Nature	No	50	2.81000	0.461696	
	Yes	30	2.88333	0.363966	.742

* $p < .05$, (1-tailed test);
 Bold = equal variance not assumed

small pelagic fisheries, because *Sardinella* has a low commercial value. The frequent incidence of bulk landings serves to reduce landing prices and fisher income.

Table 8 examines fishers' willingness to leave the sector entirely for another job. The respondents in Mbour appear especially eager to shift occupation, whereas the majority of fishers in Guet Ndar are reluctant to do so. Joal occupies an in between position. Urbanisation processes explain the results found in the respective villages. Mbour has become a tourist destination and, consequently, more employment alternatives are available. In contrast, Guet Ndar is more geographically isolated, with small-scale fisheries constituting a unique source of livelihood.

Table 9 investigates respondents' willingness to advise young people to enter fishing. In light of the variations we have already noted above, it is no surprise that the majority of fishers in Guet Ndar would still recommend the fishing profession, whereas in Mbour they would most likely not do so. Here again Joal occupies a middle ground, with slightly more respondents advising against the fishing profession.

We now examine the above responses in relation to background social variables as detailed in Tables 4 through 6. Table 10 indicates that none of the social background variables are associated with attitudes towards changing fishing métier. In contrast, Table 11 indicates that fishers who are older, have more education, more years fishing and

larger household sizes say they would not leave the occupation of fishing altogether. Finally, the same cohort of fishers (older, more educated, more years fishing and larger households) indicates that they would advise a young person to enter the occupation of fishing (Table 12).

We suggest that the position of older and more experienced fishers, as brought out in Tables 11 and 12, is explained by referencing culture. Despite the worldwide fisheries crisis, of which Senegalese fishers are generally aware, the older generation views fishing not only as a way of meeting daily needs, but a way of life. Not only is the loss of fishing gear considered a shame, one's prestige and authority in the community depends on the position one occupies in the fishery. Finally, the young are expected to take care of the elderly in rural societies. Advising young people to enter the fishery can be viewed as a way of ensuring one's own subsistence at an old age.

Next, we turn to relationships between willingness to change fishing type, leave the occupation of fishing and advise a young person to fish and marital status. About one-third (33 %) of the married and 38 % of the single fishers say they would change fishing type ($\chi^2 = 0.726$, $df = 1$ $p > .05$). Three-fifths (60 %) of the married and three-quarters (75 %) of the single say they would leave the occupation of fishing ($\chi^2 = 1.184$, $df = 1$ $p > .05$). Finally, 40 % of the married and 25 % of the single fishers would advise a young person to enter the occupation ($\chi^2 = 0.363$, $df = 1$ $p > .05$). None of these differences are statistically significant.

We turn now to the relationship between willingness to change and the levels of job satisfaction. The assumption here is that the higher the satisfaction, the less willing a fisher will be to change fishing type or leave the occupation of fishing, and the more willing he should be to advise a young person to fish. Mean values on job satisfaction categories in relation to responses to these questions are examined in Tables 13 through 15. Since we predict the direction of the relationship, one-tailed statistical tests of significance are used.

Table 13 indicates that fishers willing to change fishing type score lower on the Social Needs and Management satisfaction categories (predicted direction) and higher on the Nature category (opposite of the predicted direction). As shown in Table 14, fishers willing to leave the occupation of fishing score lower on the Basic Needs, Social Needs and Self-Actualisation job satisfaction categories (predicted direction) and higher on the Management category (opposite of the predicted direction, Table 8). Finally, those who score highest on the Basic Needs, Social Needs and Self-Actualisation job satisfaction categories (predicted direction) and lowest on the Management category (opposite of the predicted direction) would advise a young person to enter the occupation of fishing (Table 9).

The correlations that are in opposition to the predicted direction require further study to be adequately explained. They are possibly related to the relative scarcity of questionnaire items in the Nature and Management categories and to the possibility of multiple interpretations for each item.

6 Conclusion

This paper reports on the findings of a job satisfaction study of 80 purse seine fishers that target small pelagics (*Sardinella*) in rural Senegal. This study is part of a larger effort to compare job satisfaction between different geographical regions and types of fisheries in the world. It was carried out in three locations along the Senegalese coast that differ primarily in their isolation and their degree of urbanisation. Whereas one settlement (Guet Ndar) along the Grande-Côte is geographically isolated and rural in nature, the others

(Mbour and Joal) are located in proximity to cities. This has resulted in the availability of alternative livelihoods, such as tourism, and in changing cultural perspectives. The differences between the three locations constitute one of the most important conclusions of this job satisfaction study.

The first part of the survey collected responses with regard to job satisfaction in five categories: Basic Needs, Social Needs, Self-Actualisation, Management and Nature. It is interesting to note that respondents are generally more satisfied with the extent to which the fishery allows them to meet Social Needs and aspects of Self-Actualisation. They are generally dissatisfied, however, with both the extent to which the fishery allows them to meet Basic Needs and with the way in which the fishery is managed. Average scores on the quality of the marine and coastal environment also show dissatisfaction, with fishers in Guet Ndar, who experience more favourable natural conditions, being more positive than fishers in the other two locations.

We paid close attention to the results of the second part of the survey, which investigates willingness to change from one fishing métier to another, and from fishing to another occupation altogether. This section also included a question on whether respondents would advise young people to enter the fishery. Here the differences between the three fishing settlements emerged in full force, with the more isolated, rural settlement evincing little interest in change. This was explained with reference to fishing as a way of life. In the other two settlements, which are more exposed to urban influence, a majority of respondents expressed a desire to change from the fishing occupation as well as an inclination to advise young people against entering the fishery. This was linked to the availability of other sources of income, as well as to deteriorating natural and economic conditions in Senegal's purse seine fishery.

Acknowledgments The author is grateful to the project entitled Ecosystems, Societies, Consilience, Precautionary principles: development of an assessment method of the societal costs for best fishing practices and efficient public policies (acronym ECOST), which supported his research. He is also grateful to Richard Pollnac for support with regard to statistical analysis.

References

- Apostle, R., Kasdan, L., & Hanson, A. (1985). Work satisfaction and community attachment among fishermen in Southwest Nova Scotia. *Canadian Journal of Fisheries and Aquatic Science*, 42, 256–267.
- Binkley, M. (1995). *Risks, dangers, and rewards in the Nova Scotia Offshore Fishery*. Montreal, QC: McGill-Queen's University Press.
- Chauveau, J. P., & Samba, A. (1990). Histoire de la pêche artisanale maritime et des politiques de développement de la pêche au Sénégal » Un développement sans développeurs. Réflexions et perspectives (Vol 1). ISRA.
- CRODT-ECOST. (2009). Case study of the Senegalese marine fisheries. <http://www.ird.fr/ecostproject/doku.php>. Accessed 22 April, 2011.
- FAO. (2011). *The state of world fisheries and aquaculture*. Rome: FAO.
- Gatewood, J. B., & McCay, B. J. (1988). Job satisfaction and the culture of fishing: A comparison of six New Jersey fisheries. *Maritime Anthropological Studies (MAST)*, 1(2), 103–128.
- Maslow, A. (1954). *Motivation and personality*. New York: Harper and Row.
- Pollnac, R. B., & Poggie, J. J. (1988). The structure if Job satisfaction among New England fisheries. Anthropological working paper N° 31, Kingston, RI: International center of marine resources development.