RISKS ASSOCIATED WITH LAGOON AND COASTAL SMALL SCALE FISHERIES IN AMVRAKIKOS GULF, WESTERN GREECE

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ABSTRACT

Risks associated with fisheries conducted by professional fishermen in lagoons and open sea (along the coast) was investigated in the area of Amvrakikos Gulf (Western Greece; N30°0'00.0"- E21°0'00.0"). Amvrakikos Gulf is fjord-like elongated gulf with an area of 405 km² and a maximum depth of 55 m (though most marine area exhibits depths below 25 m) located in Western Greece. Along the coastline of the Gulf there are more than 20 large and small brackish water lagoons, from which the north lagoon complex is the largest in the Balkans with an area of 55 km². The lagoons are exploited for fisheries by local professional fishermen cooperatives while there are other professional fishermen who fish along the gulf coastline outside the lagoons. The information on coastal fishery typology and risks were collected directly from the fishermen by using a face-to-face approach for the completion of structured questionnaires suitable to build mental maps. The paper presents the results of the mental mapping of the lagoon and coastal fishermen, the analysis of the data and the comparison of the overall mental maps.

Introduction

The Greek small scale fisheries is the most important segment of the national fisheries sector comprising of 15407 vessels out of the 15921 vessels in the national fleet (EU fleet register, accessed 30-09-2013) which mainly fall in the LOA category of 0-6 m. Risk perception in the fisheries sector is strongly related to their common understanding of the resource status, the concern expressed on the resource state by the scientists and the subsequent management regimes enforced by the administration. As the fishermen are low level stakeholders the management regime has the greatest impact on their risk perception. This paper aims to the identification of risks related to coastal fisheries, the quantification of the perceived links between risks and the comparison between risks related to lagoon professional fisheries and coastal water professional fisheries

Materials and Methods

Information on the risks perception by the small scale fishermen were collected using structured questionnaires and face-to-face interviews with professional small scale fishermen from the area of Amvrakikos Gulf, Western Greece (Ionion Sea; Fig. 1). The questionnaires were collected from 20 fishermen members of the cooperatives that rent the Tsoukalio and Logarou lagoons (Fig. 1) as well as 30 coastal fishermen operating in the gulf. The interviewees were requested according to their experience (a) to identify the risks, (b) rank the risks identified in terms of significance within a scale 0 to 1 and (c) identify the dependencies between the risks by interconnecting those risks (mental map).

Results and Discussion

The results of the risks identified for the coastal fishermen and the lagoon fishermen, are summarised in Tables 1 and 2. Grouping the risks proposed by the 2 groups of interviewees in 8 risk categories: conflicts within the sector, conflicts between fisheries and other sectors, impact of environment on fisheries, impact of fisheries on the environment, economic risks, administration risks and working environment, we obtain Figure 3. It is evident that the 2 fishermen groups show interest in different risks. Professional coastal fishermen are more interested in the conflicts with the administration (coast guard and regional fisheries authorities) as well as conflicts within the fisheries sector (sport fishermen). On the contrary, lagoon fishermen are more interested for the environmental quality of the lagoons and its effects on production, conflicts with poachers (within the sector) and the economic value of their products for the market and exports. According to PCA and k-means clustering, there are 3 clusters formed: between economic and conflicts between sectors, impact of environment to fisheries and vice versa and between conflicts within the sector and the working environment risks. Mental model maps were produced using all the risks (common and uncommon) identified by each interviewee. (Figs. 4 and 5).

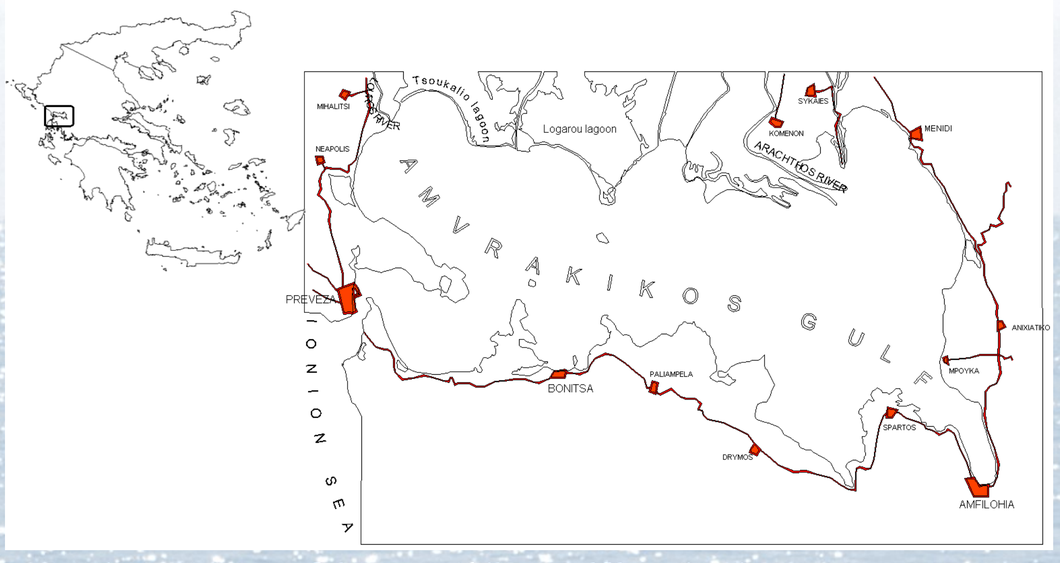

Figure 1. Map of the Amvrakikos Gulf location in Western Greece

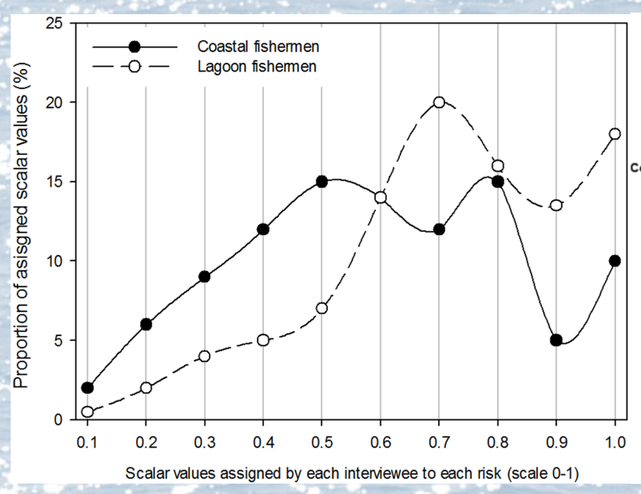

Figure 2. Proportion of scalar values assigned to the individual risks by the interviewees

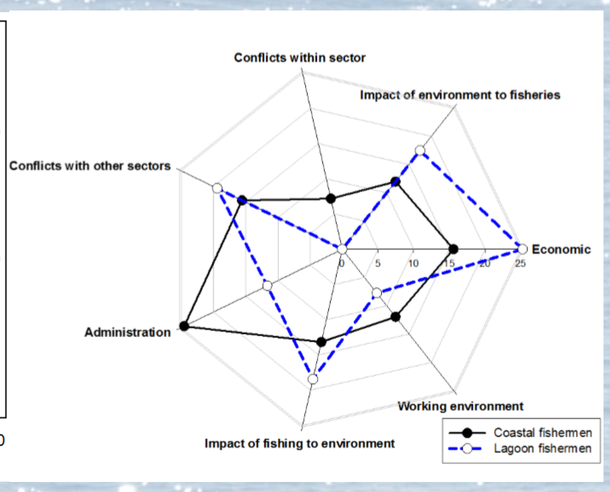

Figure 3. Proportion of major risk groups identified by the interviewers (as % of total)

Table 1. Risk register: summary of key risk identified by coastal professional fishermen

RISK	FREQUENCY	AVERAGE	VARIANCE	STANDARD DEVIATION	RANK
Fishing costs	26	0.864	0.011	0.103	1
Conflicts with sport fishing	20	0.764	0.087	0.294	2
Reduction of stocks	17	0.618	0.084	0.289	3
Application of legislation	15	0.400	0.024	0.155	4
Safety at sea	15	0.318	0.062	0.248	5
Problems with central administration	14	0.282	0.088	0.296	6
Inappropriate national legislation	12	0.273	0.052	0.228	7
Pollution	12	0.264	0.075	0.273	8
Illegal fisheries	12	0.227	0.052	0.228	9
Conflicts with aquaculture	6	0.227	0.054	0.233	10
Inappropriate infrastructure	5	0.164	0.047	0.216	11
Reduction of fishing grounds	5	0.155	0.037	0.192	12
Impact from protected species	4	0.145	0.051	0.225	13
Climate changes	4	0.136	0.045	0.211	14

Table 2. Risk register: summary of key risks identified by lagoon professional fishermen

RISK	FREQUENCY	AVERAGE	VARIANCE	STANDARD DEVIATION	RANK
Illegal fishing by poachers	20	0.864	0.011	0.103	1
Low annual production levels	19	0.318	0.062	0.248	2
Impact from protected species	19	0.789	0.077	0.345	3
Environmental state of lagoons (especially salinity)	18	0.764	0.087	0.294	4
Market (local and international)	16	0.400	0.024	0.155	5
Inefficient cooperation between state agencies - bureaucracy	12	0.618	0.084	0.289	6
Minimal budget for supporting works	10	0.282	0.088	0.296	7
Lack of experienced staff	8	0.273	0.052	0.228	8

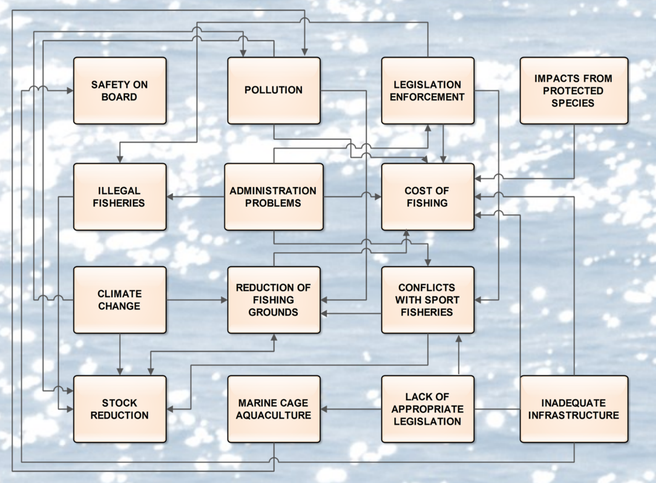

Figure 5. Mental model map of coastal professional fishermen

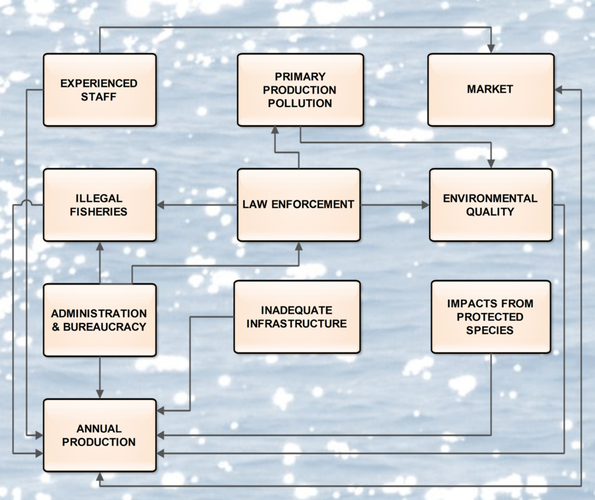

Figure 6. Mental model map of lagoon professional fishermen