



Overlapping identities: The role of village and occupational group for small-scale fishers' perceptions on environment and governance

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ABSTRACT

Resource users' perceptions are crucial for successful marine governance because they affect community support, participation and legitimacy. Efforts have been made to understand how fishers' attitudes, understandings and interpretations of the environment and its governance emerge in small-scale fisheries. However, many quantitative studies have focussed on how individual-level attributes like socio-demographics are associated with perceptions, ignoring a fundamental scale at which humans arrive at their views about the world – the social group. In multi-gear fisheries, fishers typically cluster in two overlapping types of group: occupational groups (defined by fishing gear) and village communities. Taking into account also individual-level variables, which group type is more associated with particular environmental and governance perceptions, e.g. about change in fish stocks, collective action or appropriate management actions? Through questionnaires in combination with multivariate and multi-model inference, this study reveals that, among fishers in two villages in Zanzibar ($n = 172$), village is more associated with perceptions than occupational group or any other factor. Further, individual attributes like education and age influence perceptions. The main finding implies that the role of social-cultural processes might have been underestimated in quantitative research on resource users' perceptions. This has consequences for policy and research and shows that both can be informed by statistical analyses that disentangles effects of different levels of group belonging.

1. Introduction

Successful governance in small-scale fisheries requires community support, participation and legitimacy. Multiple frameworks like interactive governance [14,42], the social-ecological systems approach [55], or (adaptive) co-management [10,28] emphasise the need to understand and promote support of and involvement in management actions by local resource users. Support hinges a lot on what people think about and how people experience the system-to-be-governed and the governing system [11,8]. Consequently, a growing body of literature has been dedicated to the question of what shapes perceptions on environmental and governance processes and how this affects governance outcomes¹

[2,3,8,9,13,16,17,20,24,29–31,34,43,47,49,50,52,57,63,64]. In this article, the term perceptions is used to cover the related concepts of

attitudes (i.e., positive or negative evaluations and judgments), understandings (i.e., mental models of cause-effect relationships) and interpretations (i.e., awareness of and beliefs about the state of the world). Although these concepts are not used consistently in the literature and can overlap, our definition captures the basic idea that perceptions entail cognitive-interpretive (how something is) and judgmental-normative (how something should be) dimensions [11,8].

Perceptions constitute an important target for sustainability and conservation research for multiple reasons. For example, in the environmental psychology literature, pro-environmental behaviour is typically viewed as a result of intentions, which are themselves based on attitudes towards and awareness of environmental processes [11,54,6]. Turning to the marine environment, there is evidence from fishers [13] and national park visitors [2] that underlying perceptions are indeed associated with behaviour. Further, how coastal populations view the

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¹ This is not to say that perceptions are not themselves also outcomes of governance processes and interactions. They are continuously debated [42] and as co-evolve with the management process [11,30].

legitimacy of management measures as well as their social and ecological consequences affects acceptance and, ultimately, compliance behaviour [44,66,9]. On a larger scale, heterogeneity in perceptions on “how the resource is to be used and managed” has been shown to be negatively correlated with sustainability outcomes in a meta-analysis on fisheries commons [64]. Besides influencing behaviour, perceptions can be important proxies of well-being themselves. For example, fear of resource degradation may directly impair happiness and life satisfaction of resource users.

Hence, “[p]erceptions are an indispensable form of evidence that is useful at all stages of conservation from planning and implementation to ongoing management” ([8], p. 586). Though the importance of local resource users’ environmental and management perceptions has been stressed repeatedly, it remains less clear which factors shape perceptions [11]. Arguably, this is of particular importance in fisheries, because the ecological environment is particularly uncertain, diverse and complex, and thus allows for strongly divergent interpretations and valuations across and within stakeholder groups [35,48].

It is widely acknowledged in the social sciences that social groups play a decisive role in the formation of attitudes, understandings and world views. Yet, surprisingly, many studies on perceptions of fishers focus primarily on how they are associated with individual-level attributes and exclude studying group variation by design or analysis (e.g., [16,17,43,44,66]). Whilst it is important to understand within-group variation arising from socio-economic or demographic differences, community-based governance is an inherently social endeavour and a “group behaviour” [11]. This requires to ask how perceptions differ not only between individuals, but also between social groups.² There are good reasons to expect substantial between-group variation at different societal scales.

Comparing groups might capture heterogeneity along more subtle dimensions that otherwise remains unobserved, because it is produced in group processes [11]. For example, social norms or “cultural-cognitive institutions” [24] regarding resource use might differ between communities, while not being reflected in socio-economic or demographic variables, but emerging from social and cultural learning within groups [27,5,60]. For example, Gelcich et al. [29] show between-group variation in attitudes towards co-management between fishing cooperatives from different parts of Chile. Much of the variation remains unexplained by individual livelihood and socio-economic attributes alone. The authors suggest that social norms could play a role. A similar divergence of perceptions, unexplained by differences in socio-demographics like fishing experience or education, was found between Indonesian fishers from two different subdistricts [34]. Explicitly comparing individual- and group-level drivers among Philippine fishers, Chaigneau and Daw [13] demonstrate that village is an important predictor of attitudes towards protected areas which could not further be explained through observed individual attributes. They conclude that “community support needs to be understood at both an individual and a community scale” (p. 505), and call for more multi-level studies to properly understand how perceptions of resource users are formed. This is particularly important in contexts where people engage in multiple overlapping and nested groups simultaneously with potentially different cultures, habits and social identities [11,12]. This multidimensionality of social group membership is salient in multi-gear small-scale fisheries: fishers belong to a village community, but also to a group defined by the fishing gear they use. What do these two types of group belonging imply for fishers’ environmental and governance

perceptions?

Tacking this question, this study extends the conceptual scale of previous studies on perceptions and considers how a variety of environmental and governance perceptions are associated with factors on the individual level (socio-demographics), as well as on the level of two salient types of overlapping groups: the village community and the subgroup defined by the gear type. In accordance with Crona and Bodin [19], the latter will be referred to as the *occupational group* of a fisher.

The selected study site is the inshore fisheries of Chwaka Bay in Zanzibar, Tanzania. As multi-gear, multi-species fishery, it is representative for many small-scale coastal resource systems in the Western Indian Ocean region [15,49]

The study area offers a unique window into the individual and group-level correlates of fishers’ perceptions. Conflicting views are abundant between both occupational groups and villages in Chwaka Bay and threaten governability and long-term sustainability [21,46]. Both types of overlapping “communities”, village and occupational group, have been identified as salient sources of identity, narratives and economic interests among fishers in the area in qualitative research [24,51]. Yet, to our knowledge, a systematic quantitative analysis of how heterogeneity in various environmental and governance perceptions is explained by one relative to the other type of group identity is missing, both for the local system and in similar multi-gear fisheries. That is the aim of this study.

2. Local background and research questions

This study examines various perceptions about the environment and human-environment interactions among two neighbouring fishing villages in Chwaka Bay, Zanzibar, Tanzania: Chwaka and Marumbi (Fig. 1). The Bay is a shallow-water ecosystem comprised of multiple productive habitats (seagrass meadows, mangrove forests, reef patches, tidal flats) which are the main source of local livelihoods. The area is rural and poverty is widespread. Fishing is the major occupation among men, while many women use the coastal habitats to collect invertebrates or to farm seaweed [26,33,37]. There are indications that coastal resources are over-exploited and long-term sustainability is under threat [36,38,61]. This has been attributed to the high dependence on fisheries resources, weak or misfitting governance institutions and the vulnerability of habitats to destructive fishing practices [24]. Gear and mesh size restrictions by the Department of Fishery and Marine Resources (DFMR) are in place, but are not effectively enforced [21,22].

Socio-cultural heterogeneity between villages and groups of different gear types in the Bay is high and clashes between resource user groups have been abundant in the past [21,24,46,51]. A recurrent theme of disagreement is the exploitative and destructive use of dragnet techniques in seagrass meadows where fish recruitment takes place and where trap fishers employ their traditional, passive gear [25]. Dragnet fishing is exclusively carried out by fishers from Chwaka. However, also other gears are used in Chwaka (see [Supplementary material](#) for village distribution of gear types in the sample). This exemplifies how village and occupational group overlap in the area, which bears the interesting question which type of group identity plays a more important role in shaping perceptions – or, more generally, at which societal level people answer for themselves the fundamental questions of how a resource is to be used and managed.

Why should one expect village residency to have predictive power for perceptions? The role of the village belonging for marine governance perceptions, even when accounting for individual socio-economic characteristics, has been demonstrated previously [13]. Village captures emergent community-level processes that are hard to measure at the individual level (e.g., institutions, social learning, conformity, leadership), but also differences that might be due to geography (e.g., exposure to environmental factors). In the specific context of Chwaka Bay, institutional differences (e.g., regarding market participation,

² Note that the transition from individual-level to group-level characteristics is sometimes not treated rigorously in the literature on resource users’ perceptions. For example, one can define “groups” through aggregating individuals by demographics, e.g., by level of education, age or wealth [43]. However, this article understands groups as defined by social and economic organization with interaction and interdependence between its members [11,67].

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