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Shark management strategy policy considerations: Community preferences, reasoning and speculations

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ABSTRACT

Shark management is contested and community support often influences policy. Decision makers are unlikely to be comfortable explaining policy solely based on expert advice, scientific data, or any information, if they feel out of touch with important stakeholder thinking. This study explored community attitudes to shark management and also reasons for preferences. It used Appraisal to analyse comments related to the NSW Shark Management Strategy in Twitter and public Facebook sites over one year, and focus groups with beach and ocean end-users. Most harm mitigation and research strategies were supported, with drones and Clever Buoys the preferred concepts. Mesh nets were widely criticised. The most common reasons given for strategy preferences emphasised the likelihood of harm to sharks and other marine species, cost efficiency, and likelihood that a strategy would generate fear or reassurance. Findings emphasised hope that detection, deterrent and surveillance technologies will improve efficacy of shark harm mitigation in the future. Importantly for policy makers, the findings elaborate simple preference information, revealing multidimensionality in attitudes concerning shark harm mitigation strategies, and explaining associations and thinking. The study highlights the importance of listening to communities and carefully planning and adapting policy communication.

1. Introduction

Community support is an important driver of policy and it is increasingly advisable to engage publics in marine environment governance issues [1,2]. Australian governments, especially in NSW and Western Australia, face pressures to develop or modify shark management policies [3]. Recently there have been significant government reviews of shark management policy and harm mitigation options, including one in NSW by the state Legislative Assembly [4], and another nationally by a Senate Environment and Communications References Committee [5]. These reviews and their recommendations underscored the complexity of problems, contexts, interests and options. However, decision-makers must contend with very public calls for direct solutions, such as this news site report: 'WA senator Linda Reynolds has expressed disappointment a Senate inquiry into shark mitigation and deterrent measures did not produce a clear plan to address increasing shark attacks in WA' [6].

Environmental programs often lack clear evidence of causal effects and benchmark indicators [7] and community attitudes to wildlife management are highly nuanced and multidimensional [8]. Local contexts are complex, complicated by timing and severity of threat or harm, density of human population, and nature of management actions proposed (e.g. lethal v non-lethal) [9]. Perceptions are further complicated by experiences with and characteristics of species [10], and even their perceived motivations. For example, perceptions of shark intentionality when humans sustain injury have been found to influence support for lethal shark management policies [11].

Sharks are the focus of emotional interest related to tourism, conservation and public safety [11]. Traditional forms of media (television, newspapers and radio) continue to find sharks extremely newsworthy, and there have been calls for less sensationalism and greater accuracy in coding and reporting of shark-related incidents [12]. Media attention to shark-related incidents led to implementation of a harm mitigation program in Western Australia in 2013 [13]. The rise of social media over the past decade has coincided with an increase in shark-related incidents in Australia, and extensive and repeated sharing of powerful images and stories about sharks from a range of viewpoints. Interest groups can very quickly make their views appear widespread [13]. The importance of a view may not be the truthfulness of its content or the contribution to useful dialogue, but the magnitude of its circulation [14]. The combination of traditional and social media has made policy communication more complex, immediate and constant. Authorities

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and decision-makers have reason to fear becoming the focus of baying online mobs [15], but systematic approaches to social media listening can yield valuable insight and wisdom for policy makers [16,17].

This paper presents a study of beach and ocean end-user perceptions of shark management strategies in NSW intended to gather information for an authority responsible for policy and implementation of shark management. The review section reflects on information needs of those required to develop and communicate policy to diverse and competing stakeholders, and the most common methods for gathering community attitudes to sharks. It considers possible benefits from gathering information from social media before introducing the context for the study, the methods for gathering and interpreting attitudes, and the findings and discussion. The paper contributes to understanding of community preferences concerning shark management, importantly for policy makers, it elaborates on preferences with insight into community reasoning, perceptions of unintended consequences, and ways they speculate about the future and opportunity costs.

2. Review

2.1. Justifying policy decisions to diverse stakeholders

Policy will never please all, but decision makers need to be able to justify their decisions to a range of publics [18–20]. Good outcomes often depend more on favourable social attitudes and political conditions than accuracy in information about ecology. Quantitative information about stakeholder values and preferences can provide valuable information about where conservation or other initiatives are likely to be welcomed or rejected by communities [21]. However, decision-makers are unlikely to be comfortable explaining policy solely on the basis of expert recommendations, or scientific, or demographic or anecdotal evidence.

> Numbers are a useful way to illustrate a point, but are rarely decisive. Many academics may regard the final result of a data run as the basis of reportable and publishable research. Decision makers will be more cautious. For them, numbers are a way of illustrating a plausible argument—not the argument itself [20, p.114].

Insight into complexity and different perspectives should enable decision-makers to develop and justify policy decisions more comprehensively, and improve mutual authority/community understanding and support. Those who make decisions benefit from advice about the feasibility of different options [21], and would also be advantaged by insight into community perceptions of negative consequences of certain policy actions and opportunity costs [20]. Opportunity cost here refers to the cost of not investing the same resources another way. It is an example of 'counterfactual thinking', mentally constructing 'what might have been', as one way of judging [22,23] or reasoning for persuasion [24]. Familiarity with reasoning enables decision makers to assess arguments for claims [25] and to align policy communication with stakeholder interests. In Western Australia community lobby groups advocated policy to improve public safety while scientists advocated protection of for marine ecosystem health [13].

An analysis of problem definitions and authority responses to shark-related harm to bathers in NSW over many decades reported policy success where approaches were seen as practical, affordable, and visible in ways that boost beachgoer confidence [26].

> Politicians, scientists, researchers, and surf lifesavers each articulated different problems, narratives and solutions following these shark bite incidents. The actors whose definitions were judged believable by the public, provided a complete and workable solution, and shared compatibility with other problem definitions, were the most likely to be successful [26, p.89].

A media discourse analysis study in Western Australia examined relationships between media, public pressure and shark policy. It reported positive correlation between public pressure and policy response, but low association between media framing and policy response. The researchers said that Australian governments need to investigate 'the viability and receptiveness of alternative shark management strategies among the general public' [3, p.275].

In deliberation about policy and communication of decisions, governments would be advantaged by insights into attitudes of constituents not usually heard from. Ideally, methods used to obtain input from communities into human-wildlife interaction policy should reach out to [19] and gather data from numerous stakeholders [27], including those not directly affected or less likely to make their voices heard [8,28], be sensitive to fluctuations across time and contextual changes [11], the nuances of perception [29], and account for the complexity and reasoning for attitudes [27]. Evidence for policy should include science and counts and trends, but without anecdote and illustration of consequence and lived realities, this will seldom be enough to communicate convincingly with stakeholders [20].

2.2. Gathering community sentiment about sharks

The main approaches used by authorities for obtaining public sentiment concerning shark tensions are measuring community attitudes [30] and open consultation through public meetings and hearings. Similar approaches also dominate collection of community attitude data concerning terrestrial species issues [29], but all methods have limitations to the type of information they provide and their utility. Surveys focus on specific aspects of issues deemed important by authorities and their researchers [29]. Events such as public hearings and attempts to solicit public opinion gravitate towards hearing from 'the usual suspects' [18, p.186] and 'organised special interests' [29]. Councils, business, industry, and organised action groups are better prepared and resourced to make effective representations 'than most individual citizens and small communities' [18, p.179] and wider public input is limited [29].

2.3. Using social media for insight into community attitudes

Social media provide an abundant source of community attitudes on a huge range of topics of interest to policymakers [31]. Authorities are increasingly interested in developing strategies that draw insights, ideas and attitudes from digital spaces, both owned and not owned by the authority [16,17]. Attitude data gathered from social media is generally not assumed to be representative of whole populations in the manner of randomised surveys. However it has been suggested that social media content may 'effectively predict social phenomena to the extent that social media distils or summarizes broader conversations that are also measured by surveys' [32, p.180]. Social media analysis aids the development of 'nuanced understanding of public viewpoints useful when making decisions and creating outreach and education programs' [29, p.454]. The spontaneous and naturalistic language in social media 'data' is often very rich and representational of community thinking [33]. However, study of social media requires new methods that accommodate complexity, irregularity and context. Messages are often presented sporadically and otherwise irregularly [8], and moods and emotions are expressed through a range of modes of communication [34,35]. More complex attitudes tend to be expressed through language, which is used to communicate attitudes to phenomena, interactions, groups and behaviours [36,37]. Attempts to interpret community sentiment online tend to seek automation in order to efficiently process large amounts of data. However, automation requires coding simplification and tends to yield data that is less nuanced. This study manually coded attitudes expressed through the naturalistic language of social media to contribute to a study of perceptions of sharks.