Attitudes to a marine protected area are associated with perceived social impacts

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Highlights

- Social impacts of the MPA are not distributed uniformly among stakeholders
- Negative stakeholder impacts resulted in strong negative attitudes towards the MPA
- Most common adverse impacts are feelings of fear, stress, uncertainty and inequity
- Feelings persisted despite acknowledgement the MPA had limited impact on fishing
- Impacts can be similar in scope to those in developing countries

Keywords

Marine protected area; Marine park; Social impacts; Impact assessment; Attitudes; Perceptions

Abstract

Marine protected areas (MPAs) conserve marine biodiversity and ecosystems by limiting or prohibiting resource use in specific areas. Reduced access to a marine resource will invariably impact local communities which reside nearby and utilise those resources. Social dimensions are recognised as crucial to the success of MPAs in meeting environmental goals, however, these dimensions are poorly understood. While much research is focused on developing countries, the majority of recent growth in MPA coverage is occurring in more economically developed settings. This research aims to address this gap by exploring the diversity of social impacts associated with an established MPA on the mid-coast of Western Australia. A range of extractive and non-extractive stakeholders were interviewed to identify the type of impacts experienced and how these are associated with attitudes towards the MPA. The results demonstrate there is a strong association between the nature of the impacts experienced by stakeholders and their attitudes. The social impacts are not distributed uniformly among stakeholders, with some groups of extractive users suffering the majority of the negative impacts and holding highly critical attitudes. The most common adverse impacts affect individual users' well-being including fear, stress, uncertainty and inequity, while impacts on fishing activities are limited. Those who reported broader scale community or environmental benefits held largely positive assessments of the MPA. Together these results illustrate the importance of identifying and mitigating the full spectrum of social impacts experienced, as opposed to a narrow focus on the disruption of fishing activities or socio-economic impacts alone.

1 Introduction

To combat declining marine ecosystem health and biodiversity worldwide [1, 2], the Convention on Biological Diversity has set a global target to conserve 10 percent of coastal and marine ecosystems through effective and equitably managed systems of Marine Protected Areas (MPAs) by 2020 [3]. Despite significant progress towards this target [currently 6.35% of the global ocean, 4], research suggests MPAs often fail to deliver ecological benefits due to design and management challenges. These may include inadequate regulations or poor enforcement [5], lack of representativeness [6] and capacity shortfalls [7]. In addition, substantial evidence supports that correlations exist between social and ecological performance [8-14], highlighting the central role social factors play in achieving successful ecological outcomes. Given that MPAs are used to manage people's access to natural resources [15], a balanced social-ecological management approach is advocated to improve both ecological and social outcomes [16-18].

Social impacts are all of the social consequences experienced by humans as a result of a proposed decision or action. They may be felt by an individual, household, organisational or societal level, and include positive and negative impacts [19]. Therefore, considering MPA outcomes in terms of social impacts can provide a useful framework through which potential social issues and successes can be identified [20]. To date, the majority of published social impacts research has occurred in developing nations [see reviews in 11, 21, 22, 23]. This is despite the stronger growth of MPA establishment in developed country settings, with over 70% of the global coverage occurring in the combined territorial waters of the U.S.A, France, United Kingdom, Australia and New Zealand [4]. Previous research on the human aspects of MPAs in developed countries commonly focuses on the socio-economic aspects of establishment [e.g. 24, 25-27]. These analyses exclude other potential impacts on equally significant aspects such as mental and physical well-being, the living environment, culture, human relationships, governance and equity [28]. Other studies have focused on selected stakeholder groups, e.g. commercial fishers [e.g. 29, 30] or changes in fishing effort [e.g. 31, 32]. Although examination of the full spectrum of social impacts from MPAs has increased in recent years [e.g. 33], it remains an under-represented area of research [34, 35].

This difference can be in part explained by Jones, McGinlay [21] who found the most common themes of social impacts from protected areas include poverty, health, displacement, power redistribution and human rights. These issues will naturally be more acute in developing countries where there are high levels of dependency on marine resources for livelihoods [36] and governance processes are weaker [37]. However, previous attempts to explore the full spectrum of social impacts from MPAs in developed countries reveal that significant negative impacts do exist. These include tension and conflict, reduced well-being, equity concerns, decreased enjoyment and cultural restrictions [33, 38-40]. Some of the positive impacts have been reported include increased respect for the environment, greater recognition as a tourism destination and improved recreational experiences [33, 38]. Additionally, social impacts are context specific and are consequently dependent on the social, cultural, political, economic, and historical milieu of the community and project of focus [28]. This is evident within research across multiple countries, which show differing responses to MPAs [13, 41]. As a result, the research insights from developing country settings may not be transferable to more economically developed countries.

Social impacts are also significant for MPA management because the formation or change in attitudes as a result of a policy implementation are themselves social impacts [28], and social impacts may influence attitudes towards an MPA via an individuals experiences. Attitudes can be defined as an expression of an evaluative judgement of an object [42]. The multicomponent model

of attitude formation, proposes *cognitive*, *affective* and *behavioural* components shape an individual's attitudes towards an object [43, 44]. *Cognitive* elements are the beliefs, thoughts and attributes associated with an object. *Affective* elements are the feelings or emotions felt in response to an object. *Behavioural* elements are past behaviours and experiences regarding an object [42]. An individual's experiences of a proposed or established MPA subsequently contribute to the cognitive, affective and behavioural information which shapes their attitudes towards the policy.

Attitudes can also be conceptualised in hierarchy with the other psychological constructs of beliefs and values [45]. Social psychology theories attempt to conceptualise the connections between these constructs to understand their influences on human behaviour. Widely used theories such as Ajzen's Theory of Planned Behaviour [46] and Stern's Value-Belief-Norm theory of environmentalism [47] have successfully shown attitudes flow from values and beliefs, and are influenced by other factors such as personal and social norms. Despite this, specific attitudes are harder to predict from fundamental values and beliefs due to the complexity of unique contextual and situational aspects which can interact and affect attitudes in a variety of ways [46, 48-51]. Considering stakeholders' perceived social impacts alongside attitudes allows the role of personal experience to be considered and increase our understanding of the situational drivers of attitudes towards MPAs across contexts. This perspective is also particularly useful to managers as the social impacts of policy implementation are variable through policy design and management, whereas the underlying values of stakeholders are relatively stable across situations [52] and time [53], and therefore difficult to change.

Attitudes towards MPAs are a critical area of concern for managers for a multitude of reasons. Specific attitudes are recognised as a useful predictor of behaviour and behavioural intentions [54, 55], which is considered critical for conservation [56, 57]. Attitudes also influence the amount of attention paid by individuals to a particular topic, and how well information is remembered [42], supporting recent research which shows that simply providing information or education is not enough to change behaviour [58]. Positive attitudes towards a policy can be a useful indicator of the level of social acceptability of MPA policy. Favourable opinions are considered a position of acceptance and unfavourable opinions a position of rejection [59]. Expressions of support, or a reduction or lack of vocal opposition are considered indicators of communities granting a "social licence to operate" to a project [60]. Following Kelly et al. [61], social license is an unwritten contract of community acceptance [62] reflecting expectations and opinions about the costs and benefits resulting from a practice or project [63]. Stakeholder support for policy interventions is also critical if 'soft' or voluntary compliance methods are going to succeed in complementing traditional formal regulation [64]. Finally, understanding the drivers of stakeholder support including the role of social impacts has been identified as a critical research need by MPA researchers and managers alike [65].

This paper explores the nature of the social impacts experienced in response to the establishment of an MPA in a developed country setting using a case study on the west coast of Australia. It examines the views of a broad range of extractive and non-extractive stakeholders to investigate how perceived impacts vary between and within stakeholder groups. Stakeholder attitudes towards the MPA are explored to assess the relationship between an individual's direction of attitudes and the impacts they have experienced. This study will contribute to an improved understanding of the drivers of support and opposition to MPAs and provide valuable lessons to inform future MPA decisions in similar settings.

2 Methods

2.1 Case study site

This research focused on a case study MPA, the Jurien Bay Marine Park (JBMP) which is located on the mid-north coast of Western Australia (WA) about 200km north of the state capital Perth. The region is a biogeographic tropical and temperate convergence zone with high biodiversity and includes a complex seabed topography comprised of islands, sub-tidal and intertidal limestone reefs [66]. The commercial western rock lobster fishery (*Panulirus cygnus*) operates out of the coastal settlements and is the mainstay of the local economies in the region [66]. The fishery was declared limited entry in 1963 and was the first globally to receive ecological sustainability certification from the Marine Stewardship Council in 1999 [67]. Depending on quota levels, the fishery has grown to be worth $200-400 million annually, representing the largest single species fishery in Australia [68].

The JBMP is a Category II multiple-use MPA declared in 2003 covering an area of 82 375 ha in state waters out to three nautical miles offshore (Figure 1). The park is managed by the State Department of Biodiversity, Conservation and Attractions (DBCA, previously known as the Department of Parks and Wildlife, the Department of Environment and Conservation and the Department for Conservation and Land Management). Commercial and recreational fishing in state waters is managed by the State Department of Fisheries, including within the marine park. The park is comprised of six zone types (Table 1) which were developed using an iterative consultative process with a community advisory committee and key stakeholder groups. The DBCA finalised the management plan after consideration of practicality, public submissions and further consultation with key stakeholders [66]. Marine parks gazetted in Western Australia require signing off by the current Minister for Fisheries [69], who provided support after the Central West Coast Professional Fishermen's Association accepted the proposed management plan. Conservation and recreational fishing representatives voiced significant opposition concerning the balance of zoning being too generous to commercial rock lobster interests [69, 70]. However, the Government established the marine park in 2003 with no significant amendments and the management plan zoning came into effect in 2005 [69].

(Insert Figure 1 and Table 1 approximately here.)

The management plan also details the long-term vision and strategic objectives of the marine park, alongside the operational objectives, targets and strategies employed within the life of the management plan. The strategic objectives of the park are: to maintain the marine biodiversity and ecological integrity of the park; to facilitate and manage the commercial and recreational uses of the park; and to promote education, nature appreciation and scientific research [66]. These are operationalised through management objectives addressing the existing and potential pressures acting on the key social and ecological values of the park. For management purposes, these pressures are confined to those likely to occur during the life of the management plan and considered to be manageable in a marine park context, excluding threats such as climate change [66]. Marine parks are not primarily designed or used to manage or recover fish stocks in Western Australia, with stock management occurring via conventional fisheries management tools under the Department of Fisheries [71]. Therefore, the management plan's strategies focus primarily on alleviating the detrimental effects of human activities on a local scale and are designed to complement rather than substitute existing management practices.

This research focused on the impacts experienced by local community members. Research participants were recruited from the five coastal settlements situated adjacent to the JBMP, along

with some local stakeholder representatives who were based in the state capital. Three of the settlements are gazetted towns: Green Head, with a population of 297 persons; Jurien Bay, population of 1,425 and Cervantes, population 527 [72]. The two other settlements in the area, Wedge and Grey, are recreational shack squatter communities erected without approval or permission of the Government or relevant authorities [73] which are located on unvested crown land managed by the DBCA. The Wedge community comprises 331 dwellings while Grey has approximately 127 [74].

Coastal settlements in this region originated as informal shacks and camping destinations used by local farmers for vacationing [75]. Populations grew with the expanding commercial Western Rock Lobster fishery in the early 20th century and by the 1950's they had become important sites for commercial fishers seeking anchorage, leading to the gazettal of the Jurien, Cervantes and Green Head townships in 1956, 1963 and 1966 respectively [76]. In 1989 the WA Government introduced a policy to stop the construction of further illegal development of squatter settlements and facilitate their removal, and local shires removed shacks on their land along the central coast including near Jurien Bay and Green Head between 1995-2001 [73]. The shacks at Grey and Wedge were intended to be removed by the DBCA after the leases expired in 2001 [77]. However, the shack associations approached the government and were granted a series of interim extensions as the Government investigated a compromise [74]. An inquiry into the shack sites in 2010 recommended removal of the shacks in response to equity concerns resulting from the non-uniformly implemented squatter policy and the exclusive use of shacks by occupiers on public lands [73]. Despite this recommendation, the DBCA is currently examining options for developing public recreational use of the land in conjunction with a level of shack retention, and a long-term solution has not been finalised [74].

2.2 Data collection and analysis

This research employed a qualitative research approach to give an overview of the issues present in the case study. Qualitative research is suitable to explore the wide variety and depth of potential impacts which may be experienced [78]. This may include emotional responses such as changes in feelings of stress, uncertainty or dissatisfaction [28] which may be difficult to quantify. Social impacts are individual experiences and "perceived" impacts affect how people feel and behave in the same way as "actual" impacts [79]. As a consequence, this research made no distinction between the two.

Thirty-nine face to face semi-structured interviews with local stakeholders and representatives were conducted between June 2015 and April 2016. A purposive non-random approach was used to contact a diversity of potential interview participants [80] via local community organisations including business, indigenous representatives, environmental and recreational organisations and previous members of the Jurien Bay Marine Park Advisory Committee involved in the design process. Interviews lasted between twenty minutes and two hours and were recorded with the consent of the participants. Snowball sampling was used to collect further participants when interviewees were asked to suggest further contacts [81]. Some participants were recruited when additional stakeholders were invited to join in by interviewees, generating a total of fifty research participants. Interviews continued until theoretical saturation was reached, meaning the adequate depth of information had been achieved and no new data was generated by additional interviews [80, 82].

The questions covered topics including the participants' background, their perception of the impact of the marine park on individuals, other stakeholders and the region, the impact of fisheries regulations changes, their participation in the marine park consultation and their views for the future management of the park. Participants were encouraged to elaborate on topics discussed and

introduce further topics for discussion as they saw fit. In some interviews, not all questions were asked due to time limitations or previous discussion which adequately covered the topics. One interview was conducted over the phone at the interviewee's request. Participants' attitudes towards the marine park were not asked directly, but evaluative statements regarding the JBMP were captured in participants' responses to other questions. All data collection conformed to ethical procedures followed by the University of Western Australia.

Anonymised interviews were transcribed and analysed in Nvivo10 Qualitative Research software using a thematic approach where segments of interviews were labelled by themes referred to as codes and repeatedly sorted, coded and categorised to identify major themes and emerging patterns [83]. Social impacts were coded according to positive or negative experiences, and sub-categorised according to emergent categories of the impact area. Stakeholders were categorised into interest groups; commercial fishing, recreational fishing, tourism or non-extractive users. These categories were further refined to subcategories where obvious differences occurred based on location, role and experiences [84]. When group interviews occurred, themes were only coded to individuals when the topic was commented upon directly. Attitudes were coded when interviewees offered evaluative statements regarding the JBMP or marine parks as a management tool during discussions. Matrices were developed to cross reference themes against stakeholder group to provide a count of how often codes appeared within groups. All positive and negative impact and attitude themes were compared against participants to determine the presence of positive and negative themes occurring within each interview.

3 Results

This section will summarise the impacts and attitudes reported by interviewees before proceeding to discuss them in more detail under the appropriate coding themes. Social impacts reported by interviewees varied considerably with fishing industry roles and location driving different experiences (Table 2). Negative impacts were largely restricted to extractive users of the park, and most commonly reported by recreational fishing representatives, recreational fishers from Grey and commercial fishers. Except for those from Grey, local recreational fishers reported fewer instances of negative impacts. Overall, experiences were most frequently reported to be psychological, with the establishment of the marine park negatively impacting on extractive users' well-being and incorporating strong emotional responses including feelings of fear, stress, betrayal and discrimination. Reported positive impacts included both regional and individual benefits and were described primarily by those in the tourism industry, non-extractive users and local recreational fishers except those from Grey.

Interviewees' attitudes towards the park displayed a similar pattern of negative and positive responses to impacts amongst stakeholder categories (Table 3). Some negative attitudes towards the park zoning and management aspects were expressed by all stakeholder groups, although were more common for those who reported considerable negative impacts. There were also clear patterns of disbelief in the effectiveness of marine parks within some fishing groups. Positive attitudes towards the park were focused on the long-term benefits the park is expected to provide in the future. When positive and negative impact and attitudes were compared for each participant, results indicate that those who reported negative impacts also saw little or no positive impacts and displayed negative evaluations of the park. Conversely, those who experienced no or few negative impacts described a range of positive impacts as a result of the park and had positive assessments of the park itself. This pattern was strongest in those reporting significant or multiple types of social impacts.

(Insert Tables 2 & 3 approximately here.)

3.1 Uncertainty and stress

The most commonly reported negative impact which was experienced by all groups of extractive stakeholders was feeling fearful of the potential detrimental impact of the park, or fearing more or extended fishing restrictions in the future. Professional and recreational fishers described the widespread belief that the marine park would be damaging to their businesses or fishing experiences when it was first proposed, and some had held on these feelings despite the length of time since gazettal. Professional fishers in particular saw the marine park as a threat to their future access to fishing grounds. They described the suspicions they held of the DBCA, who they expected to increase the area of the restricted fishing zones in the future despite the small total area set aside as a sanctuary zone under the current management plan. As explained by one commercial fisher, *"They just keep adding onto it… They want more and more of them, and eventually, the whole lot will be Marine Park… What's this zone here? What they will do is come along and say we've already got the square here we'll turn it into a* [no fishing zone]*"* In contrast to professional fishers' concerns for the future, recreational fishers more commonly reported feeling uncertainty and confusion over where the zone boundaries were located while they were fishing. They described continually watching their locations while on the water to prevent fishing in the wrong zone by mistake, making fishing a less enjoyable experience. It was also common for fishers to describe how the multiple-use zoning system from the marine park was seen as similar, or the same, as other restrictions on fishing activities put in place by the Department of Fisheries for various purposes such as stock monitoring, habitat protection or bycatch reduction. The impacts of those different regulations were seen to accumulate on fishers causing stress due to the progressive limitations on their fishing. *"But what we're seeing now, we've got our Sea Lion Device Exclusion Zone, so you've got an imaginary line that runs along that you've got to comply with. You've got another one now for the whales, you've got to use a different type of rig, so there's another line there to comply with… we're getting whittled down with lines... It's more and more compliance issues… It doesn't sound like much but when you start adding up all these issues it just keeps getting dumped on top of you"* (lobster fisher).

These feelings of uncertainty, fear and stress persisted in fishers despite many acknowledging the marine park had no or limited impact on their fishing activities. No lobster fishers reported disruptions to their use of the marine park waters for fishing. However, some commercial fishers were forced to fish in less optimal grounds due to the exclusion of their fishing method in the large scientific reference zones where lobster fishing was permitted. These feelings of fear and stress were not always linked to financial pressures, with increased financial costs only reported by two professional fishers.

3.2 Inequality due to zoning

Parts of the recreational fishing sector were distinct from other stakeholder groups and local fishers in their strong feelings of inequality associated with the marine park establishment. These impacts were described by the recreational fishing representatives and local recreational fishers from the Grey community, but not reported by local fishers from other settlements. These were linked not to the presence of the park but related to the balance of zoning types and the placement of particular zones.

All recreational fishers interviewed from the Grey shack settlement reported being forced to fish in less preferred areas due to the location of the zones surrounding the settlement. All described the sheltered areas in the lee of the island becoming a sanctuary zone, surrounded by scientific reference zone, as forcing them to travel to less safe areas to line fish from a boat. Some fishers

from Grey also reported crowding occurring in the areas still open to fishing. Recreational fishers from Grey felt they had been purposely excluded from consultation regarding the park, although they admitted that their lack of legal ownership over the land was the reason behind this. *"Legally, we are illegal settlers on Crown land. So the government would say, well why should we talk to them?"* (Grey recreational fisher). They felt this question of tenure contributed to the eventual zoning outcome, excluding them from consultation and severely restricting their access with the intention of making the informal settlement less attractive to existing and potential residents.

Despite acknowledging that the marine park has had limited impact on individual fishing activity, recreational fishing representatives described strong feelings of injustice and inequality due to the balance of zoning. All those interviewed described the current zoning scheme as a poor outcome for recreational fishers compared to the commercial lobster industry due to the inclusion of large scientific reference zones which prohibit all fishing except for lobster. Representatives criticised these zones, which cover 17% of the park, as poorly named and biased against recreational boat fishers. They saw these zones as concessions to the commercial lobster industry who enjoyed almost uninterrupted access to the park's fishing grounds.

The recreational fishing representatives also felt a sense of betrayal and disappointment at the negotiation process used by the community advisory committee to reach agreement on the final zoning plan, and the DBCA which was conducting it. They felt they had been discriminated against as they were an emerging stakeholder representative organisation at the time and were not granted the same level of importance as others at the negotiation table, unlike the professional fishing representatives. One felt the DBCA was unwilling to take on the influential lobster industry and therefore restricted recreational fishers instead, who felt they gained nothing and were given no acknowledgement for access they had conceded. *"*[The head of the DBCA] *stood up and said it was a great thing, he lied…..We were working hard to find a solution, and no wonder we felt betrayed. I needed something to go back to the sector with. To show they have listened to us…*[They] *told us it would be fair, equitable and transparent and it was none of those things…Commercial fishers got everything they wanted, and recreational fishers got nothing"*.

3.3 Regional benefits

Economic and environmental benefits at the regional scale were felt by some stakeholders including representatives of local recreational fishers, tourism stakeholders and non-extractive user groups. The most frequently reported impact was the perception that the park was beneficial to the regions' tourism industry and reputation. Participants felt the recognition of the natural marine assets in the area as a marine park highlighted its uniqueness and value over other coastal locations for potential visitors seeking nature-based experiences.

The positive environmental impacts of the marine park were reported by some lobster fishers, recreational fishers, tourism stakeholders and non-extractive users. No stakeholders who experienced significant negative impacts recognised any environmental benefits. Those who reported benefits more often reported these as increases in fish stocks or breeding ability, "*The sanctuary zones that we've got, the two down south and the little ones around the coast further to the north, there is no doubt that they provide sort of a nursery for fish. You can always go catch a* [meal of] *fish if you want to"* (Jurien Bay recreational fisher). Less commonly, individuals described the environmental benefits of providing protection and conservation of the marine environment.

3.4 Individual benefits

Individuals across all stakeholder categories identified some positive emotional and psychological impacts they experienced as result of the establishment of the Park. Many felt the park had created an increased sense of community pride and awareness connected to the local marine environment. Participants felt the establishment of a marine park in their local waters was recognition of the outstanding natural values present in the region such as the sea lion colonies, islands and beaches. For some, this was connected to a greater feeling of care for the local environment and encouragement to protect it. For others, the presence of the marine park provided a positive psychological feeling of comfort, that something is being done to protect the local environment. *"I'm happy to live in an area that I know conservation is going on. Because the Marine Park is there, I don't think* [overfishing] *is a threat, I know it's being managed. It makes me comfortable about it here"* (tourism stakeholder). Another lobster fisher stated: "*I think people appreciate protected areas. If you go down to Perth and see the impact* [of population pressure] *there I think people appreciate it that's it's there*". Less than half of the tourism operators reported personal economic benefits from the park. These participants described the marine park as a marketing tool for their organisations or businesses however it was unclear to some if any additional visitation occurred as a result.

3.5 Criticism of management and zoning

A broad range of negative attitudes towards the marine park was expressed by individuals across all stakeholder groups, with negatively impacted recreational fishing representatives, fishers from Grey and commercial fishers most consistently critical. Negative evaluations of the DBCA and the current management plan were the most commonly reported negative attitudes towards the marine park, and were present within all stakeholder groups, although sub-themes varied. Decision making and consultation were commonly criticised by those who also reported feelings of injustice and inequality as a result of the park. This included both Grey recreational fishers and recreational fishing representatives. Individuals described how they felt decisions were predetermined by the DBCA, and despite the invitation to participate in the consultation process, community members did not influence the decisions made. "[The DBCA] *seem to put out a draft, but it's the final draft, but they don't tell you that, and they consult, but don't change it. They said they consult but they had already decided. I know* [the public comment process] *makes no change"* (Grey recreational fisher). Participants frequently felt decisions were made from a distant office or from "*ivory towers"* which were disconnected from the local's experience and without knowledge of the consequences for the communities. One interviewee, who was also involved in the community advisory committee, acknowledged the weaknesses of the negotiation method used to decide on the zoning plan. "*Having a dozen people all with different views sitting in a room arguing about squares on a map is not only ineffective in achieving the objectives that they really all want, but it's awfully damaging."*

Recreational and commercial fishers frequently observed a lack of visible presence and enforcement by the DBCA. It was common amongst the recreational fishing representatives and fishers from Grey to highlight the marine park's lack of clear objectives, monitoring and purpose of the zoning plan, pointing out the difficulty in measuring effectiveness as a result. A lobster fisher echoed this view and lamented the lack of transparency with the collected data and the absence of a clear purpose for each sanctuary zone. "*The marine park* [sanctuary zones] *in some places are inefficient, on the wrong ground, are not doing anything or are not monitored. I don't mind having them, and I'm sure the general public don't either if they're doing something. Not just ocean grabbing! Maybe with the marine park, we will have the data for climate research. All the information they have is confidential…If you ask they say "what do you have to do with it, it's not your business?*"

Recreational fishing representatives described a lack of cooperation between the conservation and fisheries departments within the government, which affects the ability of the DBCA in charge of managing the park to perform its role effectively. For example, one recreational fishing representative voiced concern that compliance efforts were not maximised as a result. "*I was very concerned that the dual marine management by* [the DBCA] *and Fisheries was wasteful and there was not enough (cooperation). Each department should at least authorise the other departments…to look at safety, reserves and regulations. Management by anyone at sea is extremely expensive."*

All stakeholder groups expressed criticisms of the current zoning scheme except the non-extractive users. These criticisms were the most commonly reported negative attitudes by recreational fishers from Grey and tourism stakeholders. This concerned three aspects of the zonation including placement of sanctuary zones, visibility of zone markers for visitors and fishing regulations within some zones. Stakeholders questioned the rationale behind the placement of individual zone type. Many participants showed an understanding of the habitat contained in the protection zones and felt sanctuaries were "*just sand*" or in the "*wrong area*" because they did not feel sandy substrates required protection. Recreational fishers from Grey and tourism questioned the lack of sanctuary zones in the outer reef region and surrounding the endangered Australian Sea Lion colony on Fisherman's Islands. Other participants mentioned the small size of sanctuaries and the duplication of zone types in multiple locations. Additional negative attitudes towards the zoning plan focused on the Park's system of marking the boundaries of zones. Various individuals, particularly from Grey, felt the signage was inadequate to direct visitors to where protection zones began and accompanying fishing regulations. Some tourism stakeholders also felt that the fishing regulations in the general use and scientific reference zones were not restrictive enough.

3.6 Disbelief in marine protected area effectiveness

The majority of commercial fishers and recreational fishing representatives demonstrated some form of disbelief in the effectiveness of the Jurien Bay Marine Park or other marine parks. They commonly expressed concern that management by zonation would not protect against other threats which were perceived as more significant, such as pollution or climate change, and were not addressed by the JBMP management plan. Commercial fishers particularly preferred management of the seascape as a whole rather than in smaller zones, with multiple interviewees comparing themselves to farmers and highlighting the need to harvest everywhere lightly. "*I come from a farming background, and if you want to preserve things you don't lock things up you stock things lightly, and it makes everything good, makes everything right and it keeps everything even…I believe this piece is as important as that piece. What's the difference?"* (Commercial fisher). Some commercial fishers and recreational fishing representatives described marine parks as an ineffective tool to increase or manage fish stocks, while others said they were ineffective because species move outside the boundaries of protection zones. Some also felt the marine park was not necessary, due to the perceived limited pressure on the marine environment in the region. As one commercial fisher explained, *"Come out with me, you don't see anyone else out there but me, it doesn't need any management! I fish all throughout the marine park and there's no pressure there, only me. Not a million people there, just me. I can't see any benefit in it whatsoever."*

3.7 Positive view of the future

Themes of positive attitudes to the JBMP were typically related to an expectation of long-term benefits from the establishment of the park. Stakeholders who frequently voiced this view were those had not suffered significant negative consequences from the park and had instead experienced the benefits. This group of stakeholders included tourism representatives, non-

extractive users, local recreational fishers except those from Grey and some commercial lobster fishers.

The most commonly expressed positive attitude demonstrated by interviewees described the Park as beneficial for the environment or good for protecting the marine environment. Some felt the environment was vulnerable to negative impacts from fishing and the rising regional population. As one tourism operator stated, *"The more marine parks, the better. We're just going to end up like totally overfished if we don't. Hopefully, Australia will be one of the places where they're not overfishing and destroying the oceans."* Others compared it to terrestrial national parks, as one recreational fisher felt "*Why wouldn't everyone support marine parks? You need marine parks - they would never support us cutting down all of the forests."*

Another commonly voiced view amongst stakeholders was that the marine park is good for fish stocks, growth or breeding, present in all groups except commercial fishers and recreational fishing representatives. For example, a tourism representative stated *"It's got some good little* [sanctuaries]*…and I'm sure that there'd be some big fish that would come in to breed"* while one recreational fisher said "*There should be more no-fishing zones…stocks are not getting a chance. Guys are bringing in big Dhufish, sharks... The sanctuary will boost stocks."* Participants also felt the marine park had the potential to attract more tourists to the region and provided an avenue for people to become aware of the local marine environment.

4 Discussion

This case study demonstrates a clear distinction between individuals who have experienced negative impacts resulting from the establishment of the JBMP and those who feel they have benefitted, either individually or at the collective community level. There is a strong association between the nature of impacts experienced by stakeholders and their attitudes towards the JBMP. The social impacts are distributed unequally among stakeholder groups with some groups of extractive users bearing the brunt of the negative changes. While the most common adverse effects impact at an individual level on users' well-being and activities, the positive impacts are frequently felt at a community level involving benefits to the region's economy or the environment. Importantly, these negative impacts persist despite many fishing stakeholders acknowledging the marine park had no or limited impact on their fishing activities or use of the local waters. These findings underline the disparate nature of social impacts of marine protected areas in a developed country and are discussed in a broader context below.

The results from this research have demonstrated that individuals' views of the impacts of the JBMP are fundamentally linked to their overall opinion of the park. It is clear that these impacts affect the social acceptability of MPA policy which can have ramifications for the level of community support, compliance and achieving the social licence to adjust policy settings in the future if required. This finding is consistent with the multicomponent model of attitude formation [43, 44] which proposes that attitudes are comprised of cognitive, affective and behavioural information regarding an object. When stakeholders experience the affective sensation of negative emotional and psychological impacts such as fear or betrayal as a result of the park, or believe the park has brought benefits to the regions' fish stocks or tourism industry, this information contributes to the formation of negative or positive attitudes towards the park (Maio and Haddock, 2009). Additionally, direct experience with an object such as a local MPA is critical in attitude formation. Studies show attitudes based on direct experience are a stronger predictor of behaviour [85], are more accessible [86] and produce more emotional reactions [87] than those based on indirect experiences. Previous research in Australia linking the impacts of marine parks to attitudes has also shown that fishers are significantly

less likely to support an MPA zoning plan if they experienced negative impacts on their fishing activities [88, 89]. Additionally, Leleu and colleagues [90] found support for MPAs was strong amongst commercial fishers who were aware of the positive impacts of no-fishing zones on their fishery. This finding is consistent with previous work highlighting the important role of personal experience in influencing attitudes towards MPA policy.

However, this apparent relationship between impacts and attitudes is not necessarily a causal link and is best understood as a correlation due to the complexity of drivers which are known to shape attitudes to policy. For example, pre-existing attitudes towards an object influence the way people interpret information and behave in the future [91] and affect how impacts are experienced [92]. Therefore, negative attitudes formed before the establishment of the park may influence individuals' perceived social impacts and reactions to the park. The influence of historical events and context are also important drivers of individual and community reactions to projects [93], as is demonstrated here by the case of the Grey community. Due to the myriad of relevant factors, it is impossible to determine each's contributing role and their collective influence on attitudes towards MPAs. The application of a wide array of social science approaches may provide researchers and practitioners with the tools to attain a greater understanding of the factors shaping community responses to MPAs in the local context [94].

Environmental attitudes are also strongly influenced by an individual's system of values and beliefs [45, 95], which may have influenced local attitudes prior to the establishment of the JBMP. Recent work has highlighted the potential of in-depth qualitative research to reveal patterns community members' perceptions of marine environments including the values they hold and the way they see the world [96]. Interestingly, the use of these mental constructs has shown that values are often shared across communities and stakeholder groups [97, 98], showing promise to assist finding common ground between opposing stakeholders in marine governance conflict. It is recommended that further research is necessary to investigate the complexity of attitudes towards MPAs and their personal and contextual drivers. Particularly in policy areas of significant disagreement such as MPAs, this avenue of research may assist managers better understand underlying causes of conflict and how they may be addressed [99].

Regardless of the underlying drivers of attitudes in a given situation or context, the strong association between perceived social impacts and attitudes is worthwhile for practitioners and managers to note. Positive perceptions are necessary to ensure the long-term success of conservation interventions [100]. Therefore, if community support is to be maintained, managers must work to enhance positive MPA impacts for communities, and employ strategies to avoid, manage, mitigate or offset the predicted negative impacts [20]. It may also be helpful if MPA planning seeks to actively promote tangible and intangible benefits to local communities, even if they are not the primary purpose of establishment. This may be achieved through consultation with affected communities about what positive impacts are desired locally and may take the form of innovative co-management strategies focusing on tourism opportunities like recreational fishing enhancement, educational events or expedited business approvals. These approaches should be combined with appropriate monitoring, research and communication strategies to assist communities to become aware of the positive impacts which may arise from MPA establishment.

Amongst those stakeholders who suffered the negative impacts of the establishment of the JBMP, adverse psychological impacts were the most common as opposed to detrimental economic or livelihood related consequences which are more commonly reported from developing country MPAs [8, 9]. Commercial fishers of all types were concerned about the JBMP affecting their activities in the future, with continued feelings of fear, stress and uncertainty in reaction to the park. Fear is a

significant issue within fishing communities as a response to MPAs [101-103], and commonly precedes the establishment of the park and continues afterwards [101]. When spatial closures occur which limit commercial fishing activity where fishers are accustomed to traditional fisheries management tools, uncertainty is created as the impacts of the management strategy are unknown [33, 104]. Psychological distress in Australian commercial fishers is higher than the general population [105] which is in part driven by the insecurity of fishery access [106]. Hence policy changes which are new, different or unfamiliar are likely to increase stress and anxiety. The widespread disbelief in marine park effectiveness within commercial fishers which is evident may reinforce these feelings, as any potential benefits to fishers are also viewed as uncertain [107]. These negative psychological impacts are occurring despite many commercial fishers reporting the establishment of the JBMP had a limited or no impact on their fishing activities or use of the local waters. Therefore, marine park planning which uses only socio-economic modelling and community consultation to address social impacts by modifying zone placement and size may overlook critical psychological impacts. In its place, dedicated social impact assessment is more appropriate to identify and mitigate the full range of potential impacts as a result of marine park policy implementation [20, 34].

This finding is important because globally there is an increased awareness of the necessity to evaluate the effectiveness of protected area management to ensure networks are delivering their desired environmental and social impacts in return for the investment [108]. Particularly, social aspects are lagging behind measurements of biophysical changes due to difficulty in adequately measuring human dimensions [109]. Recent work by Corrigan and colleagues [110] assessed the social indicators and well-being dimensions used in a review of global protected area management effectiveness (PAME) tools applied in over 180 countries. They found the majority of social indicators used by commonly applied PAME frameworks reflect dimensions of living standards and environmental factors like physical resource quality, while dimensions of personal happiness, health (including mental health), governance and equality had minimal representation. Therefore the most common social impacts exposed in this particular case study of uncertainty, stress and inequality are unlikely to be picked up by the majority of PAME frameworks if applied. Without in-depth research into the social impacts of policy interventions in a particular local context, it will be unknown if particular PAME frameworks will be adequate to detect changes that are relevant for local communities in any particular context. While no framework provides a “one size fits all” solution, indicators can be developed which are specific to local context and address a full range of well-being and equity aspects including cultural, social, psychological, physical, economic and governance [111]. While equity is sometimes considered an overarching principal rather than a stand-alone indicator of well-being [111, 112], this case study demonstrates its importance to stakeholders. Addressing the challenge of incorporating these indicators into marine policy via PAME or social impact assessment will allow marine managers and policymakers to understand the human aspects better thus ensuring long-term support [109].

Social impacts are experienced differently by individuals within stakeholder groups. Some segments of extractive user groups reported similar significant negative impacts and critical attitudes towards the JBMP while others did not. Within recreational fishers, peak body representatives and fishers from the Grey community had a very different position to the other local fishers. Recreational fishing representatives raised questions of procedural and distributive justice [113] through criticising the decision-making process and the distribution of resources in the final zoning plan. Grey recreational fishers were also heavily impacted by the restrictive zoning status in commonly accessed waters surrounding the settlement and also reported procedural injustice in the form of consultation exclusion due to their precarious legal status. The positive relationship between communities’ level

of participation in marine protected area decision-making and support for those policies is well known [14, 88, 89, 114-116]. Previous research has also shown both commercial and recreational fishers have the lowest level of support for marine protected areas [115-117] because implementation transfers access rights from extractive to non-extractive users through fishing restrictions [118]. The final zoning plan was seen by recreational fishing representatives as a reallocation of fishing rights from the recreational fishing community to commercial rock lobster fishers, who were best positioned politically to avoid significant reductions in fishing grounds, through the implementation of large lobster only fishing zones [8, 119]. While this view is not commonly shared by individual local recreational fishers in the case study, it is important due to the significant power the recreational fishing peak body holds when acting on behalf of the large recreational fishing community in subsequent policy negotiations. Achieving agreement on fair decision-making processes and distribution of perceived costs would assist in improving recreational fishing peak body support and limit perceptions of impact inequity [120, 121]. Implementing recreational only fishing zones, or recreational catch and release zones alongside areas dedicated to commercial fishing may improve perceptions of impact equity amongst recreational fishers in a tangible way.

Distinct differences exist between recreational fishing representatives and local fishers from settlements other than Grey. Considering fishing representatives played a significant role in negotiations and are privy to the consultation process, it is unsurprising they hold a different view to local fishers who may not have the same level of involvement and may be unaware of the past conflict. Despite representatives acknowledging the parks' impact on local fishing activity was limited, a view affirmed by local fishers themselves, significant negative well-being and equity impacts drove their harsh criticisms of the park. Representatives were also unanimous in their views that marine parks are ineffective for conservation, while this was uncommon in the local fisher interviewed, and may affect attitudes towards the park. The differences between representatives and local fishers found in this case study could be explained by the differences in specialisation level, with representatives assumed to be highly committed fishers due to their positions. Research suggests recreational fishers with different levels of commitment, knowledge and skill hold differing opinions of regulations [122-124]. Voyer et al. [40] found specialised fishers focused on fisheries management objectives when discussing marine park effectiveness, which may overshadow the ecosystem benefits of marine protected areas leading to disbelief in their effectiveness overall [125]. Together these results suggest different segments of the recreational fishing sector hold different opinions of marine protected areas based on their variable uses of the marine environment, beliefs regarding effectiveness and management priorities. Further research is necessary to assess the spectrum of attitudes, opinions and beliefs concerning marine protected areas within the diverse recreational fishing sector in Australia and how they may be affected by management decisions.

The benefits related to marine park establishment in this case study were more commonly regionally focused and were reported by local stakeholders who did not perceive themselves to be negatively affected by the park. The positive impacts of tourism on the region were recognised by not just the tourism stakeholders, but also local recreational fishers and non-extractive users. This theme is echoed in the positive attitudes expressed by these stakeholders, focusing on the broader advantages of the park and orientated toward the region's marine environment and its future. Growth in tourism is a potential positive impact of MPA establishment which is promoted to local communities [38, 126-128]. While tourism operators attributed only minor economic benefits to the JBMP, its presence has led to a community-wide perception of its future potential to attract visitors. This situation suggests there is potential for increased community support for the marine park if

increased benefits from tourism operations to a broader range of community members can be demonstrably achieved.

Interestingly, all types of stakeholders expressed some positive emotional and psychological impacts as a result of the establishment of the park including feelings of pride and care for the environment and a feeling of satisfaction the environment is protected. These feelings demonstrate the potential for managers to grow support for MPAs by utilising local communities' pride in their environment to convey the advantages of MPA establishment. However, if perceived environmental benefits do not materialise, these results could represent a dangerous situation where stakeholders believe the local marine environment is protected when no such protection occurs [129, 130]. This situation may then lead to complacency in communities, obstructionism to future conservation opportunities and ignorance of other existent threats to marine ecosystems [131].

This case study suggests that the two categories of marine management tools, namely fisheries management regulations and biodiversity conservation reserves, contribute to simultaneous negative impacts which are difficult to extricate from one another. These negative impacts accumulate on stakeholders due to the similar change processes caused as a result of interventions. For example, both styles of management interventions limit or modify access to fishing grounds, increase regulations on types of marine resource use and increase compliance obligations. As a result, the social impacts from one style of management may amplify those of the other and contribute to poor attitudes towards an intervention which are outside of managerial control. This is particularly relevant in Western Australia where fisheries management and biodiversity conservation are carried out by two separate government departments, DBCA and the Department of Fisheries. This finding is supported by research into the social impacts of fisheries regulations on fishing communities which reveals some issues similar to those from the marine protected area literature including redistribution of fishing access rights and income reduction [e.g. 132, 133-135]. Significant confusion exists in the community regarding fisheries management and marine park policy purpose and execution. This is reflected in a number of the interview themes from this case study, for example, the prominent community expectations or perceptions of fish stock benefits from the JBMP when the park is neither designed nor primarily intended for this purpose [66, 71]. Additionally, perceptions of co-operation between the two government departments responsible for the bulk of marine management in Western Australia were low. This result is similar to recent work by Read and West [136] in the Australian state of New South Wales, who found the integration of the fisheries and marine park sectors was lacking, particularly regarding operations and shared values. These circumstances create a risk that the perceived impacts of one department's policy can interfere with the other and combine to reduce community support or invoke opposition to any new policy. Consideration of concurrent and subsequent policy interventions which may amplify social processes in fishing communities must be considered via dedicated social impact assessments of projects relying on better cooperation between responsible government departments [137].

5 Conclusion

This research identifies the broad diversity of positive and negative social impacts experienced after the establishment of an MPA in a developed country context. Some, but not all, of those who have lost fishing access rights suffer the social costs of establishment, demonstrating the unequal spread of the negative impacts within and between communities. Further research investigating what factors influence an individuals ability to withstand the costs of MPAs will assist managers to ensure consequences are equitably distributed amongst stakeholders. The emotional, psychological and equity costs to communities are high despite recognition the park had limited impacts on extractive

activities or use of the local waters. The nature of these experienced impacts suggest similar effects in other settings may not be captured using commonly applied protected area management frameworks which underrepresent the issues of well-being, governance and equity.This paper provides detailed evidence to illustrate the social impacts of an MPA in a developed country setting can be similar in scope to those commonly noted in developing countries.

It is also clear that the social impacts of an MPA have a strong connection with stakeholders' attitudes towards MPA policy. An improved understanding of the full spectrum of social impacts will assist MPA managers to identify and mitigate the negative consequences of MPAs, to prevent community opposition and rejection. A simplistic view which considers marine protected areas only in terms of access to local waters to fish in will fail to address critical negative social impacts on fishing communities. At the same time, tangible and non-tangible benefits to local communities should be prioritised as a strategy for gaining stakeholder buy-in and maintaining the social license for MPA policy. Managing the social elements of MPAs should, therefore, be considered equally as important as managing the ecological elements to successfully meet conservation objectives.

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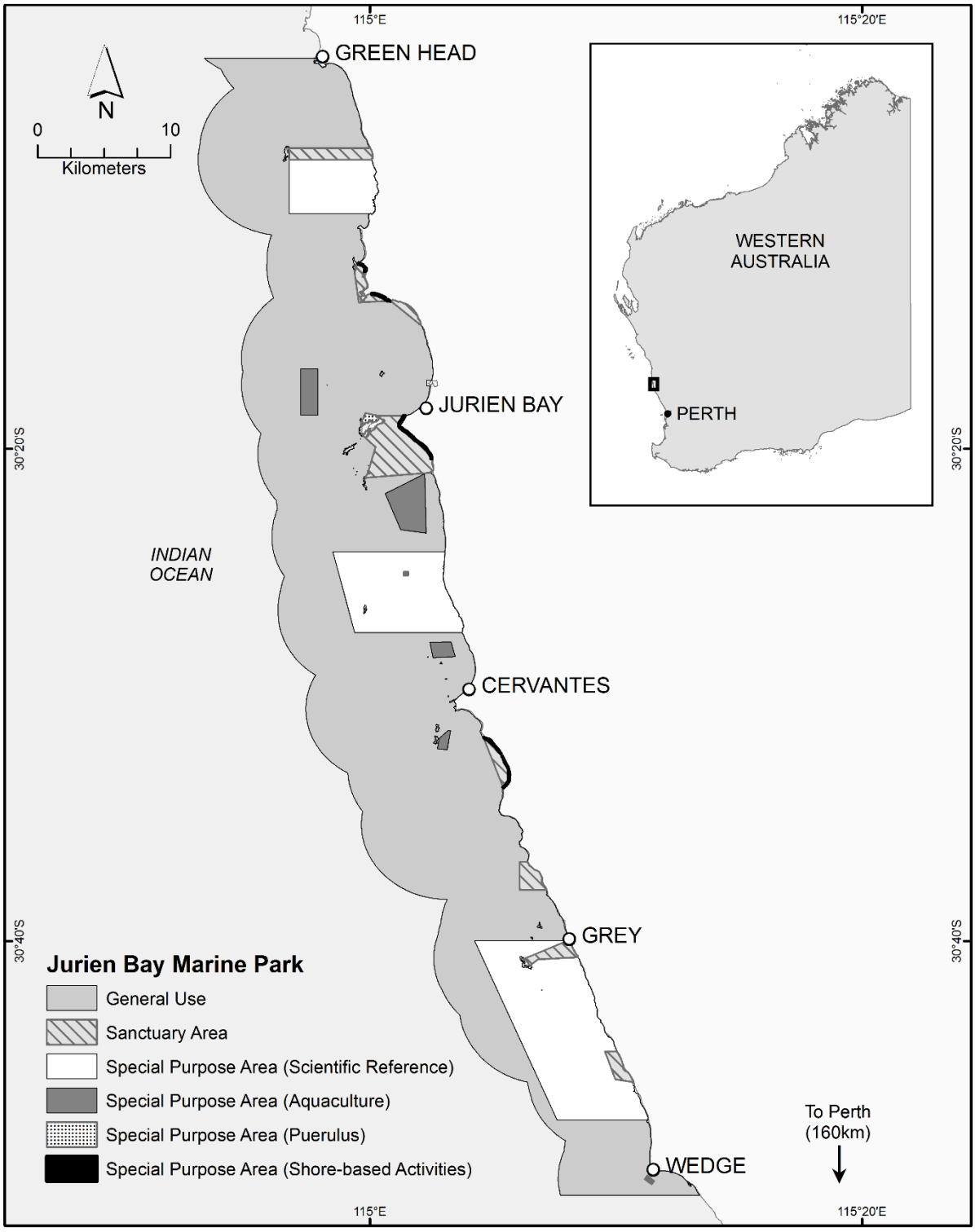

Figure 1.
Zoning scheme within the Jurien Bay Marine Park (DEC, 2005) and adjacent settlements.

Tables

Table 1.
Zones in the Jurien Bay Marine Park and summary of uses permitted [66].

Zone type	Number of zones	Combined area (ha)	Approximate % of total area	Summary of uses permitted
General use	1	63 742	77.4	Extractive activities are permitted under state fisheries management regulations and applications for infrastructure, mining and aquaculture proposals will be assessed.
Sanctuary	10	3 061	3.7	All extractive activities are excluded.
Special purpose (scientific reference)	3	14 037	17.0	All extractive activities are excluded except commercial and recreational rock lobster fishing and shore-based fishing.
Special purpose (aquaculture)	4	1 427	1.7	Activities permitted as per general use zone however aquaculture developments are prioritised. None currently occur.
Special purpose (puerulus monitoring)	1	57	<0.1	All extractive activities are excluded except recreational line fishing. Monitoring of rock lobster larvae for fisheries management purposes occur.
Special purpose (shore-based activities)	4	52	<0.1	Only commercial and recreational fishing from the beach is permitted. Zones occur adjacent to sanctuary zones.

Table 2.
Summary of social impacts from JBMP by stakeholder group from interviews

Category of responses from stakeholder interviews	Description of thematic code	Number (Percentage) of interviews coded to this theme						
		Commercial fishing		Recreational Fishing				
		Lobster license only (n = 7)	Other or multiple licenses (n = 7)	Grey Shack Community (n = 5)	Peak body representatives (n = 4)	Other local fishers (n = 12)	Tourism (n = 8)	Non-Extractive (n = 7)
Negative social impacts	Negative emotional and psychological impacts							
	Fear of potential impacts, future parks	3 (43%)	**5 (71%)**	1 (20%)	1 (25%)	1 (8%)		
	Stress resulting from cumulative impacts	2 (29%)	3 (43%)	1 (20%)	1 (25%)			
	Feeling uncertainty and confusion when fishing	1 (14%)	1 (14%)		**3 (75%)**	2 (17%)		
	Feel persecuted or discriminated against		1 (14%)	**3 (60%)**	**2 (50%)**			
	Betrayed, disappointed by negotiation process				**2 (50%)**			1 (14%)
	Outrage at loss of right to free access	1 (14%)			1 (25%)			
	Disruptions to physical use							
	Forced into less preferred areas		2 (29%)	**5 (100%)**		1 (8%)		
	Crowding other areas		1 (14%)	**3 (60%)**	1 (25%)			
	Governance and equity issues							
	Inequitable zoning outcome			1 (20%)	**4 (100%)**		1 (13%)	1 (14%)
	Excluded from consultation			**4 (80%)**				
	Economic costs							
	Cost of management to taxpayers	2 (29%)			2 (50%)			
	Restrictions on region's industry/development	2 (29%)				1 (8%)		1 (14%)
	Increased cost to self	1 (14%)	1 (14%)					
Neutral social impacts	No benefits to region	2 (29%)	**4 (57%)**	**4 (80%)**	**2 (50%)**	1 (8%)		1 (14%)
	Don't know or insignificant benefits		1 (14%)		**2 (50%)**		2 (25%)	
	No/limited impact on use of local waters	**5 (71%)**	2 (29%)		**3 (75%)**	**7 (58%)**	3 (38%)	
Positive social impacts	Economic benefits							
	Beneficial to region's tourism	1 (14%)				4 (33%)	**4 (50%)**	2 (29%)
	Marketing tool for my business						3 (38%)	
	Created local management or research jobs		1 (14%)			1 (8%)		1 (14%)
	Positive emotional and psychological impacts							
	Increased community awareness, pride	1 (14%)	1 (14%)	1 (20%)		3 (25%)	2 (25%)	1 (14%)
	Provides comfort the environment is protected	1 (14%)			1 (25%)	1 (8%)	2 (25%)	
	Environmental benefits							
	For region's fish stocks	1 (14%)				4 (33%)	1 (13%)	2 (29%)
	For region's conservation	1 (14%)					1 (13%)	1 (14%)

Note. Themes where more than half (50%) of respondents in a stakeholder group agree are in bold.

Table 3.
Summary of attitudes to JBMP by stakeholder group from interviews

Category of responses from stakeholder interviews	Description of thematic code	Number (Percentage) of interviews coded to this theme						
		Commercial fishing		Recreational Fishing				
		Lobster license only (n = 7)	Other or multiple licenses (n = 7)	Grey Shack Community (n = 5)	Peak body representatives (n = 4)	Other local fishers (n = 12)	Tourism (n = 8)	Non-Extractive (n = 7)
Negative attitudes	Poor management							
	Poor consultation and decision making	1 (14%)	2 (29%)	2 (40%)	**3 (75%)**		1 (13%)	
	Unsatisfactory enforcement & visibility	1 (14%)	2 (29%)			5 (42%)		1 (14%)
	Unsatisfactory evaluation of effectiveness	1 (14%)		2 (40%)	**3 (75%)**			1 (14%)
	Animosity between Government Departments		1 (14%)		**3 (75%)**	1 (8%)		1 (14%)
	Poor zoning scheme							
	Poor placement of sanctuaries	1 (14%)		**4 (80%)**	**2 (50%)**	2 (17%)	3 (38%)	1 (14%)
	Not clearly marked for visitors		1 (14%)	**4 (80%)**		4 (33%)	1 (13%)	
	Criticism fishing regulations too generous						2 (25%)	
	Disbelief in Marine Park effectiveness							
	Ineffective for conservation	2 (29%)	**4 (57%)**		**4 (100%)**			
	Whole seascape needs to be managed	1 (14%)	**6 (86%)**		1 (25%)	1 (8%)		
	Ineffective for managing fish stocks		**4 (57%)**		**3 (75%)**			
	Because species move	1 (14%)	2 (29%)					
	Unproven				**2 (50%)**			
	Marine Park not necessary	1 (14%)	2 (29%)	2 (40%)				
	Barrier to business and investment	1 (14%)				1 (8%)		2 (29%)
Positive attitudes	Marine Park is good for environmental protection	2 (29%)				5 (42%)	**5 (63%)**	
	Marine Park is good for fish growth and breeding	2 (29%)		1 (20%)		2 (17%)	2 (25%)	2 (29%)
	Potential tourism and educational opportunity			1 (20%)		3 (25%)	1 (13%)	3 (43%)
	Establishment process and zoning were done well	1 (14%)	1 (14%)			3 (25%)	1 (13%)	

Note. Themes where more than half (50%) of respondents in a stakeholder group agree are in bold.