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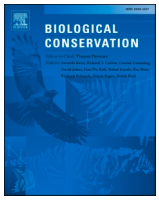

Perceived equity in marine management and conservation: Exploring gender intersectionality in Fiji

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ABSTRACT

Ensuring equitable decision-making and distribution of costs and benefits in conservation and natural resource management is morally right and instrumental to achieving positive social and ecological outcomes. Understanding perceived equity is key; equity is subjective, context-dependent and has implications for legitimacy, cooperation and wellbeing. Since gender, in combination with other social characteristics, influences how people benefit or participate in management, examining perceived fairness from an intersectional perspective is crucial. However, few studies have examined people's perceptions of equity and how those perceptions are related to intersecting identities. Using data from ten villages in Fiji, we assess how perceptions of distributional and procedural equity differ by gender and the intersection between gender and other social identity characteristics (migrant status, age, education, marital status and wealth). We found that the majority of respondents identified the broader community as benefiting the most from management, while women were the most negatively affected. Overall, respondents' perceptions of distributional and procedural fairness were high regardless of gender. The intersection between gender and other social identity characteristics was not significantly related to perceived fairness, except in relation to migrant status; migrant men were less likely to perceive distributional fairness. Our study provides new insights into patterns of perceived (un)fairness in marine management and conservation. It reveals a discrepancy between conservation costs (women are seen as more negatively affected by conservation) and fairness perceptions (women are not more likely to perceive unfairness). Our findings can inform conservation theory and practice aimed at fostering equity in conservation and management.

1. Introduction

Conservation and natural resource management initiatives can have large and diverse effects on people's wellbeing (Ban et al., 2019), with important implications for social equity. Of particular relevance to social equity and human wellbeing is whether the distribution of conservation costs and benefits and decision-making processes are fair. Ensuring fairness in conservation is a moral imperative. In addition, perceived fairness[1] is considered a key driver of attitudes and behavior (Fehr and Schmidt, 1999), including legitimacy (Tyler, 1997), and cooperation (Tyler, 2015). Given that conservation and management rely on stakeholder cooperation (Ostrom, 1990), fairness perceptions likely impact social and ecological outcomes. Indeed, perceptions of unfairness have led to conflict, sabotage, and protests and jeopardized

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[1] Use of the terms 'equity', 'justice' and 'fairness' differs by discipline (Luckasiewicz et al., 2017). Broadly, 1) equity refers to what is right and fair (OED, 2022), and it is more commonly used in global policies (e.g., Convention on Biological Diversity, Sustainable Development Goals) than justice and fairness; 2) justice is considered the 'first virtue of social institutions' (Rawls, 1971: p3) and is concerned with broader aspects than equity (Martin, 2017), such as the underlying issues that lead to inequities (e.g., power, race, class) (Dawson et al., 2018); and 3) fairness is often referred as perceptions of equity in the environmental governance literature, which are underpinned by justice principles (e.g., equality, need) (Friedman et al., 2018; Gurney et al., 2021).

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conservation efforts (Gurney et al., 2014; Mariki et al., 2015; Raycraft, 2020). Fairness perceptions are being increasingly assessed in conservation and management (e.g., Gurney et al., 2019; Franks and Pinto, 2021), and equity more broadly, is a topic of growing interest in conservation policy and practice (Bennett, 2020) and plays a central role in recent global environmental agreements, such as the Convention on Biological Diversity's Global Biodiversity Framework (Gurney et al., 2023).

Recent environmental justice scholarship examines how people perceive fairness in conservation, the reasons for the diversity of viewpoints, and how these are shaped by the context and social identities (Sikor et al., 2014). This empirical approach to equity conceptualizes equity as plural and context-dependent (i.e., what is fair depends on the eyes of the beholder) (Walker, 2012; Sikor et al., 2014) and differs from the normative equity perspective, which seeks to find universal justice principles of right or wrong (e.g., Rawls, 1971). Given that normative equity conceptions guiding conservation policy can differ from those held by local communities (Gurney et al., 2021), it is essential to adopt an empirical approach to determine which justice principles are appropriate to inform local management and conservation. However, it is important to acknowledge limitations; the empirical approach may not capture the injustices rooted in underlying structures such as gender norms (Lau et al., 2021). In addition, perceptions of fairness can be influenced by self-interest (Tyler, 2015), and the approach may uncover deep disagreement about what is fair. As such, rather than a panacea, empirical equity assessments provide an important tool for eliciting locally relevant equity perceptions, that should be interpreted within a broader context of avoiding harm and disadvantage. Environmental justice theory posits three key equity dimensions (Walker, 2012; Sikor et al., 2014): (1) distributional equity – the fairness of the distribution of benefits and costs from management; (2) procedural equity – the fairness of the decision-making process; and (3) recognitional equity – acknowledging and respecting sociocultural diversity, including in relation to values, identities, cultures, types of knowledge, institutions, power, capacities, and rights.

Understanding how inequities are experienced by different social groups is critical to achieving equitable and effective conservation (Dawson et al., 2018). Communities are heterogeneous, harboring a diversity of social identities (based on gender, ethnicity, age, etc.) that shape people's capacities to benefit from and participate in management. Most studies have focused on how impacts are distributed among groups (e.g., Cinner et al., 2014; Gurney et al., 2015), as well as identifying who participates in management and decision-making processes (e.g., Gurney et al., 2016; Friedman et al., 2020). However, these approaches do not illuminate how inequities are experienced. Being a winner (experiencing benefits or participating in decision-making) or a loser (experiencing costs or being excluded from decision-making) does not necessarily lead to perceptions of distributional and procedural (un) fairness (Lau et al., 2021; Ruano-Chamorro et al., 2022).

Only a handful of studies have examined how social identity characteristics are related to perceptions of fairness (e.g., Lecuyer et al., 2018; Abebe et al., 2020; Lau et al., 2021), equity indicators (e.g., Bennett et al., 2020), and preferences for distributional justice principles (e.g., Martin et al., 2014; Gurney et al., 2021). However, there is a lack of understanding of how distributional and procedural fairness perceptions differ by gender and how gender intersects with different social identity characteristics to shape perceptions of distributional and procedural fairness in conservation and management.

Gender is a key element of social identity, with important implications for equity in conservation and management (Kleiber et al., 2018; Gustavsson et al., 2021). Gender refers to socially constructed expectations associated with being a woman or a man (UN Women, 2001). It is inherently connected to power relations, cultural norms, and traditions. In the context of conservation and management, gender shapes how individuals experience benefits and losses (e.g., Kleiber et al., 2018; Rohe et al., 2018) and their ability to participate (e.g., Vunisea, 2008; Rohe et al., 2018; Lawless et al., 2019). Yet, whether these gender inequalities lead to perceptions of distributional and/or procedural (un) fairness remains unclear (e.g., Lau et al., 2021).

Exploring how gender shapes fairness perceptions can help to identify the root causes of gender inequities. For instance, understanding women's and men's perceptions of procedural fairness can help identify ways to ensure that both are treated fairly. Achieving gender equity is considered key to promoting human rights, sustainable development, and effective environmental management and conservation (Baker-Médard, 2017; Galappaththi et al., 2022; Smallhorn-West et al., 2023) and is increasingly being integrated into conservation and management policy. In addition, gender is an entry point for looking at broader justice issues. Once gender blindness is overcome, awareness of constraining power relations and discriminatory structures (e.g., norms, customs) increases (Lawless et al., 2019), including in relation to forms of oppression associated with other social identities (Ferguson, 2021).

Gender intersects with other components of social identity to shape power relations and forms of discrimination and oppression in conservation and management (Lau and Scales, 2016; Ferguson, 2021) with implications for distributional and procedural equity (Kaijser and Kronsell, 2014; Elias et al., 2020). *Intersectionality* acknowledges that humans have different components of social identity that contribute to their unique social position in society (Crenshaw, 1989). Therefore, employing an intersectional lens can reveal how to confront overlapping systems of discrimination to address inequities (Nightingale, 2011). Intersectionality and the environment have been studied in other fields, such as feminist political ecology (e.g., Nightingale and Ojha, 2013; Kaijser and Kronsell, 2014) and development (e.g., Carr and Thompson, 2014), but these insights have been integrated less into conservation scholarship and practice (James et al., 2022). Only a few studies have examined the intersection between gender and other social identity categories in relation to distribution of trade benefits (e.g., Ferguson, 2021), resource use (e.g., Lau and Scales, 2016; Rohe et al., 2018), and participation in governance (e.g., Rohe et al., 2018; Elias et al., 2020). There is a need to better understand how gender intersects with other social identities and how these influence resource users' perceptions of procedural and distributional fairness in conservation and management.

Here, we examined perceived fairness about the distribution of positive and negative impacts from management and decision-making processes for the use and management of marine resources. We explore how distributional and procedural fairness perceptions differ by gender and how gender intersects with other social identity characteristics to shape those perceptions. Using data from ten Indigenous Fijian (*iTaukei*) communities in Nakorotobu and Rakiraki districts in Ra Province that practice traditional management, we examined: a) How do perceptions of winners and losers of management impacts differ by gender?; b) How do perceptions of distributional fairness and procedural fairness differ by gender?; c) How do reasons given for perceptions of distributional and procedural (un)fairness differ by gender?; and d) How are perceptions of distributional and procedural fairness related to intersectionality?

2. Material and methods

2.1. Study site

In Fiji, small-scale fisheries are key to people's livelihoods, subsistence, and culture (Veitayaki, 2000; Gillett, 2016; Vave, 2022). *iTaukei* women contribute significantly to the communities' annual catch and household food security. Yet, women's role has often been overlooked as their fishing activities are often unpaid, informal and considered household chores (Thomas et al., 2021).

iTaukei communities have historically managed marine resources through traditional management systems (Veitayaki, 2000; Vave, 2022) that include strategies such as permanent or temporary no-take zones (i.e., *tabu*), species-specific bans, and gear restrictions (Jupiter et al., 2014;

Vave, 2022). The traditional governance system is embedded in a patriarchal and hierarchical culture that shapes decision-making at the village, district, and provincial levels (Nainoca, 2011; Vuki and Vunisea, 2016). Decisions related to customary fishing grounds are made by the *Bose Vanua*, a collective of the districts' high chiefs. Decisions at the community level are made in consultation between community members and their traditional leader (Vunisea, 2008), who usually has the greatest say in decision-making (Nainoca, 2011). In addition, social and cultural norms and relations shape women's and men's ability to access resources and participate in decision-making processes (Vunisea, 2008; Thomas et al., 2021). In many Pacific Island cultures, people tend to not speak unless addressed or asked, respect the perspectives of elders, and conform to what is agreed upon (Vunisea, 2008).

2.2. Sampling

In 2016, we used household surveys to collect data from 193 individuals across ten villages in Nakorotubu and Rakiraki districts in Ra Province, Fiji. Ra province was selected because it has the largest community-established tabu area in Fiji. Villages of similar size and dependence on fisheries resources were selected with the knowledge of local Wildlife Conservation Society staff and the Ra provincial office. Within each village, households were systematically sampled. A sampling fraction of every i^{th} household (e.g., 2nd, 3rd, 4th) was determined by dividing the total village population by the desired sample size (De Vaus, 1991). Between 10 and 20 surveys were conducted in each village. The number of surveys was dependent on the population size and the time available at each site. Our aim was to conduct between 10 and 20 surveys with more surveys done in the larger villages. Surveys were directed to the primary head of the household, or to the next highest-ranking member if the primary head was unavailable. Surveys were conducted by trained interviewers in the local *iTaukei* language. Responses to open-ended questions were translated into English by these interviewers. This research was conducted with the ethical approval of the Wildlife Conservation Society Institutional Review Board.

2.3. Fairness perceptions

People were asked open-ended questions to assess perceptions of winners and losers from coastal marine management. Management referred to the governance system as a whole, including all types of rules used to manage coastal marine resources, and this was specified to respondents at the beginning of the survey. Individuals were asked: who is most positively affected by management in this community? (i.e., who are the winners) and who is most negatively affected by management in this community? (i.e., who are the losers) (Table 1). In addition, individuals were asked to rate how fair the distribution of positive and negative impacts from management was (i.e., distributional equity), and how fair the decision-making process about marine resources was (i.e., procedural equity) on a 5-point Likert scale (Table 1). Afterwards, individuals were asked open-ended questions about the reasons behind the ratings for both distributional and procedural fairness.

2.4. Social identity characteristics

Together with gender, data collection also included information on other social identity characteristics (Table 1) that may intersect with gender to shape the distribution of management outcomes (e.g., impacts), people's involvement in the decision-making process of resource management (Lawless et al., 2019; Ferguson, 2021), and thus, perceptions of distributional and procedural fairness (Gustavsson et al., 2021). Social identity characteristics were selected based on their relevance in the context of the study and the literature.

Table 1
Description of variables used to examine distributional and procedural equity perceptions and social identities.

Variables	Description	Type of variable
Winners and losers		
Winners	Who is most positively affected by management in this community? (open-ended question)	Categorical (multiple categories)
Losers	Who is most negatively affected by management in this community? (open-ended question)	Categorical (multiple categories)
Equity dimensions		
Distributional equity	In general, do you think the distribution of the positive and negative impacts from management is fair? (5- point Likert scale). Why? (open-ended question)	Ordinal (1–5)
Procedural equity	In general, do you think the way that decisions are made about marine resource use and management is fair? (5-point Likert scale). Why? (open-ended question)	Ordinal (1–5)
Social identity characteristics		
Gender	Women/ men	Categorical (2 levels)
Migrant status	Migrant/ non-migrant. Migrant is used to describe someone who married into a village, while a non-migrant is someone from the village.	Categorical (2 levels)
Marital status	Single/ Married/ Widow	Categorical (3 levels)
Education	Primary/ Secondary/ Tertiary	Categorical (3 levels)
Age	Years	Continuous
Wealth	Material Wealth (MSL). Index based on the presence and absence of household assets (Table A1).	Continuous

2.5. Analysis

2.5.1. Coding

We coded these responses into themes. For a detailed description of the coding process see Supplementary Material. Some respondents did not answer the open-ended questions about winners ($n = 28$), losers ($n = 31$), and 'why' questions regarding distributional ($n = 71$) and procedural ($n = 36$) equity.

2.5.2. Quantitative statistical analysis

To assess the effect of intersectionality and social identity characteristics (Table 1) on perceptions of distributional and procedural fairness, we compared six candidate Bayesian cumulative mixed-effects models for each response variable (six models for distributional equity and six models for procedural equity). For each response variable, we developed one model without an interaction (the additive model) and five interaction models (Table A3). We used a Bayesian approach with the Hamiltonian Monte Carlo algorithm implemented in Stan through the brms package in R (Bürkner and Vuorre, 2019) for 5000 iterations, 1000 burn in, and four chains. We used weakly informative priors; thus, the posterior distribution was informed only by the data. We included social identity characteristics as covariates in all the models (Table A3) and village as a random effect. For all analyses, continuous variables were standardized by subtracting the mean and dividing by 2 standard deviations (Gelman, 2008).

We conducted posterior predictive checks to examine model fit and checked residuals against fitted values. We compared the different models (Table A3) through leave-one-out information criteria (LOOIC) to assess relative model fit. In addition, we checked the proportional odds assumption by fitting an adjacent category model (i.e., it does not

assume an equal effect of the predictor across categories of the ordinal dependent variable) and comparing it against the cumulative model through LOOIC (Bürkner and Vuorre, 2019).

3. Results

Broadly, we found that: 1) people generally perceived high levels of distributional and procedural fairness; 2) perceptions of distributional and procedural fairness did not differ by gender, even though both women and men perceived women as the group most negatively affected by management); 3) we found little evidence of a relationship between intersectionality and fairness perceptions, except in regards to the intersection between gender and migrant status. We outline each of these in turn.

3.1. Gender and perceptions of winners and losers

Respondents generally agreed on who were the winners and losers from management (Fig. 1). Most respondents (66 % of total responses) identified the broader community as the winner (Fig. 1a) and 52 % indicated that no one was a loser (Fig. 1c). However, 24 % of the total responses indicated that women were the losers (Fig. 1c). Women tended to report more frequently that women were the losers, and the difference between women's and men's responses were 7 % (i.e., two-thirds of the people who mentioned that women were the losers were women). 13 % of the responses indicated that the community was the loser (Fig. 1c). Few other social groups were consistently mentioned by respondents as the winners and losers, and there was never more than a 5 % difference in responses between men and women (Fig. 1b and d).

3.2. Gender and perceived fairness

Overall, most men and women perceived high levels of distributional and procedural fairness (Fig. 2). The distribution of positive and negative impacts from management was perceived as fair (or very fair) by 66 % of women and 79 % of men, and the distribution of impacts was perceived as unfair (or very unfair) by 21 % of women and 17 % of men. In addition, 75 % of men and 68 % of women perceived procedural equity (or very fair), and 19 % of men and 20 % of women perceived procedural inequity (or very unfair).

Respondents provided various reasons for their perceptions of distributional (un)fairness (Fig. 3a, Table A4). Two distributional criteria (i.e., public good and equality) emerged as to whether management was considered fair. Public good was defined broadly as everyone benefiting from management, and equality as benefits from management being shared equally within the community. Specifically, 20 % and 10 % of responses (i.e., the percentage of respondents who gave reasons) indicated that the distribution of costs and benefits was perceived as 'fair' or 'very fair' because of community benefits and equal shares in benefits, respectively. A variety of benefits from management also emerged as themes for distributional fairness, with respondents mentioning both broad and specific benefits. Specific benefits included resource sustainability (e.g., increase in the abundance of fish and invertebrates, resource protection), food supply, catch provision for cultural activities, source of income and security, and benefits for future generations. Around a third (33.6 % of responses) indicated fair distribution due to the benefits from management, with resource sustainability mentioned most frequently (17.5 % of responses). Respondents who believed the distribution of benefits and costs was unfair or very unfair cited inequality, reduced resource access, reduced resource access for women, poor management quality, and poor compliance. Inequality refers to respondents perceiving that some groups (e.g., families,

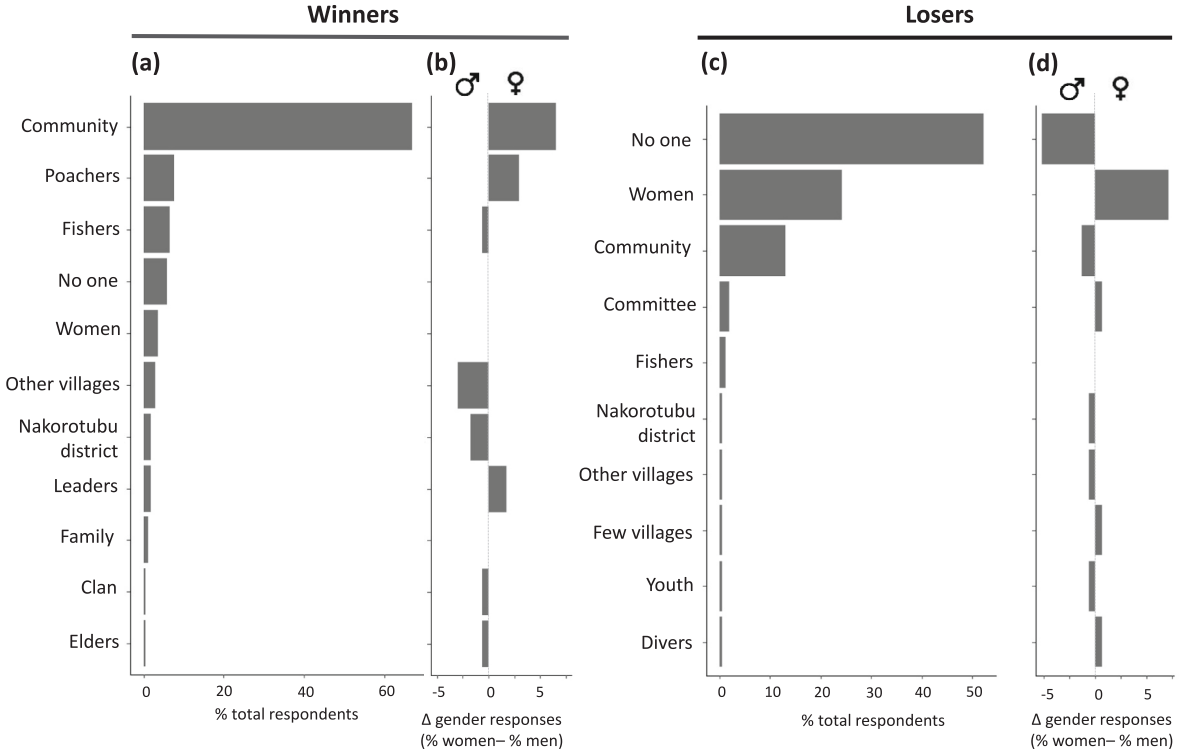

Fig. 1. Perceived winners and losers from management. (a) Total responses to the question 'who is most positively affected by management in this community?' (winners) and (b) differences in responses between women and men regarding winners. (c) Total responses to the question 'who is most negatively affected by management in this community?' (losers) and (d) differences in responses between women and men regarding losers. Most people perceived community as the group most positively impacted by management (winner) and women were the group most negatively impacted by management (loser). The symbol ♀ indicates women and the symbol ♂ indicates men. Responses indicate the percentage of those who respond to the question of winners and losers.

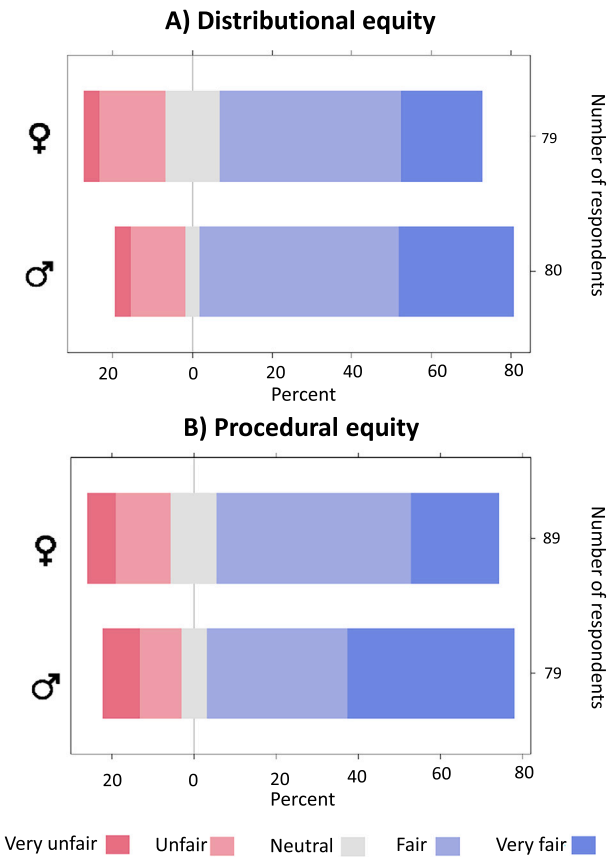

Fig. 2. Perceptions of (a) distributional fairness (i.e., how fair is the distribution of management impacts) and (b) procedural fairness (i.e., how fair is the decision-making process regarding the use and management of marine resources) among women and men. The symbol ♀ indicates women and the symbol ♂ indicates men.

villages, chief) benefited more than others, and reduced resource use indicates that respondents perceived reduced access to fisheries due to management. Reduced access to resources referred to women being negatively affected more than half of the times it is mentioned. Poor compliance and poor management quality referred to some people not respecting the tabu and lack of punishment for non-compliers, respectively. On every theme, there was never more than a 5 % difference in responses between men and women, meaning that they broadly agreed on the reasons for both procedural and distributional fairness (Fig. 3b).

Respondents' reasons for perceived procedural (un)fairness were related to four main themes (Fig. 3c, Table A5). These themes included community agreements, participation, leaders as decision-makers, and respected and trusted leaders. Community agreements and leaders as decision-makers refer to characteristics of the traditional governance systems in which decisions are agreed upon at the village and are often taken by leaders at district meetings (e.g., *Bose Vanua*). 'Participation' generally refers to respondents' perception that everyone participates in decision-making, and 'respected and trusted leaders' refers to respondents' perception that leaders are fair, knowledgeable and respected. Specifically, 11.8 % and 7.4 % of responses indicated that decision-making processes were perceived as 'fair' or 'very fair' respectively, because of community agreements and leaders making decisions, while 11.2 % and 4.3 % of responses indicated that people viewed decision-making processes as 'fair' or 'very fair' because everyone participates, and leaders are trusted and respected respectively. The provision of management benefits, particularly resource sustainability, and the fact that everyone benefited (public good) also emerged as important themes for procedural equity, as well as compliance, which was defined as people respecting the *tabu*. Specifically, responses reported fair or very fair decision-making process due to resource sustainability (5.6 %), public good (8.7 %), and compliance (5.0 %). The most frequent theme for procedural unfairness was poor participation in decision-making (7.4 %). Other reasons for procedural unfairness involved inequality (2.4 %), poor management quality (5 %) and poor compliance (2.5 %). There were no differences regarding procedural fairness reasons between women and men (Fig. 3d, Table A5).

3.3. Intersectionality and perceived fairness

In the case of distributional fairness, we found one model with a significant interaction between gender and a social identity characteristic, namely migrant status (Tables A8, A10). This model had the highest predictive accuracy (Fig. 4, Tables A9, A11). From this model, we can conclude that with at least 80 % probability, the interaction between gender and migrant status had an effect on perceptions of distributional fairness (Fig. 4a). Specifically, migrant men ($n = 21$) were more likely to report perceiving distributional fairness as being 'very unfair' and 'unfair' and less likely to perceive distributional fairness as 'very fair' relative to non-migrant men ($n = 66$), while there was no difference between migrant women and non-migrant women (Fig. 4b). Although migrant men were slightly more likely to report 'unfair' distribution and less likely to report 'very fair' distribution than non-migrant and migrant women, the overlap of the credible intervals is substantive and thus the difference has high uncertainty (Fig. 4b). None of the models showed a significant relationship for perceptions of procedural fairness and interactions between the gender and social identity characteristics (Table A11). The model with more predictive accuracy for procedural equity was the additive model (Fig. A1, Tables A9, A11).

4. Discussion

Our results highlight three key findings, which we discuss in turn: 1) high levels of perceived distributional and procedural fairness are related to perceptions of equality and overall public good, 2) gendered social norms may shape perceptions of fairness despite unequal distribution of costs between genders, and 3) historical context and rights may shape how groups, such as migrant men in the Pacific, perceive fairness.

4.1. High levels of perceived fairness

In general, people perceived high levels of distributional fairness. People provided three main reasons for fair (or very fair) cost-benefit distribution: 1) benefits were distributed equally (i.e., equality), 2) everyone benefited in some way (i.e., community benefit or public good), and 3) management provides benefits (e.g., resource sustainability). The first reason suggests that the justice criterion 'equality' matters for fairness perceptions regarding the distribution of costs and benefits from management. These results are consistent with a previous study conducted in these communities, which showed that 67 % of respondents considered equality as fair when distributing monetary benefits arising from a payment for ecosystem services program (Gurney et al., 2021). The relevance of the equality principle aligns with justice research on social psychology which suggests that equality tends to be preferred when the maintenance of enjoyable social relations based on mutual respect is prioritized (Deutsch, 1975). In addition, these results suggest that inequality and costs (e.g., reduced resource access) are related to perceived distributional unfairness. The second reason suggests that 'community benefit (public good)' is another important justice criterion for distributional fairness in this context. Furthermore, with respect to the third reason, most of the benefits referred to by respondents are available to the entire community (e.g., resource sustainability, cultural benefit), which may also indicate the importance of the public good criterion. Similarly, a study in China found that the

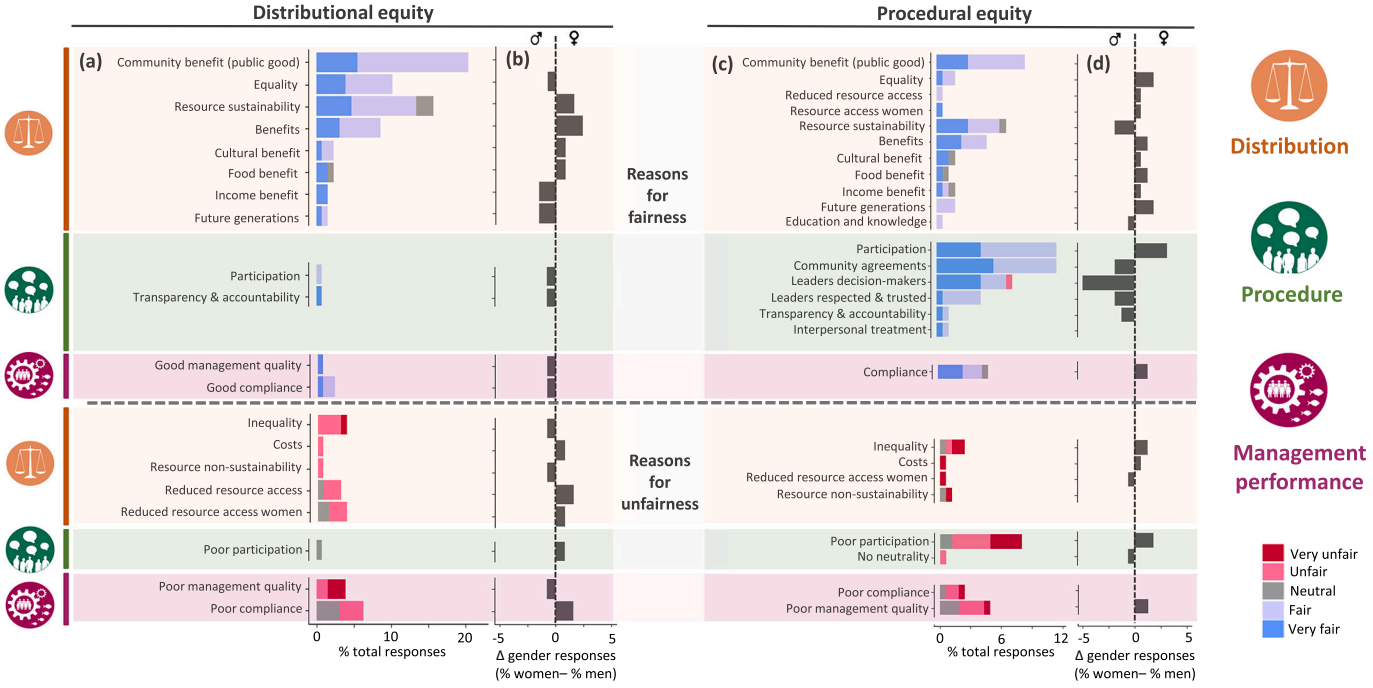

Fig. 3. Reasons why people perceive (a) distributional (un)fairness regarding the distribution of management impacts and (c) procedural (un)fairness regarding the decision-making process. Difference in gender responses regarding (b) distributional and (d) procedural equity. Open-ended questions regarding why they perceived distributional (un)fairness and procedural (un)fairness were coded into themes and grouped into three dimensions (distribution, procedure, and management performance). Reasons for fairness ('very fair' and 'fair') are indicated in blue above the dotted line. Reasons for unfairness ('very unfair' and 'unfair') are indicated in red below the dotted line. The symbol ♀ indicates women and ♂ indicates men. Responses indicate the percentage of those who gave reasons for distributional and procedural equity. The procedure icon is adapted from "Family" by Joanna Woerner, Integration and Application Network (ian.umces.edu/media-library) used under CC BY-SA 4.0. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

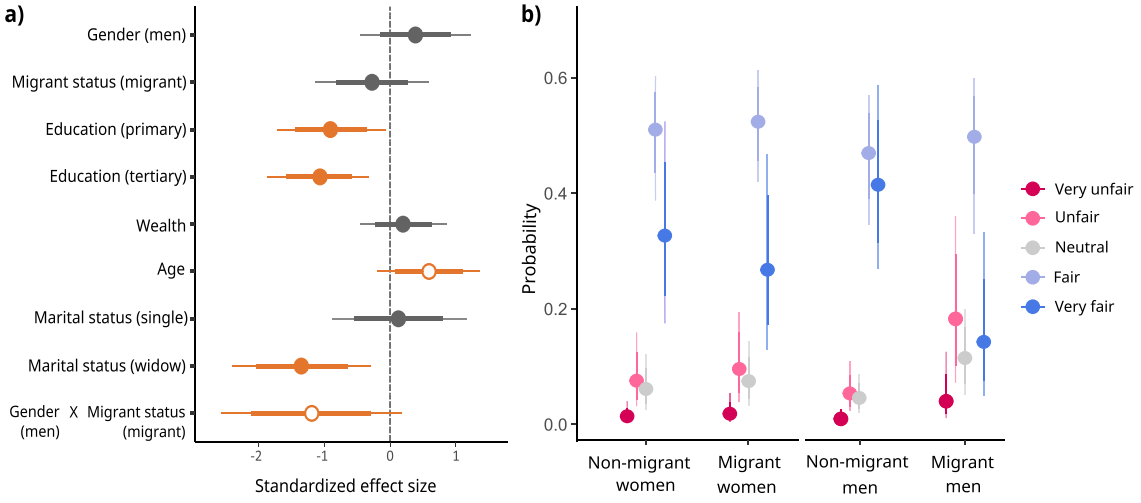

Fig. 4. Perceptions of distributional fairness and social identity characteristics based on the model with the interaction between gender and migrant status. (a) Effect size of the interaction between gender and migrant status and other social identity characteristics. Parameter estimates are Bayesian posterior means and 95 % and 80 % uncertainty intervals. Orange indicates covariates with an effect on perceptions of distributional fairness and gray indicates no effect. The interaction and covariate with a white dot indicate an effect on perceptions of distributional fairness with higher uncertainty (i.e., it crosses the zero). With 80 % certainty, there is an interaction between gender and migrant status. (b) Marginal effects on perceptions of distributional fairness. Points indicate posterior mean estimates of the probability of responses in each category of distributional equity. Error bars indicate 80 % and 95 % credible intervals. Our analysis shows that migrant men were more likely to report perceiving distributional unfairness and less likely to perceive distributional fairness relative to non-migrant men, while there were no differences between migrant women and non-migrant women.

public good criterion (i.e., using forest funds for community-based infrastructure and other public goods) was perceived as the fairest way for everybody to benefit (He et al., 2021).

People generally perceived high levels of procedural fairness. Reasons behind procedural fairness were related to four main topics. First, people perceived the decision-making process to be fair because management provided benefits and everyone benefited (public good). Procedural fairness is often thought to shape perceptions of distributional fairness (Thibaut and Walker, 1975). However, our results suggest that perceived outcomes (e.g., distribution of benefits) may determine

perceptions of procedural fairness. This finding is consistent with experimental research on the psychology of justice, which suggests that when there is insufficient information about the decision-making process, people use other cues, such as the fairness or favourability of outcomes, to assess procedural fairness (Van Den Bos, 1999; Blader, 2007). Second, people also perceived procedural fairness because 'everyone' participated in the decision-making process. Theoretically, voice – the ability to express opinions and concerns – and influence in decision-making are key for procedural equity (Ruano-Chamorro et al., 2022). However, in this case, 'everyone's participation' may not imply that all the people in the community have a voice as cultural barriers in the Pacific limit some people's ability to have a voice and influence decisions (Vunisea, 2008; Nainoca, 2011; Lawless et al., 2019). In addition, participation may involve different ways of exercising agency beyond having a voice in decision-making processes (e.g., participation through husbands, women representing other women) that satisfy people's psychological needs for procedural equity and self-determination (Decaro and Stokes, 2013) and that are more valuable for some individuals (Singh, 2008).

Third, our findings also suggest that people perceived procedural fairness because decision-making followed traditional governance procedures (i.e., community agreements, leaders/decision-makers, and leaders trusted and respected). Along with the traditional governance system, which emerged centuries ago to regulate access and use of marine resources (Veitayaki, 2000; Vave, 2022), justice principles may have evolved to fit the social-ecological context (Decaro and Stokes, 2013) and become legitimate equity norms that facilitate cooperation, stable social interactions (Tyler, 2015), and effective institutions (Fisher et al., 2018; He et al., 2021). For instance, a study conducted in these communities revealed that distributing monetary benefits from a conservation project according to customary rights was considered the fairest benefit distribution approach (Gurney et al., 2021). Fourth, people's reasons for procedural fairness were also related to management performance, including the level of compliance and management quality (e.g., enforcement). Perceived fairness is often seen as a key driver of compliance and management quality in the psychology of justice (Tyler, 2015) and in environmental management (e.g., Rohe et al., 2018) literature. Our results suggest that perceived compliance and management quality may also shape fairness perceptions. These results align with a study in a biosphere reserve in Mexico which found that respect for decisions and their further enforcement was an important equity claim made by local stakeholders (Lecuyer et al., 2018).

4.2. No gender differences in perceived fairness

The second key result was that we did not find large differences between women's and men's perceptions of distributional and procedural fairness, even though people perceived that women bore most of the management costs and are often excluded from decision-making (Vunisea, 2008). This result aligns with findings from a study in Papua New Guinea where women were prevented from using a collective fishing method and did not perceive this as unfair (Lau et al., 2021). In the context of our study, perceptions that everyone in the community benefits (or benefits equally) may be more important for overall perceptions of distributional fairness than the costs suffered by a particular social group. Indeed, in the Philippines, women were less likely than men to perceive positive effects from a marine protected area, but they would still recommend it (Kleiber et al., 2018).

Further, perceptions of fairness may also be influenced by constraining social structures (e.g., gender and cultural norms), gendered power relations (Baker-Médard, 2017; Lawless et al., 2019; Galappaththi et al., 2022) and the legitimate traditional governance systems which tend to disadvantage women (Vunisea, 2008; Rohe et al., 2018). In addition, psychological mechanisms (e.g., system justification) can motivate people to legitimize and support social institutions that impact them negatively (Tyler, 2015). For instance, a study in Laos suggested that the positive aspects of a national park were overemphasized by locals to justify the hardships they faced (Martin and Myers, 2018).

4.3. Intersectionality and equity perceptions

Our findings show little empirical evidence of a difference in fairness perceptions shaped by the interaction between gender and the social identity characteristics examined (i.e., age, wealth, marital status, and education), apart from the interaction between migrant status and gender. Specifically, we found that migrant men (i.e., men who moved to their wife's village after marriage) were slightly more likely to report distributional unfairness and less likely to report distributional fairness than non-migrant men. This finding reflects how customary ownership of natural resources is controlled through patrilineal descent in Fiji; meaning that migrant men do not have analogous ownership and access rights as those who are based in their village of origins and may therefore not feel they benefit as much as others. Other studies have shown that migrants perceived lower benefits from co-management (Macneil and Cinner, 2013) and were less involved in decision-making processes (Cinner, 2009). A study in Palau, which defined migrants as non-Palauans, found that migrant men had less access to resources (boats) than migrant (married) women and non-migrant men (Ferguson, 2021). In this context, migrant men may view the distribution of costs and benefits from management as unfair compared to non-migrant men. In the Pacific, migrant men who do not have tenure rights have less agency in community decisions (Lawless et al., 2019) and, thus, are less likely to benefit relative to non-migrant men.

Several studies have highlighted the significant role of gender intersectionality in conservation and management in the Pacific region (e.g., Vunisea, 2008; Nainoca, 2011) and elsewhere (e.g., Shitma, 2018; Erwin et al., 2021). For instance, it has been reported that older men tend to have more decision-making power than women or younger men in the Pacific (Vunisea, 2008; Nainoca, 2011). Although interactions between gender and age tend to be associated with inequalities in the Pacific, we found that the effects of gender on fairness perceptions did not depend on age, education, marital status, and wealth. There are two potential reasons why we did not find significant interactions between gender and the other social identity characteristics. One possible reason is that, in this context, inequalities associated with gender and social identity characteristics are embedded in the traditional culture and are seen as legitimate and thus not considered unfair (see discussion in the previous section with regards to gender only). Another reason may be related to the low variability of some of the social identity characteristics. For instance, there was not much variability in marital status. In Fiji, most heads of households are married (Fiji Bureau of Statistics, 2021) and most widows are women because men tend to remarry and live shorter than women (Republic of Fiji, 2023).

4.4. Future directions

We suggest three key research directions to continue advancing the understanding of equity in conservation and management. First, future studies could assess the criteria underpinning perceptions of fairness. Notions of fairness are plural and situated (Sikor et al., 2014) as people can use multiple criteria to assess the fairness of distribution of costs or benefits (i.e., equality, need, proportionality) (Deutsch, 1975) or decision-making (e.g., voice, decision control, respect) (Ruano-Chamorro et al., 2022). Future research could focus on how social identity characteristics are related to preferences for justice criteria regarding decision-making processes or the distribution of management impacts (e.g., see Gurney et al., 2021 for an example regarding the distribution of monetary benefits arising from a co-managed protected area). For instance, we found that everyone participating in decision-making was an important reason for procedural equity. However, it is unclear what form of agency (e.g., voice, influence on decisions) is relevant in this

context and for whom. This line of research would benefit from a qualitative inductive approach that involves examining justice notions held by communities (e.g., see Lau et al., 2021).

Second, understanding people's claims regarding the equity dimension of recognition is vital for elucidating perceptions of distributional and procedural fairness and advancing equitable management (Sikor et al., 2014; Lecuyer et al., 2018; Lau et al., 2021). Our study suggests that there are two potential aspects that may be related to recognition issues in this context: a) recognition of the diversity of social identities within a community (e.g., migrant men, young people, and widows), and b) respect toward the traditional governance systems, which has been identified as a recognitional concern in another area in the Pacific (Lau et al., 2021). Future research might focus on gaining deeper insight into what social identities are (mis)recognized and why, how recognition of traditional governance systems differs across social identity categories (e.g., Abebe et al., 2020) and how these shape perceptions of distributional and procedural fairness.

Third, future studies could also assess the influence of traditional governance characteristics (e.g., community agreements, respected and trusted leaders) on fairness perceptions. Research could investigate how social structures (e.g., cultural and gender norms) and power relations embedded in traditional governance systems are creating inequalities and shaping perceptions of fairness to provide insights on how to achieve conservation justice. A key consideration when examining people's perceptions of fairness is recognizing that structural injustices, including gender inequalities, may either not be visible to those impacted or may not be considered as an issue of fairness if they are (Lau et al., 2021). Other approaches, such as feminist political ecology (e.g., Nightingale and Ojha, 2013), could be used to understand how social structures and power relations shape perceptions of fairness. More broadly, this line of enquiry may help bridge empirical and normative approaches to elucidating equity. Specifically, these approaches investigate the social, economic and political dynamics that shape intersectional experiences of disadvantage in the context of conservation. As such, they enable contrast and comparison between local perceptions (i.e., empirical equity) and broader international discourse around human rights (i.e., normative equity). Understanding this gap is particularly important for identifying when and why local perceptions of fairness might not align with established principles of human-rights, and thus can provide further empirical evidence on how to balance the two approaches for ultimately more equitable conservation.

4.5. Conservation and management insights

We highlight three key lessons from our study that can inform management and conservation efforts in Fiji and beyond. First, conservation costs and benefits will be more equitably distributed when in line with local values and equity preferences. For instance, in some contexts (e.g., societies where social relationships and mutual respect are prioritized), the value placed on collective benefit may outweigh the conservation costs borne by individuals, including by those individuals themselves. Second, within communities, people may perceive, and experience (in)equity differently based on the rights and experiences of their intersectional identities. The disadvantages of some groups—migrant men in the case of this study—may be obscured by approaches to equity that fail to apply an intersectional lens or pre-define target groups who experience inequity (e.g., women only). Intersectional identities, and accompanying rights and restrictions, are embedded in history and context; dedicated attention to uncovering these will help ensure that management and conservation do not inadvertently exacerbate disadvantage. Third, perceived and experienced inequity are dynamic; economic, social, political and cultural conditions that shape what is considered fair can change over time. For example, what is considered fair in the distribution of benefits associated with a marine protected area in the study area has been suggested to be related to increasing market interaction and levels of formal education (Gurney et al., 2021). Thus, monitoring perceptions of fairness and the context in which they occur is key to ensuring equitable conservation and management in the future.

5. Conclusion

Understanding how people with different intersecting identities (e.g., gender interacting with age) perceive distributional and procedural fairness is critical to moving toward equitable governance. We found that, although management does not impact everyone equally (the community as a whole benefited the most, while women were the group who bore most of the costs), perceptions of distributional and procedural fairness are generally high and were not related to gender. In addition, we found no evidence of a relationship between fairness perceptions and interactions between gender and social identity characteristics (age, education, marital status, wealth) with the exception migrant status. Given that perceptions of fairness are context-dependent and dynamic, it is through studies like ours that we can unravel the complexity of people's inequity experiences in management and help inform equitable management and conservation processes and policies that leave no one behind. Importantly, our study highlights the relevance of better understanding underlying causes leading to (in)equity (e.g., social structures and power relations) to achieve management and conservation justice.

CRediT authorship contribution statement

C. Ruano-Chamorro: Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis, Conceptualization. **G.G. Gurney:** Writing – review & editing, Visualization, Supervision, Methodology, Investigation, Funding acquisition, Conceptualization. **S. Mangubhai:** Writing – review & editing, Visualization, Methodology, Investigation, Funding acquisition, Conceptualization. **M. Fox:** Writing – review & editing, Investigation, Methodology. **J. Lau:** Writing – review & editing, Supervision. **W. Naisilisili:** Writing – review & editing, Investigation. **S. Dulunaqio:** Writing – review & editing, Investigation. **J.E. Cinner:** Writing – review & editing, Visualization, Supervision.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

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Appendix A. Supplementary data

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