

Influence of Community Perceptions towards Conservation and Eco-tourism Benefits at Tiwai Island Wildlife Sanctuary, Sierra Leone

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Abstract Community support for protected areas is increasingly viewed as an important element of biodiversity conservation. This is often predicated on the provision of benefits from protected areas, and a common means of providing such benefits is tourism development. However, the relationship between receipt of tourism benefits and support for conservation has not been explored. This study examined the influence of community perceptions towards conservation and eco-tourism benefits at Tiwai Island Wildlife Sanctuary, Sierra Leone. Tiwai Island Wildlife Sanctuary is one of the designated sites for tourism in a region where protected areas are becoming increasingly visited and where community support for conservation has not been fully investigated. Results of a questionnaire survey revealed positive perceptions towards tourism and high support for conservation (84.3%), as well as a recognition that tourism is dependent upon the existence of the sanctuary. Community perceptions towards eco-tourism were positively related to the receipt of eco-tourism benefits, and to support for conservation. However, a positive relationship between receipt of eco-tourism benefits and support for conservation was not identified, suggesting that benefits from protected area conservation make no difference to community support for conservation. It is clear that eco-tourism benefits from the TIWS are unequally distributed and that this is recognized by the communities, influencing their perceptions towards eco-tourism. Although perceptions are generally positive, the communities do recognize the effect of eco-tourism on inflation locally. Overall, this study did demonstrate that eco-tourism benefits engender support for conservation.

Keywords Local Attitudes, Tourism, Protected Areas, Conservation

1. Introduction

Mutually supportive relationships between communities and nearby protected areas are critical to the long-term success of conservation efforts. In sub-Saharan Africa, many protected areas were first created during colonial times as hunting grounds or parks for European elites, with little or no regard for the needs or desires of local communities[1],[2]. Today, many of these areas harbor long-standing conflicts over land tenure and resource use as reported by International Institute for Environment and Development[3]. These conflicts may create tensions between local communities, protected area staff, and conservation goals [4],[5]. Protected areas are the cornerstones of biological conservation. Although they have usually been set aside from human exploitation, it is now increasingly recognized that protected areas should play a role in sustaining local communities adjacent to them only[6],[7].

Various projects that link conservation and development have been implemented in and around protected areas in an effort to generate benefits for local communities that have otherwise been disenfranchised by protectionist policies[8]. The rationale behind such initiatives is to engender support for conservation among local communities, by involving them in management and decision-making and by providing benefits to offset the opportunity costs of protection. If such projects are successful, we would expect local communities to display more positive attitudes towards conservation and associated development projects.

A number of recent studies have examined the issue of local perceptions towards conservation and development[10]. It has generally been found that costs associated with conservation (such as wildlife damaging crops) have negative effects on local attitudes, whilst benefits from conservation (such as game meat) may have some positive effects.

One of the most common uses of protected areas is tourism. Protected areas in developing countries are increasingly popular destinations for wildlife tourists, and tourism has the potential to generate sustainable local benefits 'sufficient for local people to value, and therefore

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protect, their wildlife heritage as a source of income'[11]. Although several studies have examined the economic performance of tourism to protected areas[9],[12], few have assessed local perceptions towards tourism. One study found that attitudes towards protected area tourism were more positive among those receiving economic benefits from tourism than those not economically benefiting[13]. However, it remains to be demonstrated whether the receipt of tourism benefits result in more positive attitudes towards conservation. Other studies have shown an unequal distribution of tourism benefits within communities and commensurate differences in level of support between those benefiting and those that do not[13],[14].

This study aimed to address these issues. Hypothesis 1 is that receipt of benefits from protected area tourism results in

greater support for conservation amongst surrounding communities. This relies on an associated supporting hypothesis 2, namely that people recognize the role that a particular protected area plays in attracting tourists to the area. This supporting hypothesis was also tested. If tourism is to act as a sustainable form of development, then two additional factors are important. Firstly, benefits should be distributed in an equitable manner, and secondly host communities should support the development of tourism. This study examined the perceived distribution of benefits within communities and the effect of this on support for tourism. This paper also considers how tourism could be improved, based on patterns of local community perceptions.

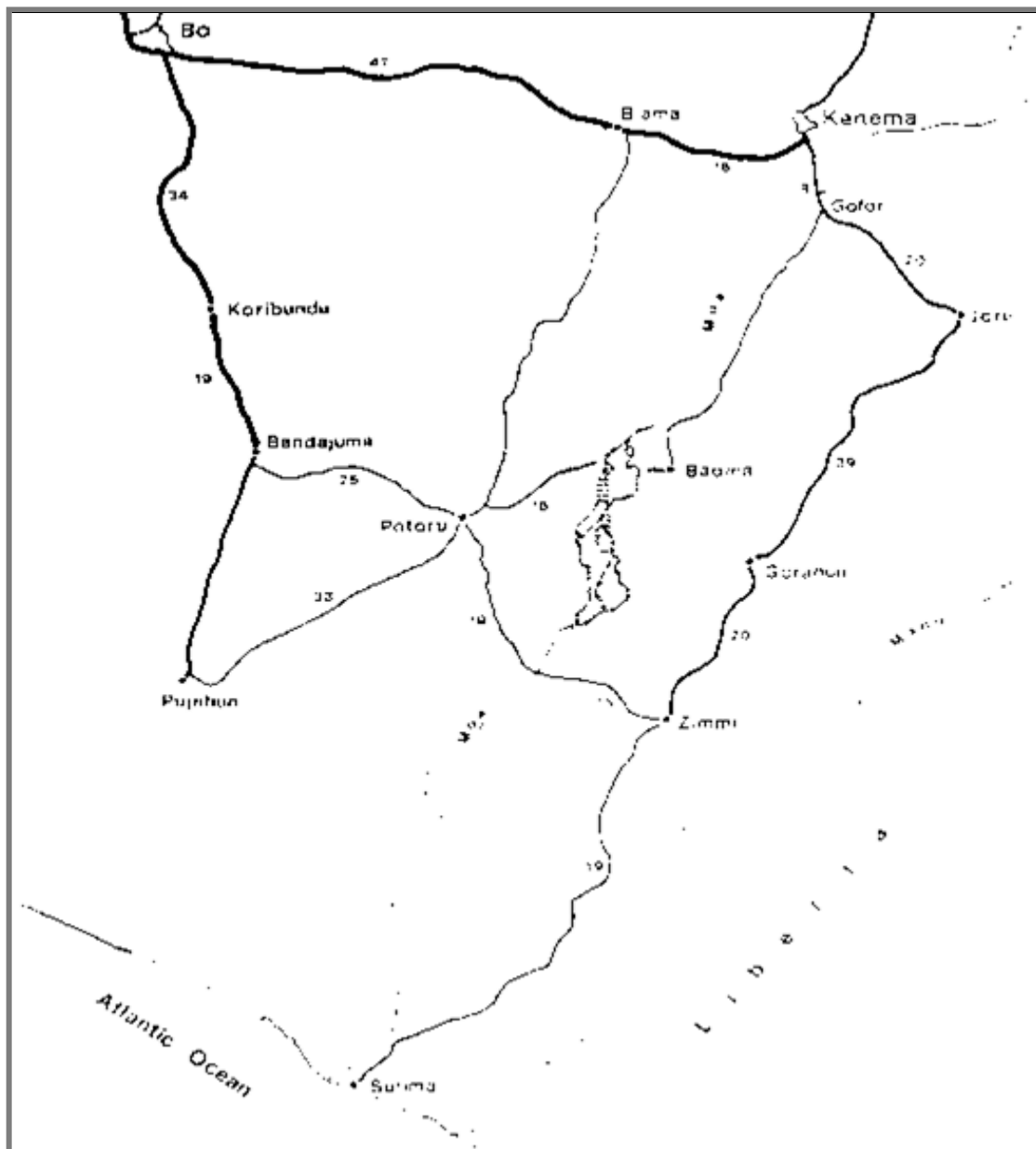


Figure 1. Southern Sierra Leone - Shading shows the location of Tiwai Island. Source: Tiwai Statement for Management (1989)

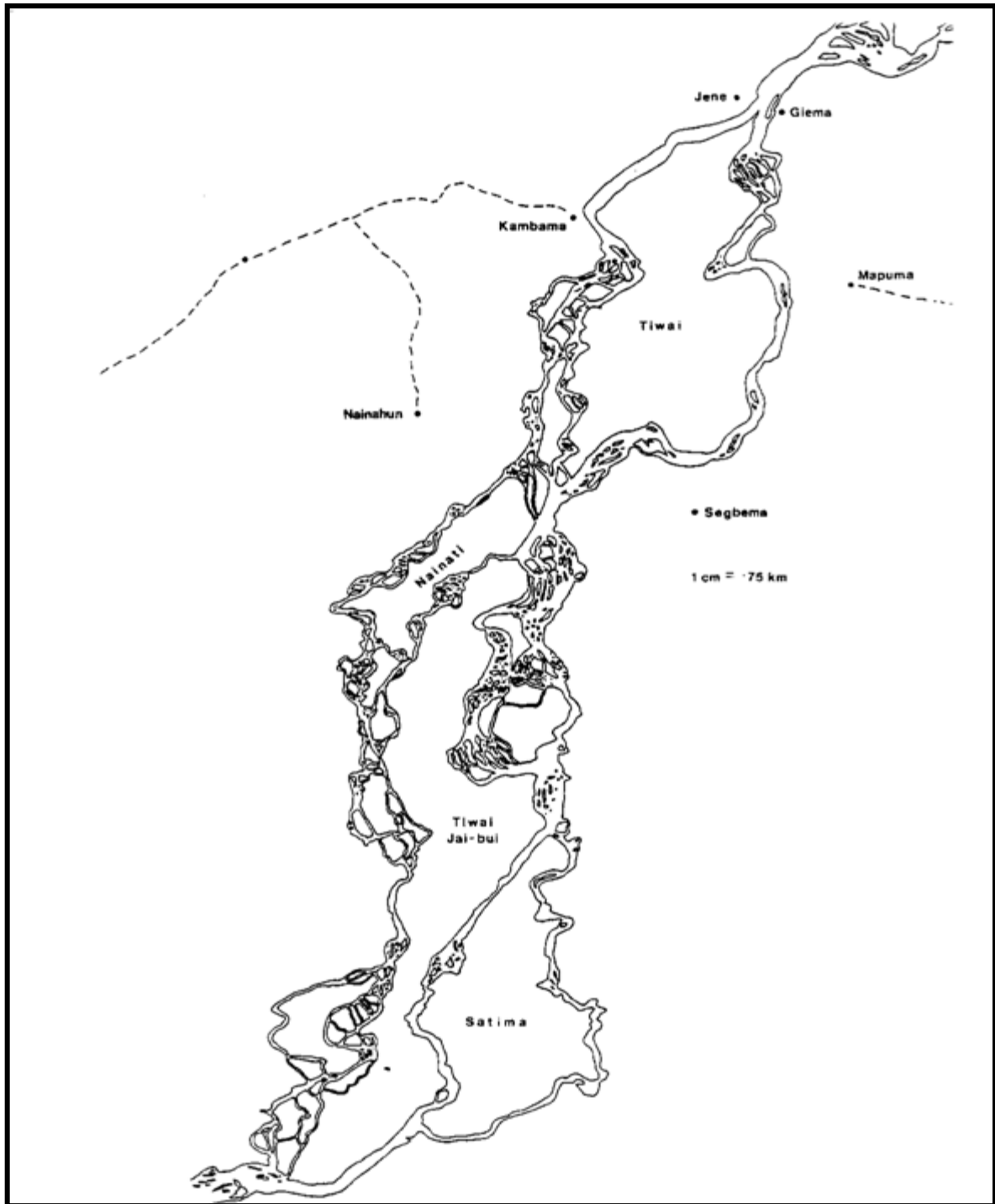


Figure 2. Tiwai Island the six nearby villages and the islands downstream. Source: Tiwai Statement for Management (1989)

Much of the research into people-park relations in developing countries, including the role of tourism, has focused on Africa and to some extent South America[9]. As in other parts of the developing world, increased concern over the burden that conservation often places on local communities has led to efforts to incorporate development goals into conservation practices[15].

Given the recurring nature of conflict between conservation and local communities, it is critical that conservationists better understand local views with respect

to wildlife and protected areas. Toward that end, the focus of this study was Tiwai Island Wildlife Sanctuary (TIWS) in Sierra Leone. If this is to serve as a national and regional example of sustainable tourism, then, among other things, it is important that local community support for conservation is nurtured. Without such support, the environmental resource upon which tourism is based may be threatened.

2. Materials and Methods

2.1. Site Profile

Sierra Leone is located on the Atlantic Coast of West Africa, and lies at the western end of the Upper-Guinean forest block. Tiwai Island Wildlife Sanctuary ($7^{\circ} 35.5' N$, $11^{\circ} 21' E$) is approximately 12km² in size and located in the Moa River in Southern Sierra Leone (Fig. 1). The island is about 6km up the Moa River of Gola West and is part of the Gola ecosystem[16]. Lying between the mainlands of Barri Chiefdom, Pujehun District, Southern Sierra Leone and Koya Chiefdom, Kenema District, in Eastern Sierra Leone; the island is of low relief approximately 85m above sea level at the Moa Bank to a maximum of approximately 120m above sea level in the interior[17].

Tiwai Island was first identified as a valuable site for wildlife conservation and research in 1979. Subsequently, the island became the site of collaborative research project (later became known as Tiwai Primate Project) between Njala University College, Hunter College of the City University of New York and the University of Miami. As the research project developed, scientists and nature conservationists became interested. This provided the need for the island to be formally protected. Tiwai Island was declared a wildlife sanctuary under the terms of the 1972 Wildlife Conservation Act of Sierra Leone.

Tourists have travelled to the islands since the establishment of the nature centre in 1987. By July 1989, over 482 people had visited the centre[18],[19]. Since that time, tourism has grown steadily. In the 2010, almost 605 visitors were recorded. Of these, 76% were foreign tourists, consisting mainly of European and North American visitors[20]. It should be noted that tourism in Tiwai is essentially terrestrial; therefore, management and conservation are concerned only with the terrestrial component of the island. Indeed, conservation of the marine component has not received much attention.

The island has a permanent research station and a small-scale visitor center in Kikihun on the island, for the promotion of eco-tourism. There is limited accommodation for visitors within Tiwai, and most tourist development is confined to two gateway villages; to the south, the village of Kambama in Pujehun District, Southern Sierra Leone and to the east, the village of Mapuma in Kenema District, Eastern Sierra Leone. All visitors to Tiwai pass through either one or both of the gateway villages, with those arriving through Kambama by the outboard engine powered speedboat constituting 75%. Access to the island is easier from Kamabma. In total eight host communities share ownership of the island: Segbwema, Mapuma, Kambama, Nianiahun, Geima, Jene, Boma, and Sahun, of which, six communities (Segbwema, Mapuma, Giema (Koya Chiefdom) and Kambama, Nianiahun, and Jene (Barri Chiefdom) (Fig. 2). The dominant economic activity in the area is farming.

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2.2. Data Collection and Analysis

A structured questionnaire was distributed to 90 households, 45 in Koya chiefdom and 45 in Barri chiefdom, with 15 households per village for the 6 study communities adjacent to the island (as shown in Fig. 2). Six random starting points were selected in each village in each of 6 study sites, and every other house was visited. Alternate male and female respondents were selected for interview, resulting in an almost balanced distribution of respondents by gender (47 male and 43 female). Interviews were conducted in Mende (the local dialect).

After a series of demographic questions (age, sex, education, occupation, number of children, place of birth, marital status), respondents were asked about their contact with tourists and their involvement in the tourism industry. A series of dichotomous (yes/no) questions were then asked regarding respondents' attitudes towards conservation and tourism. These were posed as statements to which respondents were asked to agree or disagree[21]. Three categories of question were asked: (1) questions regarding respondents' general attitudes towards tourism and conservation; (2) questions regarding the distribution of benefits and costs of tourism, and (3) questions regarding the cultural impacts of tourism. Questions were selected after workshop discussions with community representatives regarding the local impacts of tourism.

Analysis was conducted using the SAS system for windows[22]. Relationships between dependence on tourism and individual attitude questions, and between attitude of conservation and attitudes towards tourism, were analysed using the chi-squared test. Logistic regression was used to identify demographic factors related to dependence upon tourism. Answers to 11 questions regarding tourism were combined into a single additive score. Positive answers were scored 1 and negative answers 0, and the answers summed to give a score ranging from 0 to 11, with a higher score indicating a more positive overall attitude. The internal consistency of this measure was examined using Cronbach's alpha[13]. This lies between 0 and 1, with higher values indicating higher internal consistency. Differences in the mean score between those dependent and not dependent

upon tourism for income, and between those with positive and negative attitudes towards conservation of the island, were analysed using two-sample t-tests. In addition, stepwise multiple regression was used to examine the contribution of other demographic factors to overall attitude towards tourism. For t-tests and regression, the score variable was logarithmically transformed to fit the assumption of normality required for these tests.

3. Results and Discussions

3.1. Community Characteristics

A significant ($F = 13.72$; $df = 2$; $P = 0.016$) number (58%) of the respondents were within the age category of 30 ~ 50 years, followed by those who were within the age range of less than 30 years (30%) and above 50 years (12%); with a significant ($F = 625.00$; $df = 1$; $P = 0.002$) number being males (92%). Significant ($F = 243.00$; $df = 2$; $P = 0.004$) difference was observed in the marital status, with 95% of the respondents being married. The most common (form of occupation was farmer (90%); others included housewife (3%), pupil (2%), carpenter (2%), trader (2%) and forest guide (2%). There were significant differences in the categories of occupation ($F = 35.33$; $df = 5$; $P = 0.028$). All of the respondents were born within the study areas. No significant ($F = 0.00$; $df = 5$; $P > 0.05$) differences with regard to age, gender, education, marital status and occupation were found amongst the communities.

3.2. Experience of Eco-tourism among the Community

The majority (36%) of respondents had no contact with or derived benefits from eco-tourism. Only 20.4% of respondents stated that their families were dependent upon eco-tourism for part of their income. Equally, 22.9% of respondents had spoken to tourists, whilst 12.1% had sold goods to tourists. Very few had provided guiding or other services (3.5% and 5.1%, respectively). Significantly more respondents in Kambama village (Barri chiefdom) than in the other five villages were dependent upon eco-tourism ($\chi^2(1) 82.5$, $p < 0.0001$). Stepwise logistic regression revealed Barri chiefdom residents, farmers and younger respondents to be significantly more likely to be dependent upon eco-tourism (Table 1).

Table 1. Logistic regression of relationship between demographic variables and dependence on tourism ($n = 85$). B = regression coefficient, SE = standard error, Wald = Wald statistic, p = significance. Overall fit of predicted to observed results = 82%

Variable	B	SE	Wald	p	R
Kambama (Barri chiefdom)	4.47	0.51	37.43	0.001	0.45
Profession (farmer)	3.38	0.23	17.15	0.001	0.18
Age (younger)	-1.14	0.12	9.12	0.001	-0.14

3.3. Perceptions towards Conservation

Support for conservation was very high, with 84.3% of respondents agreeing that 'it is good that TIWS is protected by the government'. The majority of respondents (81%) also agreed that 'tourists come here because of Tiwai'. Thus the hypothesis that people recognize the link between eco-tourism and conservation can be accepted.

3.4. Perceptions towards Eco-tourism

Overall, respondents held positive perceptions towards eco-tourism. Most would be happy to see more tourists (83.4%) and for their children to work in eco-tourism (80.0%). Few respondents felt that eco-tourism was eroding traditional customs (16.7%), although around one-third felt that it was damaging their culture (24%) and only 2% did not like the way that tourists dress. There were mixed feelings regarding the distribution of benefits from eco-tourism. Although some respondents felt that only outsiders benefited from eco-tourism (21.7%), half felt that the whole community benefited from eco-tourism (45.9%). A similar proportion felt that only rich people benefited (42.7%), and few respondents felt that eco-tourism benefited their family or increased their income (24.6% and 20.7%). Almost half of the sample felt that eco-tourism had caused prices of goods to rise (44.6%). The mean score on the 11-point attitude scale was 7.4, indicating an overall positive perception towards eco-tourism. The scale had an acceptable level of internal consistency (Cronbach's alpha 0.61, cf. accepted values of 0.63 and 0.68 in [13]).

3.5. Relationships between Eco-tourism Benefits and Eco-tourism Perceptions

Responses to 8 out of the 11 questions regarding eco-tourism perceptions revealed significant differences between those dependent upon eco-tourism and those not (Table 2). For 7 of these, those benefiting from eco-tourism were significantly more likely to answer positively. Only for the question regarding prices were those benefiting from eco-tourism more likely to give a negative answer and say that prices had risen. Those dependent upon eco-tourism had a significantly more positive overall perception than those not dependent upon it ($t_{349} = 6.48$, $p < 0.001$). Equally, dependence upon eco-tourism was the most important factor explaining perception score in the multiple regression model ($F_{7,349} = 19.1$, $p < 0.001$, $R^2 = 0.278$). Six other variables were included in the model, in the following order; village, age, sex, dichotomous variables for farmers, and whether or not respondents had spoken with tourists. Among the 6 study communities, those dependent upon eco-tourism and who had spoken with tourists, residents of Kambama, older residents and female residents were more likely to have a positive perception, while farmers were less likely to have a positive perception.

The relationship between chiefdom and perception score was examined further. There was no significant difference in mean score among those residents dependent upon

eco-tourism in Barri (7.40 ± 0.19) and Koya (7.75 ± 0.23), but among those not dependent upon eco-tourism the perception score was significantly lower among Barri chiefdom community residents than Koya chiefdom community residents (Barri 4.84 ± 0.28 , Koya 6.88 ± 0.11 , $t_{254} = 8.01$, $p < 0.001$). In both chiefdoms, those dependent upon eco-tourism had a significantly higher score than those not dependent (in Koya, $t_{183} = 2.58$, $p < 0.01$; in Barri, $t_{184} = 7.67$, $p < 0.001$).

3.6. Relationships between Tourism Benefits, Perceptions and Support for Conservation

For 7 out of the 11 eco-tourism perception questions, those

with a positive perception towards eco-tourism were significantly more likely to support conservation of TIWS (Table 2). For the remaining 4 questions there was no significant difference. Those supporting conservation had a significantly more positive overall perception towards eco-tourism ($t_{381} = 4.88$, $p < 0.001$). These results suggest that those with a positive perception towards eco-tourism support conservation of TIWS. However, those dependent upon eco-tourism for part of their income were significantly less likely to support conservation of TIWS ($\chi^2 (1) = 7.09$, $p < 0.01$). This suggests that the main hypothesis of the study, that receipt of benefits from protected area tourism results in greater support for conservation, be rejected.

Table 2. Responses to statements regarding tourism by those who were dependent and not dependent upon eco-tourism for family income, and by those who supported and did not support conservation of Tiwai Island Wildlife Sanctuary (TIWS)

Statement	Agreement with statement (%)			Agreement with statement (%)		
	Eco-tourism dependent	Not eco-tourism dependent	Chi-squared significance (p)	Supported conservation	Did not support conservation	Chi-squared significance (p)
I would be happy to see more tourists here	88	82	< 0.05	84	68	< 0.001
I would be happy for my children to work in the eco-tourism industry	80	78	< 0.88	83	33	< 0.001
Eco-tourism benefits my family	53	11	< 0.001	24	25	< 0.95
My family has more money because of eco-tourism	32	14	< 0.001	22	14	< 0.4
Eco-tourism benefits the whole community	51	42	< 0.07	46	43	< 0.75
Only outsiders benefit from eco-tourism here	15	25	< 0.05	20	47	< 0.001
Eco-tourism only benefits rich people	21	52	< 0.001	42	43	< 0.95
Eco-tourism has caused prices to rise	58	38	< 0.001	43	76	< 0.001
I do not like the way that tourists dress	48	47	< 0.7	45	76	< 0.001
Eco-tourism causes young people to reject traditional customs	20	32	< 0.01	27	58	< 0.01
Tourism is damaging our culture	10	20	< 0.01	15	32	< 0.05

3.7. Contribution of Eco-tourism to Conservation and Local Communities

Eco-tourism as a conservation and development tool is promoted on the basis of a number of assumptions. From a conservation perspective it is expected to be environmentally sustainable and to provide tangible benefits to protected areas in the form of revenues to be used for conservation and management. From a community perspective, it is expected to provide equitable benefits that consequently enhance local support for conservation[11]. In this study, respondents showed almost unanimous support for conservation of TIWS, and recognized the link between the Sanctuary and the existence of the local eco-tourism industry. However, those directly benefiting from eco-tourism appeared to show lower than expected support for conservation. The latter result is counter-intuitive, and implies that benefits from eco-tourism do not result in increased conservation support. This may be due to the presence of other forms of relationship between local people and conservation other than eco-tourism, which may have a stronger effect on conservation perceptions than eco-tourism does. If residents have had negative experiences of the Sanctuary or its authorities, then, despite gaining benefits from eco-tourism, they may still view the island negatively. Local interactions with TIWS and its authorities, other than indirectly through eco-tourism, were not investigated in this study but may play an important role in shaping community perceptions both here and elsewhere.

Respondents with positive perceptions towards eco-tourism were more likely to support conservation of TIWS. This may be a result of respondents answering in a generally positive or generally negative way regardless of the topic. This is not an issue that has received much attention but is important when considering the validity of social surveys such as this.

Despite generally positive perceptions towards eco-tourism, few local people believed that they benefited from eco-tourism or had much contact with tourists. This agrees with economic distribution analyses conducted in Komodo National Park, Indonesia[9]. Whilst residents recognized some of the distributional inequalities present within the eco-tourism industry locally, they had few complaints about it other than its effect on inflation. This overall positive perception may be attributable to the early stage of development of eco-tourism locally[9]. When eco-tourism begins to develop there may be a period of expectation during which perceptions are positive in anticipation of future benefits[23]. It may not be until later in the eco-tourism development lifecycle, as negative impacts increase and benefits fail to match expectations, that perceptions become less favourable. Residents living closest to eco-tourism developments, with more immediate experience of the negative social and environmental aspects of such development, are more aware of the negative impacts than those living further away[24],[25]. Equally, those living in areas with a more developed eco-tourism industry tend to have a more negative view of eco-tourism, as studies in

Europe and America suggest[26],[27].

Those respondents who economically benefited from eco-tourism were more positive about it than those without such benefits. This finding corroborates that of other studies[13],[14]. In the study reported here, it was also found that, among those not benefiting, perception was more negative in the communities that received most tourism benefit. This might suggest that, as benefits to an area increase, those not receiving a share of the benefits become more disenchanted with tourism and display more negative perceptions[28].

It has been shown elsewhere that ethnicity can affect attitudes towards outsiders, including tourists[29]. However, ethnicity was not included as a factor in this study, because all respondents were of the same ethnic group. Ethnicity could therefore not be responsible for the difference in perception among the 6 communities in the 2 chiefdoms; but its potential importance means that it should be borne in mind when considering local perceptions in any multicultural community.

4. Conclusions

This study has revealed patterns in community perceptions towards conservation and eco-tourism. It is clear that eco-tourism benefits from the TIWS are unequally distributed and that this is recognized by the communities and may influence their perceptions towards eco-tourism.

Although perceptions are generally positive, the communities do recognize the effect of eco-tourism on inflation locally. In addition, this study did not demonstrate that eco-tourism benefits engender support for conservation.

Based on the results of the study, some recommendations can be made that may be useful for tourism management issues.

If tourism is to play a part in sustainable development around protected areas, then planners and managers must ensure a fair and equitable distribution of benefits. This might be achieved by targeting training programmes, alternative livelihoods and micro-credit arrangements, and by ensuring that tourism development does not follow enclave practices that limit local access to the eco-tourism market.

Longitudinally studies conducted over time, might provide greater insights into the mechanisms that shape community perceptions towards conservation in this region and elsewhere.

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