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Assessing Community Perceptions about the Contributions and Impacts of Wildlife Tourism to Rural Livelihoods: Wildlife Management Areas Perspective

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ABSTRACT

Wildlife Management Areas (WMAs) refer to protected areas in a village land, set aside for conservation of wildlife and tourism activities. Existing studies on WMAs have focused more on the establishment, governance and conservation consequences of WMAs. Relatively few studies have been conducted on the contributions of wildlife tourism from WMAs perspectives to rural livelihoods in Tanzania. The objective of this study was to assess community perceptions about the contributions of wildlife tourism and conservation to livelihoods of communities residing in WMA, using Ikona and Makao WMAs as a case study. Crosstabs analysis using Chi-square (χ^2) was applied to analyse data collected using questionnaires. Overall, the findings indicate that most people (74.1%) are proud of their villages being in WMA, (59.8%) are aware of tourism activities in their WMA, (71.5%) accept wildlife conservation and (33.6%) agree that WMA increases livelihood options. Overall, the findings indicate that wildlife tourism contributes to local peoples' livelihoods at a community level but not at a household level. The study recommends WMA authorities to integrate local communities at a household level in all facets of wildlife tourism in WMAs so as to enhance the contribution of WMAs and wildlife tourism to sustainable livelihoods.

Keywords: Community Perceptions – Conservation – Ikona – Livelihoods – Makao – Tanzania - Wildlife Management Areas (WMA) - Wildlife Tourism.

INTRODUCTION

Wildlife tourism is one of the most prevalent and fastest growing recreation activities in protected areas in Tanzania. One of such areas in which wildlife tourism is taking place is Wildlife Management Areas (WMA). During the period from 2003 to 2022, the number of WMAs increased by more than 117.6%, from 17 to 37 (AWF 2013, TAWA 2022). At present WMAs cover an area of approximately 31,000km^2 (AWF 2013), which is roughly 3.28 % of the total land in Tanzania (945,087 km²). A Wildlife Management Area (WMA) is a form of community-based conservation approach which aims at ensuring that villagers or communities rich in wildlife sustainably conserve, utilize and benefits from wildlife. WMAs are formed within village lands from which villagers set aside a piece of land purposely for sustainable conservation and utilization of wildlife resources (TAWA 2016). WMAs often have diverse wild animal species or are important corridors through which wild animals migrate. Some WMAs have unique natural resources such as rare or unusual species; or are close to existing tourist attractions, or to national parks or reserves (TAWA 2016).

The idea of establishing WMAs in Tanzania originated from Community-Based Natural Resources Management (CBNRM) approach (Moyo 2016). CBNRM is an approach for sustainable natural resources management and is commonly practiced in other East and Southern African countries such as, Zimbabwe's Communal Areas Programme for Indigenous Resource Management (CAMPFIRE), Namibia's Community-

Based Natural Resource Management (Namibia's CBNRM), Zambia's Administrative Management Design (ADMADE) and Kenya's conservancies (TWMA 2013).

CBNRM is a system of natural resource governance that has been developed and practiced in many southern Africa countries as a way of protecting natural resources such as, forests and wildlife populations including their habitats while empowering local populations to live in harmony with nature. It is an approach that devolves power from central government to local communities so that they in turn become responsible for the costs as well as benefits associated with managing natural resources in their areas (Masuruli 2014).

WMA operations have impacts both to the ecology of protected areas and the livelihood qualities of the local populations where WMAs are formed. The ecological impacts of WMAs operations have been widely studied and found to include improved biodiversity protection through conserving wildlife outside the core protected areas, increased protection of areas that are considered ecologically important either as dispersal areas, wildlife corridors or simply important wildlife areas and improved buffer zones bordering the game reserves (Shoo *et al*. 2021, Wilfred 2018). The impacts of WMA operations to local populations livelihood include improved community empowerment to manage land properly, greater participation in consumptive and non-consumptive tourism related activities and enhanced rural economic development e.g. employment in hotels and lodges, selling local goods such as foods, souvenirs, and handicrafts to tourists visiting their WMAs, economic diversification, poverty alleviation as well as economic incentives for community stewardship towards wildlife resources (Bluwstein *et al*. 2018, Homewood *et al.* 2022, Keane *et al.* 2020, Lwankomezi *et al.* 2022). Some other impacts of WMA on local populations livelihood include improved infrastructures such as schools, roads, water points and health centers (Keane *et al*. 2020, Shoo *et al*. 2021).

Several studies on WMAs and their impacts have been conducted (see e.g., Noe 2018, Poudyal *et al*. 2020). An examination of these studies (e.g., Bluwstein *et al.* 2016, Lee and Bond 2018, Moyo *et al.* 2016, Noe 2018, Noe 2018, Poudyal *et al.* 2020, Poudyal *et al.* 2020, Robinson and Makupa 2015, Wilfred, 2010) shows that nearly all research on WMAs has focused on the establishment, governance and conservation consequences of the WMAs. Relatively little research (see e.g., Makupa 2013, Odumbe 2009, Raycraft 2022) has been conducted on the community perceptions about the contributions of wildlife tourism to rural livelihood. This will be important to address since in the recent past; WMAs have been mushrooming on many community lands in Tanzania. Currently there are 37 WMAs in Tanzania covering approximately a total area of 29,000 km^2 which is about 3% of the country's land surface area (Shoo *et al.* 2021). Most of the existing community perceptions research on WMAs examines economic contributions of WMAs in general (Moyo 2016), benefit sharing mechanisms (Kegamba *et al.* 2022), community governance (Kicheleri *et al*. 2021, Kisingo and Kideghesho 2020) and improved conservation and local livelihoods (Makupa 2013). A study that went beyond the issues of conservation and livelihoods measured the perceived economic efficiency of selected income generating activities (Philemon 2016). In this study (Philemon 2016) analyzed the costs and benefits associated with selected Income Generating Activities (IGAs) such as handcraft and Dress making in Burunge WMA but did not assess the overall community perceptions about the contributions of WMAs to rural livelihoods. As tourism continues to grow in Tanzania and in other counties, more informed management of WMA operations will be required. More specifically, information is needed about how local communities perceive tourism operations in WMAs. This is important because negative perceptions

about the impacts of WMA on local people's livelihoods may result in social discomfort to the people and weaken their support for conservation (Mojo *et al.* 2020). Thus, this paper seeks to understand community perceptions about the contributions of wildlife tourism in rural livelihoods. Specifically, the study aimed to assess community perceptions about; (1) wildlife and tourism in their WMA, (2) WMA livelihood outcomes, (3) their village being in WMA, (4) benefits of wildlife at a household level, (5) benefits of wildlife at a village level, (6) the need to continue conserving wildlife in their WMA, and (7) whether WMA increases options for livelihood opportunities.

Theoretical Frameworks

This study draws on Social-Ecological Systems (SES) theory and Sustainable Livelihood Framework (SLF). SES is a useful theory in understanding and managing complex systems in which human interactions with nature are inherently systemic and highly interactive through multiple feedback mechanisms (Redman *et al*. 2004). Redman *et al*. (2004, p.163) define SES as 'a coherent system of biophysical and social factors that regularly interact in resilient, sustained manner', which may span a range of hierarchically linked scales, is continuously dynamic and in which critical resources are regulated by a combination of ecological and social systems. Scholars agree that SES theory consists of 'a bio-geo-physical' unit and its associated social actors and institutions (Glaser *et al*. 2008). Social-ecological systems are complex and adaptive and delimited by spatial or functional boundaries surrounding particular ecosystems and their context problems (Glaser *et al*. 2008). Examples of Social Ecological Systems include economic (such as tourism, increased property values, lodges), recreational (e.g., bird-watching, game drive), and ecological (e.g., seed dispersal, pollination, shade) (Byrne and Houston 2020). Socio-ecological systems reflect a highly interconnected relationship between society and ecosystems (Francis and Bekera 2014).

The sustainable livelihoods framework on the other hand is a holistic approach that tries to capture, and provide a means of understanding, the fundamental causes and dimensions of poverty and rural livelihoods without collapsing the focus onto just a few factors (e.g. economic issues, food security, etc.) (Walker and Salt 2006). SLF aims at helping the rural communities to achieve sustainable livelihoods through a number of assets/capitals surrounding them. Such capital include (1) Natural/Environmental capital**,** which includes natural resources such as land, water, wildlife, biodiversity, environmental resources, (2) Physical Capital, which includes housing, means of production and basic infrastructure such as water, sanitation, energy, transport, communications, (3) Human Capital which includes health, knowledge, skills, information and ability to labour, (4) Social Capital which include social resources such as relationships of trust, membership of groups, networks, access to wider institutions and (5) Financial Capital which include financial resources available such as regular remittances or pensions, savings and supplies of credit. However, McLeod (2001) added two more capitals to the framework i.e., Institutional Knowledge Capital and Political capital arguing that the added capitals are fundamental in empowering communities to negotiate partnerships with different organizations including financial institutions. A number of researchers have used SLF in assessing how tourism can be used as a livelihood strategy in rural settings (see e.g., Su *et al*. 2019, Tao and Wall 2009).

WMAs are a good example of a day-to-day relationship between nature and society. WMAs can be classified as Social-Ecological Systems – SES (Figure 1), as they are complex, integrated, and interlinked systems of social and ecological processes consisting of various natural and social factors that change over time and space (Walker and Salt 2006). As Social-

Ecological Systems (SES), WMAs can be used to sustain livelihood of communities endowed with plenty of natural resources. The sustainable livelihood Framework (SLF), can therefore be used to analyse which livelihood assets (capital) can enable which livelihood strategies, and cause sustainable outcomes within local communities (Carr 2015, Taylor 2014).

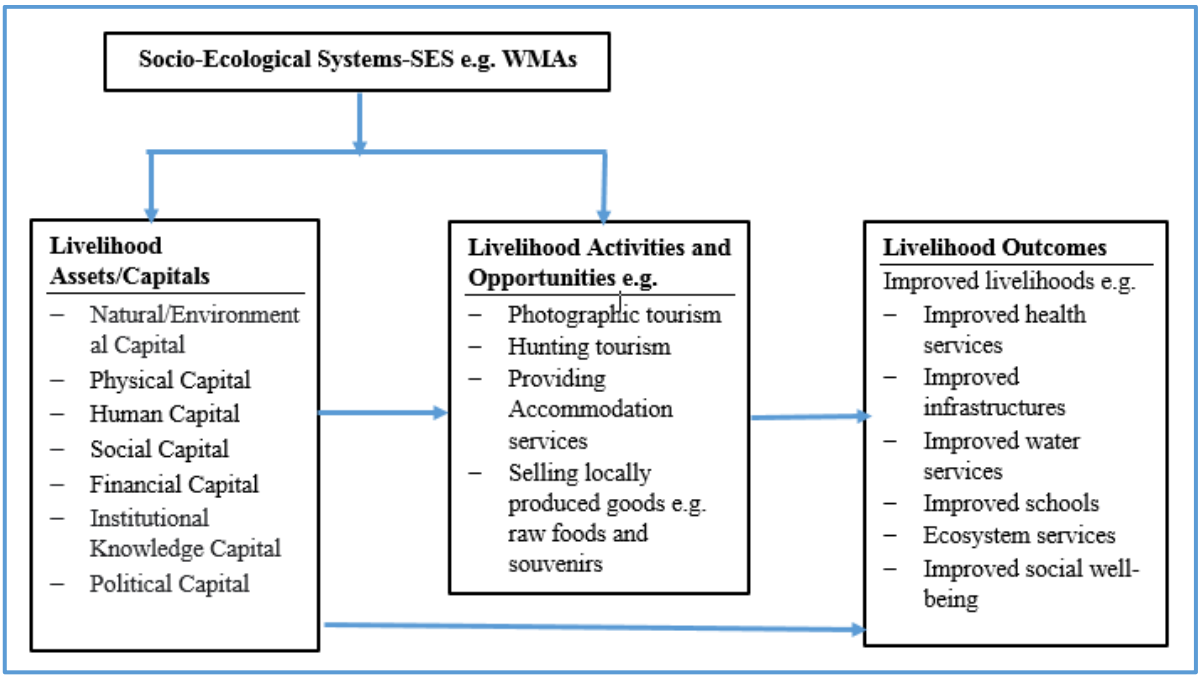

Figure 1: WMA as a Socio-Ecological System

STUDY METHOD

The Study Area

The study presents analysis of data collected from a purposeful field visit to Ikona and Makao WMAs in October 2018, both located in the northern part of Tanzania. These two WMAs were selected based on four criteria, namely high wildlife tourism activities, duration of operation, income and proximity to the largest ecosystem (Serengeti-Maswa) in Tanzania. Wildlife tourism was chosen because it contributes enormously to the economy of the country and it is one of the main sources of income to WMAs. Both Ikona and Makao WMAs have high level of wildlife tourism activities (Makupa 2013) compared to other WMAs, have more than 13 years of operation (both established in 2007 just after WMA pilot period i.e., 2003-2006), have a considerable high income through joint venture activities generating over one million US$ per annum (Shoo *et al.* 2021).

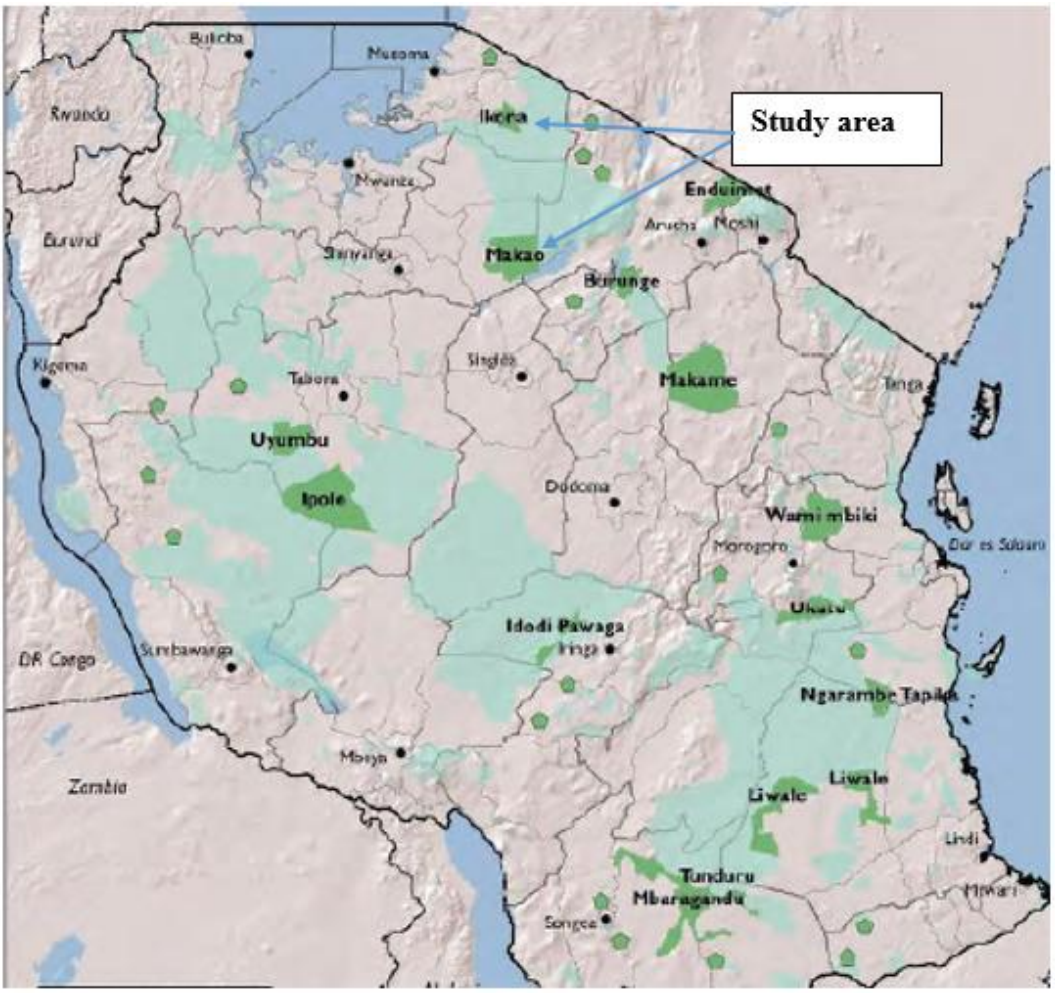

Figure 2: Map of Tanzania showing the study area (Source: TWMA 2013)

Data Collection

Data were collected quantitatively using survey questionnaires from four villages randomly selected from the two WMAs (i.e., Nyichoka and Makundusi villages) from Ikona WMA; and (Makao and Sapa villages) from Makao WMAs. The study population consisted of all Village household heads. A sample of 559 participants was drawn randomly from the village registers using systematic sampling procedure. The questionnaire drew extensively on existing literature on WMA and CBNRM and was developed using procedures suggested by Boynton and Greenhalgh (2004). The questionnaire constituted the following questions; What are your views about wildlife and tourism in this WMA? What are your views about livelihood outcomes from this WMA? Do you feel proud of your village being in WMA?, Do you see the benefits of wildlife at your household?, Do you see the benefits of wildlife at your Village?, Do you see the need for conserving wildlife in your WMA?, and Does WMA increase options for livelihood activities in your village?. As suggested in various quantitative literatures, the first draft of the questionnaire was presented to a number of academic staff in the department of tourism in order to obtain their insights on the accuracy of the preliminary questionnaire.

Data Analysis

The collected data were subsequently entered in SPSS and analysed using Crosstabs (Chi-square (χ^2)). The effect sizes associated with the group difference test results were examined and reported to demonstrate the strength of differences between the groups (Vaske 2008). According to Cohen (1988), correlation coefficients in the order of .10 are "small," those of .30 are

"medium," and those of .50 are "large" in terms of magnitude of effect sizes (see pp. 77–81). Cohen (1988) is the most frequently reported study in effect sizes evaluation in social sciences.

RESULTS

Demographic Profile of Participants

The demographic profile (Table 1) shows that the number of participants was almost evenly distributed between the two WMAs with 50.8% (n = 283) coming from Ikona WMA. The findings also show that the percentage of male participants was slightly higher (59.8%, n = 330) than that of female. Similarly, the percentage of relatively younger participants (age ≤50 years) was considerably higher (79.3%, n = 441) compared to that of older participants. The findings show further that about 72.2% (n = 402) of the study participants have very low level of education and nearly a quarter of all the participants (19.4%, n = 108) have never been to school. The findings also show that the percentage of participants who migrated to the study area from other areas was slightly higher (56.5%, n = 313) compared with participants who were born in the study area. As far as the family size is concerned, the findings exemplify that majority of the study participants (73.6%, n = 410) had medium to large family size (5 people and above).

Table 1: Demographic Profile of Participants

Respondent Characteristics		Frequency (N)	%
WMA	Ikona	283	50.8
	Makao	274	49.2
Village	Nyichoka	169	30.3
	Makundusi	114	20.5
	Makao	128	23.0
	Sapa	146	26.2
Gender	Male	330	59.8
	Female	222	40.2
Age	18-35 years	214	38.5
	36-50 years	227	40.8
	51-65 years	78	14.0
	66 -80 years	34	6.1
	81 years and above	3	0.5
Education	None	108	19.4
	Primary Education	402	72.2
	Secondary Education	42	7.5
	Tertiary Education	5	0.9
Originality	Born in this Area	241	43.5
	Migrated from other villages	313	56.5
Occupation	Farmer	509	91.4
	Pastoralist	20	3.6
	Farmer and Pastoralist	17	3.1
	Employed in WMA	11	2.0
Family size	Small family size (1-4 people)	147	26.4
	Medium family size (5-8 people)	219	39.3
	Large family size (9 people +)	191	34.3

What are your views about wildlife and tourism in this WMA?

Table 2 presents results of community views about wildlife and tourism in their WMA. The results illustrate that majority of the participants (74.1%, n = 407) were proud of having WMA in their area and 59.8% (n = 332) were aware of tourism related activities in their WMA. However, majority of the participants (65.5%, n = 363) felt that they don't get direct benefit from wildlife at a household level. Surprisingly when they were asked about collective benefits,

majority (72%, n = 398) replied that their village receive some benefits from wildlife. A considerable number of participants (71.5%, n = 394) argued that they see the need for conserving wildlife in their WMA. While (69.8%, n = 381) agreed that there were some vivid impacts of tourism in their villages.

Table 3 presents findings of selected livelihood outcomes. The analysis shows that majority of the study participants (33.6%, n= 183) tended to agree with the statement that WMA increases options for livelihood activities. Equally, the findings show that majority of the participants (29.2%, n = 159) were satisfied with the overall WMA benefits.

What are your views about livelihood outcomes from this WMA?

Table 2: Community Views about Wildlife and Tourism in WMA

Participants were asked to respond Yes, No or I don't know to the following questions

Questions to participants	Answers from participants					
	Yes		No		Don't know	
	Freq.*	%	Freq.*	%	Freq.*	%
Do you feel proud that your village is in WMA	409	**74.1**	97	17.6	46.	8.3
Are there tourism activities in your WMA?	332	**59.8**	168	30.3	55	9.9
Does your household currently benefit from WMA?	154	27.8	363	**65.5**	37	6.7
Does your village receive any benefits from WMA?	398	**72.0**	117	21.2	38	6.9
Do you see the need for conserving wildlife in your WMA?	394	**71.5**	100	18.1	57	10.3
Are there positive impacts of tourism in this area?	381	**69.8**	30	5.5	135	24.7
Have you ever experienced crops damage caused by wildlife in the past five years?	456	**82.8**	75	13.6	20	3.6
Have you ever experienced livestock loss due to wildlife in the past five years?	234	43.1	286	**52.7**	23	4.2

*****Freq. = Frequency = Number of participants

Table 3: Community Views about Livelihood Outcomes from WMA

Participants were asked to rate their level of agreement or disagreement with the questions below

Questions to participants	Highly disagree		Disagree		Don't know		Agree		Highly agree	
	Freq.*	%	Freq.*	%	Freq.*	%	Freq.*	%	Freq.*	%
WMA increases options for livelihood activities	87	16.0	91	16.7	132	24.3	183	**33.6**	51	9.4
I am satisfied with the overall WMA benefits	93	17.2	117	21.5	110	20.2	159	**29.2**	65	11.9

Do you feel proud of your village being in WMA?

Further analysis (Table 4) on the question "do you feel proud that your village is in WMA"? revealed that there is a significant relationship between type of WMA and feeling proud of WMA, χ^2 (1, N = 506) = 31.406, P = 0.000, effect size (φ) = 0.249, villagers from Ikona WMA were more proud of WMA than villagers from Makao WMA (48.8% to 32.0%). Similarly, the analysis shows that there is significant relationship between education level and feeling proud of WMA, χ^2 (1, N = 506) = 8.949, P = 0.003, effect size (φ) = 0.133, villagers with at least basic level of education felt more proud of WMA than villagers with no formal education (70.0% to 10.9%). The findings in Table 4 also indicate that there is significant relationship between migration status and feeling proud about WMA, χ^2 (1, N = 503) = 8.825, P = 0.003, effect size (φ) = 0.132, villagers who migrated to the study area, felt more proud about WMA than villagers born in the study areas (42.9% to 38.0%). Analysis in Table 4 also demonstrates that

there is significant relationship between family size and feeling proud about WMA, χ^2 (1, N = 506) = 5.159, P = 0.013, effect size (φ) = 0.110, villagers from medium to large family size felt more proud of WMA than villagers from small family size (54.9% to 25.9%).

Table 4: Feeling Proud of Village Being in WMA

H	Variable	Variable Category	Percentage of Response (N in Brackets)		χ^2-Value	p-Value	Effect Size (φ)
			Proud	Not Proud			
Ha1	WMA	Ikona	**48.8 (247)**	5.5 (28)	**31.406**	**0.000**	**0.249**
		Makao	32.0 (162)	13.6 (69)			
		Total	**80.8 (409)**	19.2 (97)			
Ha2	*Gender*	Male	49.3 (248)	12.5 (63)	0.495	0.481	0.031
		Female	31.4 (158)	6.8 (34)			
		Total	80.7 (406)	19.3 (97)			
Ha3	Age	Young	65.3 (330)	15.8 (80)	0.130	0.718	0.016
		Old	15.4 (78)	3.4 (17)			
		Total	80.8 (408)	19.2 (97)			
Ha4	Education	No education	10.9 (55)	4.9 (25)	**8.949**	**0.003**	**0.133**
		Basic Education	**70.0 (354)**	14.2 (72)			
		Total	**80.8 (409)**	19.2 (97)			
Ha5	Migration	Native	38.0 (191)	5.8 (29)	**8.825**	**0.003**	**0.132**
		Migrated	**42.9 (216)**	13.3 (67)			
		Total	**80.9 (407)**	19.1 (96)			
Ha6	Family size	Small	25.9 (131)	8.7 (44)	**6.159**	**0.013**	**0.110**
		Medium-large	**54.9 (278)**	10.5 (53)			
		Total	**80.8 (409)**	19.2 (97)			
Ha7	Occupation	Farmer	77.5 (372)	19.0 (91)	0.042	0.838	0.009
		Pastoralist	2.9 (14)	0.6 (3)			
		Total	80.4 (386)	19.6 (94)			
Ha8	Leadership	Leader	28.2 (116)	0.2 (1)	1.634	0.442	0.063
		Not leader	70.1 (289)	0.5 (2)			
		Total	98.3 (405)	0.7 (3)			

Do you see the benefits of wildlife at your household?

Further crosstabs analysis (Table 5) on the WMA benefits at a household level shows that there is a significant but negative relationship between education level and perceived wildlife benefits at a household level χ^2 (1, N = 517) = 5.591, P = 0.018, effect size (φ) = 0.104, residents with at least basic education level felt that at a household level they are not benefiting from wildlife roaming in their WMA as opposed to residents with no formal education (55.9% to 14.3%). Equally, the analysis indicates that there is a significant but negative relationship between leadership and perceived wildlife benefits at a household level χ^2 (1, N = 511) = 8.409, P = 0.004, effect size (φ) = 0.128, residents who have never been leaders felt that they are not benefiting from wildlife as opposed to those who have been leaders (55.2% to 14.9%).

Do you see the benefits of wildlife at your Village?

Further crosstabs analysis (Table 6) on the question whether community members receive WMA benefits at a village level shows that there is a significant relationship between the type of WMA and perceived wildlife benefits at a village level χ^2 (1, N = 517) = 5.591, P = 0.018, effect size (φ) = 0.104, residents from Ikona WMA agreed than residents from Makao WMA that at a village level they see benefits from wildlife WMA (44.5% to 32.8%).

Table 5: Wildlife Benefits at a Household

H	Variable	Variable Category	Percentage of Response (N in Brackets)		χ^2-Value	p-Value	Effect Size (φ)
			Benefiting	Not benefiting			
Hb1	WMA	Ikona	16.4 (85)	36.6 (189)	0.425	0.515	0.029
		Makao	13.3 (69)	33.7 (174)			
		Total	29.8 (154)	70.2 (363)			
Hb2	*Gender*	Male	19.9 (102)	41.3 (212)	2.340	0.126	0.068
		Female	10.1 (52)	28.7 (147)			
		Total	30.0 (154)	70.0 (359)			
Hb3	Age	Young	23.4 (121)	56.4 (291)	0.221	0.638	0.021
		Old	6.4 (33)	13.8 (71)			
		Total	29.8 (154)	70.2 (362)			
Hb4	Education	No education	3.5 (18)	14.3 (74)	**5.591**	**0.018**	**0.104**
		Basic Education	26.3 (136)	**55.9 (289)**			
		Total	29.8 (154)	**70.2 (363)**			
Hb5	Migration	Native	13.4 (69)	29.0 (149)	0.643	0.423	0.035
		Migrated	16.3 (84)	41.2 (212)			
		Total	29.8 (153)	70.2 (361)			
Hb6	Family size	Small	9.3 (48)	25.0 (129)	0.916	0.338	0.042
		Medium-large	20.5 (106)	45.3 (234)			
		Total	29.8 (154)	70.2 (363)			
Hb7	Occupation	Farmer	27.4 (135)	68.5 (337)	0.018	0.892	0.006
		Pastoralist	1.2 (6)	2.8 (14)			
		Total	28.7 (141)	71.3 (351)			
H**b**8	Leadership	Leader	10.0 (51)	14.9 (76)	**8.409**	**0.004**	**0.128**
		Not leader	20.0 (102)	**55.2 (282)**			
		Total	29.0 (153)	**70.1 (358)**			

Table 6: Wildlife Benefits at a Village Level

H	Variable	Variable Category	Percentage of Response (N in Brackets)		χ^2-Value	p-Value	Effect Size (φ)
			Benefit	No Benefit			
Hc1	WMA	Ikona	**44.5 (229)**	6.8 (35)	**27.615**	**0.000**	**0.232**
		Makao	32.8 (169)	15.9 (82)			
		Total	**77.3 (398)**	22.7 (117)			
Hc2	*Gender*	Male	48.3 (247)	12.3 (63)	2.540	0.111	0.071
		Female	29.0 (148)	10.4 (53)			
		Total	77.3 (395)	22.7 (116)			
Hc3	Age	Young	62.1 (319)	18.1 (93)	0.000	0.999	0.000
		Old	15.4 (79)	4.5 (23)			
		Total	77.4 (398)	22.6 (116)			
Hc4	Education	No education	12.2 (63)	6.0 (31)	**6.895**	**0.009**	**0.116**
		Basic Education	**65.0 (335)**	16.7 (86)			
		Total	**77.3 (398)**	22.7 (117)			
Hc5	Migration	Native	35.0 (179)	7.8 (40)	**4.212**	**0.040**	**0.091**
		Migrated	**42.4 (217)**	14.8 (76)			
		Total	**77.3 (396)**	22.7 (116)			
Hc6	Family size	Small	26.4 (136)	8.5 (44)	0.470	0.493	0.030
		Medium-large	50.9 (262)	62.4 (73)			
		Total	77.3 (398)	22.7 (117)			
Hc7	Occupation	Farmer	73.6 (360)	22.7 (111)	0.462	0.497	0.031
		Pastoralist	3.1 (15)	0.6 (3)			
		Total	76.7 (375)	23.3 (114)			

H	Variable	Variable Category	Percentage of Response (N in Brackets)		χ^2-Value	p-Value	Effect Size (φ)
			Benefit	No Benefit			
Hc8	Leadership	Leader	21.4 (109)	3.5 (18)			
		Not leader	**56.0 (285)**	19.1 (97)	**6.860**	**0.009**	**0.116**
		Total	**77.4 (394)**	22.6 (115)			

Similarly, further analysis show that there is a significant relationship between education level and wildlife benefits at a village level χ^2 (1, N = 515) = 6.895, P = 0.009, effect size (φ) = 0.116, residents with basic level of education sensed more benefits than those who have no formal education (65.0% to 12.2%). The analysis also indicates that there is a significant relationship between migration status and wildlife benefits at a village level χ^2 (1, N = 512) = 4.212, P = 0.040, effect size (φ) = 0.091, residents who migrated from other areas acknowledged more benefits than native residents (42.4% to 35.0%). The analysis also indicates that there is a significant relationship between leadership and wildlife benefits at a village level χ^2 (1, N = 509) = 6.860, P = 0.009, effect size (φ) = 0.116, residents who are not leaders sensed more benefits than those who leaders (56.0% to 21.4%).

Do you see the need for conserving wildlife in your WMA?

Further crosstabs analysis (Table 7) on the question whether there is a need for conserving wildlife at the village land shows that there is a significant relationship between gender of the participants and the need for conserving wildlife χ^2 (1, N = 490) = 6.410, P = 0.011, effect size (φ) = 0.114, male residents agreed more than female residents that there is a need to continue conserving wildlife in their village land (50.6% to 29.2%). The analysis also demonstrates that there is a significant relationship between migration status of residents and the need to continue conserving wildlife χ^2 (1, N = 491) = 6.170, P = 0.013, effect size (φ) = 0.112, residents who migrated from other areas felt the need to continue conserving wildlife more than residents who were born in the areas of study (43.2% to 36.5%).

Table 7: The Need for Conserving Wildlife

H	Variable	Variable Category	Percentage of Response (N in Brackets)		χ^2-Value	p-Value	Effect Size (φ)
			Need	No need			
Hd1	WMA	Ikona	42.5 (210)	11.9 (59)			
		Makao	37.2 (184)	8.3 (41)	1.045	0.307	0.046
		Total	79.8 (394)	20.2 (100)			
Hd2	*Gender*	Male	**50.6 (248)**	10.0 (49)			
		Female	29.2 (143)	10.2 (50)	**6.410**	**0.011**	**0.114**
		Total	**79.8 (391)**	20.2 (99)			
Hd3	Age	Young	64.3 (317)	16.6 (82)			
		Old	15.4 (76)	3.7 (18)	0.093	0.761	0.014
		Total	79.7 (393)	20.3 (100)			
Hd4	Education	No education	13.2 (67)	3.6 (18)			
		Basic Education	66.6 (329)	16.6 (82)	0.129	0.720	0.016
		Total	79.8 (394)	20.3 (100)			
Hd5	Migration	Native	36.5 (179)	6.5 (32)			
		Migrated	**43.2 (212)**	13.8 (68)	**6.170**	**0.013**	**0.112**
		Total	**79.6 (391)**	20.4 (100)			
Hd6	Family size	Small	26.3 (130)	8.1 (40)			
		Medium-large	53.4 (264)	12.1 (60)	1.734	0.188	0.059
		Total	79.8 (394)	20.2 (100)			

H	Variable	Variable Category	Percentage of Response (N in Brackets)		χ^2-Value	p-Value	Effect Size (φ)
			Need	No need			
Hd7	Occupation	Farmer	73.6 (359)	22.7 (111)	0.468	0.494	0.031
		Pastoralist	3.1 (15)	0.6 (3)			
		Total	76.6 (374)	23.4 (114)			
Hd8	Leadership	Leader	21.5 (105)	4.1 (20)	1.745	0.187	0.060
		Not leader	58.4 (285)	16.0 (78)			
		Total	79.9 (390)	20.1 (98)			

Does WMA increase options for livelihood activities in your village?

In relation to livelihood opportunities, further crosstabs analysis (Table 8) shows that there is a significant relationship between age of participants and acceptance that WMA increases options for livelihood activities, χ^2 (1, N = 411) = 5.202, P = 0.025, effect size (φ) = 0.113, participants with young age tended to agree more with the statement than old age participants (43.8% to 13.1%). Similarly, the analysis indicates that there is a significant relationship between education level of participants and acceptance that WMA increases options for livelihood activities, χ^2 (1, N = 412) = 4.546, P = 0.033, effect size (φ) = 0.105, villagers with at least basic level of education tended to agree more with the statement than villagers with no formal education (50.5% to 6.3%).

Table 8: WMA Increases Options for Livelihood Activities

H	Variable	Variable Category	Percentage of Response (N in Brackets)		χ^2-Value	p-Value	Effect Size (φ)
			Agree	Disagree			
He1	WMA	Ikona	33.1 (128)	21.1(87)	1.374	0.241	0.058
		Makao	25.7 (106)	22.1 (91)			
		Total	56.8 (234)	43.2 (178)			
He2	*Gender*	Male	34.6 (141)	27.2 (111)	0.223	0.637	0.023
		Female	22.3 (91)	15.9 (65)			
		Total	56.9 (232)	43.1 (176)			
He3	Age	Young	**43.8 (180)**	37.0 (152)	**5.202**	**0.025**	**0.113**
		Old	13.1 (54)	6.1 (25)			
		Total	56.9 (234)	43.1 (177)			
He4	Education	No education	6.3 (26)	8.0 (33)	**4.546**	**0.033**	**0.105**
		Basic Education	**50.5 (208)**	35.2 (145)			
		Total	56.8 (234)	43.2 (178)			
He5	Migration	Native	24.9 (102)	20.0 (82)	0.366	0.545	0.030
		Migrated	32.2 (132)	22.9 (94)			
		Total	57.1 (234)	42.9 (176)			
He6	Family size	Small	18.4 (76)	15.5 (64)	0.545	0.461	0.036
		Medium-large	38.3 (158)	27.7 (114)			
		Total	56.8 (234)	43.2 (178)			
He7	Occupation	Farmer	52.0 (208)	44.5 (178)	0.082	0.775	0.014
		Pastoralist	1.8 (7)	1.8 (7)			
		Total	53.8 (215)	46.3 (185)			
He8	Leadership	Leader	16.7 (68)	9.3 (38)	2.988	0.084	0.086
		Not leader	40.3 (164)	33.7 (137)			
		Total	57.0 (232)	43.0 (175)			

DISCUSSION

Overall, the findings illustrate that majority of the participants were proud of having WMA in their villages and were aware of tourism related activities in their WMA. Comparatively, participants from Ikona

WMA were more proud of WMA than participants from Makao WMA. Similarly, majority of the participants felt that WMA increases options for livelihood activities. The findings also demonstrate that residents with formal education felt that at a household level they are not benefiting from wildlife in their WMA as opposed to residents with no formal education. At a village level, residents from Ikona WMA felt that at a village level they see the benefits of wildlife in their WMA as opposed to residents from Makao WMA. Interestingly at a village level, residents with formal education sensed more benefits than those who have no formal education.

In relation to feeling proud of village being in WMA, the findings show that majority of the community members feel proud about their villages being in WMA although in comparison, residents from Ikona WMA were more proud of WMA than those from Makao WMA, residents with basic level of education (at least primary school education) were more proud of WMA than those who have never been to school, residents who migrated from other villages were more proud of WMA than native residents, and that residents with medium/large family size were more proud of WMA than those with small family size. The findings suggest that the differences in feelings may be largely attributed to the direct and indirect benefits that a household receives or envisage to receive form WMA. For instance, residents from Ikona WMA may exhibit higher delighted feelings than Makao WMA because Ikona is the most successful WMA in Tanzania, delivering multiple socio-economic and cultural benefits to community members than any other WMA in the country (Makupa 2013). Through revenues generated from Ikona WMA, each village under Ikona WMA has a primary school, teachers' houses, water boreholes for both livestock and human usage, a dispensary, and an ambulance. The revenues are collected from licensed hunting and photographic activities conducted in the WMA (Makupa 2013).

Tourism companies both hunting and photographic, are more likely to employ residents who have at least basic education level. Thus, making these residents to have more access to livelihood capitals than uneducated ones. Similarly, availability of various livelihood capitals within WMA, might have caused some community members to migrate to the study area thus it is logical for them to feel more proud of WMA than native residents. Likewise, residents from medium to large family size, are likely to be more gratified by WMA because they have a higher probability of accessing livelihood capitals from WMA than residents from small family size (other factors being constant). Suich (2010) found that household livelihood is affected by a combination of factors including household circumstances e.g., family size, education level, and preferences and their access to benefits from natural resources. Supporting this argument, Igoe (2006) argues that differences exist because some households and communities are better able to take advantages of conservation benefits than others. The findings of this study are also consistent with those of Makupa (2013) who found that communities and households that benefit more from WMA hold more positive perceptions about WMA compared to those who are not directly benefiting from WMA.

In relation to awareness, the overall results show that most residents are aware of tourism activities that are conducted in their WMAs. However, in comparison, there was no significant relationship between awareness and all tested variables, although in general, residents from Ikona WMA, male, young, educated (those with at least basic education), those who migrated from other villages, medium to large family size and farmers were more aware about tourism activities in their WMA than their counterparts. The findings of this study are in some ways consistent with studies that have suggested that many residents are aware of tourism related activities in WMA although their participation in such activities is poor. For instance, a study by Bitanyi *et al*. (2012)

about awareness and perceptions of local people about wildlife hunting in Western Serengeti found that more than one-third (40%) of the persons interviewed stated that they knew about the existence of hunting tourism in WMA, although their participation in such activities was very low (9%). Likewise, a more recent study by Lwankomezi *et al.* (2022) in Makao WMA found that only 2.1% (n = 6) of the study participants worked as tour guides in WMA while only 1.4% (n = 4) participated in handcrafts for sale to tourists. As pointed out by Igoe (2006), the low participation exists because some households and communities are better able to take advantages of conservation benefits than others.

As for the benefits of WMA at a village level versus household level, the vast majority of participants surveyed in this study agreed that they obtain wildlife related benefits at a village level (community level). Some of the benefits mentioned include construction and development of infrastructures such as: health centers, primary and secondary schools, water boreholes and roads. Some participants also made the case that some money from WMA is given to village government in terms of village development fund. Some participants also mentioned that some residents in their village are directly working in WMA. In comparing the two villages, residents from Ikona WMA reported higher benefits that those from Makao WMA. Interestingly, residents with formal education and those who migrated from other villages reported higher perceived benefits than their counterparts. The findings of this study are in some ways consistent with studies that have suggested that protected areas provide tourist-related livelihoods that improve livelihood opportunities (e.g., Nyaupane and Poudel 2011). A study by Makupa (2013) in Ikona WMA also concluded that villages which benefit more from WMA hold more positive perceptions about WMA compared to those who are not directly benefiting from WMA.

What is more interesting in this study is that at a household level, majority of the residents with formal education argued that they don't get WMA benefits at a household level. These residents argued further that to a large extent, Wildlife from WMA have caused tremendous damages to their crops in the field, depredated on their livestock, injured and or killed some people. The findings of this study corroborate with those of Nepal and Spiteri (2011) who found that households are more likely to appreciate and recognize the link between natural resources conservation and personal benefits only when conservation incentives improve their household livelihoods. The findings of this study are also similar to those of Molina-Murillo (2016) who found that residents hold positive perceptions about conservation only when the benefits compensate for costs associated with conservation. Nevertheless, studies on natural resources management show that measuring benefits perception or satisfaction with conservation incentives is complex as it is influenced by a multitude of factors such as; type of the park, household distance from the park, age, gender, economic activity and education level (Mbise *et al.* 2021).

As for the need to conserve wildlife, majority of study participants expressed positive insights towards conserving wildlife in their WMA, this may be due to livelihood incentives that they receive at a community level. The findings of this study are similar to those of Makupa (2013) and Kegamba *et al.* (2022) who found that WMAs provide some conservation incentives to villages such as building; schools, classes for both primary and secondary schools, health centers, roads, village offices, water points etc.

In relation to gender differences, the findings show that male residents are more positive to wildlife conservation than women. This scenario may be due to the fact that most WMA activities are conducted by men. The findings of this study corroborate with those of Homewood *et al.* (2022) who found that

although WMAs bring many community benefits, most women have limited participation in WMA activities, and experience resource use restrictions and fear wildlife attacks. Similarly, a study by León (2007) makes the case that even in circumstances where there are tourism and conservation related jobs available to women, their husbands or partners do not let them work outside their houses. Thus, prevailing gender ideologies seem to keep some women from reaping the benefits that conservation and tourism could provide to them (León 2007).

As for the question whether WMAs increase more options for livelihood opportunities or not, the findings show that there were mixed feelings among residents. These findings are not surprising considering the fact that only few participants reported to be working directly with WMA or hunting tourism companies and or lodges which partly might probably have been attributed to the low levels of education of community members. The empirical disconnect between WMA and livelihood opportunities is not a novel finding. The literature has long suggested that WMA and tourism related enterprises operating within WMA do not always provide significant livelihood opportunities to local communities (Benzies and Mychasiuk 2009). Among the many reasons for this disconnect include the limited capacity of local community members to engage effectively with the private sector (see e.g., Lapeyre 2010), and low level of education (Makupa 2013). Simpson (2009) in Maputaland, South Africa, noted a similar experience, where community-based initiative (CBI) benefits were limited to the few households who had members directly employed by CBI, leaving the majority accruing no direct benefits from CBI. Similarly, a study of Emerton and Mfunda (1999) noted that employment in tourist-related enterprises is negligible in the Western Serengeti because most employees originate from outside the area.

CONCLUSION

This research tried to answer a number of questions regarding the ability of studied WMAs to provide livelihood capitals and opportunities to local communities. The study also paid attention to what extent these livelihood capitals and opportunities satisfy the local community livelihoods. The findings are mixed. While there is sufficient empirical evidence of differences (across gender, age, migration status - rural to rural migration, family size, education level and occupation) in accessing the livelihood capitals emanating from WMA, satisfaction with WMA benefits (livelihood outcomes) is slightly higher among residents from Ikona WMA particularly those who are relatively younger, educated and those who migrated from other villages.

Consistent with previous studies on Community Based Natural Resources Management initiatives, this study has found that there is a substantial difference in perceptions of the benefits accrued from WMA and the impacts of these benefits to local community. The level and extent of the impacts of these benefits hugely depends on a myriad of factors at both household and community levels. For instance, at the household level, factors such as household characteristics (e.g., family size, age and gender composition), human wildlife conflict, the capabilities of households (e.g., education level, employment status), whereas at the community level, factors such as village location (e.g., from a rich or poor wildlife resources), infrastructure and social services development influence the extent of acceptance of WMA.

One of the major limitations of this study is that, the study findings cannot be generalized to the other WMAs or community based natural resources management initiatives in Africa because the WMAs used in this study adjoin the Serengeti ecosystem, which is one of the richest ecosystems in Africa in terms of wildlife, making these two WMAs highly successfully economically. However, the results do provide the basis for further

research into the contribution of wildlife tourism to rural communities.

RECOMMENDATIONS

Majority of the local residents living in villages surrounded by WMA have very low level of education thus, lack the means to take full advantages of tourism opportunities, leading to many livelihood programs to be dominated by people outside their areas. Thus, government and other conservation stakeholders should improve the learning environment in WMAs including provisions of study sponsorship to young people to attend tertiary education inside and outside the country so that in turn they can take full advantages of the opportunities provided by WMA. The study also recommends WMA authorities to integrate local communities in all wildlife tourism activities within WMA so as to enhance the contribution of WMAs and wildlife tourism to rural livelihoods. The study also recommends WMA authorities to provide consolation money in a timely manner.

Implications for Conservation

This research has several implications for research and theory. First, the low overall acceptance of WMA benefits at a household level among residents, despite the relatively strong acceptance of the WMA benefits at the community level and the need to continue conserving wildlife, suggests that further research is needed to identify potential factors leading to the negative perception towards WMA benefits at a household level. Similarly, future research assessing the relationship between wildlife tourism, community wellbeing, and community support for conservation should control for the effect of socio-psychological, economic, and political factors, which, according to Diener et al. (1999), are likely to moderate wellbeing perceptions.

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