

*Full Length Research Paper*

# **Environmental sustainability of consumptive and non-consumptive wildlife tourists: The case of a game reserve in Namibia**

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**Africa as a tourism destination is seen as a wildlife tourism hotspot that contributes significantly to job creation, community upliftment, and conservation. Wildlife tourism is based on encounters with non-domestic animals that can occur in either the animal's natural environment or in captivity. The interaction with the animals includes activities that are historically classified as consumptive and non-consumptive. This research aims to determine the environmental impacts of wildlife tourists (consumptive and non-consumptive) based on their behaviour as perceived by senior staff managing a game reserve in Namibia. The study applied qualitative research, namely interviews, to encapsulate in-depth information. From the results, it can be concluded that, although both consumptive and non-consumptive wildlife tourists impact the environment at the game reserve, the behaviour of non-consumptive wildlife tourists seems to be more negative than that of consumptive wildlife tourists. The study further found that hunters behave in an eco-friendlier manner towards the environment and tend to be more concerned about their own impact on nature.**

**Key words:** Wildlife tourism impacts; environmental impact; natural area tourism; protected area tourism; wildlife tourism.

## **INTRODUCTION**

Throughout the 20th century, the increasing desire of tourists to experience and interact with the natural environment had stimulated significant growth in wildlife tourism, with Africa being one of the most affected continents (Backman and Munanura, 2015; Reynolds and Braithwaite, 2001: 32). This resulted in higher visitor numbers to the protected areas (Rodger et al., 2007:162; Sadikin et al., 2017), adding more pressure on the already over-utilised protected resources in Africa, which jeopardises the sustainability of nature-based products in

protected areas (Newsome et al., 2005).

Sustainable tourism can be defined as the type of tourism that is developed and maintained in an area (community, environment) in such a manner and at such a scale (visitor numbers, development size) that it remains viable over an indefinite period and does not degrade or alter the (host) environment to such an extent that it prohibits the successful development and well-being of other activities and processes. It is thus acknowledged that tourism is not taking place in a

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vacuum (Ioannides, 2001: 59). Sustainable management of wildlife tourism in protected areas is based on three main pillars (Ioannides, 2001: 57), which indicate that to achieve genuinely sustainable development, a delicate balance should be struck between conflicting economic, environmental, and socially equitable objectives, also known as the three Es. This balance will then result in the equal distribution of economic growth and the minimisation of environmental impacts. All three pillars are fundamental to sustainable wildlife tourism, but this research focuses on the environmental management indicators thereof.

Wildlife tourism has been defined in different ways. Reynolds and Braithwaite (2001: 32) define wildlife tourism as “the travelling to a destination to view wild animals and the environment”. In 2004, Higginbottom (2004: 2) referred to wildlife tourism as “tourism based on encounters with non-domestic animals ... [that] can occur in either the animal’s natural environment or in captivity. The interaction with the animals includes activities that are historically classified as consumptive and non-consumptive”. Consumptive wildlife tourism includes activities such as hunting and fishing, whereas non-consumptive wildlife tourism refers to ecotourism-related activities. Curtin (2005: 2) adds that “pleasure in wildlife tourism derives from factors such as viewing animals in their natural habitat, observing a wide range of species, interacting with wild animals in close proximity, experiencing the sense of habitat (place), and sharing experiences with others”. Both consumptive and non-consumptive types of wildlife tourism impact the environment (positively and negatively). Wildlife tourists want to escape the rush of their cities or towns and the consequence is that it may increase the risk of hit-and-run tourism, resulting in a rapid increase of nature lovers to the latest wild spot discovered. A degraded state of nature might thus follow their activities and even cause the abandonment thereof. This will lead to detrimental impacts on the natural environment.

There are, however, also positive impacts, since ecotourism (that is, non-consumptive) can provide much-needed revenues for the protection of national parks and other natural areas, as well as increase the funding for local communities (The Nature Conservancy, 2016). Lindsey et al. (2007) and Saayman et al. (2018) indicate that consumptive wildlife tourism also impacts local communities positively, especially in rural settings; these impacts can include income generation, job creation, skills development, and conservation of wildlife. Therefore, from the literature, it is evident that wildlife tourism (consumptive and non-consumptive) impacts the environment, thereby impacting the sustainability of protected areas (Shackley, 2006: 868).

This research hence aims to determine the environmental impacts and behaviour of consumptive and non-consumptive wildlife tourists as perceived by the selected management staff of a game reserve (30 000 ha

in size) in Namibia; the researchers want to ascertain which one of the two groups is considered to be contributing to higher levels of environmental sustainability. From the literature studied regarding wildlife tourism (Gössling et al., 2012:4; Hunter and Green, 1995; Newsome et al., 2013; Roe et al., 1997), it has become evident that this type of tourism contributes greatly to the management and conservation of protected areas. Some of the benefits of wildlife tourism include foreign exchange revenues, employment opportunities, improving awareness of conservation objectives, and stimulation of economic activity (Roe et al., 1997). The opposite is also accurate, since wildlife tourism can cause a depletion of natural resources, for example water resources, local resources, and land, due to certain behaviour (Gössling et al., 2012:4; Hunter and Green, 1995; Newsome et al., 2013). The ideal is to increase the positive impacts of wildlife tourism in order to contribute to higher levels of sustainable management of these areas.

Roe et al. (1997) and INTOSAI WGEA (2013) divide the areas of wildlife tourism impacts into three categories, namely environmental, economic, and social (cultural) groups (which also form the pillars of sustainability). This research focuses on the first category (the environmental impact), which will be discussed next. In the literature review, the environmental impacts of consumptive and non-consumptive wildlife tourism will not be addressed in a comparative manner, but collectively.

## **The environmental impacts of wildlife tourism**

The literature studied (George, 2007:308; Gössling et al., 2012:7; Islam, 2013:124; Newsome et al., 2013:159; Roe et al., 1997) on the environmental impacts of wildlife tourism divides environmental impacts into three categories, namely natural elements, ecosystems, and the human environment; each of these categories is also divided into subcategories.

### **The natural elements**

#### ***Water***

Water, especially freshwater, is one of the most critical natural resources. Wildlife tourism can gradually overuse this resource, either through the accommodation sector, for example building luxury lodges and facilities such as swimming pools, or through overuse by the wildlife tourists when showering, bathing, and using toilets. All of these can result in water shortages and degradation of the freshwater supply in the immediate area of the game reserve (George, 2007: 308; Gössling et al., 2012:7; Newsome et al., 2013:159; Roe et al., 1997).

The most appropriate example of water pollution

relates to wastewater (from accommodation facilities, kitchens and other installations) being discharged into the water systems (surface and underground) in a natural or protected area that hosts wildlife tourists (George, 2007: 307). The construction of different facilities for consumptive and non-consumptive wildlife tourists, such as camping sites, lodges and recreational areas, often leads to sewage pollution due to an increase in the volume of generated wastewater. This wastewater can pollute the surface and underground water bodies and therefore damage the fauna and flora of such areas (Page and Connell, 2009: 430). Sewage pollution also causes health hazards for humans as well as animals (Islam, 2013: 124).

### **Wildlife**

Wildlife is impacted by tourists in the following ways: indiscriminate hunting and fishing; poaching for souvenirs; wildlife harassment from viewing and photography; and development of highways and trails through natural areas. It can result in changes in species composition, the disappearance of rare species, the reduction of wildlife numbers, the disruption of feeding and breeding patterns of wildlife, and the disruption of predator-prey relationships. Relocation of feeding and breeding areas, or even destruction of wildlife habitats and disturbance of wildlife migrations, can impact wildlife (Newsome et al., 2013: 147; Roe et al., 1997; Saayman, 2009). The seasonal character of the wildlife tourism industry is another concern, as many destinations in wildlife areas experience an influx of tourists during the high (busy) season, causing a high demand on these resources in order to meet the expectations of tourists (Gössling et al., 2012: 7).

### **Vegetation**

Land degradation occurs when the land in natural areas is cleared of vegetation for the construction of wildlife tourism facilities (e.g., accommodation, paths and roads), and because of an increased use of firewood, the careless use of fire in forests and parks, pedestrian and vehicular traffic at campsites and trails, the collection of flowers, plants and fungi, and the introduction of alien species. This causes a disturbance in the natural wildlife found in the area and the degradation of the minerals in the soil, the fertility of the soil, as well as the surface and underground water supply (Hunter and Green, 1995; Newsome et al., 2013:147; Roe et al., 1997).

### **Atmosphere**

Wildlife tourists also contribute to air pollution. According to Andereck and Robert (1993: 27), Belsoy et al. (2012: 68) and Mehta (2013: 5), the most significant tourism-

related pollution of wildlife air is caused by the industry's automobiles, which emit by far the most carbon monoxide of all transportation modes. This, together with the production and use of energy, can all be linked to acid rain, global warming, and photochemical pollution. Roe et al. (1997) state that air and noise pollution within peak seasons may result in a loss of recreational value; it may harm fauna and flora, and increase the use of non-renewable fossil fuels, creating greenhouse gases and resulting in ozone depletion.

The aesthetic value of the area: Solid waste and littering occur where there is a high concentration of wildlife tourism activities at natural attractions. Improper disposal of waste can cause significant damage to the natural environment, rivers and scenic areas. For example, when solid waste collection and disposal are poorly managed, such as wildlife tourists leaving their litter at accommodation areas and camping sites, it can severely impact the natural environment and threaten human and animal life (Islam, 2013: 120).

A lack of land-use planning and building regulations by owners of wildlife tourism establishments, for example game farms or ranches, can facilitate the sprawling development of accommodation facilities such as lodges and campsites, as well as other supporting wildlife tourism infrastructures, for example roads, parking areas, service areas, and waste disposal facilities. The aesthetic appearance of these destinations is diminished by the construction and building of such facilities if they clash with the surrounding environment. It creates architectural or visual pollution and results in low aesthetic value (Roe et al., 1997; Shannon et al., 2017: 40; Sunlu, 2003: 265).

### **The ecosystem**

The impact on the ecosystem is mainly due to the construction of facilities (e.g., lodging and roads for wildlife tourists) that causes the elimination of plant and wildlife habitats, interference with breeding habits of wildlife, erosion, obliteration of geological features by excavation or water pollution, loss of natural beauty, unsightly urban-like development, disruption of soil stability, alteration of the drainage system, and water runoff that may result in floods and negative visual impact on the landscape (Roe et al., 1997).

### **The human environment**

The physical impacts on the environment that are most likely caused by wildlife tourists can be divided into impacts caused by development and those caused by activities.

### **Developmental impacts**

The construction of various wildlife tourism facilities

requires the clearing and filling of large areas of land in natural or sensitive areas. These actions cause severe disturbance to the natural environment and also lead to the disturbance of communities (Roe et al., 1997; Sunlu, 2003:265).

### **Activities' impacts**

The impacts of wildlife tourists' activities are aspects such as trampling, and disturbance of wildlife. The trampling of vegetation and soil occurs when wildlife tourists use the same trail or road over and over again. This can happen when a variety of activities take place, for example when taking photographs, investigating flora, or creating an informal path (trail) for these purposes, thereby causing damage such as the prevention of seed germination, which can lead to erosion and, finally, a loss of natural biodiversity (Newsome et al., 2013: 14).

Developments associated with tourist infrastructure and activities can lead to the displacement of local people, a loss of amenity to remaining residents due to traffic congestion and overloaded infrastructure, as well as increased pollution and noise. The excessive use for tourist purposes leads to overcrowding, which can result in trampling, littering, alteration of traditional use and function, desecration, and exclusion of traditional users (Islam, 2013: 121; Newsome et al., 2013: 14; Roe et al., 1997).

It is clear that wildlife tourism activities in protected areas impact the environment; all tourism products in protected areas must thus strive to reduce their impacts on the environment and encourage wildlife tourists to act in a more responsible manner. Therefore, the question this research wishes to answer is as follows: What are the environmental impacts and behaviour of consumptive and non-consumptive wildlife tourists with regard to this case study, and which of the two types is seen as more sustainable as perceived by the management of the game reserve?

## **MATERIALS AND METHODS**

### **Research method and sampling**

A game reserve in Namibia was selected for the study; it is large in size and offers both consumptive and non-consumptive wildlife tourism products. In this research, a non-experimental research design was applied. Qualitative research (action research) was performed by means of semi-structured interviews to determine the perceived environmental impacts of wildlife tourists (consumptive and non-consumptive) as viewed by the game reserve management, who have been working with these different types of wildlife tourists for a prolonged period. A non-probability sampling approach (Maree and Pietersen, 2016), namely purposive sampling, was applied in which the owner, the general manager, and the consumptive and non-consumptive tourism managers were purposefully selected based on their knowledge and previous experiences in working with both groups of wildlife tourists. Table 1 provides an overview of the participants in this study.

Semi-structured interviews were used to collect data from

participants invested in the supply and demand side; these interviews were based on research conducted by Solberg (2017) and O'Conner (2009). The interviews provided the researchers with the opportunity to use some predetermined core questions, but as the interviews progressed, follow-up questions were posed (Maree, 2007). The interviews were conducted on-site during the last week of September 2019, which added to the insights regarding the discussions and observations by the researcher. Each participant gave verbal consent before commencing with the interview and given the depth of the topic, the average length of the interviews held were 45 min.

### **Development of the interview guide**

The interview guide was developed after reviewing similar studies conducted on the environmental impacts of wildlife tourism. These studies include the works of Chen (2015), O'Connor (2009), Silent (2017), Solberg (2017) and Sucheran (2013). The interview guide included questions related to the management of the game reserve regarding non-consumptive and consumptive wildlife tourism environmental impacts. Ethical clearance (NWU-01319-19-A4) was obtained from the ethics committee of a higher education institution whose members reviewed the measuring instrument and method of study.

### **Data analysis**

To ensure objective interpretation of the discussions, the interviews were recorded using an audio voice recorder. This contributed to high-quality transcriptions and enabled the researcher to listen to the interviews again where clarity was needed. During these interviews, handwritten notes were also taken by the researcher. The handwritten notes and recorded interviews were then merged to have one data set; all the data were transferred to Microsoft Office Excel 2010. For the analysis, Creswell's (2009) six steps for analysing and interpreting qualitative data were applied, which led to the identification of specific themes. These six steps are as follows: Step 1: Organise and prepare the data for analysis (All the data [handwritten and recorded] were captured in Microsoft Excel). Step 2: Read through all the data (The researchers read through the responses of the participants to identify different themes). Step 3: Start detail analysis with a coding process. (Data were coded according to previous literature regarding wildlife tourists' environmental impacts). Step 4: Identify themes (Different themes were listed based on previous literature regarding the various environmental impacts of wildlife tourism; therefore, thematic analysis was applied). Step 5: Report the data (This was done in the Results section of the article). Step 6: Interpret the data (This was done in the Discussion section of the article).

## **RESULTS**

The results are presented in three parts: Parts 1 and 2 contain the results related to the perceived negative environmental impacts of non-consumptive and consumptive wildlife tourists, whereas Part 3 focuses on the positive impacts/contributions of both groups to conservation and the environment.

### **Part 1: Non-consumptive wildlife tourism**

A brief background situation analysis is given on non-consumptive wildlife tourism and the facilities offered to

**Table 1.** Participant (interviewees) information.

Participant	Gender	Job description	Years employed in the position
1	Female	Owner	37
2	Male	General manager	15
3	Male	Consumptive tourist manager	40
4	Female	Consumptive tourist assistant manager	18
5	Female	Non-consumptive tourist manager	8
6	Female	Non-consumptive tourist assistant manager	3
7	Female	Non-consumptive tourist assistant manager	5

tourists who visit the game reserve. For the non-consumptive tourists, also known as ecotourists, the following came forward:

The lodge offers a lounge area, dining area, bar area, kitchen area, and a variety of accommodation options. Up to 50 guests can be accommodated at a time; they also have access to the garden, a large lawn area and a swimming pool. The average price of the smaller rooms is N\$1640 (US\$99) per person per night, whereas the luxury rooms cost up to N\$2500 (US\$150) per person per night. These prices include all meals. Regarding return visitation, Respondent 1 estimated that of the 14 600 non-consumptive wildlife tourists who visit the game reserve each year, 4 to 7% of them make return visits. It was also clear that differences exist with regard to preferences related to the time of visit, with international tourists favouring the lodge from July to November and local tourists between December and January. A critical element noted by Respondent 6 is that the ecotourists only stay at the lodge for one night.

Based on the responses, the conclusion is that the lodge offers various facilities to the ecotourists and there is enough space for tourists to enjoy their stay. The low return rate and limited duration of stay are, however, two aspects of concern.

### **Negative environmental impacts regarding non-consumptive wildlife tourism as perceived by management**

The interviewees (participants) were asked to give their opinion on the most significant adverse environmental impacts of the tourists and the lodge. Based on the semi-structured interviews, the following themes were established: impacts on water resources, general waste generation, and impacts on wildlife.

#### **Water resources**

**Respondent 1:** *“The tourist lodge uses approximately 20 500 litres of water on a daily basis. This is due to the fact that bedding, towels, linen, preparation of food and general cleaning need to be done on a daily basis before*

*new guests arrive.”*

**Respondent 2:** *“The amount of water usage at the tourist lodge is [sic] seven times more than that of the hunting lodge (consumptive side). This puts a big demand on the underground water source of the reserve. Non-consumptive tourists impact the environment with the amount of water they use. The daily cleaning of bedding, towels, et cetera put[s] additional pressure on water resources, which can be managed differently.”*

**Respondent 6:** *“... the guests’ selfish behaviour towards the environment when they want to use the jacuzzi, [even] when they see how dry the surrounding environment is. They feel they have paid for that service and they want it.”*

**Respondent 1:** *“Greywater is also another big challenge at the tourists’ lodge.”*

#### **Waste food and general waste generation**

**Respondent 5:** *“The volume of food prepared at the ecolodge on a daily basis has to cater for at least 40 to 50 guests. Every day, three meals (breakfast, lunch and dinner) are prepared for the guests. Lunch is only prepared according to pre-orders made by the tourists themselves. Added to the above are [sic] a coffee station, where snacks and refreshments are served daily for the guests of the ecolodge.”*

**Respondent 6:** *“The generating of waste materials and the wasting of water are the biggest negative impacts at the tourist lodge. We are trying to minimise the amount of plastic water bottles used at the tourist lodge. For example, the tourists each receives a mug to drink water [from] while on a game drive; [water is] provided in glass bottles that has [sic] been refilled at the lodge.”*

**Respondent 1:** *“The waste generated at the tourist lodge adds up to 10 500 kilograms in a month and consists mostly of leftover food, plastic, paper waste, consumables in the room (soap and shampoo), and personal waste the ecotourists bring with them to the reserve.”*

### **Management perceptions regarding impacts on wildlife**

**Respondent 2:** *“The use of six vehicles for game drives at the tourist lodge can cause a variety of impacts that range from air pollution, soil compaction, damaging of vegetation, and the disturbance of wildlife, to name but a few examples.”*

**Respondent 5:** *“The majority of the tourists are so detached from everything around them that they show no interest in nature or wildlife. Other times, the tourists also want to know why they have to pay a rhino levy; then we as staff have to explain to them the whole rhino-poaching scenario and that we are trying to protect the rhinos on the reserve.”*

**Respondent 2:** *“The majority of ecotourists who visit the lodge are there to enjoy themselves, regardless [of] what impact they might have on the environment; for example, they don’t switch off the lights and the air-conditioning systems if they leave their rooms. They overfill their plates with food at dinner and only eat a little bit; the rest of the food then needs to be thrown away. During game drives, they are usually noisy and they also litter more than the hunters do. Their mindset is one like, they will use it because they have paid for it. It is evident that tourists show no real interest in or might have no insight into wildlife and are more concerned about their own welfare. There is almost a “do not care” attitude visible as they leave lights on, dish up too much food and use plastics. The results indicate tourists are there to enjoy themselves.”*

The responses from management regarding non-consumptive wildlife tourism environmental impacts at the lodge revealed significant results. First, the scale of operations, with reference to the number of visitors per day and year, impacts water use and creates a significant amount of waste. The scale of operations in natural areas does matter. Second, although the effect of visitor numbers was evident, it was also their behaviour that raised concerns. Participants felt that non-consumptive tourists were nonchalant towards the environment; as stated by one respondent, they are “detached from nature”. Respondents indicated that non-consumptive wildlife tourists behave selfishly regarding water use, do not switch off their lights in the rooms, create unnecessary food waste by overfilling their plates, litter while on game drives, make a lot of noise while on game drives (safari), and tend to be more concerned about their own welfare than that of the wildlife. This research is in accordance with previous work done by George (2007: 308), Gössling et al. (2012: 7) and Rabbany et al. (2007: 120), which indicated that non-consumptive wildlife tourists affect the natural environment via impacts on water resources, waste generation, food waste, and noise pollution.

### **Part 2: Consumptive wildlife tourism**

The wildlife tourism products and facilities offered to consumptive tourists (also known as hunting tourists) are different. In terms of facilities, the hunting lodge consists of a lounge area, dining area, bar area, kitchen area, and a total of six en-suite rooms that can accommodate 12 hunters at a time; there are also a small lawn and swimming pool. The average price per hunter is N\$7497 (US\$450) per night. This price includes the accommodation, meals, a private guide (professional hunter), the hunting vehicle, and any additional activities on offer at the reserve. It excludes all species hunted and the trophy-handling fees. Although trophy hunting is open from February to November, hunters prefer to hunt during the winter months (from May till the end of August). Respondents 1, 2, and 3 indicated that of the 50 consumptive wildlife tourists who visit the game reserve each year, 40 to 50% of them return to hunt again. There are also exceptions, though; one client has already revisited the reserve 26 times.

Respondent 1 indicated that hunters originate from North America, Canada, and Europe, with an average group size made up of two people who are most of the time couples (husband and wife). On average, hunters tend to stay 14 days, depending on the type of hunt (plain game or big five). The average number of animals hunted by one person varies between four and ten, with kudu and gemsbok (oryx) the most preferred species to hunt.

### **Negative environmental impacts regarding consumptive wildlife tourism as perceived by management**

Similar to non-consumptive wildlife tourists, interviewees (participants) were asked to give their opinion/perception on the most significant environmental impacts of the hunting lodge and hunters. Based on the structured interviews, the following themes were identified: impacts on water resources, food and general waste generation, and wildlife disturbance.

#### **Impacts on water resources**

**Respondent 2:** *“The water source used at the hunting lodge is ... a borehole. This water is used for daily chores like the cleaning of the rooms, the washing of linen and towels, the preparation of food, the washing of clothes, and the watering of the lawn in front of the lodge. The greywater that the lodge generates is also treated by means of a French drain system. This water then gets drained out into watering troughs for animals to drink, usually in the dry season; otherwise, it is used to water the grass.”*

**Respondent 4:** *“... wasting of water through the huge*

*bathtubs in the rooms that use at least 200 litres of water to fill.”*

### **Food and general waste generation**

**Respondent 4:** *“Two meals (breakfast and dinner) have to be prepared for the hunters on a daily basis. Lunch consists of light snacks and refreshments, pre-packed in a lunch bag that the hunters enjoy in the veld where they are hunting. The hunters are satisfied with less food and smaller portions of food compared to the ecotourist[s].”*

**Respondent 2:** *“The waste at the hunting lodge consists mostly of leftover food and recyclable waste such as tin cans and the accumulation of wastewater from the kitchen and bathrooms.”*

### **Management perceptions regarding impacts on wildlife**

**Respondent 4:** *“... the spooking of animals when the hunters use rifles that are not fitted with silencers to hunt with.”*

The interviews with management led to the following significant findings related to the impacts of consumptive wildlife tourists and its sustainability: First, the results revealed that the hunting lodge operates in a more environmentally friendly manner, which may be due to the smaller scale of operations (it accommodates 12 tourists at most). This coincides with Saayman’s (2009) finding that a smaller scale of operations in nature is more sustainable and reduces the impact on the environment. Second, less waste is generated, which is also better managed, again as a direct result of the scale of operations. Third, the big baths available in the accommodation units result in high water use, but this is also a development issue. Management should consider changing these bathrooms in the long term.

### **Part 3: Positive impacts and behaviour of consumptive and non-consumptive wildlife tourists**

Interviewees (participants) were asked to give their view on what they perceive the positive impacts of visitors on conservation and the environment are. The following aspects emerged:

#### **Non-consumptive wildlife tourists**

**Respondent 7:** *“The biggest positive impact the tourist lodge has on the environment is that it generates extra funding for the wildlife. It also helps to increase job*

*employment and provides primary education for children of the staff.”*

### **Consumptive wildlife tourists**

**Respondent 2:** *“Trophy hunters’ overall attitude and knowledge about nature and animals help to benefit conservation at the game reserve, and the hunters understand why they have to shoot the older bulls or rams in a herd in order for the younger bull[s] or ram[s] to mate with the females so that new genes can be established within the herd. They also have an understanding that the animal numbers on the reserve need to be managed according to the reserve’s carrying capacity.”*

**Respondent 3:** *“All of the trophy hunters’ behaviours who have hunted here before are [beneficial] for conservation, and the professional hunter plays a big role regarding this, because it is his task to establish and instil a sense of conservation towards nature in the hunter’s mind. Trophy hunters also do a lot of research beforehand of [sic] the animals that they want to hunt, and from my own personal experience, I can say that hunters’ overall knowledge about nature is much better than that of the ecotourists.”*

**Respondent 4:** *“Trophy hunters are more environmentally orientated, with a better understanding about nature. They are also willing to learn more about the environment and they want to be in nature, hiking or driving, while looking for a trophy animal to hunt. It is as if they have a completely different mindset than the ecotourist[s]. It seems that they are still connected to nature. The hunting lodge indirectly helps to contribute towards conservation through the professional hunters that exchange their own personal knowledge about the environment with the [other] hunters.”*

**Respondent 2:** *“The hunting lodge has different ways of recycling. Firstly, all the leftover food that can’t be used again, such as peels, bones et cetera, are turned into compost, which are [sic] then used again in the vegetable garden of the hunting lodge. Secondly, the food that can be used again is frozen and reused the following day or is given to the staff. All plastics, such as water bottles, eating utensils et cetera, are replaced by aluminium ones.”*

It was clear that the participants perceived hunters to be more environmentally friendly and showing more supportive behaviour towards nature conservation than ecotourists. Although they hunt animals and have an impact in that regard, they seem to be more in sync with nature than non-consumptive wildlife tourists. It is also evident that knowledge about nature is exchanged

between hunters and hunting guides while hunting. It was further revealed that hunters do research regarding animals they plan to hunt and thus gain knowledge of these species. This is an essential characteristic in wildlife tourism, namely to learn more about nature.

On the other hand, it was mentioned that non-consumptive tourism contributes positively to job creation in the area and schooling of employees' children. One can assume that due to its scale of operations, more staff are employed at the non-consumptive lodge than in the case of consumptive wildlife tourism. Another positive factor is that the children of the employees are schooled on the premises. This was not measured in the study, but came forward in the discussions. The nearest town is approximately 100 km away, which makes this a significant contribution.

## DISCUSSION

Based on the results, notable differences were identified in consumptive and non-consumptive wildlife tourists' impacts on the environment and their behaviour in the environment.

First, the old saying that size does matter is an essential concept when looking at sustainable tourism and the environmental impacts of wildlife tourism. As indicated by Saayman (2009), in the case of nature-based tourism, it is better for one tourist to spend \$100 than for 10 tourists to spend \$10 each. A higher number of people naturally generate more impacts on the environment and influence the conservation area/reserve's sustainability on a larger scale (Davis, 2009; Roe et al., 1997: 43). In the case of this study, approximately 14 to 500 non-consumptive wildlife tourists visit the lodge annually compared to the approximately 50 consumptive wildlife tourists visiting the hunting lodge. These consumptive wildlife tourists spend around three times more per night on accommodation, excluding the game hunted. If the latter was to be included, it doubles the total amount spent per hunt, as research by van der Merwe and Saayman (2013) has found. This leads to a more significant economic impact per person than in the case of non-consumptive wildlife tourists, thereby supporting the notion of fewer visitors paying higher prices.

The consequences of larger groups are that more resources are used and more waste materials are generated (Saayman, 2009). In the case of this study, it seems that consumptive wildlife tourists' behaviour is more in line with ecotourism principles than that of non-consumptive wildlife tourists (ecotourists); the former tourists consist of smaller groups, pay a higher price to stay, and generate less environmental impacts such as waste generation and water use. The lesson to be learned here is the ability to attract the more lucrative markets, which can be more environmental friendly with

fewer impacts on nature. Therefore, if the non-consumptive lodge wants to be more environmentally sustainable with fewer environmental impacts, it is recommended the lodge focuses on the high-end ecotourism market, as fewer tourists in conservation areas will have fewer impacts (Saayman, 2009).

Second, the results revealed that the consumptive wildlife tourists tend to support conservation actions and efforts more, have more knowledge of wildlife and the environment, and educate others about nature and wildlife. Radder (2005) researched the motives and behaviour of trophy hunters in South Africa and found that their reasons for hunting are to discover new experiences, increase personal growth, have fun, experience excitement, and improve their interpretation of the environment, thereby learning more about nature. Freeman and Wenzel (2005) research points out those polar bear hunters provide an example of a successful conservation programme and that hunting contributes to wildlife management and sustainable economic and community development. Consequently, hunting is seen as a more sustainable product than ecotourism. However, with non-consumptive wildlife tourists, it would appear that they are more concerned about their own needs than about wildlife and conservation. They are also more demanding and egotistic regarding services delivered at accommodation units. Therefore, this study finds that consumptive wildlife tourists are more educated and knowledgeable about wildlife and nature, and are therefore a more sustainable wildlife tourism market.

Third, the results disclosed that consumptive wildlife tourists stay for substantially longer periods. In tourism terms, it is more sustainable (with regard to natural resources) to have tourists who stay longer and have more return visits (40-50% of these consumptive tourists are return visitors), as there is no need to find new visitors all the time (Saayman, 2009). This is confirmed by Dunford (2020) from *The Guardian*, who writes about greener tourism, stating that "we want to attract visitors for longer stays and encourage a 'slower' type of tourism". Because consumptive wildlife tourists stay longer, they have a more positive impact on the hunting lodge.

Fourth, consumptive and non-consumptive tourists do not leave the same trace regarding wasted food. It is true that there are more ecotourists visiting the lodge, but what is of great concern to the researchers is non-consumptive tourists' selfish behaviour, which is also evident when they are on safari (a game drive), where they are guilty of littering (and noise pollution). Therefore, higher levels of awareness are needed to encourage tourists to limit their waste generation, which has a big impact on the environment.

Fifth, both these groups impact negatively on wildlife through noise pollution. The respondents indicated that both groups spook the animals, either through hunting or, in the case of ecotourists, making noises on a game



drive. This is in line with previous research by Green and Higginbottom (2001), who found that negative impacts of wildlife tourism and related human activities on wildlife can be grouped into the following three main categories: (1) disruption of activity; (2) direct killing or injury; and (3) habitat alteration (including the provision of food). Therefore, there will always be some negative impacts. One needs to weigh the positive and negative impacts and then make operational decisions based on the finding.

Last, as was stated by Ioannides (2001: 57), “to achieve genuinely sustainable development, a delicate balance should be found between conflicting economic, environmental, and socially equitable objectives”. This research concurred with the statement and showed the difficulty in balancing economic objectives with environmental sustainability in nature-based tourism.

## Conclusion

The aim of this research was to determine the environmental impact of consumptive and non-consumptive wildlife tourists as perceived by the management of a game reserve in Namibia. Our study reveals that, according to the perceptions of the management of this game reserve, consumptive wildlife tourists, based on their behaviour, have less impact on the environment; this type of tourism is therefore seen as more sustainable in the long run. Regarding non-consumptive wildlife tourism, the authors are also of the opinion that a smaller scale of non-consumptive wildlife tourism operations, focusing on the high-end market, can have the same results as consumptive tourism (as was found in the case of this study).

From the results, it seems that consumptive wildlife tourists adhere to a greater extent to the principles of eco- and sustainable tourism than non-consumptive wildlife tourists. The research makes the following contributions: First, it was expected that non-consumptive wildlife tourists are natural ecotourists, but it proved not to be the case. The results of this research show that consumptive wildlife tourists at the game reserve display more environmentally sustainable behaviour and fit the requirements and profile of typical ecotourists better. Second, the size (scale of operations) of nature-based tourism products does matter, and to be lucrative while having a limited environmental impact, the high-end wildlife tourism market should be targeted. The lodge also has a role in changing the behaviour of consumptive and non-consumptive tourists to act more responsibly while enjoying nature.

Limitations of the research are as follow: This study did not investigate non-consumptive operations on a smaller scale or more lucrative high-end ecotourism market operations. In addition, the study did not test the tourist behaviour of these groups towards the environment, and a possible study in future is to see if the smaller scale of

operations and the high-end ecotourism market expose similar behaviour to that of the ecotourists in our research. The opinions of the wildlife tourists can therefore be tested, but the problem is that one will always consider one's own behaviour as good; the view of management is thus important. A last factor to do research can be to test the high-end ecotourists' economic contributions to wildlife areas to see if they spend the same amount of money as hunters.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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