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The diversity of tortoises and their diet at Tswapong North District of Botswana

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ABSTRACT

The study focuses on the diversity of tortoises and their diet in Tswapong North district of Botswana. Tortoises are of economic, ecological and agricultural importance. The greatest diversity of chelonians in the world occurs in southern Africa. However, information on the tortoise species represented in Botswana is scarce hence the need for this study. The study was conducted at Lerala, Maunatlala, Seolwane, Mokokwana and Mosweu villages in Tswapong North district. Data were collected using a structured questionnaire. The questionnaire was randomly administered to 30 respondents. The respondents were 70% males and 30% females. The study revealed that tortoises were mostly available during spring season and were usually seen in late mornings and in late afternoons during the day. One species of tortoises was encountered and identified; the leopard tortoise (*Geochelone pardalis*). What tortoises were found eating during the study was collected and brought to the laboratory at Botswana University of Agriculture and Natural Resources herbarium for identification. The tortoises were found eating *Oxygonum alatum*. Most of the respondents felt tortoises were declining in numbers in the study area and they suggested that tortoises should be conserved.

Keywords: Diet, distribution, *Geochelone pardalis*, tortoise diversity, Tswapong North

INTRODUCTION

Botswana is blessed with the different species of fauna and flora that must be protected to ensure sustainability. With climate change effects being felt around the globe, one would wonder what would happen to the different species of animals especially terrestrial reptiles which are known to have their body temperature dependent on the ambient temperatures for example some tortoises. This calls for the documentation of natural resources which is in line with International Standards on biodiversity conservation.

There is scarce information on the documentation of chelonians of Botswana. Documentations exist but are not thorough. A study on the diversity and distribution of chelonians of Botswana especially at district level would be important as this would serve as baseline information to refer to in future. Previous documentations on chelonians were mainly focused on chelonians of southern Africa (Boycott and Bourquin, 2000) and of Africa (Branch, 2008). Testudine diversity has already been recognized with 5 genera comprising of 14 species (Bycott and Bourquin, 2000), however witout detail report from various districts of Botswana Most land based chelonians are herbivores and consume a wide range of plants, herbage and grasses (Burdge and Bradley, 1976). Finding the possible diet of the tortoises in the region may shed light on which diet tortoises may compete with livestock for. This study has been confined to the mapping of tortoises and their possible status and conservation measures. The objectives of the study were to identify and classify tortoises found in Tswapong North and to determine their possible diet.

MATERIALS AND METHODS

Study animal

Tortoises are a family of land dwelling reptiles characterized by a domed shell called a carapace. They vary in terms of size, morphology and colour. They show sexual dimorphism in their morphology. The males have a curved plastron while the females have a flat plastron

Study site

The study was conducted from December 2012 to May 2013 at Lerala, Maunatlala, Seolwana, Mosweu and Mokokwana villages and neighboring cattle posts in Tswapong North district of Botswana. The study was first conducted by the use of questionnaire which was administered to 30 respondents in five villages. The respondents were asked the areas where tortoises were seen and the season at which they were mostly seen. A camera was used to take photos of all tortoises encountered during the study. Pictures of tortoises and shells encountered were taken for identification and classification at the laboratory at Botswana University of Agriculture and Natural Resources (BUAN). It was also documented during the study period the intake of food items and their identification at the herbarium of BUAN.

Data handling

The data were analysed using Microsoft Excel. Tables and graphs were used to present summary statistics.

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RESULTS AND DISCUSSION

Demographic characteristics

The respondents were mostly herdsmen who lived at the cattle post. Table 1 shows that majority of the respondents were males. This is due to the fact that most males stay or live at the lands or cattle posts looking after livestock and they were available during the time of study. Most females live at the villages taking care of the elderly and the children. The table also shows that the majority of the respondents were 50 years and above because during the time of the study, most of them were living at the cattle posts as compared to other age groups.

Table 1. Demographic characteristics of the respondents

Variable n = 30	Category	Overall %
Gender	Male	70
	Female	30
Age (years)	20 – 30	3.3
	40 – 50	5
	50 and above	91.7

Area and season where and when tortoises are readily seen

All the respondents saw tortoises at the cattle posts during spring. The season at which the respondents reported to have seen tortoises is in accordance with Boycott and Bourquin (2000). Tortoises are inactive during winter and become active in spring and move around looking for food and water**.** Tortoises were seen at the cattle posts due to availability of food and less disturbance by human beings.

Time of the day at which tortoises were seen

Eighty percent (80%) of the respondents mostly saw tortoises in the morning, 3.3% during the day (midday) and 16.7 % both in the morning and late in the afternoon. This agrees with the findings of Else *et al.* (1988) and Keswick *et al.* (2006) who reported that tortoises were found active in the morning and late in the afternoon. This is because the tortoises prefer cooler time for feeding i.e. at dusk and dawn (Branch, 2008). Tortoises are reptiles and they mostly depend on the surroundings for thermoregulation. When it is too hot during the day, they prefer to stay in their shady forms. When it is cold, they busk in the sun.

Frequencies of seeing tortoises by respondents

Minority of the respondents (3.3 %) saw tortoises frequently at Tswapong North while majority (96.7 %) saw tortoises by chance. All the respondents (100%) felt tortoises were less in abundance when compared to the past. This may suggest a decline in tortoise numbers in Tswapong North district. The possible decline may be attributed to several factors like road mortality, drought, diseases and habitat destruction.

Tortoises found in the study area

One species of tortoises was found in the study area, leopard tortoise (*Geochelone pardalis*). This is not surprising because some species are known to show a preference for certain ecological niches. Many wild species are habitat specialists and have specific needs for a habitat for their survival (Branch, 2008). This suggests that leopard tortoises are able to adapt to conditions in Tswapong North region. Other species may be present but not found during the study period.

Diet of tortoises

The tortoises were found to feed on green grass that was still soft, crispy and young and on a plant that was identified as *Oxygonum alatum*, also known locally as letswai la khudu. The grass species was too small to be identified properly.

CONCLUSION

Tortoises were mostly seen in spring. There was only one species of tortoises found in Tswapong North and that was the leopard tortoise (*Geochelone pardalis*). The diet of tortoises included grass and *Oxygonum alatum*. Tortoises were mostly seen in spring because they are active during this season due to the fact that they just got out of winter hibernation.

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