The use of swimming pools by bats in a game reserve in South Africa
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Introduction
- It is generally acknowledged that natural habitats tend to represent resource rich areas, with semi-natural habitats, in comparison, providing inferior and/or limited resource opportunities (Cassel et al. 2019).
- Currently, the use of anthropogenic resources by wildlife in natural and semi-natural habitats is largely unknown and to date, we have found few studies that suggest that anthropogenic features could improve or enhance such areas for wildlife (Newton et al. 2017; Switalski & Bateman 2017).
- Where species or communities of conservation concern are involved, any improvements to their habitats, whether it be natural or non-natural, could be of benefit to their persistence and/or recovery.
- This study was accomplished by conducting acoustic and behavioral observations surveys to determine bat activity and behavior over swimming pools.

Materials and Methods
Study Area: Amakhala Game Reserve in the Eastern Cape of South Africa (13° 32’ 22.48” S, 26° 05’ 15.26” E; Fig. 1).
- This 66 km² area is a joint conservation venture started in 1999 and consists of 10 privately owned lodges.
- Natural and semi-natural water sources include the Bushman’s River and several watering holes throughout the reserve.
- Artificial water sources include 9 swimming pools.

Results
- ~125,000 bat calls recorded (~114,000 at Leeuwenbosch Country House and ~11,000 at Woodbury Lodge).
- During behavioral observations, we found a significant decrease in the number of instances where bats were both observed and acoustically recorded compared to the number of instances bats were observed only (Fig. 6; F=4.009, df=45, p<0.001).

Conclusions
- Bats are using swimming pools in a semi-natural habitat as a resource.
- Behavioral observations indicated we are underestimating pool use by up to 60%.
- The presence of foraging and feeding buzzes indicate that the swimming pools were used as a foraging resource by at least 7 bat species.
- The presence of drinking buzzes indicates that pools were used as drinking resource by at least 4 bat species.
- Our results suggest that anthropogenic features could increase water availability for bats in semi-natural habitats.
- Ensuring that swimming pools are accessible to bats could, therefore, enhance game reserves, such as Amakhala, for bats and aid their conservation.

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