

2019-07-12

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John Wiley & Sons, Inc.

<https://doi.org/10.1111/aje.12677>

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Observation of an adult female oribi with leucistic pelage in Lobo, Serengeti National Park, Tanzania

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Funding information

Swedish Research Council, Sida and Formas, Grant/Award Number: 2016-06355

1 | INTRODUCTION

The oribi (Bovidae: Antilopinae: Ourebiini: *Ourebia ourebi* [Zimmermann, 1783]) is a small antelope distributed widely across open woody grasslands of sub-Saharan Africa (Goldspink, Holland, Sweet, & Stewart, 2002), especially in hilly open-broadleaf savanna and primarily feeds on herbaceous vegetation (Monfort & Monfort, 1974). The species lives singly or in small groups with multiple males, yet long-term pairing is frequently low (Adamczak & Dunbar, 2008; Arcese, 1994; Arcese, Jongejan, & Sinclair, 1995; Jongejan, Arcese, & Sinclair, 1991). Oribi are readily identifiable with a tan coat and whitish underbelly, large ears, a conspicuous black-coloured preorbital glandular spot below the ear, long neck and long legs (Foley et al., 2014; Kingdon et al., 2013). Up to 13 subspecies have been described with one subspecies found in Serengeti National Park: *O. ourebi cottoni*.

The northern Tanzania population of oribi has disappeared from many areas around Lake Victoria as a result of habitat loss due to land use changes surrounding the park (Estes, Kuemmerle, Kushnir, Radeloff, & Shugart, 2012) and bushmeat (in the early 1990s: Mduma, 1995). The *O. ourebi cottoni* population in Serengeti National Park increased rapidly during recent decades and likely exceeds 7,000 individuals (Foley et al., 2014; Sinclair, 2012). In the park, the distribution is predominantly from Ikorongo and Grumeti Game Reserves eastward to Loliondo, and from Lobo northward to Kenya, making this area the highest estimated population density in Africa (Mduma, 1995). Aberrant anomalies with pelage (fur) colouration ranging from melanistic (darker) and leucistic (lighter) have been reported in several African mammal taxa, such as wild felids (Schneider et al., 2012; da Silva, 2017), primates (de Jong

& Butynski, 2010) and antelopes (Butynski & de Jong, 2019; de Jong & Butynski, 2017), as has albinism (Bowen, 1926; Stevenson-Hamilton, 1913), which also causes pigment differences in skin as well as fur. The resulting high contrast in colouration between conspecifics in a group or the surrounding environment can result in modified antipredator behaviours in leucistic individuals. Leucistic individuals potentially experience increased predation risk because predators focus on their aberrant coloration (Caro, 2005).

2 | METHODS

The observation of an individual female oribi with a light-coloured pelage was made incidentally during fieldwork on 18 November 2018 at 1:55 p.m. in Serengeti National Park, Tanzania, in the vicinity of Lobo at an elevation of approximately 1700 m asl viewed from the main road between Seronera and Klein's Gate. A female pair of *O. ourebi cottoni* were sighted westward from the roadway at a distance within 10–20 m of the roadside. One female with regular coloration fled westward upon arrival of the vehicle, while the light-coloured female remained sitting prone and was facing forward towards the vehicle (Figure 1). After a few minutes, the leucistic female stood and walked away from the vehicle in the direction of her companion. Photographs were taken from within the vehicle over a three-minute duration to document the light-coloured female. The observation occurred in *Vachellia robusta*-dominated woodland savannah when grasses were relatively dry, on a partly cloudy day with no rainfall immediately prior to or during the observation.



FIGURE 1 A leucistic adult female oribi (*Ourebia ourebi cottoni*, Zimmerman, 1783) with several tsetse flies on its face. The observation was made on 18 November 2018 at 1:55 p.m. in Lobo, Serengeti National Park, Tanzania, at approximately 1700 m asl. Photographs by Rob Marchant. [Colour figure can be viewed at wileyonlinelibrary.com]

3 | RESULTS AND DISCUSSION

Upon focusing on the light-coloured individual, it was observed that it was not a case of albinism but, more likely, it was leucism characterised by reduced pigmentation in the pelage. To the authors' knowledge, this is the first reported observation of leucism in oribi across its entire sub-Saharan distribution.

The individual was observed in *Vachellia robusta*-dominated woodland savannah, outside of the *Combretum-Terminalia* woodlands where oribi densities are highest and food is more abundant (Mduma, 1995). Oribi tend to inhabit areas close to rock outcrops (frequently within 60 m) and avoid patches of dry yellow grass (Brashares & Arcese, 2002; Mduma & Sinclair, 1994) with highest

oribi densities in areas with high annual precipitation (Mduma, 1991, 1995; Rowe-Rowe, 1982; Stears & Shrader, 2015). The hilly Lobo region hosts many rock outcrops (Scoon, 2018), but the contrast between the yellow grasses certainly makes this individual more prone to daytime predation. The relatively limited rains of early November 2018 and attractiveness of recent hot grass burns at this time as observed in Lobo potentially contributed to the pair moving into riskier areas with dry grass. The surrounding grass heights of 0.5–2 m conform to previous habitat preference observations (Mduma & Sinclair, 1994).

Camouflage is part of predation avoidance, and the leucistic individual remained seated in the grass while the regular-coloured individual fled. It is worth mentioning, but difficult to assess from this

single observation, whether hiding could be a preferred risk avoidance strategy by the leucistic individual or other individuals of small ungulates with aberrant pelage. The behaviour of leucistic small ungulates that form pairs or occur in small groups could be different than that of large herding ungulates. But based on the literature of observations reported so far, it is difficult to distinguish whether the phenotypic expression is different between different ungulate taxa, or whether habitat selection of leucistic individuals has resulted in fewer observations among large ungulates.

The frequency of leucism occurrence in oribi and its distribution range has yet to be confirmed, and there was no opportunity to collect a hair or dung sample. However, it remains clear that leucistic coloration does exist in oribi, but it remains unknown how the aberrant colouration affects individual behaviour and its fitness. Further investigation is worthwhile given that there are potentially strong selective pressures against the perpetuation of aberrant pelage colouration due to predation pressures. Our observation informs ecologists, conservationists and management authorities on the phenotypic variation that could be useful in monitoring oribi populations. Further investigation should use camera trap observations to confirm the observation of leucism and quantify the prevalence and spatiotemporal distributions.

ACKNOWLEDGEMENTS

We thank Rebecca Kariuki, Alex Moshi (NM-AIST) and Alais Mepukori Mamasita (TANAPA) for help in the field, and TAWIRI and TANAPA staff. This work was carried out with the COSTECH permit no., 2018-465-NA-2018-320. We thank Sarah Cleaveland and Grant Hopcraft who kindly commented on the photographs that provided the steer and motivation to publish; Nick Mitchell, Rosie Woodroffe, Tom Butynski and Tim Caro for further discussions; and, the editor, two anonymous reviewers for their constructive insights. Field work was supported through "Adaptation and Resilience to Climate Change (ARCC)" under the Sustainability and Resilience—tackling climate and environmental changes programme funded by Swedish Research Council (Vetenskapsrådet), Sida and Formas (2016-06355).

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REFERENCES

- Adamczak, V. G., & Dunbar, R. I. M. (2008). Variation in the mating system of oribi and its ecological determinants. *African Journal of Ecology*, 46(2), 197–206. <https://doi.org/10.1111/j.1365-2028.2007.00833.x>
- Arcese, P. (1994). Harem size and horn symmetry in oribi. *Animal Behaviour*, 48(6), 1485–1488. <https://doi.org/10.1006/anbe.1994.1391>
- Arcese, P., Jongejan, G., & Sinclair, A. R. E. (1995). Behavioural flexibility in a small African antelope: Group size and composition in the oribi (*Ourebia ourebi*, Bovidae). *Ethology*, 99(1–2), 1–23. <https://doi.org/10.1111/j.1439-0310.1995.tb01085.x>
- Bowen, W. W. (1926). Some recorded cases of albinism, melanism and abnormal coloration in African animals. *Sudan Notes and Records*, 9(2), 69–73.
- Brashares, J. S., & Arcese, P. (2002). Role of forage, habitat and predation in the behavioural plasticity of a small African antelope. *Journal of Animal Ecology*, 71(4), 626–638. <https://doi.org/10.1046/j.1365-2656.2002.00633.x>
- Butynski, T. M., & de Jong, Y. A. (2019). Aberrant-coloured (white) Smith's Dik-Dik *Madoqua (guentheri) smithii* [photographs]. *Lolldaiga Hills Research Programme Newsletter*, 22, 1–23.
- Caro, T. (2005). *Antipredator defenses in birds and mammals*. Chicago, USA: University of Chicago Press.
- da Silva, L. G. (2017). Ecology and evolution of melanism in big cats: case study with black leopards and jaguars. *Big Cats*, 6, 93–110.
- de Jong, Y. A., & Butynski, T. M. (2010). Three Sykes's monkey *Cercopithecus mitis* × vervet monkey *Chlorocebus pygerythrus* hybrids in Kenya. *Primate Conservation*, 25, 43–56.
- de Jong, Y. A., & Butynski, T. M. (2017). Distributions in Uganda, Kenya, and north Tanzania of members of the Günther's dik-dik *Madoqua (guentheri)* and Kirk's dik-dik *M. (kirkii)* species groups, regions of sympatry, records of aberrant-coloured individuals, and comment on the validity of Hodson's dik-dik *M. (g.) hodsoni*. *Gnusletter*, 34(1), 11–20.
- Estes, A. B., Kummerle, T., Kushnir, H., Radeloff, V. C., & Shugart, H. H. (2012). Land-cover change and human population trends in the greater Serengeti ecosystem from 1984–2003. *Biological Conservation*, 147(1), 255–263. <https://doi.org/10.1016/j.biocon.2012.01.010>
- Foley, C., Foley, L., Lobora, A., De Luca, D., Mshu, M., Davenport, T. R. B., & Durant, S. (2014). *A Field Guide to the Larger Mammals of Tanzania*. Princeton: University Press.
- Goldspink, C. R., Holland, R. K., Sweet, G., & Stewart, L. (2002). A note on group sizes of oribi (*Ourebia ourebi*, Zimmermann, 1783) from two contrasting sites in Zambia, with and without predation. *African Journal of Ecology*, 40(4), 372–378. <https://doi.org/10.1046/j.1365-2028.2002.00396.x>
- Jongejan, G., Arcese, P., & Sinclair, A. R. E. (1991). Growth, size and the timing of births in an individually identified population of oribi. *African Journal of Ecology*, 29(4), 340–352. <https://doi.org/10.1111/j.1365-2028.1991.tb00471.x>
- Kingdon, J., D. Happold, T. Butynski, M. Hoffman, M. Happold, & J. Kalina (Eds.) (2013). *Mammals of Africa (6 vols)*. London: Bloomsbury Publishing.
- Mduma, S. A. R. (1991). *Population ecology of oribi in Serengeti. National Park, Tanzania*. M.Sc. thesis, University of Dar es Salaam.
- Mduma, S. A. R. (1995). Distribution and abundance of oribi. In A. R. E. Sinclair, & P. Arcese (Eds.), *Serengeti II: Dynamics, Management, and Conservation of an Ecosystem* (pp. 220–230). Chicago, IL: University of Chicago Press.
- Mduma, S. A., & Sinclair, A. R. E. (1994). The function of habitat selection by oribi in Serengeti. *Tanzania. African Journal of Ecology*, 32(1), 16–29. <https://doi.org/10.1111/j.1365-2028.1994.tb00551.x>
- Monfort, A., & Monfort, N. (1974). Notes sur l'écologie et le comportement des oribis (*Ourebia ourebi*, Zimmerman, 1783). *Revue D'écologie La Terre Et La Vie*, 2, 169–208.
- Rowe-Rowe, D. T. (1982). Influence of fire on antelope distribution and abundance in the Natal Drakensberg. *South African Journal of Wildlife Research*, 12(4), 124–129.
- Schneider, A., David, V. A., Johnson, W. E., O'Brien, S. J., Barsh, G. S., Menotti-Raymond, M., & Eizirik, E. (2012). How the leopard hides its spots: ASIP mutations and melanism in wild cats. *PLoS ONE*, 7(12), e50386. <https://doi.org/10.1371/journal.pone.0050386>

- Scoon, R. N. (2018). *Geology of national parks of central/southern Kenya and northern Tanzania - geotourism of the Gregory Rift Valley, active volcanism and regional plateaus*. Basel, Switzerland: Springer Nature.
- Sinclair, A. R. E. (2012). *Serengeti Story: Life and Science in the World's Greatest Wildlife Region*. Oxford: Oxford University Press.
- Stears, K., & Shrader, A. M. (2015). Increases in food availability can tempt oribi antelope into taking greater risks at both large and small spatial scales. *Animal Behaviour*, 108, 155–164. <https://doi.org/10.1016/j.anbehav.2015.07.012>
- Stevenson-Hamilton, M. J. (1913). Notes on albinism in the common reed-buck (*Cervicapra arundinum*), and on the habits and geographical distribution of Sharpe's Steenbuck (*Raphiceros sharpei*). *Proceedings of the Zoological Society of London*, 83(3), 537–541.
- Zimmermann, E. A. W. (1783). *Geographische Geschichte des Menschen, und der allgemein vorbereiteten vierfüßigen Thiere, nebst einer hieher gehörigen zoologischen Weltcharte*. Leipzig, Germany: Dritter Band. (Weygand).

How to cite this article: Munishi LK, Courtney-Mustaphi CJ, Marchant R. Observation of an adult female oribi with leucistic pelage in Lobo, Serengeti National Park, Tanzania. *Afr J Ecol.* 2020;58:129–132. <https://doi.org/10.1111/aje.12677>