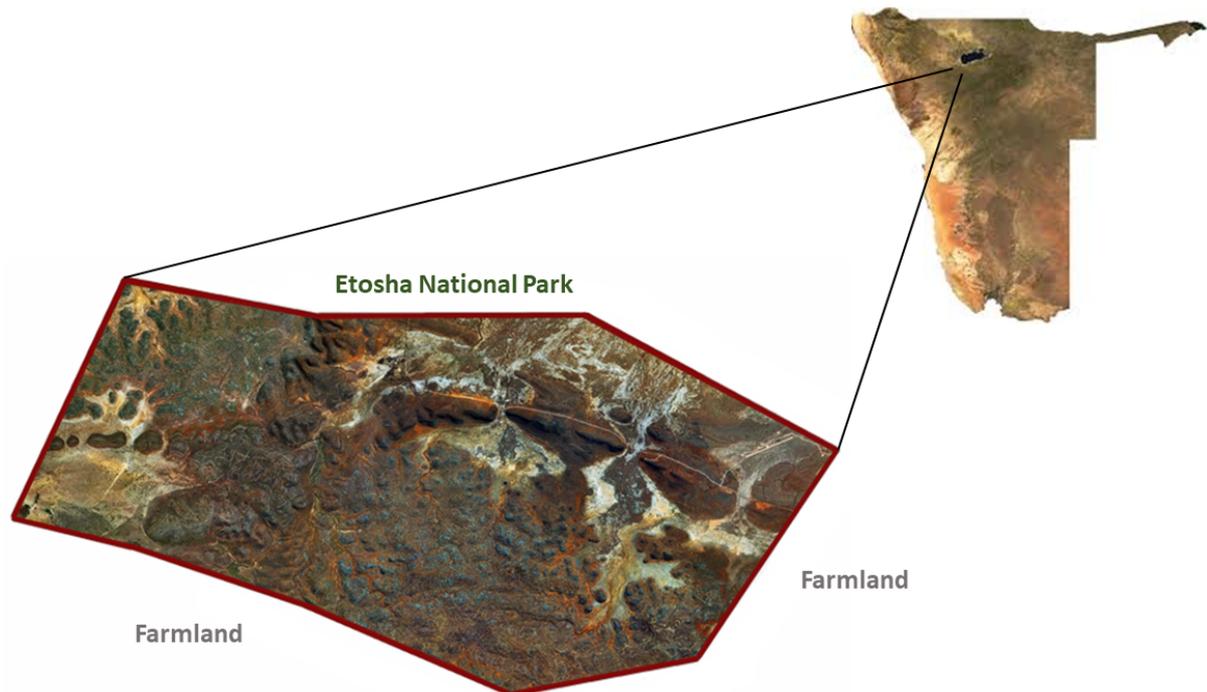


# Ongava Research Centre camera trap database

## General information

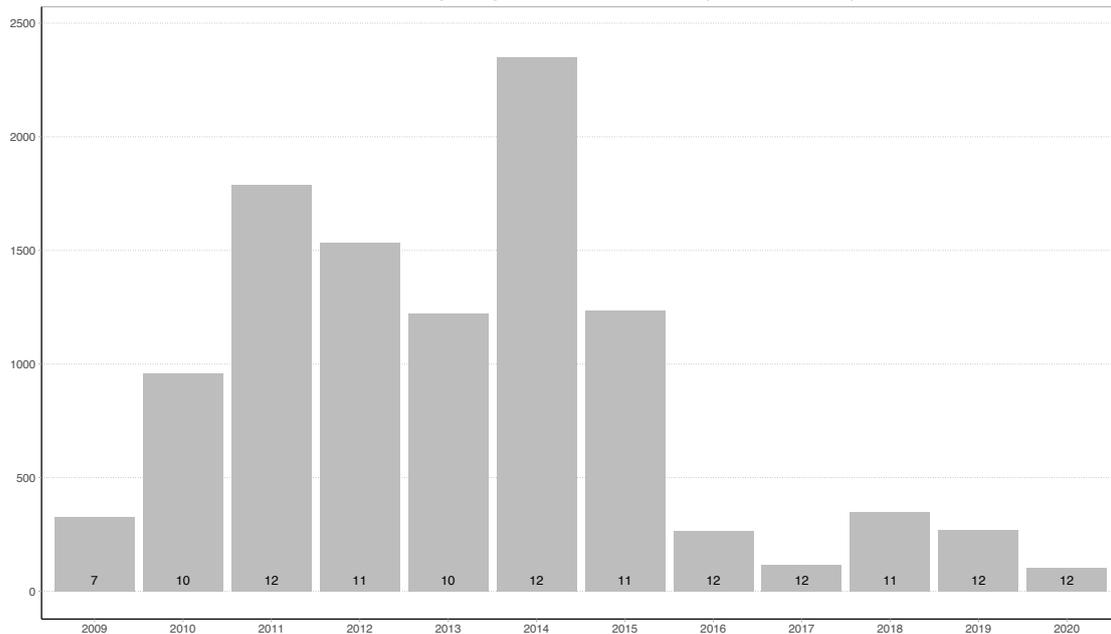
Ongava Game Reserve is a fenced 300 km<sup>2</sup> (125 square miles) private conservation area in northern-central Namibia. Ongava borders the Etosha NP as well as free-hold private farmlands. The reserve's central coordinates are: 19°19.7' S and 15°54.9' E. Previously a cattle farming area, Ongava was converted into a wildlife tourism area in the 1990s, now supporting diverse and abundant wildlife populations that have been monitored with camera traps since 2009, predominantly at the reserve's permanent artificial water holes.

Ongava's terrain is mostly undulating, dominated by rocky dolomite ridges. Much of the local habitat is thick mopane shrub- and woodland, with open to semi-open savannah in low lying plains. The reserve receives approximately 450 mm rain annually, concentrated between November through March, with dry winter months from May through August and hot summer months from October through April.



The nature of Ongava's terrain and vegetation led to camera trapping becoming an important source of wildlife information, for research and management purposes. Hence, the Ongava Research Centre (ORC) developed an in-house processing software that enables keyword tagging of camera trap images. This way, ORC has keyworded and stored well over 6 500 000 wildlife images since 2009. These and the associated meta-data are curated in a central database. While sampling effort has varied in space and time, and generally tends to be less during the rainy season, the processed data enable a variety of analyses.

Camera trap days at waterholes (2009–2020)



Values in the bars indicate the number of waterholes surveyed each year.

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## Camera trap details

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Cameras deployed:

**Reconyx** models RC55, HC500 and HF2X (Hyperfire 2)

Typically set to 10 images per burst, without delay and time-outs of 15-30 sec.

**Bushnell** models HD (incl. HD-Trophy) and Core

Typically set to 3 images per burst with minimum delay and short inter-burst time-outs.

Other brands and models deployed occasionally

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## Species recorded

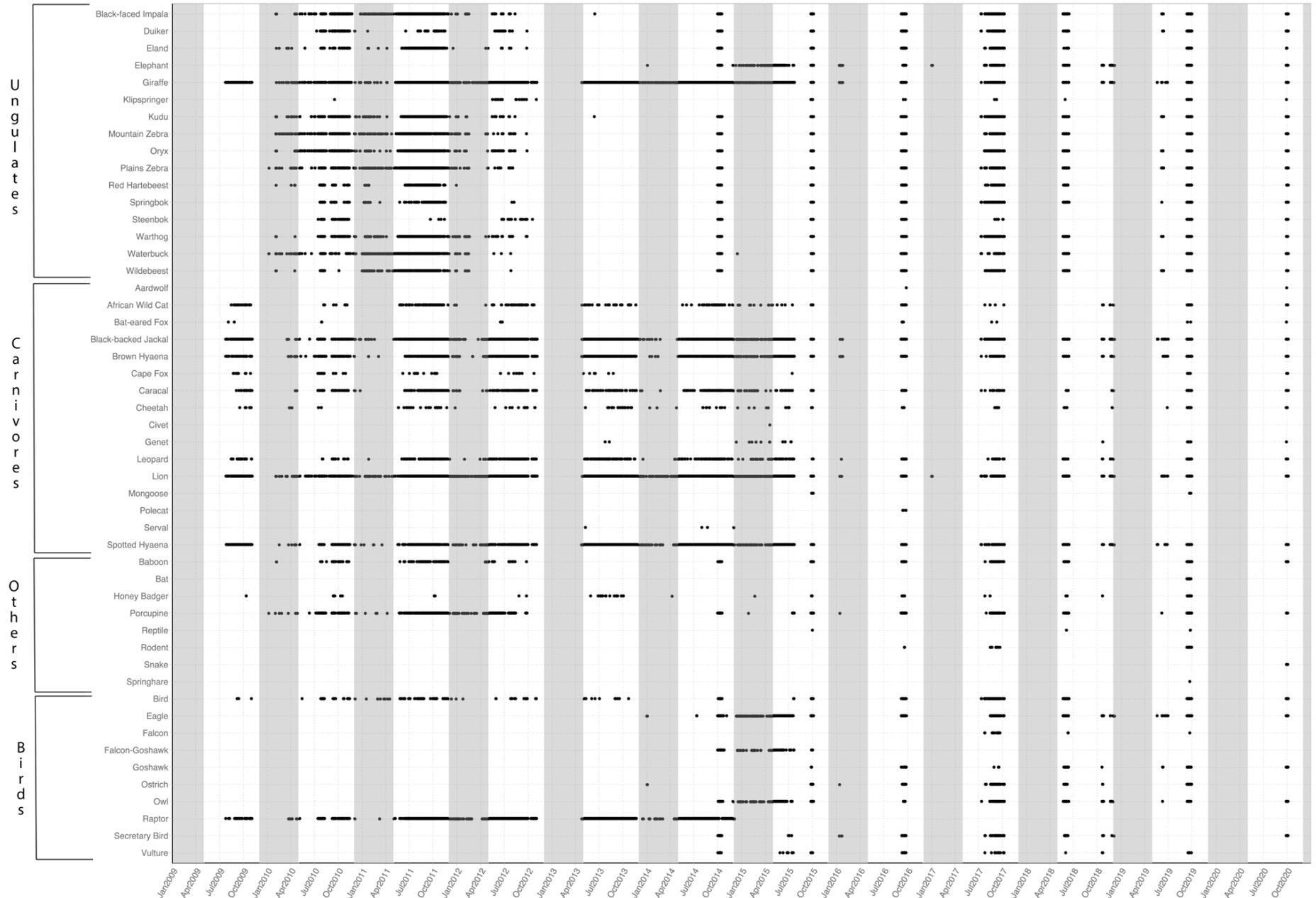
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Note that not all wildlife spp. have consistently been keyworded in the coded imagery.

- All carnivorous mammals were keyworded consistently;
- Avian raptors are recorded to species level since 2014 (where subsequent analysis has been undertaken) – previously generic as “raptor”;
- Most other birds were not recorded consistently, except vultures and ostrich;
- Ungulate images and smaller mammals might not have been keyworded consistently throughout all sampling periods, but are generally present during annual game counts.

See Gantt chart below for temporal distribution of keyworded species.

### CT waterhole monitoring 2009-2019



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## Additional data available

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- Structured trials on camera performance & functionality.
- Data from cameras deployed along fences, game trails and at cave entrances.
- Videos recorded at wildlife communication hubs, e.g. latrines, marking trees, stumps.

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## Data available for sharing

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- Image meta-data incl.: date and time of capture, species present in the frame, camera brand and model, camera location.
- Camera trap operation table including total number of photos taken before keywording.
- Original camera trap image files.

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## Questions that could be answered

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- AI/ML training + validation sets: identification of species and individuals.
- Presence-absence-occurrence.
- Distribution mapping and modeling (local and broad geographic scales).
- Occupancy modelling.
- Camera efficacy for wildlife monitoring and population estimates.

Specifically at waterholes:

- Activity patterns, drinking patterns (incl. seasonality).
- Species interactions and co-occurrence, sociality.
- Social networks for individually distinguishable species.
- Demographics: group size and composition.
- Behaviour(s).

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## Conditions for using this dataset

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- ORC retains full ownership of the shared data.
- A project-specific data sharing agreement is entered.
- ORC remains a collaborator and co-authorship is granted if applicable.

- Data are treated confidentially.

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## How to request the data

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- Email [info@orc.eco](mailto:info@orc.eco)
- Provide details of your project and data use purpose(s) and methods.
- Provide details of which data you are requesting, e.g. year and species sought, only meta-data needed, or meta-data + images...

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## Previous studies using this dataset

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- Périquet S., Crawford, S., Naholo, S., Stratford S. & Stratford, K. Leopard spatial ecology and population size in a private game reserve between Etosha National Park and farmland in Northern Namibia. In prep.
- Bonenfant, C., Stratford, K. & Périquet S. Estimating giraffe population size in a closed reserve using camera trap data. In prep.
- Bonenfant, C., Stratford, K. & Périquet S. Long term giraffe population dynamics in a closed reserve. In prep.
- Stratford, K. J., Stratford, S. M. C., & Périquet, S. (2019). Dyadic associations reveal clan size and social network structure in the fission–fusion society of spotted hyaenas. *African Journal of Ecology*, 58(2), 182–192. <https://doi.org/10.1111/aje.12641>
- Khwaja, H., Buchan, C., ... Stratford, K. J., ... Weise, F. J., ... & Challender, D. W. S. (2019). Pangolins in global camera trap data: Implications for ecological monitoring. *Global Ecology and Conservation*, 20, 537–543. <https://doi.org/10.1016/j.gecco.2019.e00769>
- Edwards, S., Portas, R., Hanssen, L., Beytell, P., Melzheimer, J., & Stratford, K. (2018). The spotted ghost: Density and distribution of serval *Leptailurus serval* in Namibia. *African Journal of Ecology*, 56(4), 831–840. <https://doi.org/10.1111/aje.12540>
- Weise, F. J., Vijay, V., ... & Pimm, S. (2017). The distribution and numbers of cheetah (*Acinonyx jubatus*) in southern Africa. *PeerJ* 5:e4096. <https://doi.org/10.7717/peerj.4096>
- Stratford, K. J., & Naholo, S. (2017). Can camera traps count game? *Namibian Journal of Environment*, 1, 27–31.
- Stratford, K., Weise, F. J., Melzheimer, J., & Woronin-Britz, N. (2016). Observations of servals in the highlands of central Namibia. *Cat News*, 64, 1–9.
- Stratford, K. J. Camera Trap Analysis of Waterhole Visits by Birds of Prey on Ongava Game Reserve, Namibia. Poster presentation, Ongava Research Centre.
- Stratford, K. J. & Stratford, S. M. C. Using Camera Traps to investigate Drinking Patterns in Giraffe (*Giraffa camelopardalis*) on Ongava Game Reserve, Namibia. Poster presentation, Ongava Research Centre.