Observations of servals in the highlands of central Namibia

4 authors, including:

Ken J. Stratford
Ongava Research Centre

Florian J Weise
CLAWS Conservancy

Joerg Melzheimer
Leibniz Institute for Zoo and Wildlife Research

ISSN 1027-2992

CAT news

N° 64 | Autumn 2016

SPECIES SURVIVAL COMMISSION

CAT SPECIALIST GROUP

CATnews is the newsletter of the Cat Specialist Group, a component of the Species Survival Commission SSC of the International Union for Conservation of Nature (IUCN). It is published twice a year, and is available to members and the Friends of the Cat Group.

For joining the Friends of the Cat Group please contact Christine Breitenmoser at ch.breitenmoser@kora.ch

Original contributions and short notes about wild cats are welcome
Send contributions and observations to ch.breitenmoser@kora.ch.

Guidelines for authors are available at www.catsg.org/catnews

CATnews is produced with financial assistance from the Friends of the Cat Group.

Design: barbara surber, werk'sdesign gmbh
Layout: Tabea Lanz & Christine Breitenmoser
Print: Stämpfli Publikationen AG, Bern, Switzerland

ISSN 1027-2992 © IUCN/SSC Cat Specialist Group

Editors: Christine & Urs Breitenmoser
Co-chairs IUCN/SSC
Cat Specialist Group
KORA, Thunstrasse 31, 3074 Muri, Switzerland
Tel ++41(31) 951 90 20
Fax ++41(31) 951 90 40
<u.breitenmoser@vetsuisse.unibe.ch>
<ch.breitenmoser@kora.ch>

Associate Editors: Keith Richmond
Brian Bertram
Sultana Bashir
Javier Pereira

Cover Photo: Serval
Photo P. Meier

KEN STRATFORD[1*], FLORIAN WEISE[2], JÖRG MELZHEIMER[3] AND NATASHA DE WORONIN-BRITZ[4]

Observations of servals in the highlands of central Namibia

The serval *Leptailurus serval* is one of the more cryptic cat species to occur in sub-Saharan savannahs. While its conservation status is Least Concern in the IUCN Red List, records are sparse, especially in semi-arid anthropogenic landscapes. We report a series of 38 observations, both current (2006-2014) and historic (1911-1977), that show that servals have been present in the central highlands of Namibia for an extended period, and it is likely that a resident population persists here. We use maximum entropy modelling to define a new range extension for the serval in Namibia. However, our data indicate that the population exists at an extremely low density, making the serval in Namibia very vulnerable to changes in habitat.

The serval is a medium-sized felid native to sub-Saharan Africa, occurring across a range of savannah and wetland habitats, predominantly in the east and central areas of the continent (Skinner & Smithers 1990, Nowell & Jackson 1996, Thiel 2011, 2015). The serval's conservation status is currently listed as Least Concern LC in the IUCN Red List (Thiel 2015). A combination of permanent water sources with sufficient vegetation cover and opportunities to shelter are thought to be an important component of serval habitat selection (e.g. van Aarde & Skinner 1986), with water availability appearing to be the most significant factor (Smithers 1978, Skinner & Smithers 1990, Nowell & Jackson 1996, Herrmann et al. 2008). Provided that these habitat characteristics are present, the species can be found in degraded rainforests-savannah mosaics (Bout 2010), anthropogenic landscapes such as agricultural developments (Nowell & Jackson 1996, Ramesh & Downs 2013, Thiel 2015), or semi-arid environments (Herrmann et al. 2008).

Fig. 1. Serval captured by camera trap on Ongava Game Reserve (2014; Photo Ongava Research Centre).

Detailed serval distribution records for Namibia are sparse. Early accounts limited the species' known range to the north-east of the country (e.g. Skinner & Smithers 1990, Nowell & Jackson 1996) with the town of Otjiwarongo representing the approximate southernmost boundary of the distribution as published in earlier assessments by the IUCN (Breitenmoser-Würsten et al. 2008). The latest IUCN assessment (Thiel 2015) describes an expansion into central Namibia. Here we present an analysis of current observations and historic records of servals in the central Namibian highlands. We use maximum entropy modelling to predict the extent of the serval's range in this area, and assess which environmental variables are most important in accounting for the distribution of observations.

Methods

We recorded opportunistic observations of servals in the course of our research activities in four areas of the Namibian central highlands: southeast (FW), east (JM), west (NdVB) and north (KS). These observations were classed as 'current', verified using either objective evidence (images) or by the presence of at least two experienced observers, and GPS coordinates were recorded. We also analysed a set of 'historic' observations made before 1977 (Gaerdes 1978). These observations were listed by farm name; hence we used the GPS coordinates of the centre point of the farm as the location of these observations. We used QGIS v. 2.8 (Quantum GIS Development Team 2014) to display these data.

We used Maximum Entropy modelling (Maxent 3.3.3 - Phillips et al. 2006, Elith et al. 2011) to determine the predicted species distribution for our serval observations. We selected five different categories from the Atlas of Namibia Project (Mendelsohn et al. 2002) as environmental variable overlays: annual rainfall (continuous), elevation (continuous), average vegetation biomass (categorical), vegetation type (categorical) and biome (categorical). We downloaded shapefiles and associated data from the University of Cologne's Digital Atlas of Namibia 'Acacia' Project (http://www.uni-koeln.de/sfb389/e/e1/download/ atlas_namibia/index_e.htm, data derived from Mendelsohn et al. 2002, accessed 02.03.2015), then used ArcGIS to project these into an Albers Equal-Area conic projection and finally exported Environmental Systems Research Institute ESRI ASCII raster grid files (cell size 100 m, grid size 13,000 columns by 13,244 rows) for input to Maxent. We used Maxent's jackknife test to determine which environmental variables had most impact on the model prediction, then eliminated those variables that had least impact, as measured by Maxent's gain statistics, to provide the most parsimonious fit to the data.

We also conducted camera trapping studies in each of our research areas. In the north (KS; Ongava Game Reserve) 8-31 cameras (Reconyx RC-55 and HC500) were deployed on game trails and waterholes during a 5-year period from 2010 until 2014 (>8,000 trap nights). In the east (JM; Seeis Conservancy) IZW researchers monitored cheetah marking trees with 20-60 cameras (Reconyx PC900 and HC600) from 2011 until 2015 (>50,000 trap nights). In the south-east (FW; N/a'an ku sê farmland study area) multiple cameras (various makes) were deployed in the period 2010-2014 (>15,000 trap nights). In addition, one of us (FW) conducted a camera trap study in Mangetti National Park in the north-east of Namibia (-18° 42' 30.24'' N / 19° 8' 31.884'' E, within the current range) over a 15-month period (09.13-12.14) in which 10-20 cameras (Reconyx HC600) were deployed at permanent waterholes (>3,000 trap nights).

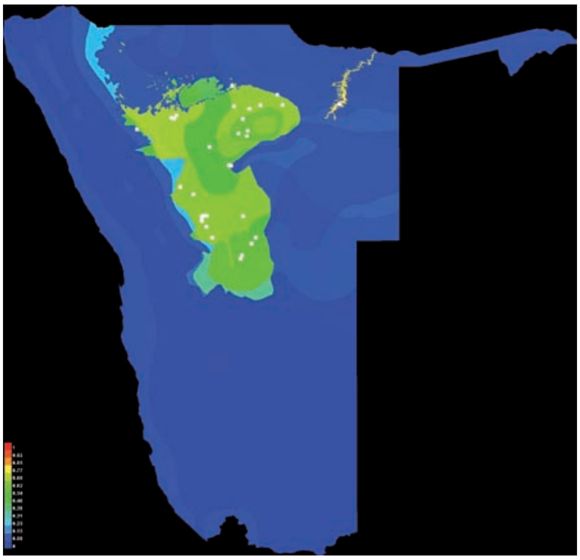

Fig. 2. Maximum entropy model of the predicted distribution of serval in the central highlands of Namibia. Hotter colours indicate areas of highest probability of occurrence. White squares are the locations of observation data. Environmental variables selected were vegetation type and annual rainfall.

Results

We recorded a total of 18 current (2006-2014) observations of servals in the central highlands of Namibia (Supporting Online Material SOM Table T1). These included five live-captures, one photographic record, six direct observations (one adult with juvenile), five camera trap records (resolving to three separate individuals), and one dead specimen. Of these 17 servals, we were able to classify 14 adults, one sub-adult and one juvenile (see Fig. 1 for example). Five of the servals were confirmed as male, and two as female.

In our various camera trapping studies, a total of more than 75,000 trap nights, we only detected three individual servals, all at the northern site (Ongava Game Reserve). Over the 5-year period of camera trapping at the same site, we recorded 130 observations of the smaller African wild cat *Felis sylvestris*, 299 observations of caracal *Caracal caracal* and 417 observations of leopard *Panthera pardus*. At the Mangetti study site over the 15-month study period we recorded 27 observations of African wild cat, 69 observations of caracal and 119 observations of leopard, but no servals. Despite regular recordings of sympatric felids, no servals were recorded on our more southern sites (Seeis Conservancy and N/a'an ku sê farmland area).

We were able to determine location data for 21 of the 24 historic (1911-1977) records listed in Gaerdes (1978: SOM T2). These records enumerate to at least 26 individuals, with just 2 confirmed males. Almost three-quarters of the records (n = 17, 71%) arose from indiscriminate trapping or hunting.

Initially we used Maxent to model our current and historic date sets independently; however, for all Maxent models the predicted distributions based on current and historic observations were very similar. We therefore grouped these data together to create one set of 38 observations. Maxent's jackknife test showed that vegetation type was the variable that most strongly influenced the model fit, followed by annual rainfall. We therefore used these two environmental layers to produce a model prediction for the distribution of servals in our study areas (Fig. 2). In this model the relative contributions of vegetation type and annual rainfall are 73.4% and 26.6% respectively.

We used QGIS to show the locations of our observations (Fig. 3, red and black dots). Finally, using a combination of marked points in Google Earth and plotting functions in QGIS, we created a smooth line that approximates the boundary of the Maxent predicted distribution (Fig. 3, red dashed line) where it extends beyond or incorporates the current IUCN range boundaries (Fig. 3, blue dashed lines).

Discussion

The serval observations described in this study extend the former range by approximately 270 km south, and our predicted range includes the recent expansion area described by Thiel (2015). In addition to contemporary observations, our overlapping historic records were derived from a German archive dating as far back as 1911 (Gaerdes 1978). Thus

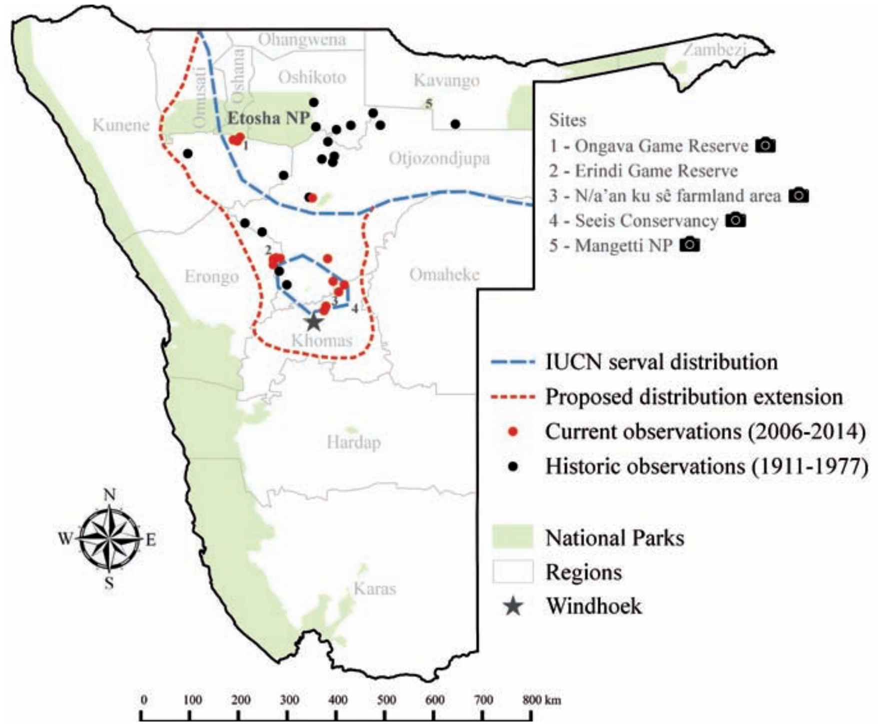

Fig. 3. Observations and ranges of serval in Namibia. Current observations (2006-2014) shown as red dots, historic observations (1912-1974) shown as black dots (Gaerdes 1978). Southern limit of former IUCN distribution and recent range extension shown by blue dashed lines (Thiel 2015). Red dashed line encloses the predicted extension to the distribution. Study sites are numbered. Camera icon indicates those at which camera trapping surveys were carried out.

servals have been present in the Namibian north-central highlands for at least the last 100 years. Our identification of females and a juvenile, plus camera trap recaptures (intervals 15 months and 4 months, see SOM T2) within this data set suggest that at least the current observations are of resident animals, rather than of long-distance dispersing individuals (e.g. as recorded by Herrmann et al. 2008 in South Africa).

It is impossible to estimate abundance from such a sparse set of observations made over many years. However, based on our extensive camera trapping studies we can certainly say that servals are scarce in these areas. Even allowing for factors such as variation in use of habitat, our data suggest that abundance is significantly lower than for other sympatric felids. It may be that camera trap detection probabilities for servals are lower than for other species, however we optimised our trap positions to record carnivores, and regularly recorded images of felids of similar (caracal) and smaller (African wild cat) sizes, which suggests this not to be the case.

The vegetation types associated with our predicted range extension were highland shrubland (characterised by *Acacia hereroensis*, *Combretum apiculatum*, *A. reficiens*), thornbush shrubland (*A. mellifera, A. reficiens, A. flekii*) and the southern part of the western highlands (*A. reficiens*, *Commiphera* spp.; Mendelsohn et al. 2002). Much of this shrubland area is associated with extensive private farms that are mainly utilised for livestock and game production or tourism activities (Mendelsohn 2006). Water sources are therefore abundant, a factor found to be critical for the survival of serval in these landscapes (Ramesh et al. 2015). This *Acacia*-dominated landscape provides a dense mosaic, and also provides a high abundance of prey species, such as small mammals (especially rodents), birds and reptiles, which form the mainstay diet of the serval (Geertsema 1984, Bowland 1990, Bowland & Perrin 1993, Ramesh & Downs 2015, Thiel 2011). Thus the central highland areas of Namibia appear to provide a suitable habitat for servals.

The Maxent model uses presence-only data to predict the distribution of a species (Phillips et al. 2006), thus we cannot rule out the possibility that servals are present in other areas of Namibia. For example, the landscape to the east of the central highlands, termed the central Kalahari savannah, is also dominated by *Acacia* species (*A. erioloba, A. melllifera*) and has a similar annual rainfall (Fig. 2; see Mendelsohn et al. 2002). Private farms also dominate this area. We therefore might also expect to find servals in this habitat, with a range extending across to Namibia's eastern border with Botswana.

Conclusion

Our current and historic observations show that the serval has been present in the central highlands of Namibia for an extended period, and it is likely that a resident population persists here. Given the cryptic nature of servals, and the likelihood that they will be predominantly nocturnal in this farmland area, it is not surprising that verifiable accounts are scarce. Even so, our data suggest that this population occurs at very low densities, making its sustainability vulnerable to further habitat fragmentation and any fluctuations in prey densities that might be associated with changes in land use and climate.

Acknowledgements

We would like to thank Joe Lemeris Jr. for assistance with setting up the ESRI ASCII files. All research was conducted with permission from Ministry of Environment and Tourism in Namibia. Small carnivore research at Ongava Research Centre is supported by The Namibian Wildlife Conservation Trust (UK) and the Directors of Ongava Game Reserve. We thank Rudie and Marlice van Vuuren (N/a'an ku sê Foundation) and Dr Ian Baines of Windhoek Animal Hospital who attended to the successful rehabilitation of two servals that were captured with gin traps and required veterinary care. We also thank the Namibia African Wild Dog Project for making the Mangetti National Park camera data available. Special thanks goes to Detlef Marggraff who caught a serval in central Namibia. We thank the numerous students and co-workers of the IZW who checked millions of camera trap photos. JM is generously supported by the Messerli Foundation in Switzerland. We thank Erindi Private Game Reserve, and especially Dr Douw Grobler, wildlife custodian and veterinarian who inspires conservation at Erindi and is passionate about the protection of all species.

References

Bout N. 2010. Recent direct observations of the savannah felid Serval *Leptailurus serval* in a degraded rainforest-savannah mosaic of south -east of Gabon. African Journal of Ecology 49, 127-129.

Bowland J. M. 1990. Diet, home range and movement pattern of serval on farmland in Natal. MSc. Thesis, University of Natal, Pietermaritzburg, KwaZulu-Natal, South Africa. 96 pp.

Bowland J. M. & Perrin M.R. 1993. Diet of serval *Felis serval* in a highland region of Natal. South African Journal of Wildlife Research 28, 132-135.

Breitenmoser-Würsten C., Henschel P. & Sogbohossou E. 2008. *Leptailurus serval*. The IUCN Red List of Threatened Species. Version 2012.2. <www.iucnredlist.org>. Downloaded on 25 January 2013.

Elith J., Phillips S. J., Hastie T., Dudìk M., Chee Y. E. & Yates C. J. 2011. A statistical explanation of MaxEnt for ecologists. Diversity and Distributions 17, 43-57.

Gaerdes J. 1978. Serval in Südwestafrika. SWA Wissenschaftliche Gesellschaft, Beilage zu Mitteilungen 19, 1-6.

Geertsema A. A. 1985. Aspects of the ecology of the serval (*Leptailurus serval*) in the Ngorongoro Crater, Tanzania. Netherlands Journal of Zoology 35, 527-610.

Herrmann E., Kamler J. & Avenant N. 2008. New records of servals *Leptailurus serval* in central South Africa. South African Journal of Wildlife Research 3, 185-188.

Mendelsohn J. 2006. Farming Systems in Namibia. RAISON, Windhoek, Namibia. 80 pp.

Mendelsohn J., Jarvis A., Roberts C. & Robertson T. 2002. Atlas of Namibia: A portrait of the land and its people. David Philip Publishers, Cape Town, South Africa. 200 pp.

Nowell K. & Jackson P. 1996. Wild cats – status survey and conservation action plan. IUCN/SSC Cat Specialist Group, IUCN. Gland, Switzerland. 383 pp.

Phillips S. J., Anderson, R. P. & Schapire R. E. 2006. Maximum entropy modeling of species geographic distributions. Ecological Modelling 190, 231-259.

Ramesh T. & Downs C. L. 2013. Impact of farmland use on population density and activity patterns of serval in South Africa. Journal of Mammalogy 94, 1460-1470.

Ramesh T. & Downs C. L. 2015. Diet of serval (*Leptailurus serval*) on farmlands in the Drakensberg Midlands, South Africa. Mammalia 79, 399-407.

Ramesh T., Kalle R. & Downs C. L. 2015. Sex-specific indicators of landscape use by servals: consequences of living in fragmented landscapes. Ecological Indicators 52, 8-15.

Skinner J. D. & Smithers R. H. N. 1990. The mammals of the southern African subregion. 2nd edition, University of Pretoria Press, Pretoria, Republic of South Africa. 768 pp.

Smithers R. H. N. 1978. The serval *Leptailurus serval* Schreber, 1776. South African Journal of Wildlife Research 8, 29–37.

Thiel C. 2011. Ecology and population status of the Serval *Leptailurus serval* (Schreber, 1776) in Zambia. PhD Thesis, University of Bonn, Bonn, Germany. 294 pp.

Thiel C. 2015. *Leptailurus serval*. The IUCN Red List of Threatened Species 2015: e.T11638A50654625. http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T11638A50654625.en. Downloaded on 09 September 2015.

van Aarde R. J. & Skinner J. D. 1986. Pattern of space use by relocated servals *Felis serval*. African Journal of Ecology 24, 97-101.

Supporting Online Material SOM Tables T1 and T2 are available at www.catsg.org.

[1] Ongava Research Centre, Outjo District, Namibia
*<kenjstratford@gmail.com>

[2] N/a'an ku sê Research Programme, Windhoek, Namibia and Namibia African Wild Dog Project, Windhoek, Namibia

[3] Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany

[4] Erindi Private Game Reserve, Omaruru District, Namibia

ESSAYAS TSEGAI ABRAHA[1]

First camera trap record of leopards in Eritrea

Camera trap pictures and video footage of leopards *Panthera pardus* in Eritrea were obtained for the first time in Semenawi-Debubawi bahri protected area between December 2015 and March 2016. The records confirm the presence of the species in the area and in the country. Semenawi-Debubawi Bahri is likely to be a key area for the long-term conservation of the species in Eritrea.

Leopards in Eritrea have been reported all along the eastern escarpments and particularly at Semenawi-Debubawi Bahri protected area.

Semenawi-Debubawi Bahri tropical woodland is one of the most biodiverse areas in Eritrea and is possibly the most northerly rainforest in Africa (Birdlife International 2014). Semenawi-Debubawi Bahri contains the only remaining mixed evergreen tropical woodland in Eritrea. The forest extends for about 40 km along the eastern escarpment of the highlands between the altitude of 700 m and 2,000 m, varying from mixed evergreen and deciduous trees at lower altitude to African Olive and African Pencil Cedar *Juniperus procera* at higher altitude (DOE 2013). Currently around 1,290 km^2 has been proposed for protection (DOE 2013).

Although the area is of great conservation significance for biodiversity in the country, little is known about the wildlife found in the area, including mammals. In particular there is little information on the presence and distribution of secretive species such as the leopard, as their elusive behaviour coupled with the rugged terrain of the area makes the species difficult to detect. In order to provide up-to-date information on the presence and distribution of terrestrial mammals of the area I undertook a pilot study with camera traps from 18 December 2015 to 27 March 2016 in collaboration with the Forestry and Wildlife Authority Eritrea.

Results and discussion

Camera trap records of leopards in Eritrea were taken for the first time in Semenawi-Debubawi Bahri protected area between 18 December 2015 and 27 March 2016. The records were taken during a pilot period of the first camera trap survey of mammals of the area. The records confirm the presence of the species in the area and in the country.

Two camera traps (Bushnell 8MP trophy cam) were used to survey four locations in a non continuous period for a total of 57 camera trap days. The survey area covered approximately 15 km^2 from Mogo to the Filfil riverbed. At least two individuals, a large male (Fig. 1) and another of unidentified sex were recorded using the same trail at Mogo (15°35.701' N / 38°55.588' E, altitude 1,730 m). The male leopard was recorded on two separate occasions (22.12.2015 and 11.03.2016) suggesting that leopards are residents in the area.

Stratford K., Weise F., Melzheimer J. & de Woronin-Britz N. 2016. Observations of servals in the highlands of central Namibia. Cat News 64, 14-17. Supporting Online Material.

SOM T1. Serval observations in the central highlands of Namibia, 2006-2014. 18 observations of 17 individuals (including one juvenile). Two individuals were recorded twice by camera trap

#	Observer	Date	GPS South	GPS East	Sex	Age	Type
1	NdWB	2006	-21.4823	16.3765	M	Adult	Hunted – from photographs
2	NdWB	Jan 08	-21.4402	16.4268	Unknown	Unknown	Skull recovered
3	KE[1]	Aug 10	-20.3789	17.0697	Unknown	Adult	Direct Observation
4	KS	18. Sep 10	-19.3684	15.7379	Unknown	Adult	Camera Trap
5	NdWB	Sep 11	-21.562	16.3743	M	Adult	Capture
6	FW	26. Okt 11	-22.2998	17.3116	F	Adult	Capture
7	NdWB	Mrz 12	-21.8577	17.4374	M	Adult	Capture
8	FW	15. Apr 12	-22.3799	17.2772	Unknown	Adult	Direct Observation
9	NdWB	Jun 12	-21.4495	16.5001	F	Adult with Juvenile	Direct Observation
10	JM	05. Jun 12	-22.0475	17.5364	M	Adult	Capture
11	FW	16. Jul 12	-22.2998	17.3116	M	Sub-adult	Capture
12	FW	08. Feb 13	-21.4566	17.3407	Unknown	Adult	Direct Observation
13	NdWB	12. Feb 13	-21.4585	16.3783	Unknown	Adult	Direct Observation
14	JM	17. Feb 13	-21.923	17.6349	Unknown	Adult	Direct Observation
15	KS[2]	10. Mai 13	-19.2991	15.7866	Unknown	Adult	Camera Trap
16		23. Aug 14	-19.3684	15.7379			Camera Trap
17	KS[2]	01. Aug 14	-19.3488	15.6678	Unknown	Adult	Camera Trap
18		02. Dez 14	-19.3684	15.7379			Camera Trap

SOM T2. Historic serval observations in the central highlands of Namibia, 1911-1974 (extracted from Gaerdes, 1978). Location data is available of 21 of 24 records.

#	Observer	Date	Property/Location	GPS South	GPS East	Count	Sex	Age	Type
1	Jan Gaerdes	1917	Ozombanda 21	-21.91979	16.61733	1	M	Adult	hunted
2	Fritz Gaerdes	1939	Karakuwisa	-19.06814	19.60673	1	Unknown	Unknown	not stated
3	E. Albat	1974	Ganachaams 47			1	Unknown	Unknown	caught in gin trap
4	W. Arnold	1960	Heliodor 857	-19.11726	17.13272	1	Unknown	Unknown	caught in box trap
5	W. Arnold	1967	Heliodor 857	-19.11726	17.13272	1	Unknown	Unknown	caught in gin trap
6	H. D. von Alvensleben	1950s	Kumkauas 552	-19.6891	17.23881	1	M	Adult	caught in box trap
7	R. Boehme	1925	Kayas 286	-19.08764	18.27578	1	Unknown	Unknown	caught in gin trap
8	R. Boehme	1926	Otavifontein 798	-19.63724	17.45987	1	Unknown	Unknown	caught in gin trap
9	R. Boehme	1911	Onguma 314	-18.68309	17.09566	1	Unknown	Unknown	shot in a tree
10	A. Feucht	prior to 1977	Heidelberg 291	-19.08988	17.75289	3	Unknown	Unknown	killed
11	H. Friedrich	1972	Choantsas 292	-18.87227	18.1465	1	Unknown	Unknown	observed at night
12	H. Friedrich	1974	Choantsas 292	-18.87227	18.1465	1	Unknown	Unknown	observed at duiker kill
13	E. Haerlen	1935	Hohentwiel 506	-19.74309	17.43109	2	Unknown	Unknown	caught in gin trap
14	E. Haerlen	1949	Hohentwiel 506	-19.74309	17.43109	1	Unknown	Unknown	shot
15	Braeuninger	prior to 1961	Otjenga 362	-20.36735	17.01414	>1	Unknown	Unknown	shot

#	Observer	Date	Property/Location	GPS South	GPS East	Count	Sex	Age	Type
16	G. Hobohm	1930	Valhal 331			4	Unknown	Unknown	caught in gin trap
17	G. Hobohm	1930	Meyerton 175	-19.97808	16.55986	>1	Unknown	Unknown	trapped
18	H. Hofmeister	prior to 1976	Finsterbergen 469	-19.38025	17.34552	1	Unknown	Unknown	observation
19	Fr. Krenz	prior to 1977	Cauas 118			2	Unknown	Unknown	trapped
20	W. Schatz	1962	Otjiguinas 458	-19.16536	17.49761	1	Unknown	Unknown	caught in gin trap
21	V. Stubenrauch	1912	Kamanjab 190	-19.59214	14.85982	>1	Unknown	Unknown	observation
22	M. von Dewitz	1936	Otjombuindya 33	-21.67754	16.48132	2	Unknown	Unknown	observation
23	W. Traupe	1973	Zierenberg 70	-20.82543	15.87372	1	Unknown	Unknown	observation
24	W. Traupe	1972	Georg-Ferdinandshoehe 86 (new 512)	-20.98322	16.17952	1	Unknown	Unknown	caught in box trap and sold