- Black-footed Cat Working Group -
Report on surveying, catching and monitoring Black-footed cats (*Felis nigripes*) on Benfontein Nature Reserve, Nuwejaarsfontein and Taaiboschpoort Farms in 2013

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Introduction:

The Black-footed Cat Working Group (BFCWG) aims to conserve this rare cat species by furthering awareness and conducting multidisciplinary research on the species' biology. The BFCWG owns a research vehicle (Toyota Hilux) for which the insurance, running and maintenance costs are administered by the McGregor Museum, Kimberley. The specialized equipment required for our research is also stored at the McGregor Museum. This year we made one joint trip to the two previous study areas: Benfontein Nature Reserve (BFN), near Kimberley, from 31 October – 2. November, then to Nuwejaarsfontein (NJF) and Taaiboschpoort (TBP) Farms, south of De Aar, from 2–11 November then back to BFN 11–14 November 2013.

Study Areas and Project Aims

1 - Benfontein Nature Reserve (BFN):

A nature reserve owned by De Beers Consolidated Mines, located 10 km southeast of Kimberley on the border of the Northern Cape and Free State Provinces in central South Africa. The majority of the 11.400 ha which consists of arid plant communities has been the subject of the first, and so far only, in-depth field study on the black-footed cat by A. Sliwa in the 1990s (1992-1998; Sliwa 2004, 2006, Sliwa et al. 2010). BFN receives average annual rainfalls of 450 mm.

2 - Nuwejaarsfontein (NJF) and Taaiboschpoort (TBP) Farms:

Situated 24 km south of De Aar in the Northern Cape Province, these sheep and game farms are owned by Sterrie Marais and are managed by his son Piet Marais. They are about 5 km apart, separated by the farm Eselsfontein. The BFCWG visited them for the first time in February 2009. The 13 000 ha of NJF and 8.000 ha TBP farms receive an average of 300 mm rain annually and the Karoo plant communities are fenced into 300–400 ha camps both sides of the secondary road parallel to and between the R348 and N10.

Project Aims: This project is part of a multidisciplinary effort to study the distribution, ecology, health, and reproduction of *F. nigripes* over an extended period. With the aim of repeatedly capturing black-footed cats (hereafter termed "bfc") for biological sampling and radio-collaring for subsequent observation, several methods were employed to survey areas, previously known to hold bfcs. From November 2005 annual capture operations were conducted on BFN and from February 2009 also on NJF until the present visit. 9 reports are available on these periods by the authors and on the website www.black-footed-cat.wild-cat.org.

Methods:

(A) Spot-lamp searching: For a total of 12 nights (4 nights on BFN, 8 nights on NJF & TBP) a 4x4 vehicle (2.4 litre Diesel Toyota Hilux Double cab or Toyota Landcruiser) drove a route of 20–80 km in length along dirt roads at a speed of 20–30 km/h whilst looking for the characteristic bright eye-shine of cats. A minimum of 2 people stood on the open back of the vehicle operating 2 spotlights (1 million candle power / Lightforce® SL240 mm).

(B) Catching via searching and pursuit: Once bfcs were located by their eye-shine in the spotlights, their species identity was swiftly confirmed using 10x42 binoculars. If positively identified, they were pursued quickly by vehicle for a short distance, of between 100–600m until the cat squatted low on the ground in front of the stopped vehicle. 1 or 2 people with fish landing nets then netted the cats. On other occasions the cats would find a den system (dug by aardvarks, ground squirrels or springhares) and were either captured by exposing them after digging, or were lost when escaping deeper into the den system. All accessible cats were subsequently anaesthetized with an intramuscular injection of medetomidine, midazolam, and butorphanol and covered with a blanket to shield them from lights and sounds. This November we processed all 9 captured cats in the field. All animals were given complete physical examinations, had biological samples collected for disease and genetic studies, morphometric measurements obtained, and radio-collars fitted. During this year's captures even more vital body data were collected while the cats were under anaesthesia, such as blood pressure, and a blood sample was drawn from a catheter in the jugular vein every 20 minutes for blood gas analysis. The anaesthetic drugs were antagonized with intramuscular injection of atipamezole, flumazenile and naltrexone, and the cats then placed in a small plastic crate for recovery. All bfcs were released back into a den, close to their capture locations. A blanket was used to cover the den entrance, keeping them inside until they were fit to leave on their own account. A digital camera trap was set close to the den entrance to record the cat leaving the den. There were no complications associated with these procedures, but for 2 who were slow to leave, and all cats (n=9) were confirmed alive and well on subsequent nights using telemetry and visual verification.

(C) "Digging" of previously radio-collared cats: This method was employed twice this year, where the den with the radio-collared bfc was carefully opened with a spade and via hand-digging. The still functioning radio-collars of one male (Bama) and one female bfc (Ilse) were exchanged. "Ilse" was extracted out of her tight den with the aid of a snake hook, hooked under her collar, with only very little digging being necessary.

(**D) Live-trapping:** We operated 21 traps for 2 trap nights (11-13 November) on BFN.

The captures via vehicles were variously staffed in November 2013 by:

Ms. Beryl Wilson, zoologist, McGregor Museum, South Africa (berylwa@museumsnc.co.za)
Dr. Alex Sliwa, behavioural ecologist and zoo curator, Cologne (Kölner) Zoo, Germany (sliwa@koelnerzoo.de)
Dr. Nadine Lamberski, zoo veterinarian, San Diego Zoo Safari Park, USA (nlamberski@sandiegozoo.org)
Dr. Adrian Tordiffe, research veterinarian, National Zoo of South Africa, Pretoria, SA (adrian@nzg.ac.za)
Dr. Arne Lawrenz, zoo veterinarian, Wuppertal Zoo, Germany (a.lawrenz@zoo-wuppertal.de)
Dr. Leith Meyer, Senior Lecturer, section Pharmacology & Toxicology, Univ. of Pretoria, SA (leith.meyer@up.ac.za)
Dr. Birgit Eggers, wildlife vet, Durban, Kwazulu Natal, South Africa (blackegg@mweb.co.za)
Dr. Sandra Silinski-Mehr, zoo veterinarian, Münster Zoo, Germany (silinski@hotmail.com)
Ms. Martina Küsters, field assistant, researcher bfc-study Namibia, Swakopmund, Namibia (kusters.m@hotmail.com)
Mr. Sterrie Marais, farm owner of Nuwejaarsfontein and Taaiboschpoort, De Aar, SA (info@karooexperience.co.za)
Mr. Pieter Marais, farm manager of Nuwejaarsfontein and Taaibospoort, De Aar, SA (maraispiet@gmail.com)

Results:

Trapping: We caught no bfc and a single yellow mongoose (*Cynictis penicillata*) during the 2 nights of operating 21 traps (equalling 42 trap nights).

Spot-lamp searching and catching/exchanging radio-collars:

BFN: we saw 3 bfc individuals during 4 nights of searching and caught two of them. Thus we saw bfcs unaided by telemetry every 1.5 nights (67% chance of sightings /night). The entire area was part of the previous ecological study of Alex Sliwa from 1992–1998, and the same that we searched during previous

capture trips. During these night drives we observed other carnivores including numerous aardwolves (*Proteles cristatus*), different individuals of black-backed jackals (*Canis mesomelas*, ~ 1 per night), Cape foxes (*Vulpes chama*) and small groups of bat-eared foxes (*Otocyon megalotis*). Other nocturnal mammals seen included aardvark (*Orycteropus afer*), porcupines (*Hystrix africaeaustralis*) and springhares (*Pedetes capensis*). 1 night we had to stop after only 1 hour of searching, when driving the vehicle into a ditch while driving behind an un-collared bfc.
We caught two new cats on BFN, the adult female "Faf" and a fully adult male "Kubu" via the pursuit method. Thus our success rate was 67% out of 3 pursuit attempts. We also exchanged the functioning radio-collar of the male "Bama" via digging him out of his daytime den.

NJF and TBP: we saw bfcs on 7 occasions during the 8 nights of searching (no search on 9 November) and caught 5 in6 attempts (83% capture success). 1 sighting was of the radio-collared female, which we didn't pursue and the other was a cat in very difficult and rocky terrain, which managed to get away by moving around on the boulder-strewn koppies. 2 un-collared males "Zuma" and "Stan" on NJF and the likewise un-collared male "Ego", young adult female "Mozi" and adult female "Hasi" on TBP. Thus we saw a bfc every ~1.2 nights (87.5% chance of sightings /night). During these night drives we observed other carnivore species such as aardwolves, groups of bat-eared foxes. Also Cape foxes, aardvark, as well as porcupines, and spotted eagle owls (*Bubo africanus*).
We caught 5 new cats on NJF and TBP via the pursuit method. Thus our success rate was 100% out of 5 pursuit attempts. We also exchanged the functioning radio-collars of the females "Ilse", when we extracted her out of her tight den with the aid of a snake hook lodged under her collar after little digging her daytime den. Her examination showed that her lower left mandible was swollen but healing after being broken. So we had 6 radio-marked bfcs on these farms, when we left on 13th November 2013.

Fate of black-footed cats last collared in 2012

Female "Paris": we had "Paris" collared since July 2010 as an adult female of then ~1.5 years. She maintained a relatively large territory in the central part of BFN over 2,5 years and was last seen in February 2013 by Chriszanne Burger. We don't know what happened to her as we could not detect a signal when we returned to BFN in November 2013. During the years of tracking her she had at least one confirmed litter of kittens (see 2011 report).
Female "Tess": caught in November 2012 as a young adult. She has used both BFN and the neighbouring farm "Susanna" across the N-8 road. She had crossed over many times. She was last seen alive on 8th April 2013 by Ch. Burger. We found her functioning collar and bleached bones on 12th November 2013 after climbing the koppie with the beacon on the westernmost side of BFN. Location on Map 1.
Female "Line": caught her last in November 2012 on NJF. She was subsequently monitored intensively by A. Timmermans until she was found dead in August 2013 in the centre of her home range (Map 2). Her carcass looked emaciated, thus she might have died of starvation. She had been collared and monitored since November 2011 (>1.5 years).
Male "Piet": caught in November 2012 on NJF and monitored until end of January 2013 by A. Timmermans within his home range, contained in female "Line"s range. Contact was lost for 5 weeks when he dispersed towards NW until he was found again on 6th March 2013 12 km away (Map 2). He was seen again on 10th March but subsequently contact was lost entirely, despite extensive searching by A. Timmermans in a wide circle south of De Aar.
Other: the female "Ilse" radio-collared on NJF and male "Bama" on BFN in November 2012 were found both alive in November 2013 and their collars were replaced with new ones. "Bama" had substantially lost body weight and condition, weighing 400g (20%) less than a year ago. Female "Ilse" was in fair condition despite her broken left mandible, which was healing, but the process had misaligned her lower left molar (Fig. 23). We observed her hunting and capturing prey both 2 nights before and 2 nights after her capture.

Locating the radio-collared cats

NJF, TBP and BFN: before and subsequent to their respective capture, Alex, Arne and Martina attempted to acquire location fixes (waypoints) of all newly radio-marked cats in their dens during daylight each day, and then additional fixes during the course of the nights. Altogether 103 (Table 1) such fixes were obtained for the 3 cats on BFN (Map 1) and the 6 cats on NJF & TBP (Map 3). The short duration of the field trip allowed only for the collection of a limited number of fixes, and thus to arrive at incompletely estimated ranges (Table 1), even when incorporating all the fixes collected in 2013. We were fortunate to receive help in acquiring additional fixes for the cats on BFN through field assistant Chriszanne Burger ("Paris" = 6, "Tess" = 5**, "**Bama" = 2, Total = 13 waypoints, Map 1, Table 1) over the whole year 2013. Between January and August 2013, field assistant Afke Timmermans collected fixes for the cats on NJF ("Ilse" =206; "Line" =254; "Piet" =22, Total= 482 waypoints, Map 2). Since 14th November 2013 Martina Küsters was tracking all 8 radio-collared cats on all three farms (BFN, NJF, TBP) and has collected 284 waypoints until 18th December 2013. Sterrie Marais and his son checked the pulse rate of the radio signals when going out predator calling, so they could tell in what general area the radio-collared cats are staying on NJF and if they are alive. However, this doesn't provide data accurate enough for home range analysis. All the location fixes (waypoints stored) provide a clearer picture of the home ranges of individual bfcs, especially on NJF & TBP. The home ranges used by the cats on NJF and TBP in November/December 2013 are shown as 100% MCP polygons (Map 3) including single waypoints. Actual home range sizes for all the individuals are provided in Table 1.

Behavioural Observations of black-footed cats

A total of 13 cats were monitored in 2013 with varying intensity. "Ilse" on NJF was well habituated since February 2009 and is thus the longest continuously radio-collared bfc. She allowed close observation, both by vehicle and even on foot, hunting in circles initially, but then calming down and capturing various rodents, birds and a gecko. "Bama" has hardly been tracked on BFN since his capture in November 2012, although he allowed relatively close approaching on foot at night on 1st November 2013. He has since moved across the N-8 to the farm "Susanna" and can thus only be visited periodically, allowing permission of the land owner. All the other cats were still rather shy or not yet habituated, thus no behavioural observations were possible.

Unfortunately the young adult female "Mozi" was found dead after Martina's return to TBP on 21th November 2013. She must have died after 10th.November, when we last saw her. Her desiccated carcass was fed on, so no clear cause of death ie. via predator could be determined. Her lean body condition may have been additionally stressed by adapting to the 40 g radio-collar, however she was only 80 g less in body mass than the adult female "Hasi", which occupies the adjacent range.

Over the past 4 months Martina has tracked the 8 remaining cats (5 on NJF and TBP and 3 on BFN) and most of the cats have habituated well to the tracking vehicle. She has been able to record several prey captures, including the capture of a white-quilled bustard (*Eupodotis afraoides*) by "Kubu". She has also witnessed an aggressive meeting between "Bama" and "Faf" on BFN. Unfortunately almost all the cats leave at some point the study farms and thus permission must be sought with the adjacent land owners to get periodical visual observations of them, to check on their condition. We hope that we can establish good relations with these land owners, to explain that it is highly desired to record the full size of the used home ranges of these trespassing cats.

Reproduction: there were no juvenile cats or kittens caught, which could have helped calculating the reproductive period within 2013 in the study areas. The adult females "Hasi" and "Faf" were possibly in the early stages of pregnancy (pers. comm. N. Lamberski, A. Tordiffe), while "Mozi" had unused nipples, indicating her young age and "Ilse" may be too old for pregnancy any more. It is hoped that our field assistant Martina will record kittens by the females, once conditions have improved after good summer rainfall.

Camera Trapping: Alex Sliwa employed 2 digital camera traps (Bushnell Trophy Cam HD, Reconyx Hyperfire HC600), after every release of the captured cats into their subterranean dens. Via this the exact time of their leaving the release den could be recorded. Some videos and pictures of the various cats, leaving their dens after waking from anaesthesia will become available on www.black-footed-cat.wild-cat.org.

Discussion and Conclusions:

Valuable data on censusing and catching black-footed cats have been collected again on this trip of the BFCWG on BFN, where the species was intensively studied between 1992–1998. We captured 2 new cats (during 4 nights of spotting there). The other was a recapture of a male with a still functioning collar. We attained an equally high success rate on NJF and TBP with 5 new cats captured and the daytime exchange of the collars of the female "Ilse" through extracting her from an accessible den.

The sighting frequencies between the 2 established study areas during this trip were similar (see progress reports 2005 to November 2012 – downloadable as PDF files at www.black-footed-cat.wild-cat.org), with NJF and TBP having a slightly higher sighting frequency. Over the years, the detection chance of bfcs was similar between the 2 sites as both have open habitats with good visibility, especially with this year's still short grass, due to prevailing dryness. During this trip, we never had to stop due to rain or thunder storms, which was even better than in 2012. Thus we were able to drive unrestricted in all the areas, with no wet spots. A significant event during this trip was however the driving into an erosion gully (donga) while following a bfc on BFN, which damaged our field vehicle substantially and we had to make adjustments in our plans by leaving the next day for NJF and TBP. Luckily no bodily harm occurred to the crew and the assessments of damage and repairs proceeded fast enough, so that we could use our vehicle again for 2 more captures of cats on BFN towards the end of our trip.

The jackal density on BFN was the same (low) as during the November 2012 trip, seeing only 2. We saw none on NJF and TBP, likewise no caracals. We saw no African wildcats, feral/domestic cats this trip
Due to the short time periods the group spent on both study areas, we were not able to make a reasonable judgement of the population sizes, however there seem to be average population in both sites, as during the past years. It is interesting that we seem to catch and see mostly the same individuals again, although there is occasional dispersal of young adults ("Piet") and mortality or disappearance of both young adults ("Tess" and "Mozi") and breeding adults ("Line" and "Paris"). The deaths and disappearance of all these individuals were frustrating for us, as no clear cause of death could be determined, as all were not found within an easily determinable time period. Some were infrequently monitored, while others died when the field assistant was away on a break or at the other study area. The small bodies or just bleached bones were desiccated by the dry climate and no necropsy could be performed any more. The only chance to find out more clearly could still be for "Mozi".

This year, we have unfortunately no records of successful breeding in any of the study areas. As in the past the short capture field trip doesn't allow to compare estimated range sizes to those of the past field trips. Home range size development, especially for new animals collared, is highly dependent on the number of locations collected over a minimum of several months for each individual cat and on its reproductive cycle in this period (Molteno et al. 1998; Sliwa 2004; Sliwa et al. 2010).

The brief insight into the movements of the males "Stan", "Zuma", "Kubu" and "Bama" was interesting. "Stan" and "Zuma" used large parts of NJF and TBP (Map 3 & Tab. 1) and may be still dispersing or establishing their home ranges. "Bama" seems to have moved for the central part of BFN to the north and across to "Susanna" Farm, also having lost substantial amounts of body mass, while "Kubu" is covering the majority of BFN, already enclosing 33 km² in his ranging (Map 1). He seems to be the dominant male and we have observed him spraying urine the night of his capture.

Altogether the trip was very successful, with the capture rate higher than in previous field trips. We continued with our decision to radio-collar any captured bfcs large enough (> 1 kg) in order to get repeated biological samples during future trips and allowing for the comparison of home ranges to the sizes estimated by Sliwa (2004). Martina Küsters, Sterrie Marais and Piet Marais will be able to collect more location fixes and listen to radio signal frequencies on a regular basis for each of the 6 radio-collared cats on NJF and TBP in 2014.

We will return to BFN, NJF and TBP for further capturing and sampling of wild black-footed cats in late 2014.

Acknowledgements: We thank Sterrie Marais, his wife Ilse and son Pieter for their holistic support of this capture trip to Nuwejaarsfontein and Taaiboschpoort. Not only did Sterrie and Pieter drive and man spotlamps on the Toyota Landcruiser every night, they also helped with the capture of 5 cats. In addition they covered all the running costs of this vehicle and provided the use of their spotlamps. We were able to use their Landrover for checking and following the radio-collared cats, when our own vehicle was in for repairs at Kimberley. We are especially indebted for their provision of our beautiful, tranquil and comfortable lodging at Taaiboschpoort entirely for free, again. Likewise, we thank De Beers Consolidated Mines and the Diamond Route for permission to work on Benfontein NR and the use of the research house and Finas hut for accommodation. Ecology Division of De Beers who gave us permission for the sampling, and supported us in employing the pursuit and live-trapping method. We thank Finlay Markham, Benfontein's Manager, for his swift support in fixing the technical problems at the accomodations. Funds for fieldwork came from Cologne (Kölner) Zoo, Zoo-Verein Wuppertal e. V. (friends of Wuppertal Zoo, R. Stock & B. Stock), Tierarztpraxis Dr. Lore Marholdt, Leverkusen, Germany, Le Parc des Félins / SOS Félins & Co. Nesles (Paris, France); Ebeltoft Zoo (Ree Park), Denmark; Zoological Association of America (ZAA), Punta Gorda FL, USA; EFBC Feline Conservation Center AAZK, Rosamond CA, USA. The International Society of Endangered Cats (ISEC) - Canada Branch, gave generous funds for radio-collars and vehicle running costs. Afke Timmermans' and Martina Küsters' upkeep and lodging in De Aar was supported by funds donated to Alex Sliwa by Le Parc des Félins / SOS Félins & Co., France, ISEC - Canada Branch and Zoological Association of America (ZAA). Further generous funding was also received from a private donor, Mr Ralph Christie, which supported the running costs and field work in the Kimberley area. We sincerely thank our respective employers for supporting us and granting us leave from our busy work schedules to carry out this field work.

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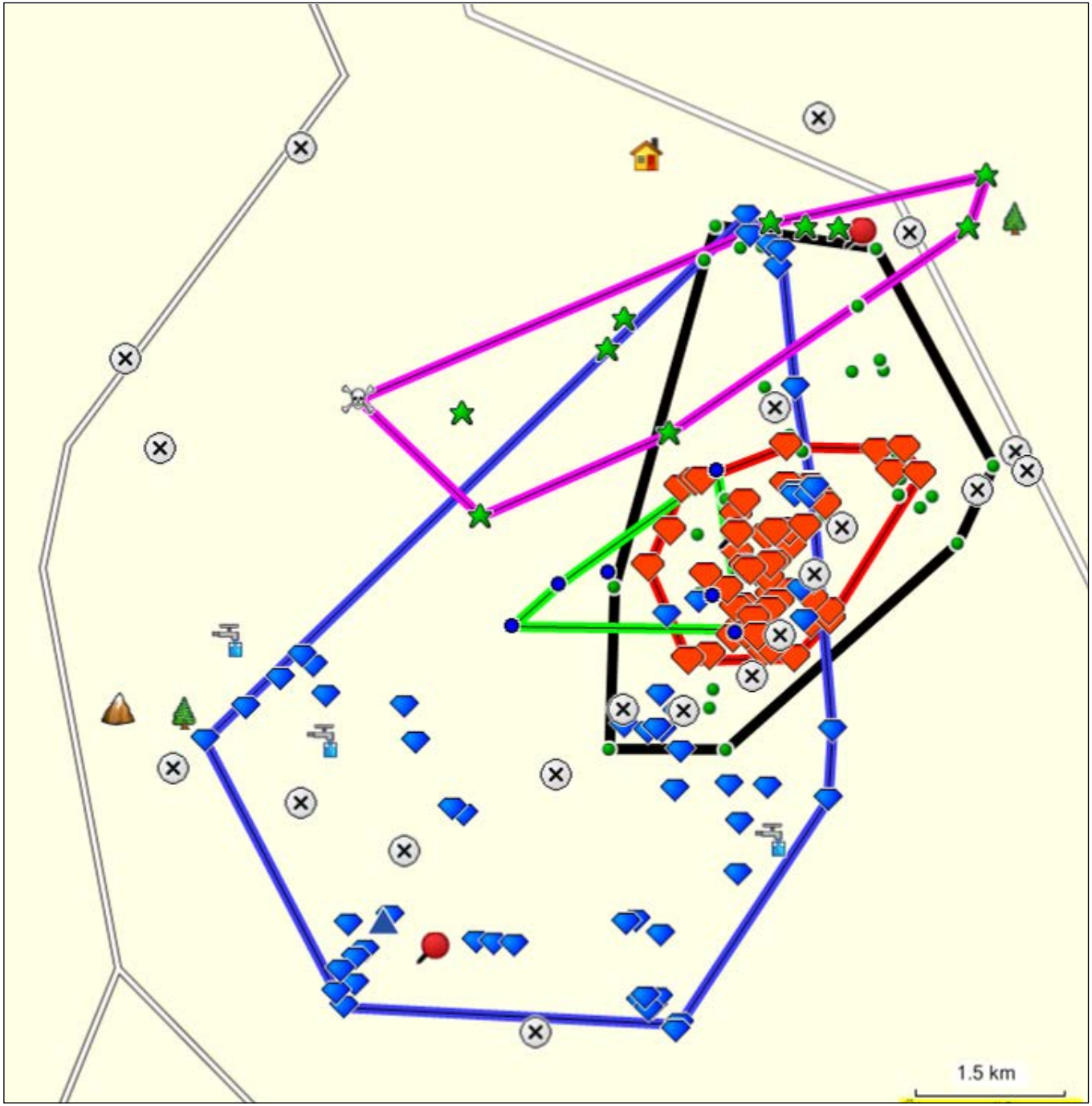
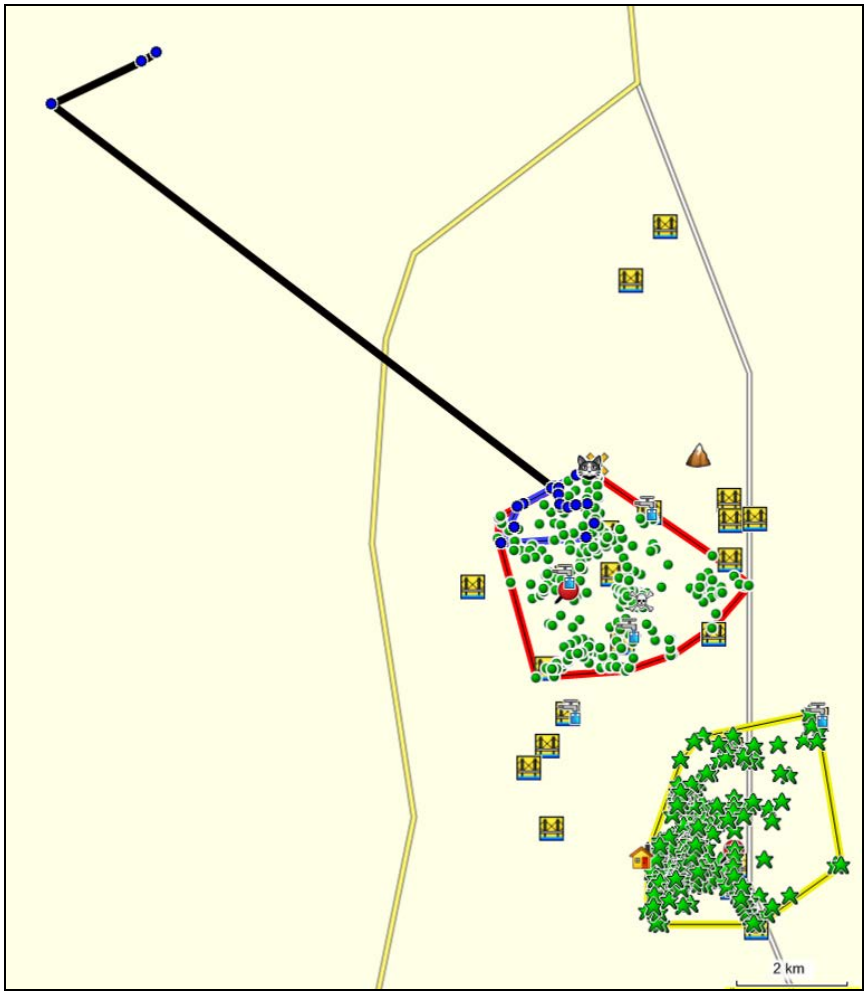
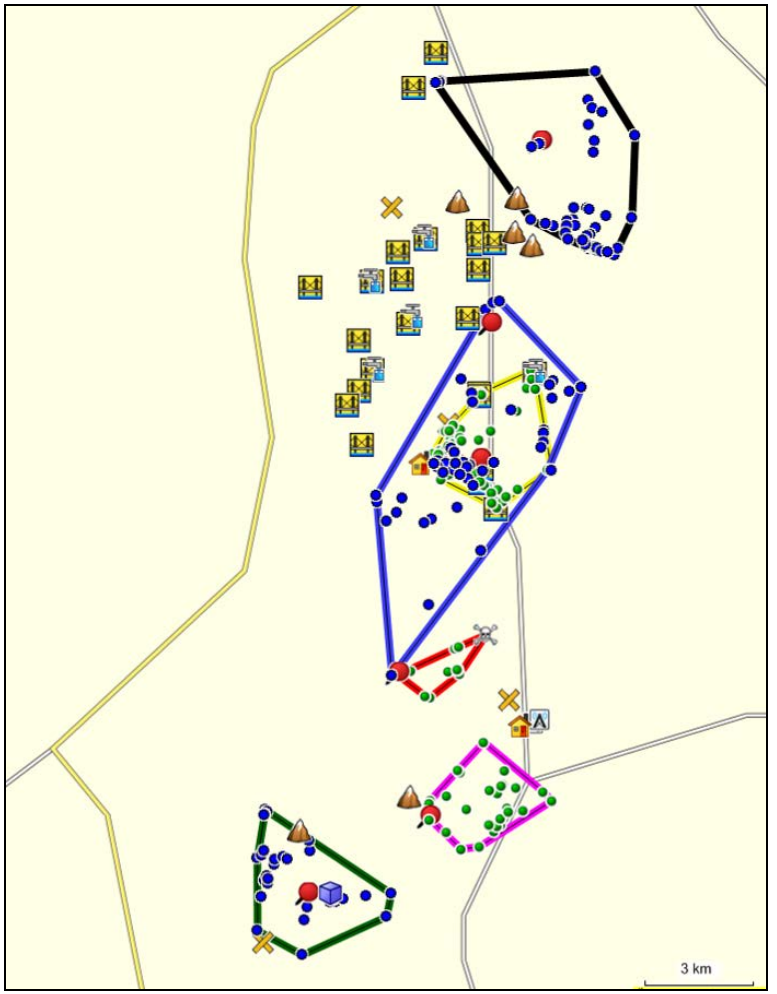


Map 1: GPS map of Benfontein NR, with minimum convex polygons (100% MCP) encompassing the locations of the 5 radio-collared cats collected during the year 2013. Female “Paris”= 2,0 km² (n=6) in green (last seen 11.2.13), female “Tess”= 8,2 km² (n=11) in magenta polygon (collar and bones found 12.11.13 – last seen alive 8.4.13), male “Bama”= 13,1 km² (n=44) in black polygon. 2 more cats were collared in November 2013: male “Kubu” = 32,9 km² (n=65) in blue polygon and female “Faf” = 4,2 km² (n=60) in red polygon, which took over part of female “Paris”’s range. Land marks, gates and capture location in 2013 (red beacons) of the black-footed cats are displayed. Site of collar and bones from female “Tess” are indicated with a skull sign.





Map 2: GPS map of Nuwejaarsfontein Farm, with minimum convex polygons (100% MCP) encompassing the locations of 3 radio-collared cats intensively monitored in 2013. Female “Ilse” in yellow polygon (10.5 km ²; n= 274), female “Line” in red polygon (11.2 km², n= 254), and young male “Piet” in blue polygon (1.5 km², n= 19). There was complete overlap between “Line” and “Piet” from 12 –26th January 2013, contact to “Piet” was lost then until he was found again on 6th March 12.2 km to NW in a straight line (black line). Contact was lost again after 10th March 2013. Skull sign shows location where collar of “Line” was found.

Map 3: GPS maps of Nuwejaarsfontein and Taaiboschpoort Farm, with minimum convex polygons (100%MCP) encompassing the locations of 6 radio-collared cats collected during the field period November-December 2013. Female “Ilse” in yellow polygon (8,1 km², n=56), female “Mozi” in red (1.6 km²; n=12), female “Hasi” magenta (5.7 km², n=29), male “Stan” black polygon (18.1 km², n=48), male “Zuma” blue (29.1 km², n=46) and male “Ego” in green (9.1 km², n=30). Skull sign shows location where female “Mozi” was found dead on 21st November 2013.

November 2013 Benfontein Nature Reserve

Fig. 1. Extracting “Bama” from den (B. Wilson)

Fig. 2. Capture team with “Bama” on 1.11.13. (B.Wilson)

Fig. 3. “Finas Hut “ accommodation for part of the team. (A.Sliwa)

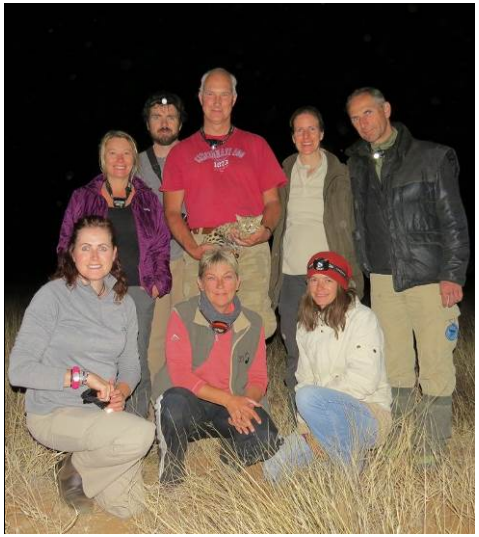


Fig. 4. Team with female “Faf” on 11.11.13 (B.Wilson – self release)

Fig. 5. Joys of working with large males! Alex – sprayed by “Kubu” (B. Wilson)

Fig. 6 Adrian and Birgit working on “Kubu”. (A.Sliwa)

Fig. 7. Collar and bones of “Tess”. (A. Sliwa)

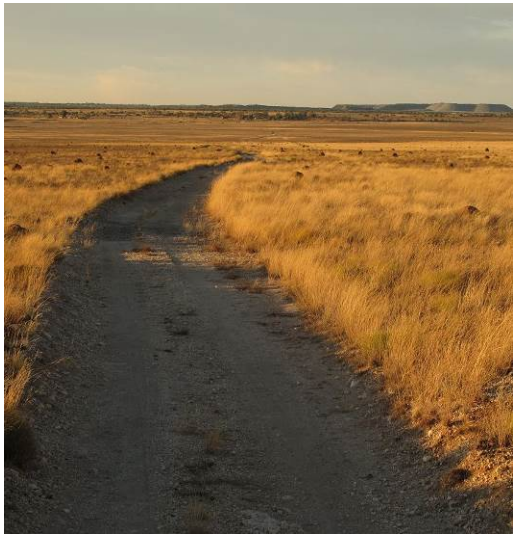


Fig. 8. Benfontein road in evening light (A. Sliwa)

November 2013 Nuwejaarsfontein & Taaiboschpoort Farms

Fig. 9: Capture team with "Hasi". (P. Marais)

Fig. 10: Digging "Mozi" out . (B. Wilson)

Fig. 11: Sampling and monitoring a bfc. (B. Wilson)

Fig. 12: Martina with "Mozi". (S. Silinski-Mehr)

Fig. 13: Piet with Beryl, Nadine and "Mozi" (A. Sliwa).

Fig. 14: Martina and Alex finding cat signals from Koppies (A. Lawrenz).

Fig. 15: View of "Ego's" home range in westernmost part of Taaiboschpoort. (A. Sliwa)

Fig. 16: "Early birds" - filling up at 4 AM, avoiding the rush hour in De Aar. (A.Sliwa)

Fig. 17: "Bama" leaving den (A.Sliwa)

Fig. 18: "Ego" leaving den (A.Sliwa)

Fig. 19: "Mozi" leaving den (A.Sliwa)

Fig. 20: "Hasi" leaving den 3 nights after capture (A.Sliwa)

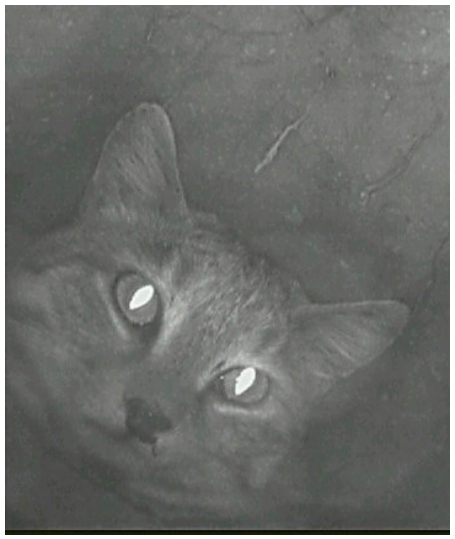


Fig. 21: "Kubu" photographed with scope camera while he is in his den (N.Lamberski)

Fig. 22: "Kubu" leaving release den (A.Sliwa)

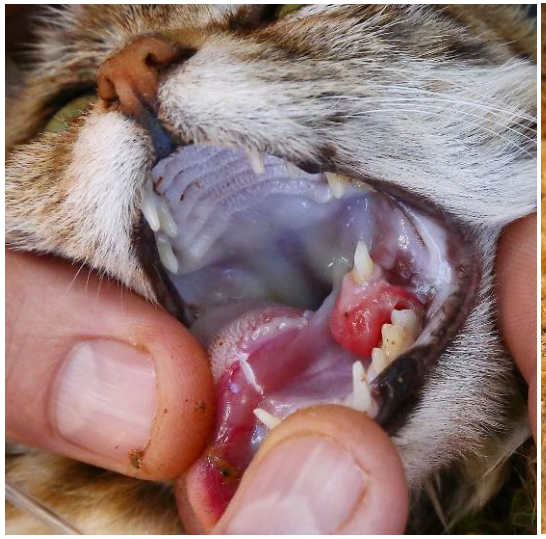


Fig. 23: "Ilse" showing misaligned lower molar after broken and healing mandible (A.Lawrenz)

Fig. 24: "Ilse" 2 nights after 5th capture, hunting in her home range. She capture various prey animals without problems (A. Lawrenz & A.Sliwa)

Table. 1: Body measurements (cm), range size and remarks on 13 black-footed cats with 9 captures on Benfontein, Nuwejaarsfontein and Taaiboschpoort in 2013.

Date	1.11.13	2.11.13	5.11.13	6.11.13	7.11.13	8.11.13	10.11.13	11.11.13	12.11.13	*not captured*	*not captured*	*not captured*	*not captured*
Name (also on Map)	**Bama**	**Zuma**	**Mozi**	**Hasi**	**Ego**	**Ilse**	**Stan**	**Faf**	**Kubu**	**Paris**	**Tess**	**Piet**	**Line**
No. captured	Cat 1 13	Cat 2 13	Cat 3 13	Cat 4 13	Cat 5 13	Cat 6 13	Cat 7 13	Cat 8 13	Cat 9 13	Cat 10 13	Cat 11 13	Cat 12 13	Cat 13 13
Sex	M	M	F	F	M	F	M	F	M	F	F	M	F
Age (judged by teeth)	Adult	Adult	Y adult	Adult	Y Adult	Adult	Adult	Adult	Adult	Adult	Y adult	Y adult	Adult
Microchip #.	6CAC2B8	6CB9581	6CBB3AO	6CBAE75	6B374ED	6895136	6CBBEBA	6CBB8B1	6FB9662				
Mass (kg)	1,62	1,90	1,07	1,15	1,34	1,20	1,35	1,24	2,05				
Ear (cm)	5,20	5,10	4,70	4,90	5,10	4,90	5,2	5,2	5,20				
Shoulder (cm)	27	26	23	22	25	24	26	25	28				
Total Length (cm)	65	68	54	54	57	53	60	58	64				
Hind foot (cm)	9,45	9,20	8,40	8,10	9,00	8,17	8,9	8,6	10,10				
Front foot (cm)	2,4	2,2	1,9	1,9	1,95	1,9	2,1	2,0	2,5				
Tail (cm)	18	18	16	16	16	16	18	18	19				
Neck (cm)	13	14	10	11	12	11	12	11,5	14				
Canine UR (cm)	1,05	1,00	0,90	0,91	1,03	0,78	1,08	0,86	10,1				
Canine LR (cm)	0,90	0,83	0,72	0,71	0,81	0,61	0,84	0,74	0,83				
Canine UL (cm)	0,98	1,00	0,83	0,86	1,00	0,76	1,00	0,86	1,05				
Canine LL (cm)	0,86	0,83	0,72	0,71	0,85	0,63	0,93	0,73	0,83				
Testes (cm)	1,2/0,8	1,5/1,1	-	-	- / -		1,1 /0,8		1,3/1,0				
No. fixes collected in 2013	44	46	12	29	30	263	48	60	65	6	11	22	254
Range (100%) in 2013	13,1 km²	29,1 km²	1,6 km²	5,7 km²	9,1 km²	10,5 km²	18,1 km²	4,2 km²	32,9 km²	2,0 km²	8,2 km²	1,5 km²	11,2 km²

All fixes collected in 2013, N=882: Alex Sliwa/Arne Lawrenz (N=103) and field assistants Chriszanne Burger (N=13), Afke Timmermans (N=482), Martina Küsters (N=284).

Remarks:

1) Bama (Cat 1 13): 3-4 yrs old, fair condition. Has lost nearly 400 g (20%) since last year. UL Canine chipped. Small nicks in both ears. Dug him out of his den at 16:10 – exchanged radio-collar – BFN.
2) Zuma (Cat 2 13): ~ 2 yrs old, good condition. Boldly marked. Ate a large meal recently, therefore slow to run, caught after short chase. NJF. Later moved also onto TBP.
3) Mozi (Cat 3 13): young adult female, thin with some parasites. Nipples unused. Radio-collared, TBP. Found dead 16 days later. Not sure if killed by predator, since desiccated. Didn't move far.
4) Hasi (Cat 4 13): adult female, used nipples, if pregnant – early stages, slightly rounded canines, plaque on carnassials. Radio-collared on TBP. Uses area around and West of house.
5) Ego (Cat 5 13): young adult male, lean but fine, unchipped canines, some tartar on carnassials. Radio-collared on TBP. Stays in South western most corner of farm.
6) Ilse (Cat 6 13): > 7 years old adult female, collared since Feb 2009, fair condition, all canines rounded, nipples well used. Broken left mandible with post trauma healing and no infection. Radio collar exchanged after short dig NJF. Well tracked over 4.5 years!
7) Stan (Cat 7 13): adult male, lean but healthy, little fat. Caught and radio-collared in Northernmost NJF. Took long to leave release den.
8) Faf (Cat 8 13): ~2-3 years old, adult female, good body condition, quite large for a female, captured via a second pursuit after previous escape into a hole, used nipples, possibly in early stages of pregnancy, uses previous territory of Paris.
9) Kubu (Cat 9 13): adult male, very good body condition, large recent meal, dug him out, he bit A Sliwa and peed on him, radio-collared on BFN. Confident attitude while being followed with vehicle on first night!
10) Paris (Cat 10 13): adult female, tracked since June 2010, last collared Nov 2012. Last location on BFN; lost contact; don't know her fate – likely dead, since territory taken by female Faf (Cat 8 13).
11) Tess (Cat 11 13); young adult female captured Nov 2012; little tracked, spent time on neighbouring farm to East Susanna; skeleton with collar found on 12th Nov 2013 from beacon koppie in pan. No mortality signal!
12) Piet (Cat 12 13): young adult male, radio-collared Nov 2012 on NJF, stayed for 2 months, then moved to NW, close to De Aar, where last waypoint location was in March 2013.
13) Line (Cat 13 13): adult female, radio-collared exchanged Nov 2012; tracked for many months, collar found without carcass on 18th Aug 2013. Last seen alive on 13th July 2013.