2014 Annual Status Report for the Painted Dog Conservation (PDC)

To

Parks and Wildlife Management Authority

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PDC Scope

The scope of the project is geographic and includes areas in Zimbabwe where Painted Dogs do or can exist and within that a CORE OPERATING AREA which is defined as Campfire, Private Farms, Forestry and Communal lands adjacent to Hwange National Park.

Conservation Targets

With the ultimate focus of this project being on the Painted Dog, the project seeks to protect or conserve three targets namely Painted Dogs and their primary prey species Kudu and Impala. Habitat areas in the Core Operating Area are the third targets.

Background:

Painted Dogs require large areas to sustain viable populations, conservation of the species therefore ranges beyond wildlife protected areas and even beyond national borders (IUCN/SSC 2007). In order to improve the conservation strategy of the species, in 2007, the IUCN Cat and Canid Specialist Group brought a range of experts, conservation managers and government agencies together to develop a regional conservation action plan for Painted Dog (and Cheetah). As part of the process of implementing the regional strategy at a national level, a similar set up was used in 2009 to develop a national conservation action plan for Painted Dog (and Cheetah). Within this national plan the number of Painted Dogs known to exist in the protected areas in Zimbabwe is estimated at ca. 450 individuals (ZPWMA 2009). No knowledge was available for areas other than wildlife designated areas. Painted dog numbers in Hwange National Park (HNP) were estimated at ca. 50 individuals (ZPWMA 2009). This last figure is now regarded as being an underestimate.

Despite anthropogenic mortality being a main threat to Painted Dog survival (Woodroffe & Ginsberg 1998), under the right circumstances, Painted Dogs seem to have the ability to avoid anthropogenic threats and survive in human dominated landscapes (Woodroffe 2010). It is therefore possible that within Zimbabwe part of the Painted Dog population occurs outside protected areas.

In order to accurately determine the population status of Painted Dogs in Zimbabwe, there is a need to carry out a nationwide population survey covering various types of land use, e.g. protected areas (especially those for which no estimates are available), commercial farmlands, hunting concessions etc. Such a survey will help to determine where Painted Dogs occur, in what numbers (individuals and breeding units (= packs)), and what conservation challenges Painted Dogs face (e.g. lack of connectivity, human persecution etc.). Ultimately the collected information will allow PDC to assist the local authorities to identify conservation priorities and improve the conservation strategy of the species, plus update the range map for Zimbabwe as presented in the regional and national conservation plan. PDC therefore identified a need to improve the current monitoring system in order to come up with a reliable Painted dog estimate for PDC's core operation area. This estimate will serve as a baseline for monitoring population trends in and around Hwange National Park (HNP).

Summary 2014:

- **Packs.** Based on the data obtained, a total count of all known packs in the HNP for the period January 2014 to December 2014 is 15, consisting of 86 adult / yearling dogs and 31 pups. An additional eight packs consisting of 37 adults / yearlings and five pups were recorded during the period 2012 – 2013 but not seen in 2014, however it is believed that they still exist. Further it is estimated that an additional five packs consisting of approximately 25 adults / yearlings exist in un-surveyed regions of HNP.

  Based on photographs received in 2014, It is further believed that significant dispersal from the Mabuyamabhema, Lukosi and Gurangwenya packs took place in 2013 / 2014 resulting in the drop in those pack sizes. This rather than any high mortality because its unlikely that these packs would suffer such high mortality in such a short period of time.

  The HNP population is thus estimated currently at 149 adults in 28 packs.

  These figures exclude the Sisele and Shamiso packs listed below, as they are only one dog and thus is not considered a pack.

- **Faecal Analysis.** An analysis of painted dog scats during the year from five packs indicates to prey preference of dogs in HNP ecosystem for kudu in larger packs (>five adults) and duiker in smaller packs (<five adults). Thus lending support towards the argument for a moratorium on hunting Kudu if the painted dog population is to thrive.
- **Road and spoor counts** were conducted in collaboration with ZPWMA, CIRAD / CNRS and Hwange Lion Research to monitor and understand seasonal habitat use in relation to spatial distribution. The monitoring and analysis is aimed at assessing prey trends and abundance over a given period. Final results will be available in February 2015.

PAINTED DOG POPULATIO RESULTS FOR HWANGE NATIONAL PARK (HNP)

Data on the HNP population demographics is collated from direct sightings, photographs and sighting sheets. Each dog has a unique coat pattern and thus photographs or video footage are the most valuable tool in determining pack structures (number of adult males / females, yearlings and pups) and distinguishing one pack / individual from another. Pup survivorship is a key element that is recorded using a capture / recapture method of recording the individuals seen each time a pack is encountered and entering this on newly designed data capture sheets.

Data used in this report is based primarily on sightings received in the period Jan to Dec 2014. Reference is also given to historical sightings and while those packs / individuals may not have been seen in 2014 it is likely that they still exist so they have been taken into account. The sighting of the New Guvalala pack on December 30th serves to illustrate the point as the previous sighting of this pack was in early 2012!

In 2014 two packs (Nyamandlovu and Jozi) were recorded at one stage consisting of 20 individuals each, though this included pups. It is the first time in more than 15 years that packs of this size have been recorded in the Hwange Main Camp region.

Concern remains regarding the number of small packs consisting of 2 or 3 individuals and their apparent failure to produce any pups in 2014. It commonly believed that for packs to thrive and rear pups there needs to be a core of five or more adults.

Also of interest this year was the close proximity of the packs, in particular the Nyamandlovu and Makwa packs overlapped considerably and we received a number of reports of the packs being seen within a few hundred metres of each other. The Nyamandlovu pack has used an area in access of 900 square kilometres, while the Makwa pack has used an area of roughly half that size. Nevertheless they have overlapped around the Main Camp, Makwa Pan and Kennedy One areas frequently as can be seen from the map below. We can only speculate on the reason for this, with availability of prey perhaps being the primary reason.

MAP 1: Gurangwenya, Nyamandlovu, Tariro and Makwa pack territory. (provided by Dr Esther van der Meer)
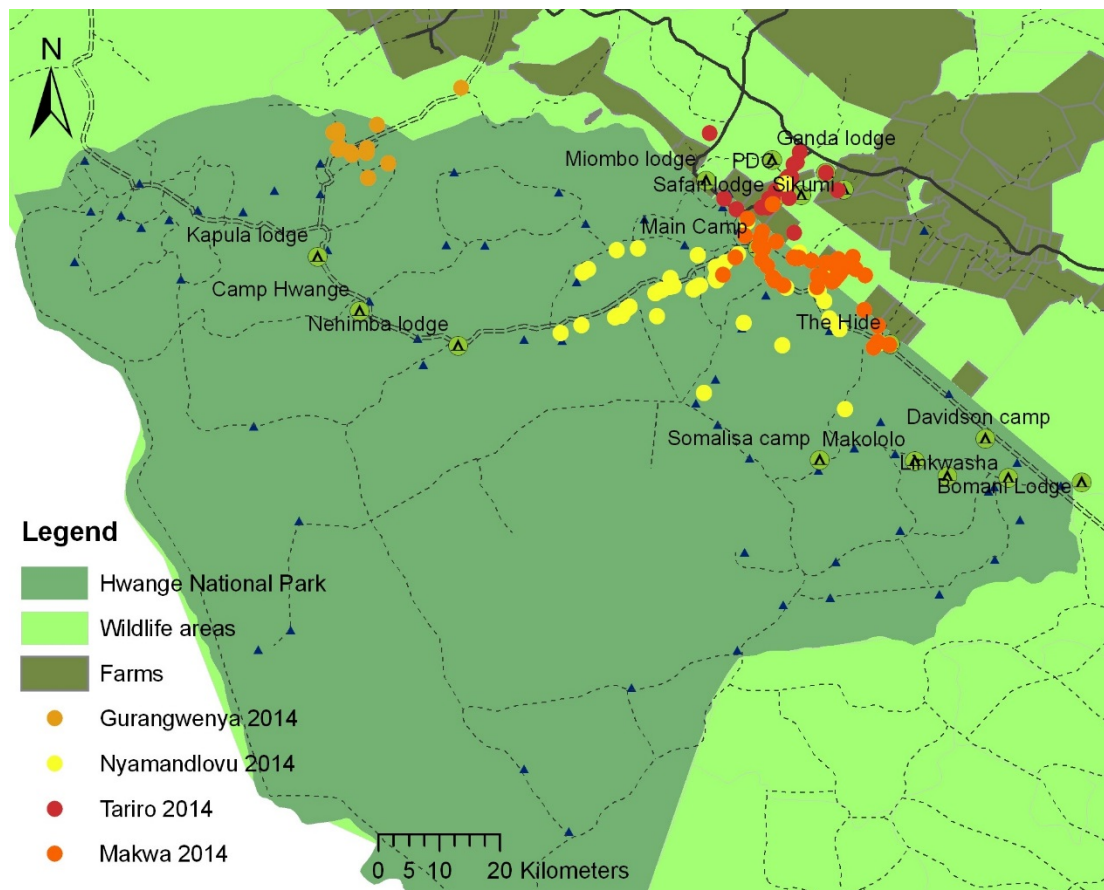
Table 1: Demographic overview HNP dogs seen in 2014

Pack name	Total	Total Ad	Ad M	AD F	Total YY	Pup	Last seen
Nyamandlovu	15	11	7	4	0	4	Dec-14
Makwa	6	4	2	2	0	2	Dec-14
Tariro	2	2	1	1	0	0	Dec-14
Sisele	1	1	1	0	0	0	Nov-14
Brokenrifle	8	5	3	2	0	3	Oct-14
Mabuyamabhema	9	9	2	7	0	0	Dec-14
Bomani	2	2	1	1	0	0	April-14
Camp Hwange	2	2	1	1	0	0	Dec-14
Kanondo	5	5	3	2	0	0	Sept-14
Jozi	20	11	??	??	0	9	Dec-14
Gurangwenya	10	6	4	2	0	4	Dec-14
Lukosi	13	7	??	??	0	6	Dec-14
Deteema*	4	4	2	1	0	0	Sept-14
Deka	8	8	??	??	0	0	Aug-14
Lodzi	3	3	??	??	0	0	Sept-14
New Guvalala*	10	7	??	1	0	3	Dec -14
TOTAL	**118**	**87**	**27**	**24**	**0**	**31**	
Number of packs (excluding Sisele as this is only one dog and as such does not constitute a viable pack)	**15**						
Average Adults per pack	**5.80**						

Table 2: Demographic overview for HNP dogs known but not seen in 2014

Pack name	Total	Total Ad	Ad M	AD F	Total YY	Pup	Last seen
Masuma	3	3	2	1	0	0	Aug-13
Shamiso	1	1	1	0	0	0	Jun-13
Kigelia*	6	6	??	??	0	0	Oct-12
North Tamafupa	3	3	??	??	0	0	Oct-12
South Tamafupa	9	9	??	??	0	0	Aug-13
Sammalisha	2	2	1	1	0	0	Jul-13
Kutsha	3	3	0	3	0	0	Jun-13
Baobab*	6	6	1	2	0	0	Jun-13
Shakwanki	9	4	0	0		5	Aug-13
TOTAL	**42**	**37**	**6**	**8**	**0**	**5**	
Number of packs (excluding Shamiso as this is only one dog and as such does not constitute a viable pack)	**8**						
Average Number of Adults	**4.63**						

Note: * Some adults not yet identified as male or female

Considering the area surveyed and taking into account average pack sizes plus average territories it is reasonable to consider that there should be a further five packs numbering 25 adults in HNP.

Mortalities/ Threats

To date road kills, rail kills and snaring have been the major anthropogenic causes of mortality among painted dogs in Hwange. In the current reporting period ten such mortalities were recorded.

- Three pups from the Nyamandlovu pack were run over and killed by a goods train at Kennedy siding in October.
- Also in October an adult dog was found snared in the Pongolo area of Sinamatella.
- The Kanondo pack lost a dog due to a road kill along the Bulawayo/Vic Falls highway and
- Another dog was killed by a vehicle between Hwange and Vic Falls.
- The Makwa pack lost the Alpha male and alpha female to snaring in the Dete area.

- The Tariro Pack lost two females to snaring incidents in the Dete / Forestry / Mabale area.

Lions killed the alpha female of the Sisele pack and at least two pups from the Makwa Pack.

While dogs killed on the roads and indeed by the train are tragic accidents the snaring incidents outside of HNP pose a significant threat not only to the dogs but their prey species, which are the usual targets. *See Appendix two PDC APU snare data.* In summary the APU data shows the high number of snares recovered on the poorly managed farms. PDC has been running APU in these locations since 2001. Our estimate is that ten per cent of snares set actually kill and that we recover ten per cent of snares set. While the data for 2014 shows that we have recovered 1556 snares it is likely then that 15,000 snares were set and that does not include the areas where we do not patrol. It is also likely that as much as 1500 animals may have been killed in snares during the year.

What is also apparent is that regular (daily) patrols of an area are effective in protecting it.

The loss of one individual painted dog may not seem significant but this changes dramatically when one considers that a single alpha female can produce more than 40 pups in her life time and those 40 pup can go onto produce 40 pups themselves, so a single individual if allowed to flourish can contribute more than 200 dogs to the population.

Inadequate land management practises in the Gwaai and Forestry contribute enormously to the problem and as such the Gwaai remains a critical sink for the Painted Dogs. Historically more than seven packs utilized the Gwaai Conservancy and Forestry while currently we only have evidence of one pack.

Early indications from the spoor transects undertaken in the Gwaai (see below), suggest a decline in all species and combined with data from the PDC APU thus leads to the need for a reduction in quotas on some species and a complete moratorium on hunting of other species, Kudu in particular.

Hair Analysis of prey species in dog scat.

During the course of the year, faecal samples were analysed for hairs from prey species the dogs consumed.

In April two research students went to the Bulawayo Museum to collect body hairs on known species the dogs commonly prey on which are Bushbuck, Kudu, Impala, Steenbok, Bat eared Fox, Common Duiker, Waterbuck, Wildebeest and Reedbuck, so as to create a hair reference data base.

The hair samples were taken from several different parts of the body specifically the neck area, tail, thigh area, belly and shoulder. Plucking on different parts of the animal was done to see if the patterns of hair changed with location on the body.

Both the scale pattern and cross section of the hairs was used to determine which species the different packs consumed. The hair reference data base was used on faecal samples collected from 2013 to 2014 to determine the prey preference of the dogs in the Hwange ecosystem.

Results were compiled and the most preyed upon species was kudu in the Hwange ecosystem. The data shows the significance of Kudu in maintaining larger packs, which are essential for an overall population growth of painted dogs.

This serves to further support the need for a complete moratorium on hunting Kudu both inside and outside HNP.

Table 3. Results by Species.

Species	Totals	Percentages %
Bushbuck	8	9.41
Kudu	24	28.24
Impala	19	22.35
Steenbok	6	7.06
Bat Eared Fox	2	2.35
Common Duiker	21	24.71
Water Buck	2	2.35
Wildebeest	1	1.18
Reed buck	2	2.35
TOTAL	**85**	**100%**

Table 4: Hair analysis by pack.

TARIRO PACK (3 adults)

Species	Totals
Bushbuck	0
Kudu	6
Impala	8
Steenbok	0
Bat Eared Fox	0
Common DUIKER	10
Water Buck	0
Wildebeest	1
Reed buck	0
Totals	**25**

DETEEMA PACK (8 adults)

Species	Totals
Bushbuck	3
Kudu	5
Impala	3
Steenbok	1
Bat Eared Fox	0
Common DUIKER	3
Water Buck	1
Wildebeest	0
Reed buck	2
Totals	**18**

NYAMANDLOVU PACK (11 adults)

Species	Totals
Bushbuck	5
Kudu	7
Impala	5
Steenbok	3
Bat Eared Fox	0
Common DUIKER	4
Water Buck	0
Wildebeest	0
Reed buck	0
totals	**24**

GURANGWENYA PACK (6 adults)

Species	Totals
Bushbuck	0
Kudu	4
Impala	0
Steenbok	0
Bat Eared Fox	1
Common DUIKER	3
Water Buck	1
Wildebeest	0
Reed buck	0
Totals	**9**

LUKOSI PACK (7 adults)

Species	Totals
Bushbuck	0
Kudu	2
Impala	3
Steenbok	2
Bat Eared Fox	1
Common DUIKER	1
Water Buck	0
Wildebeest	0
Reed buck	0
Totals	**9**

Monitor carnivore and herbivore population trends.

PDC participated in and provided logistical support to the yearly CNRS – HERD / CIRAD road counts in HNP. The objective of this monitoring and analysis is aimed at assessing prey trends and abundance over a given period.

Road Counts.

Road counts were carried out in May and October in the main camp area, Sinamatella and Robinscamp. The most available roads were used as transects. Each transect was driven at least twice at different times of the day. The road count followed the line-transect method where perpendicular distances are calculated by using the angle and the direct distance between the animal and the vehicle at first detection.Although the use of road transects has been under debate (Buckland et al., 2001) it is often the only way to estimate densities over large areas and does allow for comparisons between sides and years. Data will be analaysed by the CNRS-HERD project using Distance Sampling Software For more detail on the method used see also Chamaille´-Jammes et al., 2009.

Spoor Counts.

These were conducted in September through the Gwaai / Ngamo in collaboration with ZPWMA and HLR along the same roads that were used in 2006 by HLR (map two). All of the small to large mammals were counted by a team composed of a driver and a minimum of two observers seated on the roof rack of a vehicle, driven at low speeds (15 km/hr). When spoor was sighted by the driver or observers, the car stopped and the information about herd size, composition, animal activity, habitat etc. were recorded. All transects were driven atleast twice per session, in order to increase accuracy of estimation. It is advisable to survey each transect at morning and afternoon and drive at opposite directions.

MAP 2: Spoor Transect roads covered in September.
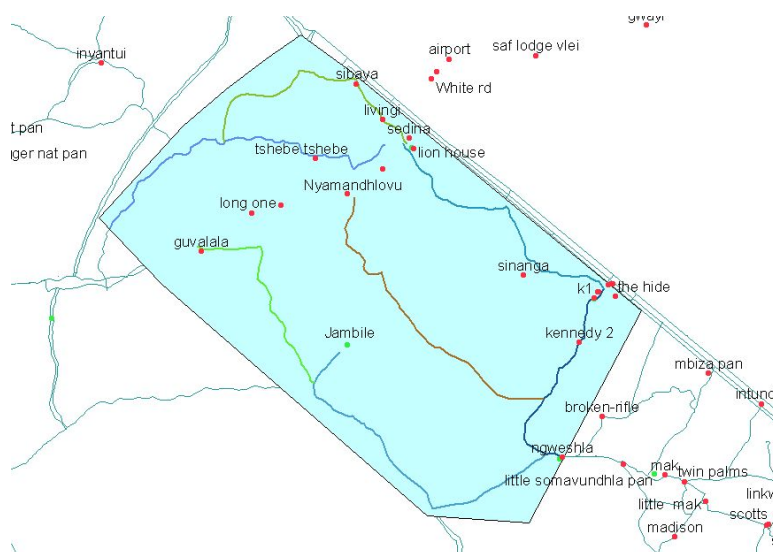
Analysis and Discussion

Fully analysed reports will be availed in February 2015. The kilometric abundance indices that is the number of animals seen per km driven are calculated for all species encountered, but the densities can be estimated for only species for which the number of sighting is higher than 10 animals. Density calculations are conducted using the computer software Distance sampling. The results will show for each species, the Abundance Kilometric Index (AKI), the estimated density and the derived population size estimation.

Additional Activities

- Mana Pools. Peter Blinston made a brief excursion into Mana Pools in November to remove a collar from the alpha female of the Vundu pack. The trip was a success and the collar was removed.

  The map (three) below (provided by Dr Esther van der Meer) illustrates the information collected from the collar. From the map it is clear that the pack moved well beyond the protected area and did not spend its entire time within Mana Pools. Thus it serves to illustrate that sympathetic management, such as quota setting, of areas adjacent to Protected areas is essential if wide ranging species such as painted dogs are to thrive.

MAP 3: Movements of the Vundu pack.
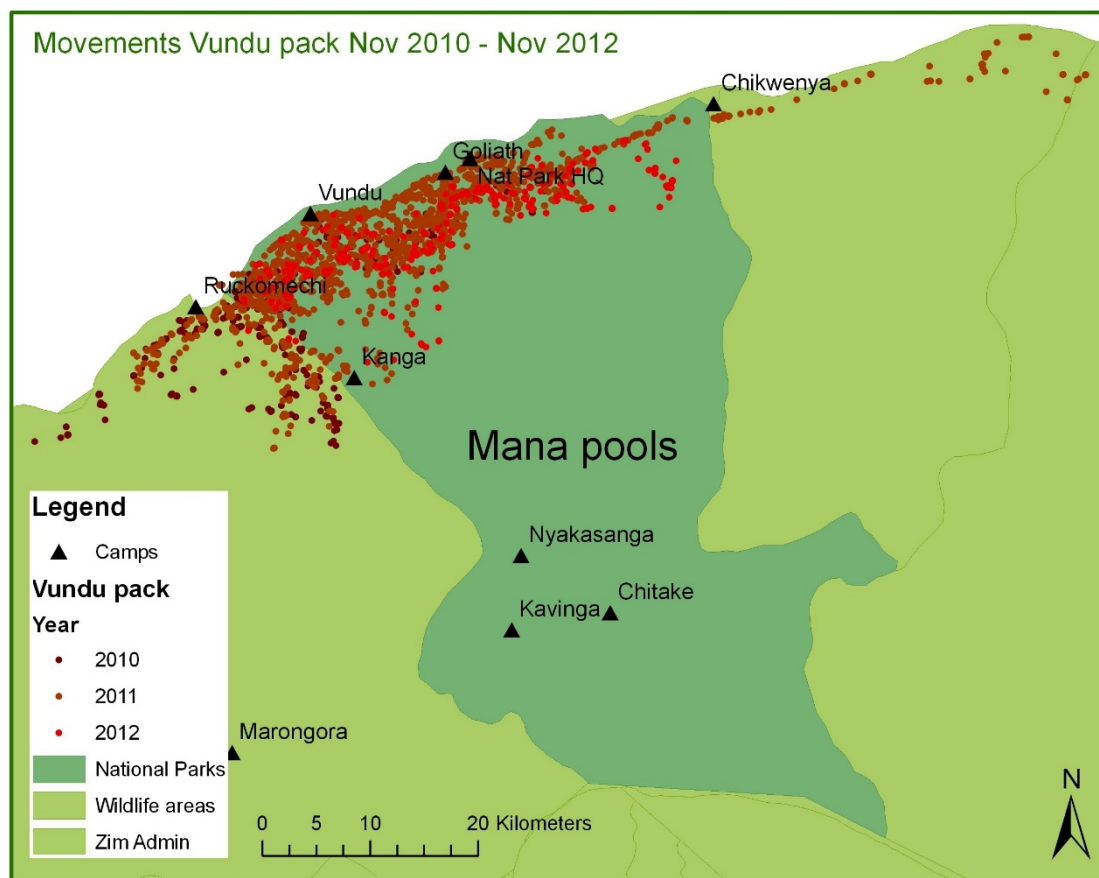
Additional Activities Continued…..

- **PDC provided significant support to HNP Main Camp in terms of fuel, vehicle use and manpower for anti-poaching initiatives. This includes 400 litres of avgas for the R22 helicopter. PDC also provided funds for rewarding informants if that information led to arrests.**
- **PDC runs its own anti-poaching units that patrol the buffer zones around HNP.**
- **PDC operates and extensive Education and Awareness programme and hosted more than 1000 children at its Children's Bush Camp.**
- **PDC attended and contributed to all of the HNP Management Plan workshops.**
- **PDC attended and contributed to the Elephant Management Plan workshop.**
- **PDC conducted a series of community based meetings tackling human wildlife conflict.**
- **PDC launched a Zero Tolerance to Wildlife Crime campaign in conjunction with ZPWMA and ZRP.**
- **The PDC Visitors centre attracts people from around the world and educates them about the painted dogs and the greater Hwange Ecosystem.**
- **In May 2014 PDC hosted the RP – PCP & AHEAD – GLTFCA Conference.**
- **Recently published paper: Van der Meer, E., Rasmussen, G.S.A., Fritz, H. 2014. Using an energetic cost-benefit approach to identify ecological traps: the case of the African wild dog. Animal Conservation, doi:10.1111/acv.12182.**
- **PDC followed up on reported conflict cases regarding painted dogs in the Gwanda area.**
- **One painted dog was darted and a snare removed from its neck. A second painted dog was treated for serious debilitating leg wounds.**
- **Seven VHF tracking collars were fitted onto painted dogs in HNP in 2014.**
- **PDC is fully committed to providing learning experiences for Zimbabwean students and thus provided internship opportunities for the below.**
    - **Tanaka Sharara:** Animal Science. Bindura University Of Science Education.
    - **Nkosilathi Ndhlovu:** Forest Resources and Wildlife Management. National University of Science and Technology.
    - **Samukelisiwe Ndlovu:** Development Studies. Lupane State University.
    - **Tapiwa Maambira:** Livestock and Wildlife Management. Midlands State University.
    - **Ntombiyothabo Ndlovu:** Bachelor of Social Sciences (hons) in Geography and Population Studies. Lupane State University.
    - **Lydia Tembo:** Bachelor of Social Sciences (hons) in Geography and Population Studies. Lupane State University.
    - **Lucian Rubaya:** BSc (Hons) Forest Resources and Wildlife Management. National University of Science and Technology.

2015 and beyond.

In order to improve the conservation strategy of Painted dogs at both a regional, national and local level, it is necessary to carry out a
- **nationwide survey to determine the Painted dog population** status plus implement an **improved system to monitor Painted dog demography in and around Hwange National Park**.

In order to be able to, for example, answer questions in relation to changes in diet composition, prey preference and differences in diet composition between packs and areas, we will to continue to
- **monitor diet composition of Painted dogs** by noting down prey species killed when following packs and the additional collection of faeces.

Genetic diversity is of conservation interest though it only becomes a conservation priority when the Painted dog population shows signs of reduced fitness through inbreeding depression (exposure of recessive deleterious genes which reduces fecundity and increases mortality). Thus PDC will
- **continue to routinely take samples for genetic and disease analyses**.

It seems clear that the increase in elephant numbers, after culling was banned as a management tool, has resulted in a decrease in other herbivores, including Painted dog prey species. Consequently
- **prey population trends need to be continuously monitored** (In collaboration with the CNRS who carry out road transects twice a year in the park). We will also conducts spoor transects in collaboration with CIRAD / CNRS and Hwange Lion Research in the Gwaai.

From a more general ecology/**herbivore** point of view, it will be interesting to look at
- **food availability in the vicinity of waterholes** (i.e. whether herbivores can find enough palatable food within their optimal range around waterholes to full fill their water requirements), this will be a topic for a joined student project with the CNRS/CIRAD.

It is likely that the utilisation of waterholes by lions affects Painted dog foraging efficiency (by sensitizing prey to predator presence and excluding Painted dogs from preferred foraging areas). Therefore making a
- **study of Painted dog spatio temporal movements in relation to lions and waterholes**, a priority for future research in a joined project with Hwange Lion Research.

At the same time it would also be interesting to determine the rate of
- **diet overlap between Painted dogs and other carnivores** in the Hwange system in collaboration with Hwange Lion Research as they have already collected faecal samples from various carnivores).

In addition, a study on
- **prey anti predator behaviour in relation to predation pressure** (by people and carnivores) will help us get an insight into whether indirect effects on prey behaviour could potentially affect Painted dog foraging efficiency (this will be a future joined project with the CNRS/CIRAD).

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Appendix One: Sighting Data capture Sheet.

Entered in the computer

General

Date: Pack name: Name observer:

First Seen Time: Name location: Distance from road:

Loc X:	Loc Y:	Compass reading:

Vegetation at First Seen: Kill site/resting site/den site/prey encounter site.

Woodland/Wooded bushland/Bushland/Bush grassland/Grassland

Dominant vegetation species: Visibility: open/medium/closed

Last Position Time: Name location: Distance from road:

Loc X:	Loc Y:	Compass reading:

Vegetation at Last Position: Kill site/resting site/den site/prey encounter site.

Woodland/Wooded bushland/Bushland/Bush grassland/Grassland

Dominant vegetation species: Visibility: open/medium/closed

Signal Only Time: Name location: Distance from road:

Loc X:	Loc Y:	Compass reading:

Vegetation signal only: Kill site/resting site/den site/prey encounter site.

Woodland/Wooded bushland/Bushland/Bush grassland/Grassland

Dominant vegetation species: Visibility: open/medium/closed

Pack composition

AM	AF	A?	YM	YF	Y?	PM	PF	P?

Size pups: small/½ adult size/adult size

Number, age and sex of dominant individuals:

Condition and activity

Belly score: full/half full/empty

Health (e.g. was a dog limping, with which leg):

Activity (what were the dogs doing):

Did the pack kill or chase: kill/chase/no kill or chase

Prey species: Sex: Age:

Additional information

Pictures or video taken: pictures/video/none   By whom:

Names dogs present:

Comments:

Appendix two: PDC APU data by location.

Patrol Location/Farm Name	Total Patrols	Total Snares	Poachers Arrested	Animals Released	Total Animals Killed	Kudu	Impala	Buffalo Male	Elephant	Wart hog	Guinea Fowl
Chamankani Ranch	4	187	0	1	3	0	3	0	0	0	0
Chimwara Farm	27	625	1	1	16	0	5	1	0	1	8
Dete Annex	7	11	0	0	0	0	0	0	0	0	0
Dete Council Land	10	31	2	0	0	0	0	0	0	0	0
Dete Valley 2	3	21	0	0	3	1	0	0	0	0	0
Dete Valley 3	2	47	0	0	0	0	0	0	0	0	0
Elephant Sands	2	2	0	0	0	0	0	0	0	0	0
Farm 41	32	0	0	0	0	0	0	0	0	0	0
Forestry Areas	30	96	0	0	8	2	2	1	2	0	0
Gundwane Farm	1	10	0	0	0	0	0	0	0	0	0
Gwayi Farm	3	116	0	0	0	0	0	0	0	0	0
Hwange Safari Lodge	9	1	0	0	0	0	0	0	0	0	0
Kana 8	1	0	0	0	0	0	0	0	0	0	0
Kanondo	8	0	0	0	0	0	0	0	0	0	0
Last Hope Estate	5	22	0	0	0	0	0	0	0	0	0
Lugo Farms	4	158	0	0	1	0	0	0	0	0	0
Mabale Communal Land	6	42	0	0	0	0	0	0	0	0	0
Mazwa Farm	1	2	0	0	0	0	0	0	0	0	0
Miombo	15	2	0	0	0	0	0	0	0	0	0
Mpofu	9	0	0	0	0	0	0	0	0	0	0
Mukombo/Kalambeza	4	170	0	0	1	0	0	0	0	0	0
National Park	12	12	2	0	0	0	0	0	1	0	0
Panted Dog Land	22	1	0	0	0	0	0	0	0	0	0
Total	**217**	**1556**	**5**	**2**	**32**	**3**	**10**	**2**	**3**	**1**	**8**

PDC is denied access to the following areas: Bindonvale and Carlisa, Dete Valley 1, Goodluck Farm, Kana 5, Kana 6, Kana 7 and Kumuna.