PDC ANNUAL RESEARCH REPORT
2015

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Summary:

The painted dog (lycaon pictus) has suffered a dramatic decline in the past decades, and now has potentially viable populations in only six of the forty countries in which it once occurred (Fanshawe et al., 1991; Woodroffe et al.,1997). The painted dog is not related to domestic dogs, jackals or wolves and represents an evolutionary line unique to Africa, loss of which would mean the loss of years of evolution.

The population status of painted dogs in Zimbabwe is fragile, however the dogs in the PDC Core research area of Hwange seemingly increased in number during 2015 and several new packs formed through dispersals.

Permission during the year was given by ZPWMA to collar two separate dogs in Mana Pools and they are being monitored on their movements. In the core area of HNP five dogs from four different packs were collared and efforts are underway to collar one dog from the Nyamandhlovu pack to ease monitoring of their movements.

Sighting questionnaire forms were distributed throughout the HNP and all Safari camps/lodges, to broaden wild dog sighting data in all areas and photographs were requested from tourist whenever available to identify the individual dogs in the packs.

HNP Packs. Based on data available, a total count of all sighted packs in the HNP for the period January 2015 to December 2015, is 18, consisting of 93 adult dogs and 37 pups.

There are a further 10 packs, consisting of approximately 51 adults though these were not seen in 2015. It is estimated that an additional 5 packs consisting of approximately 25 adults exist in the unsurveyed areas of HNP.

Thus the HNP population is thus estimated currently between 144 and 169 adults in 28 to 33 packs, with an average pack size of 5.16. This average pack size is of concern as it is considered that a pack needs a basis of six adults to successfully raise pups.

Based on photographs taken, through monitoring and received in 2015, it is known that significant dispersal from the Nyamandlovu, Gurangwenya, Mabuyamabhema, Broken rifle and Makwa Packs took place during the current year. Many of these dogs remain un accounted for at this time but are presumed to be still alive.

Feacal 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. The 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 for 2014 road counts indicate a stable trend for all herbivores except impala and giraffe.

Mana Pools: Based on data available, a total count of all sighted packs in the Mana Pools is seven for the period January 2015 to December 2015, consisting of 59 adults / yearlings and 36 pups. With an average pack size of 8.42, which is healthy

These figures seem low for Mana Pools however we feel this is explained by the demise of the Vundu pack, whose alpha female is more than ten years old now. In addition to this there has been considerable dispersal from the Nyakasanga and Kanga packs in 2015 and many of these individuals remain un accounted for.

Concern still exists over the level of genetic diversity in the region. Though this seems unlikely given that there are no physical barriers preventing natural dispersal and influx as dogs have been seen crossing the Zambezi River and indeed they exist high up on the escarpment. The fact remains that we are aware that some of the breeding pairs are brother and sister. We know this as a fact (not opinion) because of our extensive monitoring undertaken by Nick Murry, combined with his historical knowledge. Only the extensive DNA sampling, as submitted and approved by ZPWMA and Research Council, will illuminate the true situation.

PAINTED DOG POPULATION 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 and 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 as capture / recapture method of recording the individuals seen each time a pack is encountered and this is entered on data capture sheets.

Data used in this report is based primarily on sightings recorded and received in the period January to December 2015. The Nyamandhlovu pack failed to raise any pups due to lions having raided the den and killing all pups.

Concern remains regarding the number of small packs consisting of 2 to 4 individuals and their apparent failure to produce pups since 2014. It is commonly believed that for packs to thrive and rear pups, there needs to be a pack of six or more adult dogs.

The average adults per pack for 2015 is 5.16 as compared to 5.87 for 2014. *See table 1 below.*

Table 1: Demographic overview HNP dogs seen in 2015

Pack name	Total	Total Ad	Ad M	AD F	Pup	Last seen
baNyayi	10	4	3	1	6	Dec-15
Lukosi	8	8	3	5	0	Jun-15
Camp Hwange	2	2	1	1	0	Jul-15
Gurangwenya Split	13	6	3	3	7	Jun-15
Kanondo	5	5	3	2	0	Sep-15
Jozi	15	7	4	3	8	Sep-15
Brokenrifle	9	4	3	1	5	Dec-15
Lukosi Split	5	5	2	3	0	Oct-15
Deteema	7	7	5	2	0	Oct-15
New Robins Split	5	5	1	4	0	Oct-15
Mabuyamabhema	6	6	2	4	0	Oct-15
Sappers	4	4	3	1	0	Oct-15
New Guvalala Split	4	4	2	2	0	Nov-15
Nyamandlovu	7	7	5	2	0	Dec-15
Gurangwenya	19	8	5	3	11	Nov-15
Ganda	4	4	2	2	0	Dec-15
Dopi	3	3	1	2	0	Oct-15

Somalisa	**4**	**4**	**2**	**2**	**0**	Nov-15
TOTAL	**130**	**93**	**50**	**43**	**37**	
Number of packs	**18**					
Average Pack Size		5.16				

Table 2: demographic overview for HNP dogs known but not seen in 2015

Pack name	Total	Total Ad	Ad M	AD F	Pup	Last seen
Baobab	6	6	1	2	0	Jun-13
Kutsha	3	3	0	3	0	Jun-13
Masuma	3	3	2	1	0	Aug-13
South Tamafupa	9	9	??	??	0	Aug-13
Shakwanki	4	4	0	0	0	Aug-13
Deka	8	8	??	??	0	Aug-14
Lodzi	3	3	??	??	0	Sep-14
Kigelia	6	6	??	??	0	Oct-12
North Tamafupa	3	3	??	??	0	Oct-12
New Guvalala	6	6	3	3	0	Dec-14
TOTAL	**51**	**51**	**8**	**10**	**0**	
Number of packs	**10**					

Reference is also given to historical sightings and records, while whole packs/ individuals may not have been seen in 2014 and 2015 it is unlikely that these dogs or packs no longer exist. The size of the area and the distribution of access roads makes it difficult to have full coverage of the park , a survey would partially indicate only occurance of the dogs.

Mortalities/Threats

Until 2015, road kills, rail kills and snaring have been recorded as major causes of mortality, however a new emerging threat was recorded in the Mana Pools area, of cyanide poisoning at water points. In the current reporting period three mortalities were recorded as compared to ten for 2014 in HNP.

- One adult female (MK) of the Tariro pack was snared by cable wire in the Mabale area in April

- One adult male (Hacket) of the Makwa pack died during veterinary operation in Bulawayo after being found with a broken leg

- One adult female (Nat) of Nyamandlovu pack died after veterinary operation and was released in the wild.

- Nine adult dogs of Chundu area, south of Chitake spring in Mana Pools killed by cyanide at water point in November 2015.

Painted dogs killed on roads are tragic accidents, snaring incidents outside of HNP has always posed a significant threat to dogs and their prey. *See appendix two PDC APU snare data.* The APU data shows the high number of snares recovered in areas bordering the Parks estate. Data for 2015 shows that PDC APU has recovered more than 2000 snares as compared to 1556 snares recovered in 2014. A large number of dogs and prey species are killed every year in snares and not recorded due to the vegetation and size of area to be covered by the patrol teams. The current widespread rampant use of cyanide could potentially wipe out large populations of dogs and prey.

It is apparent that regular daily patrols deter and are effective in protecting wildlife and painted dogs.

Inadequate land management practices in the Gwaai and Forestry contribute enormously to loss of painted dogs and prey and the Gwaai has remained a critical source of sink for years. Currently only two packs are ranging in the area as compared to seven packs that utilized the Conservancy at its peak.

Indications from the spoor transects undertaken in the Gwaai in 2014 suggest a massive decline in herbivore population especially kudu, impala, sable and eland and combined with the PDC APU data, thus the need to urgently reduce the sport hunting quotas and the removal of prey species for dogs from these areas or a moratorium on the hunting of some species.

Hair Analysis of prey species in dog scat HNP

The prey hair analysis objective is to collect prey data to establish the extend of the predatory role of lycaon pictus and its impact on the ecology of the HNP ecosystem and provide informed recommendations to Parks Management on sport hunting and ration usage.

During the course of the year, 47 faecal samples were analysed ,*table 3,* for hairs from prey species the dogs from different packs consumed.

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

if the patterns were hair changed with location on the body and were compared with a hair reference data base compiled from the Bulawayo Museum.

Both the scale and cross pattern and cross section of the prey hairs was used to determine which species the different pack consumed within the Hwange Ecosystem.

Results were analysed and compiled , the most preyed upon species as with the records of 2014, was impala, for the HNP, followed by kudu and duiker. The data shows a significant portion of some packs (Deteema, Gurangwenya) showing bat eared fox in their diet. The importance of kudu and impala in the diet of dogs , re-enforces the argument and recommendations by PDC for the reductions or alternative species for management quotas for Parks and the Gwaai Area.

Table 3. **Results by Species**.

Species	**Totals**	**Percentages %**
Bushbuck	3	6.38
Kudu	6	12.80
Impala	23	48.94
Steenbok	2	4.25
Common Duiker	9	19.15
Water Buck	0	0
Wildebeest	0	0
Reed buck	0	0
Bat eared fox	2	4.25
Warthog	2	4.25
TOTAL	**47**	**100%**

Table 4: Hair analysis by pack.

TARIRO PACK (3 adults)

Species	Totals
Bushbuck	0
Kudu	2
Impala	2
Steenbok	0
Bat Eared Fox	0
Common DUIKER	0
Water Buck	0
Reed buck	0
Totals	**4**

DETEEMA PACK (7 adults)

Species	Totals
Bushbuck	0
Kudu	1
Impala	4
Steenbok	0
Bat Eared Fox	1
Common DUIKER	1
Water Buck	0
Wildebeest	0
Reed buck	0
Totals	**7**

NYAMANDLOVU PACK (7 adults)

Species	Totals
Bushbuck	0
Kudu	1
Impala	1
Steenbok	2
Bat Eared Fox	0
Common DUIKER	2
Water Buck	0
Wildebeest	0
Warthog	1
Reed buck	0
Totals	**7**

GURANGWENYA PACK (8 adults and 11 pups)

Species	Totals
Bushbuck	0
Kudu	1
Impala	5
Steenbok	0
Bat Eared Fox	1
Common DUIKER	5
Water Buck	0
Wildebeest	0
Warthog	1
Reed buck	0
Totals	**13**

LUKOSI PACK (8 adults)

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

GANDA PACK (4 adults)

Species	Totals
Bushbuck	3
Kudu	1
Impala	5
Steenbok	0
Bat Eared Fox	0
Common DUIKER	2
Water Buck	0
Wildebeest	0
Warthog	0
Reed buck	0
Totals	**11**

HERBIVORE POPULATION TREND MONITORING HNP

PDC participated and provided logistical support to the yearly PDC, ZPWMA, CNRS, CIRAD road counts in HNP. The objective of this monitoring and analysis is prey trends and abundance over given period.

Road counts

Road counts were carried out in May and October in the main camp area, Sinamatella and Robins camp. The most available roads were used as transects. Each transect was driven at least twice at different times of the day. The road count was followed by line transect method where perpendicular distances are calculated by using the angle and the direct distance between the animal and 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 analysed for 2014 indicates a stable densities for most species except giraffe. However the current densities are much lower than the game populations in the 80s. The population densities for impala are 2.23 impalas per sq.km, 1.87 kudu per sq.km. The standard deviation for the same period for impala and kudu is 0.26 impalas per sq.km and 0.78 kudu per sq.km respectively. The average range for kudu is 1.15-3.97 kudu per sq.km and 1.31-3.80 steenboks per sq.km. All the densities are for the dry season period when detection rates for animals are at maximum and impala have shown a dramatic recovery from the 2003 -2008 period where the densities were at below 1.00impalas per sq.km.

That said it is still evident that population densities for key painted dog prey species remain low when compared to the mid 1980's figures and this is believed to be a significant factor contributing to the low average pack sizes in HNP.

We thus urge ZPWMA to reconsider the position on ration hunting and also in light of the currently international trend it would seem an appropriate time to remove ration hunting entirely (moratorium). PDC urges ZPWMA to consult stakeholders and come up with an alternative source of rations (beef , pork, lamb, fish) for the rangers on patrol.

Spoor counts

All of the small mammals were counted by a team composed of a driver and two observers seated on the roof rack of a vehicle driven at low speeds (15km/hr). When spoor was sighted by the driver and observers, the car stopped and the information about herd size, composition, animal activity, habitat etc were recorded. All transects were driven at least 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. The spoor count data is on hold while software is being secured and will be available in the next report.

PAINTED DOG POPULATION RESULTS FOR MANA POOLS NATIONAL PARK

Mana Pools. Senior PDC staff made seven field trips to Mana Pools during the current reporting period. The last trip in December 2015 was to verify and identify the nine dogs which were poisoned by cyanide.

Daily monitoring of the Mana Pools populations was undertaken by PDC Research Assistant, Nick Murry, who accumulated an average of more than 200 observation / monitoring hours per month, which is more than what has ever been previously recorded. As a consequence PDC is in a position to report accurately on these observations and present facts as opposed to presenting opinions expressed as fact.

Such opinions that the low pup counts (presented below) for the Vundu and Nyakasanga packs were the direct result of disturbance by Film crews, researchers and the general public are no more than opinion and not based upon any facts. The number of pups born in the two packs mentioned was indeed low and inexplicable. The fact is that the two packs moved their respective den once, and this being a short distance of some 250m. This is quite normal for painted dogs. Often the first den becomes dirty and infested with fleas so the alpha female moves to a new hole a short distance away.

Over the year we have witnessed packs moving their den due to disturbance. Such moves are then several kilometers not a few meters. On one such occasion, witnessed in HNP, lions attacked the dogs at their den and the dogs moved more than 4 km away. In deed this year one pack (Nyamandlovu, mentioned above) abandoned their den entirely due to disturbance from lions. On another occasion in HNP we witnessed another pack of dogs (Hlangabeza) attacking a pack (Abangane) that had denned. The Abangane moved to a new den site more than 10 kilometers away. It is moves of that magnitude that result from disturbance and pups often die enroute as they are too small to walk such distances.

There are also reports of dogs with short legs. Allegedly a consequence of poor food provision due to disturbance at the den and thus more adults remaining behind to “protect” the pups. Again there is little evidence to support what is no more than an opinion expressed as a fact. Assuming, for one moment, that it is possible to compare leg lengths from photographs taken at different (unmeasured) distances and angles. The fact is that there has been no DNA analysis of the respective packs, no hunt follow data collected to assess relevant hunting success in terms of prey species caught, frequency of successful hunts and failed hunts and thus any measure of the actual food provision for the growing pups. The so called data is also based on a comparison between two sets of pups without knowing or apparently taking into account their respective dates of birth.

Interestingly, while this so called data has been presented at conventions it has been dismissed by experts in painted dog ecology and it has not been published in any peer reviewed journal.

Key Points:

- Collared two dogs from the Vundu and Nyakasanga pack.
- Removed an old collar from one dog of the Nyakasanga pack.
- Extensive camera trap survey undertaken in Mana Pools
- Two den sites observed.
- PDC provided support for the new anti poaching initiative in Mana Pools established by Nick Murry.

The Vundu pack has been the largest pack for many years in Mana Pools, however with the alpha female reaching ten years of age in 2015, we expected changes. In deed the alpha male died in 2014 and late that year a new alpha male joined the pack.

Despite the efforts this pack was hard to locate for much of 2015 and indeed in the months leading up to the denning they were only observed on a total of seven days. Thus accusations of the pack being harassed by film crews, researchers and the general public are unfounded and based purely on opinion not fact.

In mid June it was appeared as that three females were pregnant and when the pack finally denned in early July we anticipated glut of pups. The den was situated in the banks of the Chiruwe River and as such it was possible to observe the den from more than 100m away. Thus there was no disturbance. We were very surprised when only two pup emerged from the den towards the end of July. We can only speculate at this point on what could have happened. Our most educated guess based on the observations made is that the old alpha female did not carry her pregnancy to full term and she had no pups, however based on direct observations it seems that she "adopted" the two pups who in fact were born by her young (two year old) daughter. The third female seemed at a more advanced stage of pregnancy when observed in early June and we believe that the alpha female may not have allowed the pack to den until she her self was apparently ready and this may have resulted in the loss of the pups. It's also not impossible for a phantom pregnancy but this is something that has never been recorded and it's never likely to be recorded for obvious reasons.

The vundu pack moved the den once. A distance of 250m, which is quite normal and again indicates that they were not disturbed by film crews, researchers or the general public, which again has been reported as fact when it is in reality someones opinion based on next to no actual information.

When the pack returned to their nomadic life style the two pups were still alive but this is the most vulnerable time for them and indeed they were killed by hyena.

Seven females dispersed from the pack soon after this incident and the old alpha female has not bee seen since.

The Nyakasanga pack became the largest pack on the river front, reaching 25 individuals at the start of the year. In fact they had reached 32 at one stage in 2014 before five males dispersed and two pups were killed by hyenas.

Again, despite all the efforts they were observed on only three occasions leading up to the denning season.

Two females appeared to be pregnant, which was also the case in 2014 when 15 pups were born. We expected similar numbers this year and were surprised when only five emerged from the den, which was again observed from a respectable distance. The pack remained at the den for two months then moved approximately 250m to a second den before returning to their nomadic life style in early Sept. All five pups survived to this stage and the pack was 25 strong. However one was killed by a hyena on October 11th and another by lions on Nov 4th. An adult female also disappeared in mid Nov.

Seven males dispersed from the pack in early Nov and joined the seven Vundu females to form the Nyamatusi pack

Table 3: Demographics for known packs in Mana Pools

Pack name	Total	Total Ad	Ad M	AD F	Pup	Last seen
Nyakasanga	15	12	5	7	3	Nov-15
Vundu	4	4	2	2	0	Nov-15
Namatusi	14	14	7	7	0	Dec-15
Chikwenya	17	8	4	4	9	Dec-15
Kanga	13	7	3	4	6	Dec-15
Chitake	15	5	?	?	10	Sep-15
Chiruwe	15	9	5	4	6	Sep-15
TOTAL	93	59	26	28	34	

Additional Activities

- PDC provided support to HNP Main Camp in terms of fuel and vehicle use and manpower for Anti-poaching operations.
- PDC runs its own Anti-poaching Units that patrol the buffer zones around HNP.
- PDC provides material support and a hotline between Parks and the community in cases of poaching and human wildlife conflict.

- PDC attended and contributed to the HNP Management Plan Final Workshop.
- PDC conducted a series of community-based meetings to tackle snaring and poaching.
- PDC meets the material needs of a Zero Tolerance to Wildlife Crime Campaign.
- PDC attended regional painted dog and cheetah conservation strategy in South Africa.
- PDC attended and participated in the KAZA carnivore workshop held at the Safari Lodge.
- Five VHF tracking collars were fitted onto painted dogs in HNP and two dogs in Mana Pools in 2015.

- **PDC provides learning experiences for Zimbabwean students and provided five internship opportunities listed below:**

  - ✓ Tecla Mondela: Geography and population studies, Lupane State University.

  - ✓ Similo Luphahla: Geography and population studies, Lupane State University.

  - ✓ Sikhululekhile Mugari: African Languages and Culture, Midlands State University.

  - ✓ Munyaradzi Chiwara: Wildlife and Safari Management, Chinhoyi University of Technology.

  - ✓ Edward Mushayi: Animal and Wildlife Sciences, Midlands State University.

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