

Update Report

Leopard Research Wilpattu National Park



2016

Submitted by



The Leopard Project

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Executive Summary

This closed population leopard study was conducted between May and October of 2015 with camera trapping being carried out for 836 trap days/nights. The study area was a 500 km² area in the central core of the park which was accessible. Due to flooded conditions and reduced accessibility this study area was chosen as the most feasible for conducting such a survey.

A total of 49 individual leopards were identified within this study as the sample population with a spatially explicit capture-recapture total density for the study area of 16.2 leopards per 100km² or an adult density of 8.2 leopards per 100km². This density falls between the recorded leopard densities for Yala National Park and Horton Plains National Park as established by our earlier studies in these NPs and is in keeping with density estimate trends. A sex ratio for this population of 1M: 1.75F was observed.

On-going prey analysis shows that barking deer, sambur, wild boar and axis deer are the primary available prey species but more in depth analysis is required to indicate prey preference.

The presence of Sri Lanka's smallest wildcat the Rusty spotted cat was also detected numerous times indicating a relatively healthy population within the study area. Bear (including mother and cubs) were detected throughout and at most camera trap stations indicating widespread presence within the study area.

Timelines & Study design

Exceptionally heavy rains were experienced in 2015 and continued through into 2016. Due to limited access of the park as a result of flood waters we designed a camera trapping grid based on accessibility. Camera trapping was begun in mid-July and continued on till the 3rd week of October 2015. This time period was adequate for a closed population survey as well as allowed for coverage of the chosen study area within the park.

A total of 36 remote camera stations were set up across the central portion of Wilpattu covering an area > 500 km². This design allowed the project to optimize the trade-off between photographic re-captures and area coverage. We also conducted 3 prey transects every month which ranged in length from 20 – 23 kms and traversed the heart of the study area.

Success was high with all camera stations recording repeated leopard presence as well as numerous prey species.

Leopard Population Estimates

Population numbers & Density: Over the course of the 836 trap days (each 24hr from midnight to midnight) there were a total of 49 individual leopards photo-captured (Fig. 1). Using spatially explicit capture-recapture analysis we estimated a population density within the study area of 16.2 leopards/100 km² or 8.2 adult leopards/100 km². This suggests a density slightly lower than in Yala National Park, Block I and slightly higher than in Horton Plains National Park.

Sex Ratio: From the sample leopard population a total sex ratio for the study area of 1M: 1.75 F was obtained.

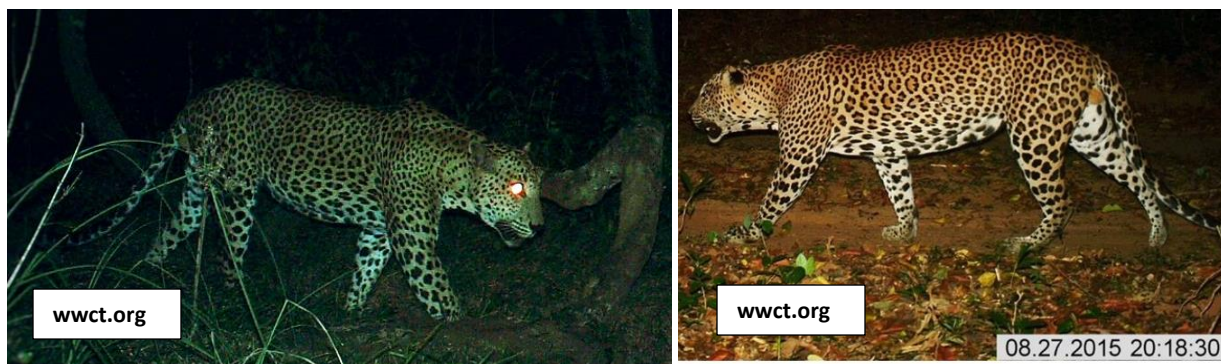


Fig. 1: two of the resident male leopards repeatedly photo-captured within the study area in Wilpattu National Park, September 2015. b. Cover picture is of a resident female within the study area.

Leopard Diet

A total of 24 scat samples have been collected so far. We hope to continue with once a month monitoring for scats to supplement this as the larger the sample size the more accurate the information gained. Due to the unusual heavy rains experienced during 2015 and 2016 so far scat samples were easily washed away and thus sample availability low. Ongoing microscopic identification will reveal if leopards in Wilpattu are showing particular prey preferences.

Prey abundance

Based on distance sampling methods from 62.7km of road transects that were repeated in June, July, August and September 2015 and 16.2km that was conducted in October 2015, we were able to estimate the abundance of spotted deer (7.8/km²) and barking deer (9.5/km²). Other species were not detected in sufficient numbers to allow for accurate absolute density estimates.

Other species:

Apart from leopards our camera trap stations also recorded a total of 19 mammal species (Fig 2) indicating mammal biodiversity within the park.

Class	Family	Common name	Scientific name
Mammalia	Bovidae	Water buffalo	<i>Bubalus arnee</i>
	Canidae	Jackal	<i>Canis aureus</i>
	Cercopithecidae	Toque macaque	<i>Macaca sinica</i>
	Cervidae	Axis (spotted) deer	<i>Axis axis</i>
		Sambar	<i>Rusa unicolor</i>
		Barking deer	<i>Muntiacus muntjak</i>
	Elephantidae	Asian elephant	<i>Elephas maximus</i>
	Felidae	Leopard	<i>Panthera pardus</i>
		Jungle cat	<i>Felis chaus</i>
		Rusty spotted cat	<i>Prionailurus rubiginosus</i>
	Herpestidae	Ruddy mongoose	<i>Herpestes smithii</i>
	Hystriidae	Porcupine	<i>Hystrix indica</i>
	Leporidae	Black naped Hare	<i>Lepus nigricollis</i>
	Manidae	Pangolin	<i>Manis crassicaudata</i>
	Mustelidae	Otter	<i>Lutra lutra</i>
	Suidae	Wild boar	<i>Sus scrofa</i>
	Tragulidae	Mouse deer	<i>Moschiola meminna</i>
	Ursidae	Sloth bear	<i>Melursus ursinus</i>
	Viverridae	Common palm civet	<i>Paradoxurus hermaphoditus</i>
Indian civet		<i>Viverricula indica</i>	

Table 1: Mammal species captured on remote cameras in the study site at Wilpattu National Park.

Wildboar were the species detected in greatest numbers by remote cameras, followed by spotted deer and then leopards (Fig. 2). This measure indicates the high success of the camera placements for recording leopard presence. It does not, however, mean that leopards were more abundant than many of the other species captured by remote camera less often, as the rate at which species were recorded on remote cameras is also determined by their use of roads and prominent jungle trails where cameras were set.

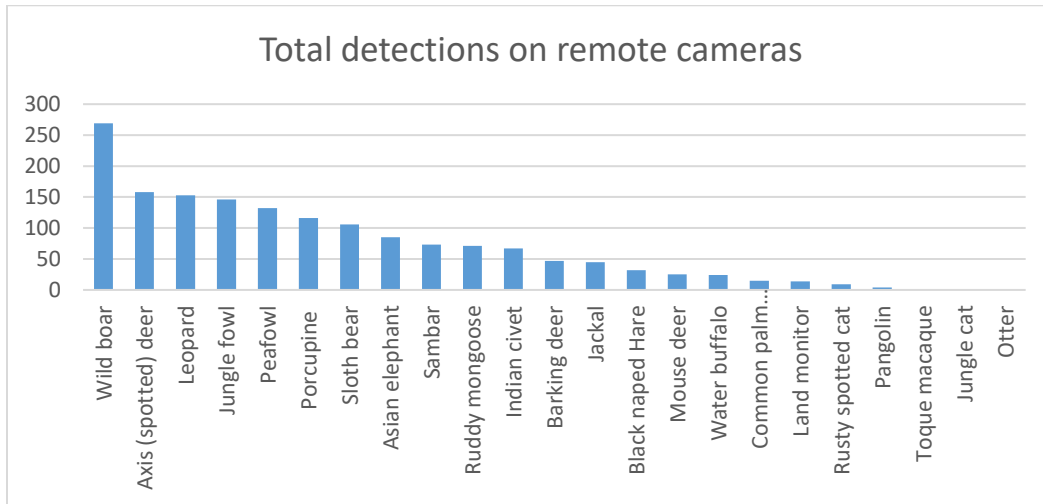


Fig. 2: Total number of animals of each species detected by remote cameras within Wilpattu National Park over 836 trapping days.

A high detection rate of bears was observed (N=106 photo captures); this is a positive sign for Wilpattu as having bear presence throughout the study indicates good quality undisturbed habitat is still available. Mother and cubs (N=15 cubs) were also detected spread out throughout the study site.

Photo-captures of other wild cats are also of substantial importance and although no fishing cat was detected, jungle cat (N=1) and numerous detections (N=9) of Sri Lanka's smallest and least understood felid, the rusty spotted cat were obtained (Fig. 3). The lack of detection of the fishing cat however does not indicate an absence of them in the study area as they have been recorded otherwise.



Fig. 3: Rusty spotted cat photo-captured near Kokkari Willu in Wilpattu National Park, September 16th, 2015.

Limiting Factors

The primary limiting factor was the heavy rains and resultant flooding of the park. This made many jeep tracks inaccessible as the villus had overflowed their banks. In general the road network within the park is limiting, with the southern and north eastern sections of the park inaccessible as there are no maintained jeep tracks traversing these parts. The fear of the presence of poachers is also a limiting factor and needs to be addressed.

Recommendations

Increasing the study size area is recommended if a follow on survey is to be conducted at a later date, which we would like to do, as this would allow for a more thorough leopard population estimate of the entire park. Opening up some jeep tracks for patrolling purposes especially in the southern and north eastern parts of the park may address the issue of inaccessibility. It will also help keep track of poaching presence and perhaps deter poachers from freely accessing the park. A more robust census of the prey throughout the park would also be a future recommendation.

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