

Cape, African White-backed and Hooded Vulture breeding surveys: 2018

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FIGURE 1. Orbert Phiri with volunteers and community members monitoring at the Moletjie Nature Reserve, Limpopo province, South Africa.

Summary

During 2018, VulPro continued with the annual surveys of six Cape Vulture (*Gyps coprotheres*) breeding colonies as well as six sites of African White-backed (*Gyps africanus*) and Hooded vulture (*Necrosyrtes monachus*) tree-nesting clusters (Table 1, Figure 1). The surveys covered the Gauteng, North West and Limpopo Provinces as well as one Cape Vulture colony in Botswana. Currently, we monitor 3 466 nesting sites across all 12 monitored sites. Our cliff nesting colony sites represent approximately 50% (4 700 pairs estimated MsAP 2017) of the Cape Vulture breeding population in Southern Africa. We monitor 5 tree-nesting clusters (Table 1, Figure 1) of White-backed Vultures as well as a Hooded Vulture site in the Olifants River Private Game Reserve (ORPGR), Limpopo Province.

This year, we identified a decline within the Cape Vulture colonies at Soutpansberg, Manutsa and the Moletjie Nature Reserve. We engaged with the reserve managers and community leaders to discuss ways to correct the decline at the Moletjie site and these are being implemented, but, as always are funding dependent. This shows the importance of annually monitoring the breeding sites to determine declines. If Soutpansberg and Manutsa shows signs of continued decline in 2019 further investigation will be implemented to determine cause.

Tree-nesting surveys have also shown a decline at all sites except for the ORPGR. This may indicate an increase of threats either locally or nationally, however, due to the extreme temperatures that South Africa has succumbed to in 2018 we cannot rule out its effects on estimated breeding success. The maximum average South African temperature in 2017 was 21.6°C whereas this year it was 22.8°C, suggesting we will need to continue being observant of changing environmental conditions and its possible influence on vulture populations



FIGURE 2. VulPro breeding monitoring sites.

TABLE 1. Summary of monitored nesting sites conducted by VulPro.

Site	Work	Province	Country	Land Ownership/use	Habitat
Manutsa	Colony	Limpopo	South Africa	Private residential	Mountainous
Kransberg	Colony	Limpopo	South Africa	Protected government, Marakele National Park	Mountainous
Magliesberg (Skeerpoort, Nooitgedacht and Roberts Farm)	Colony	North West and Gauteng	South Africa	Private Biosphere Reserve	Highveld Afro-montane savanna
Moletjie	Colony	Limpopo	South Africa	Protected Limpopo provincial government	Mountainous
Mannyelong	Colony	Southern	Botswana	Protected game farm	Mountainous
Soutpansberg	Colony	Limpopo	South Africa	Community owned	Bushveld
Curly Wee	Tree-nesting/Capture site	North West	South Africa	Private pig farm	Savannah
Olifants River Private Game Reserve (ORPGR)	Tree-nesting/capture site	Limpopo	South Africa	Protected private reserves	Savannah
Omega Farm	Tree-nesting/capture site	North West	South Africa	Private Game Reserve	Savannah
Boikarabelo	Tree-nesting/capture site	Limpopo	South Africa	Private Mining	Riparian Savannah
Khaya Ndlovu	Tree-nesting/capture site	Limpopo	South Africa	Private shareholder block	Savannah

Survey Overview and Methods

All Cape Vulture colonies were monitored according to the Cape Vulture monitoring protocol which VulPro has been following since inception. The vulture tree nesting surveys were undertaken according to VulPro's ground-walking tree nesting protocol which has been followed for the past 6 years. In this way, data obtained annually is comparable from year to year and populations can be analysed and trends monitored and recorded.

African White-backed Vulture breeding sites are on 4 properties with three different land-management practices. ORPGR is adjacent to the Kruger National Park and is a 6,500ha protected shareholder reserve in the Limpopo Province. Boikarabelo is a non-protected, commercially owned area in the Limpopo Province. Khaya Ndlovu is a privately-owned shareholder block in the Limpopo Province. Curly Wee is a piggery with a vulture restaurant, in the North West Province. This year we also included one new site 'Omega Farm' in the Mafikeng area based in the North West Province which is a private reserve (Table 1). The Cape Vulture colonies were once again monitored on mostly privately-owned land with the exceptions of the Kransberg Cape Vulture colony which is inside the Marakele National Park and the Moletjie Cape Vulture colony which is inside the Moletjie Nature Reserve, both in the Limpopo Province.

Specific terminology is used for both surveys. VulPro deduces the total number of breeding attempts and the percentage of (un)successful attempts using these descriptions of behaviors:

- Tenanted = a pair or individual bird is present at a nest where, based on the behavior of either the pair or the individual bird, breeding is suspected.
- Chick = a chick / nestling is seen, a pair or individual bird is seen feeding a chick but the chick is not actually seen, or a pair or individual bird behaves in a manner indicative to there being a chick present.
- Fledgling = a large chick/nestling, which is ready to fledge, is seen, or when a fledgling is seen.
- Brooding = an adult is seen on the nest in a guarding or shading posture, denoting the presence of a chick.
- Copulation = a pair is seen mounting and/or copulating at a nest or suitable ledge for breeding.
- Incubation = an individual bird is laying in a manner indicative of incubation behavior, different from a sleeping posture.
- Working = an individual bird or pair is actively building a nest on a ledge.
- Hidden = there appears to be breeding behavior at a ledge or crevice but the observer can't accurately see to record the data.

TABLE 2. Cape Vulture Breeding Surveys 2018. (The calculation of total pairs includes all activity seen at the nest site and, total active nests also includes all activity at the nest site. The calculation of total success at nest site calculates only proven success where fledglings and chicks have been seen).

Colonies	Breeding Pairs	Nestlings	Fledglings
Manutsa	<u>Total Pairs: 631</u> Tenanted - 62 Working - 9 Incubating - 557 Copulating - 1 Hidden - 1	<u>Total Active Nests: 775</u> Chick - 50 Brooding - 556 Incubating - 37 Tenanted - 127 Copulating - 1 Working - 2 Hidden - 2	<u>Total success: 479</u> Fledgling - 149 Chick - 330 Brooding - 6 Incubated - 1 Tenanted - 29
Kransberg	<u>Total Pairs: 793</u> Tenanted - 184 Working - 0 Incubating - 602 Copulating - 0 Chick - 3 Hidden - 4	<u>Total Active Nests: 653</u> Fledgling - 10 Chick - 97 Brooding - 409 Incubating - 10 Tenanted - 111 Copulating - 3 Working - 3 Hidden - 10	<u>Total success: 431</u> Fledgling - 290 Chick - 141 Brooding - 0 Incubated - 1 Tenanted - 0
Skeerpoort (Magaliesberg)	<u>Total Pairs: 316</u> Tenanted - 64 Working - 26 Incubating - 220 Copulating - 5 Hidden - 1	<u>Total Active Nests: 283</u> Chick - 3 Brooding - 192 Incubating - 42 Tenanted - 40 Copulating - 0 Working - 1 Hidden - 2	<u>Total success: 142</u> Fledgling - 43 Chick - 99 Brooding - 59 Incubated - 5 Tenanted - 41
Nooitgedagcht (Magaliesberg)	<u>Total Pairs: 151</u> Tenanted - 27	<u>Total Active Nests: 133</u> Chick - 1	<u>Total success: 68</u> Fledgling - 35

	Working - 7 Incubating - 117 Copulating - 0 Hidden - 0	Brooding - 106 Incubating - 11 Tenanted - 13 Copulating - 0 Working - 2 Hidden - 0	Chick - 33 Brooding - 40 Incubated - 1 Tenanted - 11
Robert's Farm (Magaliesberg)	EXTINCT Tenanted - 0	-	-
Soutpansberg	<u>Total Pairs: 196</u> Tenanted - 21 Working - 3 Incubating - 168 Copulating - 3 Hidden - 1	<u>Total Active Nests: 168</u> Chick - 9 Brooding - 117 Incubating - 1 Tenanted - 36 Copulating - 1 Working - 4 Hidden - 2	Third survey not carried out due to lack of funds
Moletji	<u>Total Pairs: 5</u> Incubating - 3 Tenanted - 2 Working - 0 Copulating - 0 Hidden - 0	<u>Total Active Nests: 7</u> Chick - 0 Brooding - 1 Incubating - 2 Tenanted - 4 Copulating - 0 Working - 0 Hidden - 0	Third survey not carried out due to lack of funds
Mannyenalong	<u>Total Pairs: 85</u> Tenanted - 6 Working - 0 Incubating - 79 Copulating - 0 Hidden - 0	<u>Total Active Nests: 80</u> Chick - 27 Brooding - 50 Incubating - 0 Tenanted - 3 Copulating - 0 Working - 0 Hidden - 0	Third survey not carried out due to lack of funds
TOTAL	Total Pairs: 2177		

The Cape Vulture colonies show an overall rise in breeding activity over the last eight years. With a total of 2177 pairs observed this year on the first survey compared to 2052 in 2017. However, some fluctuations of decline were observed at three sites, namely Manutsa, Soutpansberg and Moletjie. At Moletjie this year disturbance from human activity on top of the breeding cliff was identified which maybe attributing to the colony decline. This decline has been observed since 2012 with some fluctuations in counts in individual years (Figure 3). This year, we have been working with the manager and local community to mitigate the issue and hope to implement long-term goals in the future, if funding becomes available.

Furthermore, there was a high number of total active nests on the second survey at Manutsa. This is attributed to the temperature which reached over 40 Degree Celsius and many adults were observed shading their chicks. This figure indicates a more absolute figure to the colony size due to the increased visibility of the vultures. As these cliffs are North facing, temperature could be a huge determining factor at this site, as the site has already been recorded as one of the first colonies to be affected by global warming (Phipps et al 2015).

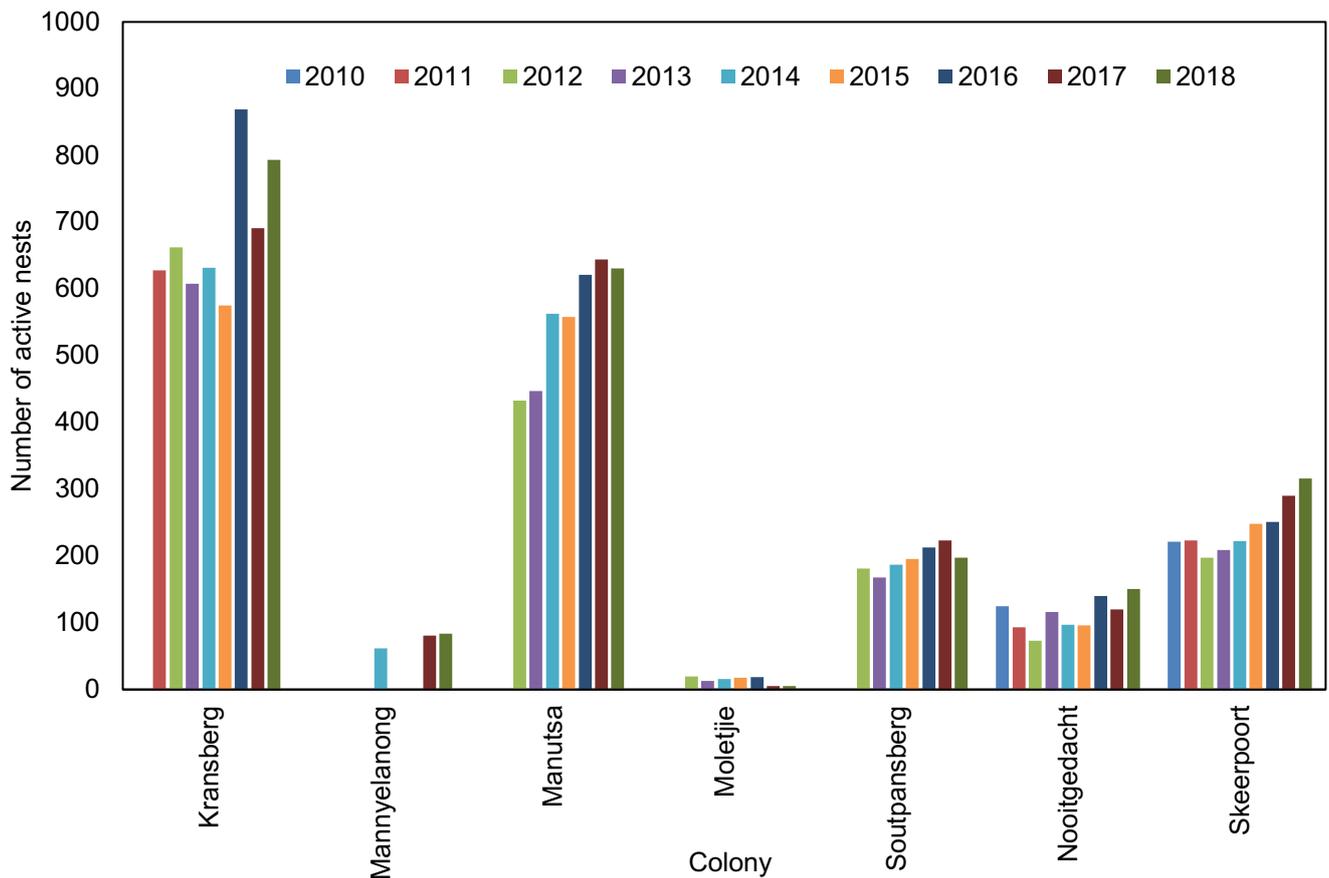


FIGURE 3. Active nests of colony surveys 2010 to 2018 for Cape Vulture (*Gyps coprotheres*).

African White-backed Vulture Breeding Surveys

The number of breeding pairs has declined this year from 2017 figures at Boikarabelo and Curly Wee by 5 nests at each site, however, the numbers at Khaya Ndlovu and ORPGR increased by 6 nests and 16 respectively. Estimated mid-season success for this species declined by 11% at Boikarabelo, 34% at Khaya Ndlovu, 26% at ORPGR between 2017-2018. Curly Wee mid-season success increased by 50% but there was only one nest remaining. Consequently, as Curly Wee now has declined to a small breeding population we are searching for new sites to monitor this species (although we will continue to monitor this site to determine if vultures return). It is not understood what causes this species to change breeding site locations, but the continued collation of data will be vital in identifying them. We aim to engage a MSc student who would be keen to work with us to analyse the breeding survey data and develop a project to answer the questions; why the species move breeding sites, what are the causal factors to this and, what are the causal factors to the changes in breeding trends.

TABLE 2. African White-backed Vulture surveys 2018

Location	Breeding Pairs June/July	Total Active Nests Aug/Sept/October	Estimated mid-season success (%)
Boikarabelo	31	26	83
Khaya Ndlovu	19	11	58
Curly Wee	1	1	100
Olifants River PGR	64	49	71
Omega Farm	24	29	121
Total	128	130	

Hooded Vulture Breeding Surveys

Our June survey in ORPGR revealed just 4 active nests (Figure 4), however in August we recorded 18 active nests but this increased number is to be expected as Hooded Vultures breed later during the year than other species (Mundy et al 1992). In the September surveys 21 active nests were found and in October 16 active nests were found. There were 12 confirmed nests with chicks by October and the estimated success was 57% for this year. The estimated mid-season success in 2017 where 75% indicating a decline in estimated survival of 18%. A number of factors could have caused this decline in breeding success including threats and unfavourable weather conditions.

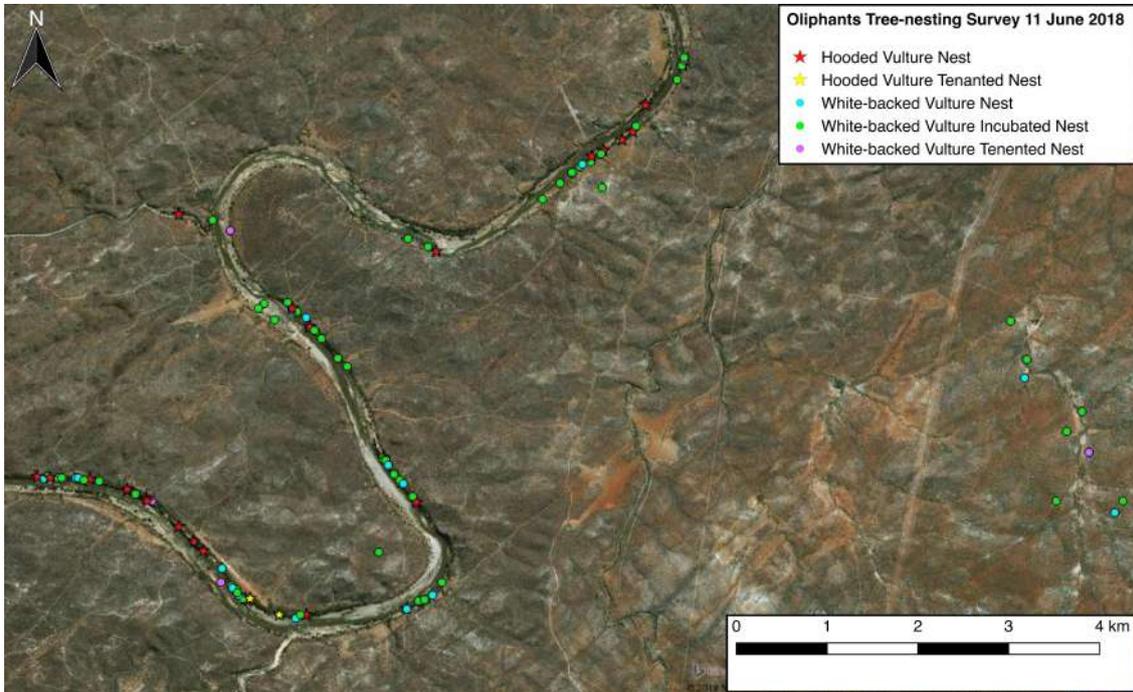


FIGURE 4. Olifants River Private Game Reserve vulture tree-nesting survey June 2018

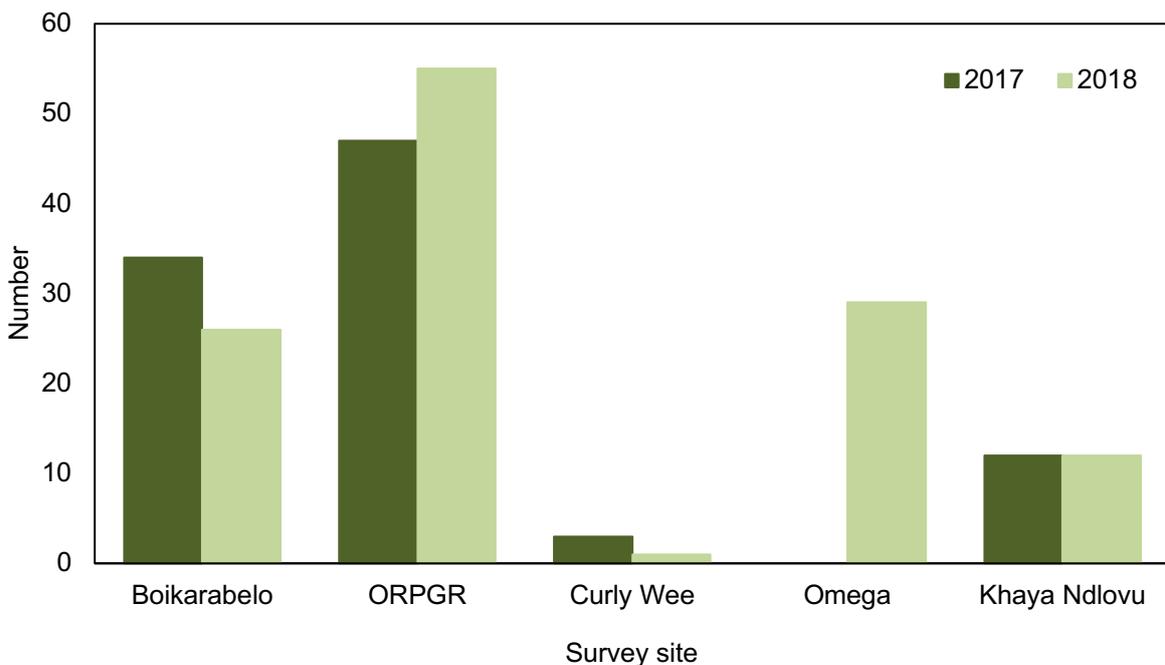


FIGURE 5. A comparison of the number of African White-backed Vultures (*Gyps africanus*) breeding pairs still active at the end of the breeding season 2017 and 2018

Overall there has been a decline at our tree-nesting survey sites for the observed number of breeding pairs and for the active number of breeding pairs at the end of the season (Figure 5 and 6) with the exception of the ORPGR. Underlining the continued necessity for monitoring and surveying these breeding sites in the ever changing anthropomorphic setting.

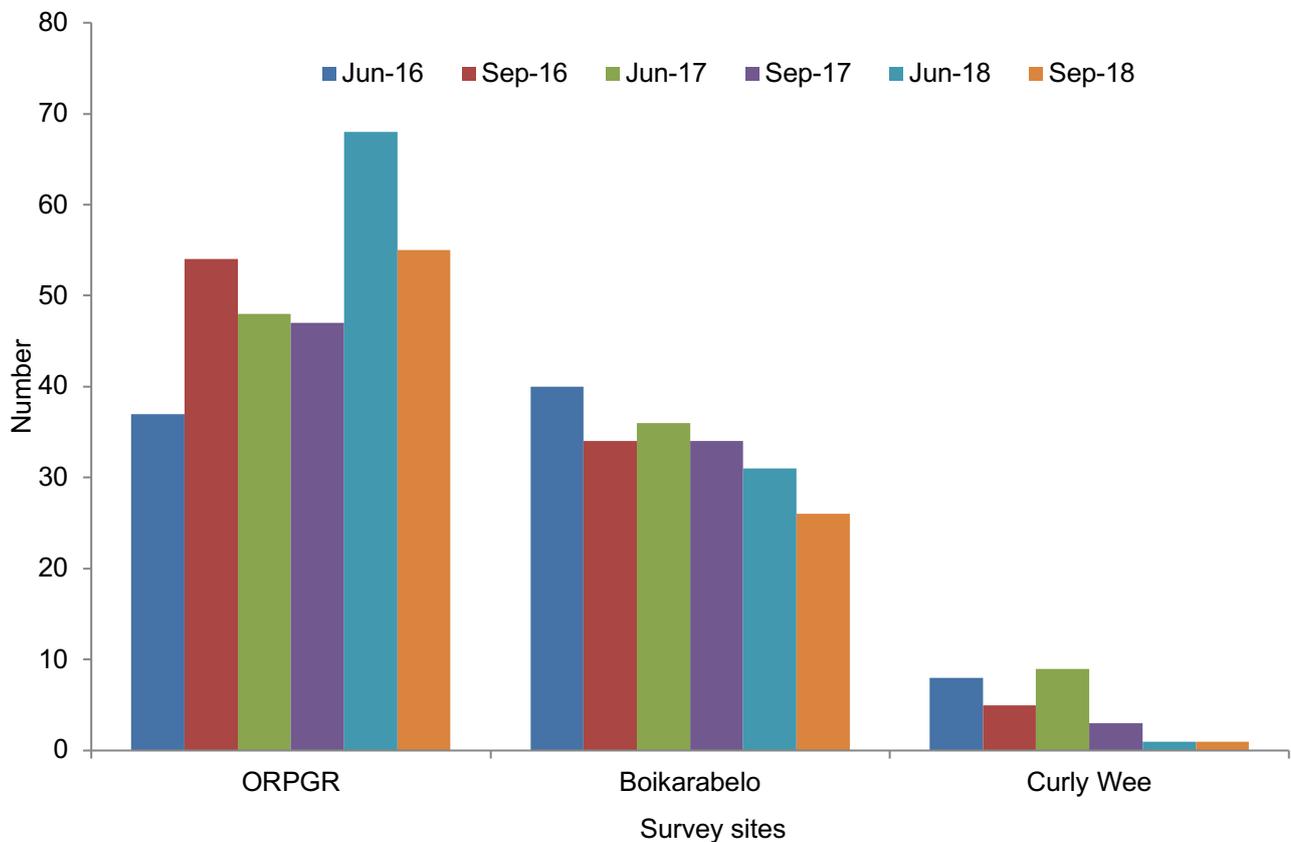


FIGURE 6. The number of African White-backed Vulture breeding pairs at the Olifants River Private Game Reserve, Boikarabelo and Curly Wee over three years simultaneous surveys.

Understanding movement of vultures during different ages groups is vital to understanding the species population. Consequently, we tag vultures so that we can identify them from a distance and monitor their movement and survival. In 2018 25 vultures were tagged, 3 Hooded Vultures and 22 African White-backed Vulture nestlings. One African White-backed Vulture also had a transmitter fitted as part of our ongoing research to understand movement of White-backed Vultures in South Africa so that we can implement targeted conservation action for this species.

Conclusion

With African Vulture populations declining at a rapid rate (Ogada et al 2015), it is imperative that we identify as many breeding sites as possible to secure those habitats and to secure the breeding populations. The combination of threats including powerlines collisions and electrocutions, poisoning intentionally and unintentionally, human disturbance, decline of food availability, habitat loss and degradation and, climate change leave all three species vulnerable to continued declines (Botha et al 2017). VulPro continually strives to mitigate these threats within the central and northern regions of South Africa and into southern Africa through powerline surveys, identifying problem areas through rescue and rehabilitation and, through continued surveys and research to answer the questions required for the conservation of these species into the future.

Acknowledgements

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