Partnering with

#29098-1

Securing current and future breeding sites of the Cape Parrot (*Poicephalus robustus*) through research and direct intervention

Progress Report

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Figure 1. An adult male Cape Parrot sitting at the entrance to a natural cavity nest.

Introduction

Today, 13 November 2020 marks the 230th day of Lockdown in South Africa.

When we received the exciting news that we had been awarded our 1st Rufford Grant, we all could never have expected to be in the midst of a pandemic one year on. But, through the initial challenges of very strict lockdown protocols initiated in South Africa in March 2020, we maintained a positive attitude and did what we could to keep things running on the ground while adhering to the ever-changing goal posts of rules and regulations set out by our government.

The Cape Parrot Project obtained the permits to travel and work out in the field to be able to keep an eye on the threatened Cape Parrot and the forests which felt increasing pressure under lockdown conditions. Government Forest rangers were absent due to work restrictions, leaving the forests and Cape Parrot feeding sites vulnerable to poachers with fewer law enforcement eyes on the ground. We hired security guards to protect an important feedback site for Cape Parrots.

It has been a year since we partnered with Rufford, and we are grateful to say that there has been a lot of progress. Some activities have not been able to take off due to unavoidable delays brought about by covid, which is to be expected under these current circumstances. But, for the most part, we are making good strides in continuing our work and we are excited to share our updates with you.

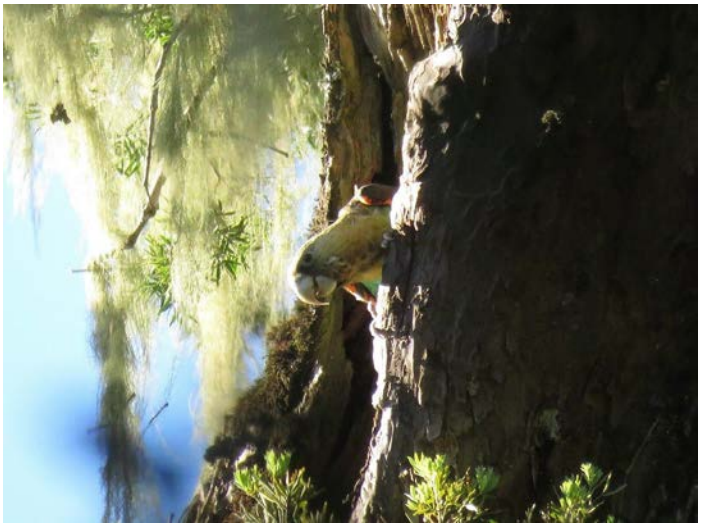


Figure 2. A Cape Parrot peering out from a cavity.

Activities

The activities list below were included in our 2019 application, and the updates under reach reflect where we are to date.

Searching for new and potential nests

“Searching for new and potential nests. August to November 2019. Nests and cavities will be actively located on foot by following calls of territorial pairs, and by morning observations at snags. After October, territorial calls cease as the peak nesting season gets underway.”

Searching for new nests occurred during August 2019—November 2019. However, what we couldn’t have predicted was that the Cape Parrots in our region decided not to breed that season. Our field researchers were out several mornings a week monitoring the forests, but there were no signs of breeding. This is not unusual for long-lived species who would choose to skip a year of breeding if the conditions were not optimal, choosing their own survival over that of their would-be brood. Luckily, we are a long-term project and so we were able to kick off again with monitoring in 2020.

Just before lockdown, we had indications that pairs were becoming active at nests. Pairs were spending longer at nesting sites in the mornings, and some pairs were seen excavating. This then looked promising for the 2020/2021 breeding season to come. Then, in March, lockdown was announced in South Africa and we were left feeling stranded and unsure how to continue. Cape Parrots might be starting to breed and we were going to miss it!

Luckily, Rufford had sponsored a DJI Mavic drone which came to our rescue in one particular instance. Not far from our project base is a Cape Parrot nest. As the crow flies, it is 1km from our back forest gate with nothing in between except forest. Using our drone, and after much practice in the months leading up to this, we deployed the drone and hovered over the nest tree for a few minutes every week during the initial weeks under lockdown. We could see no signs of Cape Parrot breeding, and suspected that it was an early interest by the pair but that breeding was possibly only going to happen later.

By June, we were much more mobile again due to easing of the lockdown restrictions, and resumed our full-scale nest searching. The research team led by the experience of the Research Manager, Cassie, resumed searches in the three forest patches near Hogsback. Over the weeks that followed, we were able to find 11 new Cape Parrot potential nesting sites, **representing a 25% increase in the number of known used and potential nesting sites!**

A systematic search of forest areas revealed several gaps, each approximately 1-2 ha in size, in the three forest patches we monitor which are going to be ear-marked for the installation of nest boxes. In Aukland State Forest we found four such areas (Appendix 1). Similarly, in Hogsback State Forest and Schwarzwald Forest, we found three and six gaps, respectively (Appendices 2

and 3). The process of identifying large suitable trees in these gaps is underway and expected to be completed in mid 2021.

Nest inspections

"Nest inspections. October 2019 to February 2020. Climbing to inspect natural nests and cavities once every 7-10 days to check for egg-laying and chick development. Nests that are unsafe to climb will be accessed using drones and cameras attached to the end of a 12 meter, telescopic pole. Some nests do not have a roof, and it is therefore possible to check these using a drone if the cavity is > 12 m (successful trial run completed using DJI Mavic Pro in December 2018). The telescopic pole will be carried in a backpack and extended beneath trees for nests with cavities 12 m off the ground or lower. Nests with entrances > 12m off the ground, in healthy, sturdy trees, will be climbed by the research team using existing rope-access equipment."

As we write this, Cassie and Research Assistant, Clare, are inspecting a Cape Parrot nest called "Five chick nest" in a forest patch about 20 minutes drive from our project base. It is named as such since the first time it was active in 2018 season the pair managed to raise five chicks to fledging, which is the maximum brood size for the species.

Both the DJI Mavic Drone (Figure 3) and the 4KAM pole camera (Figure 4) sponsored by Rufford have been successfully deployed during nest inspections. Three nests that previously we were unable to inspect, can now be inspected using the 4KAM camera with telescopic pole (Table 1). Furthermore, some nests which were previously inaccessible can now be inspected using the DJI Mavic Drone (Table 1)! Using these technologies has more than doubled the number of nests accessible by our field researchers! They have elevated our nest inspection field work to a new level, allowing access and never-before-seen perspectives into the lives of Cape Parrots and their nests!

Table 1. Number of Cape Parrot nests and/or cavities accessible using rope access, a pole camera and a drone.

Nest accessibility method	**No. nests that we can access**	**Names of nests that we accessed using this method**
1. Rope access technique	10	Samango, Side Door, 5 Chick, Pass, Phenology, Spikey, Jess', Holy Ground nests
2. 4KAM camera and 12 m telescopic pole	3	Gymnogene, Batparrot and HB259 nests
3. DJI Mavic Pro 2 drone	10	Oak Avenue, Meares', BB8, Photo Snag, Road Snag, Scratch Snag, Humpback and Phillip's nests, as well as "Not another Nest". (Bat Parrot Nest also accessible with drone)

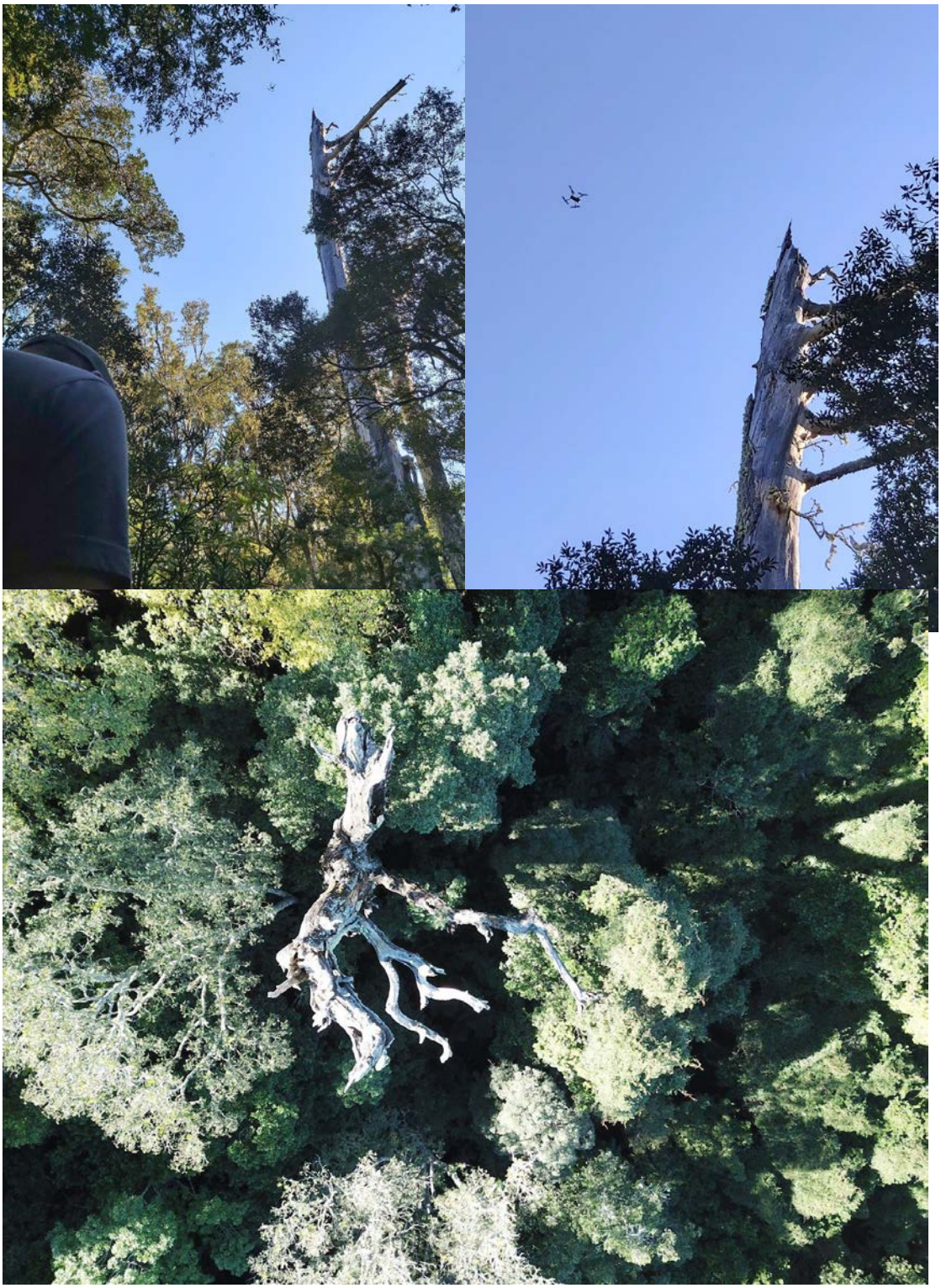


Figure 3. Cassie Carstens flying the DJIMavic drone over a natural nest (top left and right) and an aerial view over a snag containing a potential nest that the drone was able to locate.

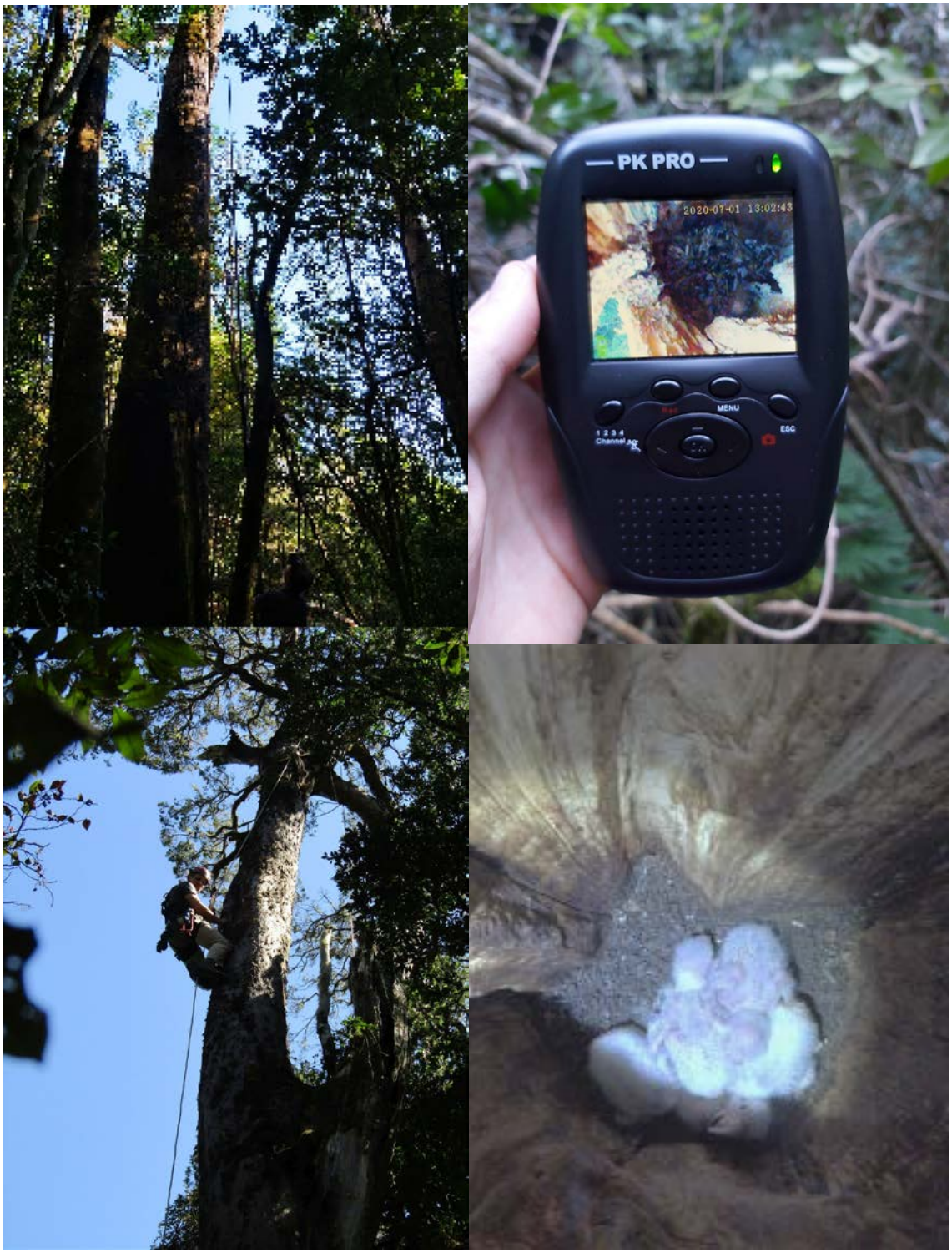


Figure 4. Clockwise from top left: Kate Carstens using the PoleKam to inspect a natural nest. Nest contents viewed from the PoleKam receiver. Five Cape Parrots nestlings inside a natural nest. Cassie Carstens inspecting a natural nest using rope access techniques.

Monitoring nesting sites for activity

“Monitoring nesting sites for activity. October 2019 to March 2020. All-day observations at nests by researchers and through the deployment of camera traps for later analysis.”

Currently, we have 40 nests that we monitor. Some of these are actual confirmed nesting sites (n = 11) that Cape Parrots have occupied in the past, and other are what we call potential nesting sites, where Cape Parrots have been seen in and around, but not yet used specifically for the purposes of breeding (n = 29). Since our partnership with Rufford began, we have found 11 new sites (see Searching for new and potential nests).

Nest sites are routinely monitored for signs of activity by our field researchers. Since June 2020, we have been routinely checking those nest sites where Cape Parrots have been frequently observed, and systematically checking those where little to no activity has been found in case some breeding activity picks up.

In the 2019/2020 season, no Cape Parrot nests were found to be active despite regular monitoring. This season (2020/2021), more than 30 nests have been monitored from observing them from the base of the tree using binoculars .Cape Parrot activity observed has been in the form of male and females entering the nests or displaying outside of nests. Currently, no fewer than two nests have eggs and/or chicks with many more expected over the coming weeks.

We have obtained sponsorship recently from IdeaWild for camera traps, which we will set up outside nesting sites his season, depending on how Cape Parrots react to these devices near their nests.

Forest scans using drones

“Forest scans using drones. March 2020. Using drones to locate potential nesting trees in the form of dead trees (hereafter snags) and large, mature yellowwoods.”

This was successfully completed for assessing gaps in Hogsback State Forest and Schwarzwald Forest. Drones provide the unique ability to assess the availability of large snags in scenarios where scanning on foot is difficult and time consuming, especially in large patches without trail access. The drone was deployed on several occasions from either the rough dirt tracks running through the forest, or from the nearest forest trail where there was an appropriate gap in the forest canopy.This has saved us so much time and allowed for the identification of no fewer than 10 potential nest trees to monitor, or to use for the installation of nest boxes. We will continue to deploy the drone for this purpose over the coming months.

Construction of new nest boxes

“Construction of new nest boxes. March-April 2020. A carpenter from the community will be employed to construct nest boxes at the Project base. Characteristics of natural nests will be mimicked to create deep and safe artificial nesting sites.”

This has been delayed due to covid, as we were unable to hire a carpenter to assist during lockdown. After lockdown, we had to reprioritise our habitat restoration and field research to catch up on some months of work lost. But we are now back on track! We have purchased a compact wood-carver’s chainsaw to hollow out the logs more efficiently, and we will be making the construction of nest boxes a CPP team effort. On rainy days, when planting is not possible, our team of 8 Xhosa general staff members from the local community will assist in the construction of nest boxes. We currently have the first batch of logs ready and waiting to be transformed (Figure).

Figure 5. From left, Vuyani, Sakhi, Wanda, Siya and Yamkela shifting a pine log that will be made into a Cape Parrot nest box.

Installation of new nest boxes

“Installation of nest boxes. May-August 2020. Using a pulley system, our research team will carefully raise and install nest boxes in the forest where natural nesting sites are lacking.”

This will be shifted to May-August 2021, due to delays with the construction of the nest boxes.

Data analysis and write-up

“Data analysis and write-up. September 2020- September 2021. Results will describe: characteristics of natural nests, breeding behaviour and success in natural nesting sites from 3 seasons: 2017/2018 to 2019/2020, characteristics of new artificial nests and the selection of sites for artificial nests.”

We have begun with data analysis and write up of the paper describing the breeding ecology of the species. We have characterized natural nesting sites, described breeding behaviour and calculated success in natural nesting sites. Although the data on breeding success is difficult to analyse due to so many nests being inaccessible, the pole cam and drone will allow us to gather much more detailed information starting with this season.

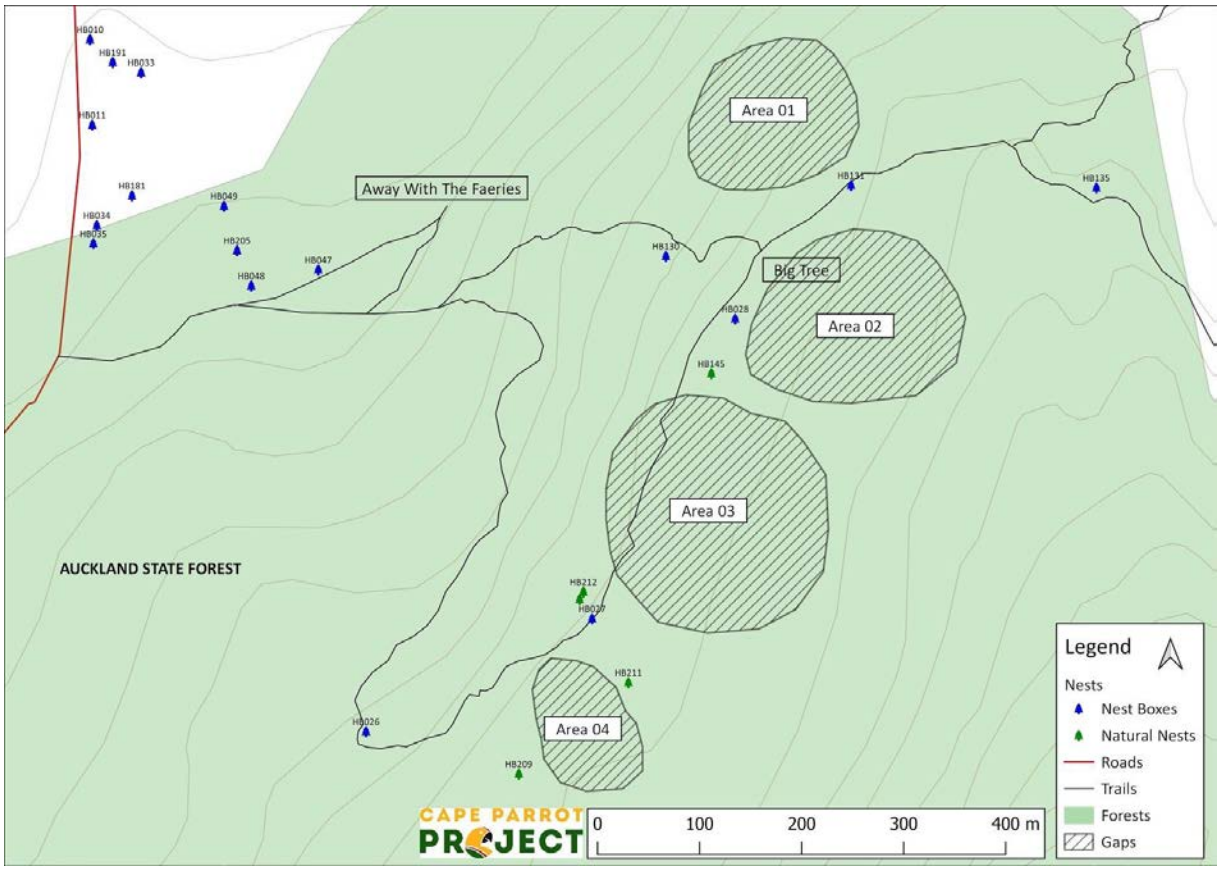
Conclusion

This year certainly has been a lot different to what was planned. Despite the set-backs, we are thrilled at the fact that our endangered national Parrot is breeding once again! We have been able to successfully use the pole camera and drone to identify and access occupied and potential natural nesting sites high up in the indiginous forest canopy that otherwise would have been impossible to reach. We are gathering never-before-seen footage of the inside of these cavities, and tracking the progress of nesting pairs. It's an unbelievably exciting time for the Project, and we are extremely grateful for Rufford’s partnership, in helping us to do the best we can to monitor their breeding success and ensure that future generations have sufficient nesting sites to grow the population to a more sustainable size.

Thank you, The Rufford Foundation, for your support!

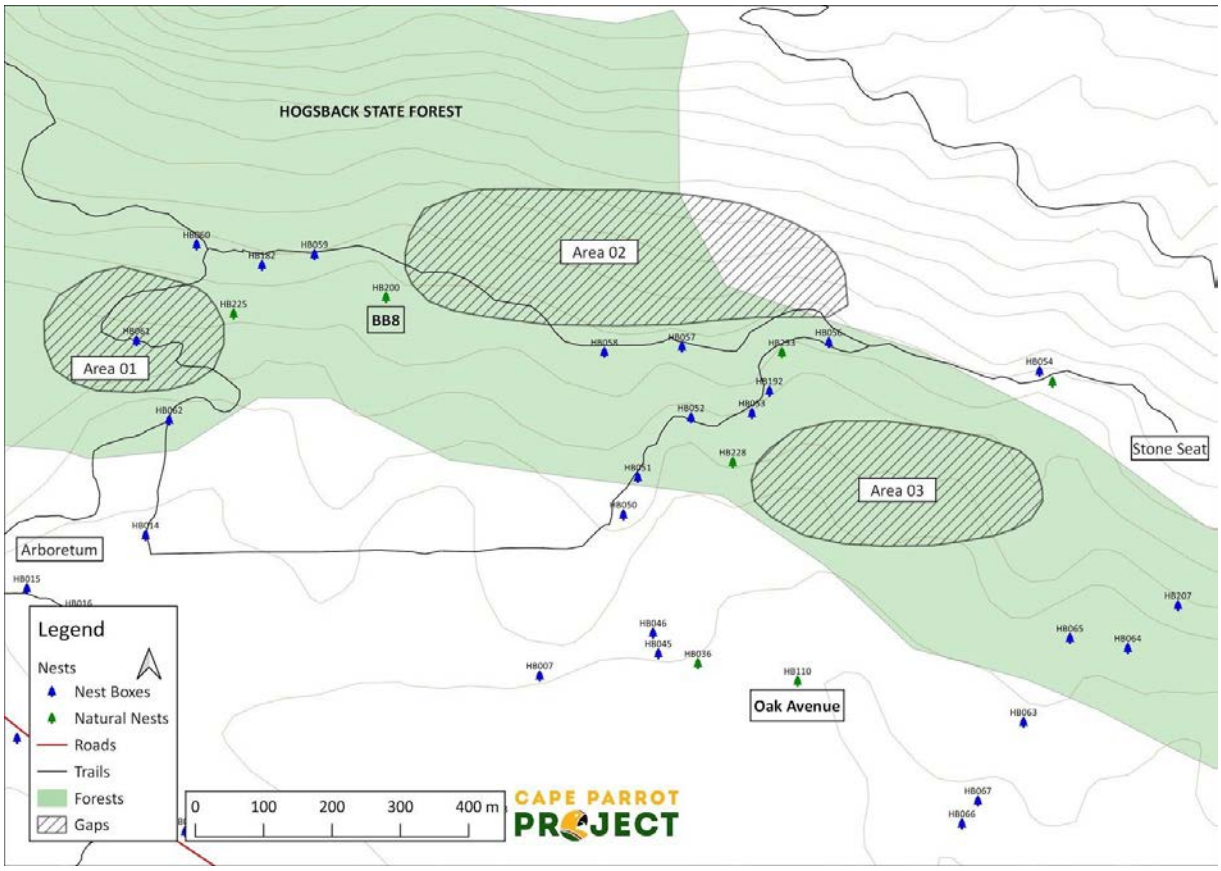
Appendix I

Map of Auckland State Forest showing four zones devoid of Cape Parrot nesting sites which could be suitable areas for the installation of nest boxes.



Appendix II

Map of Hogsback State Forest showing four zones devoid of Cape Parrot nesting sites which could be suitable areas for the installation of nest boxes.



Appendix III

Map of Schwarzwald Forest showing four zones devoid of Cape Parrot nesting sites which could be suitable areas for the installation of nest boxes.