



# 2021 in review



## Hello everyone!

Welcome to our summary of our work on Artemis in 2021.

We've included quite a bit of info here and we encourage everyone to read it with a cuppa. But if you're pressed for time, here are the main highlights:

- [10.4 hectares of critical habitat restored at 15 locations on Artemis.](#)
- [44 Golden-shouldered Parrots colour-banded, which are now providing information about changes in population size and survival rates.](#)
- [8 feral cats tracked with GPS devices, which showed they were not attracted to habitat restoration areas.](#)
- [Vegetation surveys repeated after 20 years, showing habitat thickening is widespread on Artemis.](#)
- [Butcherbird studies reveal tiny home-ranges, group living and an all round very high density in thick habitat.](#)
- [Special conservation designation added to Artemis' title, meaning we are compliant with QLD Veg. Management Act.](#)

- [Successful testing of a feral pig baiting system that excludes non-target species.](#)
- [Training workshops with 3 Indigenous Ranger groups.](#)

For those people unfamiliar with the problems facing Golden-shouldered Parrots and what we're doing about it, here are links to two very short summaries:

- [Why we're worried about Golden-shouldered Parrots.](#)
- [Our practical solutions to bring them back from the brink.](#)

We have big plans for Artemis in 2022. Funding permitting, we have identified a further 50 hectares of parrot habitat that urgently requires restoration. This includes areas where parrots haven't been seen in 10 years. So we are excited about the prospect of being able to help parrots regain some of their former distribution.

We hope you enjoy reading about our achievements in 2021 and we look forward to bringing you more updates in 2022.

Best wishes,  
Artemis Nature Fund

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**A reminder about why we're worried about Golden-shouldered Parrots**

Most people who receive this email will already know about the worrying situation with Golden-shouldered Parrots. But to recap:

- since the 1920s they have disappeared from **more than half of their range**
- the recent Action Plan for Australian Birds 2020 estimates there are **770-1100 individuals left in the wild**
- on ARTEMIS numbers have dropped from several hundred to about **50 birds** over the past 10 years
- once open habitats have become **thick with trees**, which has **increased predation** on parrots

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Golden-shouldered Parrot habitat on Artemis 20 years apart (Left: 2001, Right: 2021)

### **Habitat change and predation**

In May 2021, with the help of botanists Wendy Cooper & Rigel Jensen, we revisited vegetation survey plots that were measured 20 years ago by Sue Shephard, Gay Crowley and Stephen Garnett. We found that the **woodland thickening is widespread** on Artemis within practically all Golden-shouldered Parrot habitats.

Our work on pied and black-backed butcherbirds has shown that these **predators now occur at very high densities** on Artemis. Some of the key things we have learned about butcherbirds are:

- They often live in groups (up to 5 for pied and 6 for black-backed). This probably relates to limited territory vacancies.
- Despite > 70 individuals now wearing coloured leg bands, the majority of sightings still involve unbanded birds (within a 810 ha study area). This suggests a large population size.
- GPS tracking has revealed small home ranges: about 8 ha for pied and 3 ha for black-backed.

An increased density of ambush predators, such as butcherbirds and feral cats, who hunt in thicker habitats has meant that parrots are more **frequently killed** while nesting, feeding and drinking. You can read more details about the vegetation and butcherbird work [here](#).

The changes we observed are due to a complex interplay involving differences between how trees and grasses recover from fire during dry times versus wet times. Basically, regular burning when soil is dry, plus grazing, has **allowed small trees to escape the grass layer** that normally shades them out and stops them from becoming trees.



Wendy Cooper, Rigel Jensen and Sue Shephard surveying ground layer vegetation as part of the baseline monitoring on Artemis, May 2021

## **Practical actions to restore habitats and drive down predation**

To save Golden-shouldered Parrots on Artemis, we need to reduce predation pressure. This is best done by restoring habitats to their natural, more open structure.

Previous research has shown that fires that burn during the storm season, when soil moisture is high, can **maintain the open structure** of habitats by limiting the growth of seedlings, suckers and small saplings.

But **fires cannot kill larger trees** that are causing thickening on Artemis. Instead, large trees need to be **manually razed** to ground level, where regenerating seedlings or suckers can be suppressed by shade competition from grasses and subsequent fires lit during the storm season.

**THIS MANUAL WORK IS WHAT WE NEED TO DO TO SAVE GOLDEN-SHOULDERED PARROTS ON ARTEMIS.**



ANF team member Patrick Webster prepares for a session restoring parrot habitats.

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## Keeping on the right side of the law

At face value we are clearing native vegetation, even if the trees we need to clear shouldn't be there. This means we need to comply with Queensland's *Vegetation Management Act 1999*.

It has been a challenge to navigate our way through that process but we succeeded in June 2021 with the **establishment of a *Voluntary Declaration (VDec)*** area. This is a special conservation designation added to the title of the property, which recognises the high conservation values of specific parts of Artemis. Restoration actions that **protect and enhance** these values, including clearing and thinning, can be conducted within the *VDec* area.

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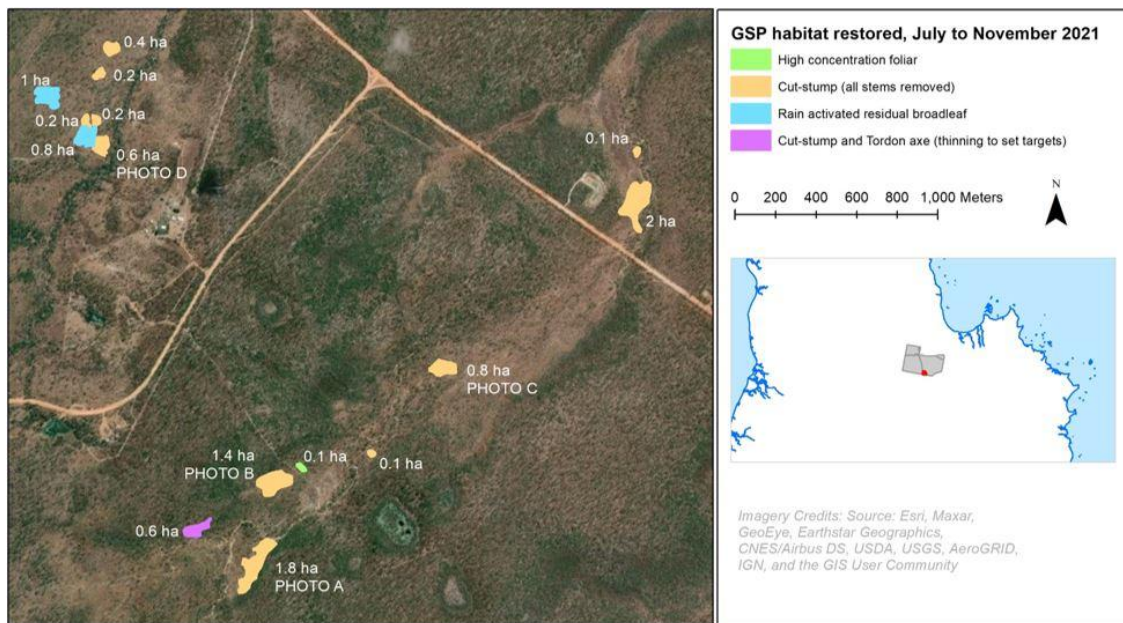


Vegetation management expert Geoff Messer overseeing clearing work right next to a tall termite mound parrot nest.

## All systems go

The ink was barely dry on the VDec when in July we started razing trees to restore critical Golden-shouldered Parrot habitats. Working closely with vegetation management expert Geoff Messer, we developed a set of techniques that were dependent on each situation. For example, in areas that should be completely open grasslands we use a pelletised herbicide called "Graslan" that is activated by rain to only kill trees and leave the grasses intact. At other places we aim for instant knockdown of trees using clearing saws and chainsaws, with follow-up herbicide treatment. Agricultural companies FMC and Corteva generously donated the products we needed in 2021

By early November, we had restored **10.4 hectares of habitat at 15 locations** on Artemis





Top: Map showing restored habitat areas on Artemis (July to November 2021)  
Bottom: Example of a 1.8 hectare area we restored to completely open grassland.

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## **Monitoring impacts**

Our aim is to grow the population of Golden-shouldered Parrots on Artemis by reducing predation and expanding the area of suitable habitat. One of our challenges - and a challenge for all conservation programs - is working out how best to measure progress towards the aim. We are doing this in a number of ways, including measuring responses in vegetation, termite mounds (parrot nests) and butcherbirds. In 2021 we spent a lot of time monitoring the response in two other important factors: the parrots themselves and feral cats.

## **Parrot survival and population growth**

First, we are monitoring the change in parrot population size and survival using colour-banding. Parrots are caught in mist-nets and fitted with unique combinations of coloured leg bands. This is a highly regulated activity requiring



several permits and a licence. As of October, we had caught, banded and successfully released **44 parrots**.

Following banding, we use automatic cameras at supplementary feeding stations to check who's coming and going, which will ultimately tell us about individual survival. While it's early stages yet, we've already gathered some good information, such as the return of an adult male who was banded among the first batch of 8 birds in December 2020; so he's still around after 310 days. What's more, in April, this bird bred at a nest about 800-m from where he was banded. Colour-banding allows us to marry together the condition of nesting habitat (thick versus open) and survival. This provides us with the **feedback necessary to tweak management** should we not see the result we are expecting.

Censuses at feed stations and waterholes allow us to count the proportion of banded to unbanded birds, which is directly related to population size. Interestingly, towards the latter part of the October catching session we began to catch many more banded birds than unbanded birds. This provided us with the first insight into their true population size, which - given we had banded around 40 birds at the time - means we talking about a population size of around **50-60 birds**.



Lama Lama Ranger Alison Liddy with ANF team member Henry Stoetzel preparing to release a young male parrot after colour-banding.

## Feral cat response

One of the techniques we use to restore habitats results in the accumulation of fallen timber, branches and leaves. Depending on the location and habitat, we also create "edges" between the grasslands and adjacent woodlands. Early dry season and storm burning are also important tools we use for habitat restoration and management. Each of these things could potentially benefit feral cats, making it possible that our actions could inadvertently attract cats to important parrot nesting areas.

To investigate this, we fitted GPS tracking collars to a sample of feral cats near areas where intensive management actions were carried out. This gave us great insights into the potential problem of attracting cats and also general information about cats and how we can better manage them.



The key results of the work were:

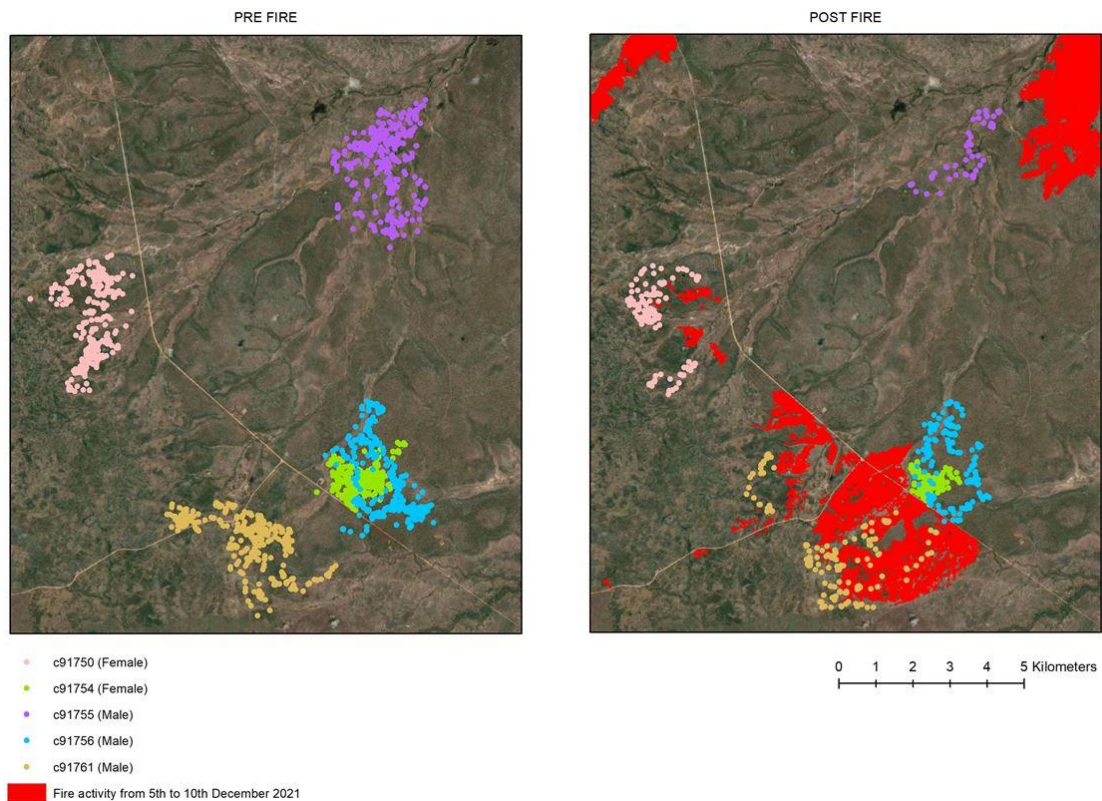
- trapping rates suggest a **very high density of feral cats on Artemis** (our trap success was about 7 per 100 traps nights; the norm is about 1).
- home range for males was about 680 hectares, which is about twice the size for females
- despite the significant difference in home range size between males and females, the average distance they moved each night was no different, at about 4-5 km
- cats showed some activity during daylight hours, meaning that they could easily come across feeding or drinking Golden-shouldered Parrots
- **cats were not strongly attracted to the fires** we lit in December as part of habitat restoration work; only one cat made visits to scars after fires, with 4 others showing little or no interest.

- **cats were not strongly attracted to restoration areas**; only one cat visited restoration areas more than once, although these visits still only amounted to about 5% of all GPS points logged for that cat

The implications of these results for managing parrot habitats are:

- Given the high density of feral cats on Artemis, that they occur right through parrot habitat, and are hunting sometimes during the day, we need to **invest in regular cat control**. This is an important finding, because cats are difficult and expensive to control, so now we can justify this investment.
- There is no urgent need to incorporate cat control into those areas which are restored and burnt. That said, such places can provide better opportunities for detection and removal by shooting, so should be visited during general cat control work.





Top: Accumulation of small trees felled during habitat restoration could provide feral cats with resting or ambush locations.

Bottom: Feral cat activity (coloured dots) around fires (red areas) lit in early December as part of our habitat restoration work.

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## A better way to remove feral pigs from parrot habitats

Feral pigs are a destructive pest on Artemis. They love to eat perennial grasses that are important foods for Golden-shouldered Parrots and other native wildlife.

In 2021 we trialled a new poison bait delivery system which only pigs can access. They are the only animal with enough strength to lift the sliding door from its shut position to access the bait. This significantly reduces the risk of poisoning non-target animals.

After two months of pre-feeding and checking that non-target species were not

accessing non-poisoned food, Cook Shire visited the trap site in November to arm the system with 1080. Camera trap monitoring suggests that up to 20 pigs have now been removed from Golden-shouldered Parrot habitat.

We have plans to remove many more pigs from parrot habitats in 2022.



A group of feral pigs accessing cracked corn during pre-feeding trials on Artemis in September.

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## Ranger training

In October, three Indigenous Ranger groups visited Artemis to learn about the ecology of Golden-shouldered Parrots and how to do surveys to find out if they are on their country. They learned from Sue Shephard - who has done more Golden-shouldered Parrot surveys than anyone.

Each of the groups plan to do surveys in 2022 and each is dealing with slightly different circumstances:

- Mary Valley Rangers will be re-visiting areas where parrots nested within the last few years.
- Lama Lama Rangers will be working in their country (near Coen) where parrots haven't been recorded for close to 70 years.
- Kunjen Rangers will be looking in country where parrots have never been recorded, but supports suitable habitat.



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