NRM SOUTH
NATURAL RESOURCE MANAGEMENT

Image credit: James Pay

# WEDGE-TAILED EAGLE RESEARCH FUND

## 2022 ANNUAL REPORT

*Prepared for Wild Cattle Hill Pty Ltd.*

SEPTEMBER 2022

# CONTENTS

# GLOSSARY

| | |
|---|---|
| ANU | Australian National University |
| DCCEEW | Commonwealth Department of Climate Change, Energy, the Environment and Water |
| EMOP | Eagle Mortality Offset Plan |
| FPA | Forest Practices Authority |
| NRET | State Department of Natural Resources and Environment Tasmania |
| TAC | Technical Advisory Committee |
| UTas | University of Tasmania |
| WTE | Wedge-tailed Eagle, *Aquila audax fleayi* |

# INTRODUCTION

This is the third Annual Report for the Wedge-tailed Eagle (WTE) Research Fund ('The Fund'). The Fund has been operating in accordance with requirements and is enabling the support of high-quality research on Tasmanian Wedge-tailed Eagles. It is unlikely this research would have been supported without The Fund. The projects being supported will provide valuable advances in the understanding of the WTE population in Tasmania, which will assist with achieving the conservation outcomes for the subspecies.

# BACKGROUND

The Cattle Hill Wind Farm was approved by Tasmanian State Regulator in 2012 and by the Commonwealth Department of Environment and Energy (now the Department of Climate Change, Energy, the Environment and Water, DCCEEW) in December 2014. A requirement of the approval of the Cattle Hill Wind Farm (as described in the relevant permit conditions) was to develop an offset plan for wedge-tailed eagles (Aquila audax fleayi, WTE).

An Eagle Mortality Offset Management Plan (EMOP) was developed and subsequently approved to satisfy these requirements. The EMOP comprises two components, with the second component describing the Tasmanian WTE Research Fund. The EMOP required that The Fund needed to be established and administered by an independent organisation. NRM South was selected as the administering body for The Fund and a Services Agreement was signed between NRM South and Wild Cattle Hill Pty Ltd on 23rd August 2019.

# OBJECTIVE OF THE FUND

The Fund is designed to offset the impact of WTE mortalities (or injured WTE that cannot be released into the wild) due to collisions with wind turbines at the Cattle Hill Wind Farm. The Fund will only support research relating to the Tasmanian sub-species of WTE and projects based in Tasmania.

The primary purpose of The Fund is to support high quality ecological or other relevant scientific research on Tasmanian WTE, the results of which will assist with the management and protection of the sub-species. The intention is that The Fund continues for the medium term (at least 10 years), hence not all funds will be expended each year. Research will be supported that is scientifically rigorous, conducted by high quality scientists, and which is in accordance with the objectives of the Threatened Tasmanian Eagles Recovery Plan 2006-2010 or any subsequent eagle Recovery Plan.

# PRIORITIES FOR THE FUND

Research supported by The Fund will be consistent with the published recovery objectives of the "Threatened Tasmanian Eagles Recovery Plan 2006-2010" or a subsequently approved version of the Recovery Plan. The EMOP notes that DoEE (now DCCEEW) have indicated they require The Fund to support key scientific research on the sub-species and not other activities, although the State component of The Fund may support education activities.

Suitably qualified researchers[1] will be eligible to apply for funds to support relevant research on WTE consistent with the below priorities. Critical research that can demonstrate a sound experimental design and statistical rigour will be viewed most favourably.

The initial priorities for funding support are:

- Demography of the WTE. This could include studies into the size of the state population (such as an evidence-based population census), fecundity, survival of different age classes, and immigration and emigration intra- and inter-state. Such ecological data could be used to update a Population Viability Analysis.
- The collection of data that will allow an evaluation of the sub-species conservation status against IUCN criteria.
- Quantification of anthropogenic impacts to WTE, such as collisions with vehicles, powerlines, shooting or poisoning, and the development of mitigation measures to reduce these impacts. • Disturbance to nesting WTE. This includes studies into determining the anthropogenic factors that impact on breeding, and quantification of these such as the distance, duration and types of factors that result in impacts to breeding success.
- Strategies to monitor nesting behaviour of WTE. Nests are currently very difficult to monitor due to the need to limit disturbance to breeding birds, hence automated strategies to monitor nests without disturbing eagles will be supported.
- Studies into why WTE collide with wind turbines and strategies to reduce collision rates. Published studies indicate WTE actively respond to and avoid wind turbines, but occasionally collide. Any insights into why they occasionally collide may assist with strategies to minimise collisions.
- Other scientific studies where it can be demonstrated that the research will provide a demonstrable benefit to the sub-species.
- The priorities for funding support may be revised by the panel following any reviews of the EMOP.
- Studies on WTEs required for commercial developments (i.e. conditions of a permit, outside offsets) or studies that are the responsibility of Local, State (including Government Business Enterprises) or Commonwealth Government will not be supported.

# ADMINISTRATION OF THE FUND

NRM South's role is ensure that The Fund is established and administered as described in the Eagle Mortality Offset Plan (EMOP).
Specifically, NRM South's role is to:

- Be responsible for receipt, management and audit of WTE Research Fund.
- Assist with the identification and selection of panel members. The Panel members selected will be agreed by the Tasmanian EPA and delegate of the Commonwealth DCCEEW.
- Host, recruit and administer/support a panel, as prescribed by the EMOP, to prioritise, assess and distribute research funds – approximately two meetings per year.
- Administer reimbursement of panel members reasonable travel costs and hourly payment for attendance at annual meetings.
- Advertise, administer and coordinate research applications, and in conjunction with the panel develop and maintain the assessment process.
- Contract and administer the research funds on behalf of the research panel, including coordination of progress and final reports.
- Provide panel advice and reports to Wild Cattle Hill Pty Ltd and any other contributors to The Fund for preparation and submission to the Regulator (if required).

[1]Must hold a postgraduate degree in science and evidence of the successful publication of relevant, high quality research in peer-reviewed scientific journals or experience and qualifications deemed by the panel to be evidence of equivalent merit. However, proposals to support high quality Honours research will also be considered.

# GOVERNANCE OF THE FUND

The Fund is overseen by an independent Technical Advisory Committee (TAC, referred to in the EMOP as a "Panel").

As described in the EMOP, the TAC comprises:

- A representative of the Department of NRET (currently Dr Rachael Alderman, Threatened Species and Conservation Programs Environment).
- A representative from the administering body, NRM South (Dr Cindy Hull).
- A representative of the DCCEEW (as an observer, Dr Ivan Lawler), and
- At least two scientists experienced in wildlife ecology, with a strong background in research and publishing (Dr Phil Bell and Dr Sarah Munks, both independent consultants with extensive experience working on eagles). These roles were filled following advertising and a competitive selection process.

The role of the Technical Advisory Committee (TAC) is to:

- Review funding applications and select those to be supported.
- Monitor the progress of grant recipients, and
- Determine whether to accept research reports (i.e. whether they fulfill the requirements of support).

Individual members of the Technical Advisory Committee are expected to:

- Actively participate in the review, monitoring and reporting of the Research Fund.
- Attend, either in person or by teleconference, twice annual meetings, and additional meetings, if required.
- Provide reliable, relevant, technical and contemporary advice.
- Comply with relevant NRM South Policies and Procedures, including the Code of Conduct, and any specific requirements of The Fund including Confidentiality; and
- Be an advocate for the research Fund's outcomes.

# ACHIEVEMENTS DURING 2022

The third year of The Fund built on the achievements of previous years.

Details of the achievements:

1. The third deposit to The Fund was received from Wild Cattle Hill Pty Ltd.
2. NRM South reviewed and updated the application process and guidelines for The Fund, which were sent to the TAC for their comment. Some changes were made to the guidelines, clarifying the GST component in grants (as there had been some confusion with one grant recipient during the year).
3. NRM South also reviewed the process and selection criteria for assessing the applications to The Fund, which the TAC reviewed prior to their finalisation. The assessment criteria were simplified by reducing the number of questions around the applicants' qualifications and experience because all applications being received are from high quality applicants, so some of these criteria were not assisting in selecting applications.
4. The third round of grants was advertised in June 2022. Three applications were received and the Fund was once again significantly over-subscribed.
5. Two online meetings were held and out of session work conducted by the TAC. During the meetings, the application details, assessment criteria and the grant applications received were discussed. (Each member of the TAC independently reviewed all applications prior to the discussion of them). Successful recipients were selected.
6. All applicants to The Fund were notified of the outcome of their application. The TAC selected one project for immediate funding and provided the other two applicants the opportunity to rescope and resubmit their applications, to allow them to better align them with the objectives of the Fund.
7. The Funding Agreement contract was reviewed and updated, including with input from an external legal representative.
8. A Funding Agreement has been prepared and provided to the successful grant recipient.

# PROJECTS SUPPORTED IN 2022

Three applications were received in response to the 2022 grant round, with The Fund being oversubscribed by 2.5 times.

The TAC unanimously supported the project "Investigation the spatial ecology and habitat use of Tasmania wedge-tail eagles in the Tasmanian Midlands using high-frequency GPS telemetry" for full funding from:

- Dr James Pay (UTas) Project Lead.
- Dr Amelia Koch (FPA)
- Prof Elissa Cameron (University of Canterbury)
- Jason Wiersma (FPA) and
- Dr Todd Katzner (USGS).

This project will provide information on the spatial ecology and resource use of adult Tasmanian wedge-tailed eagles in the agricultural area of the Tasmanian Midlands. Furthermore, the data from this project will be combined with data from other GPS-tracked eagles across Tasmania to provide a state-wide understanding of how the species uses different landscapes. The insight into the importance of different habitats and the spatial modelling of this information will address two research priorities identified in the Tasmanian wedge-tailed eagle recovery plan (Threatened Species Section, 2006) and by the Technical Advisory Committee.

The TAC agreed that there was merit in the two other applications to the Fund, but both required finessing before they could be supported.

The first was "Engagement that works: building up science and reducing threats for the Tasmanian wedge-tailed eagle" from:

- Dr Clare Hawkins (Bookend Trust, Pennicott Foundation) Project Lead.
- Dr. Angela Dean, University of Queensland.

The TAC saw merit in this project but had some concerns that it did not sufficiently make the case for alignment with the objectives of the Fund, which are quite prescriptive (and relate to the original permit condition on the Cattle Hill Wind Farm). They sought more evidence of how the project would generate tangible benefits to WTEs at its completion. The TAC offered the applicants the opportunity to refocus the project and provide a stronger indication of its alignment with the Fund's objectives, particularly how it will create tangible benefits to the management of WTEs. They allowed six weeks for a resubmission of the application for consideration for funding. In addition, given that the Where, Where Wedgie project which received support from the WTE Research Fund in 2021 had not been completed (it was due for completion in April 2022), it was a requirement for the 2021 project to be completed before additional support could be provided.

And

"Comprehensive analysis of the ecotoxin threat to Tasmanian Wedge-Tail Eagles" from:

- Dr De Stojanovic (ANU)
- Dr James Pay (UTas)
- Dr Catherine Young (ANU), and
- Adam Cistern (ANU).

The TAC also saw merit in this project, particularly the random sampling to understand background levels of ecotoxins but had some reservations about aspects of the project, including:

- The threat to WTE needed to be articulated more clearly. While lead is the implied ecotoxin of concern, the project needed to more clearly identify the ecotoxin the project was focussing on.

- The management implications that would result from quantifying the ecotoxin levels needed to be described. That is, how would this study translate into direct benefits to WTE?
- How would the study manage for seasonal changes in WTE diet and environmental conditions on the presence of ecotoxins in samples?
- The salary allocated to Dr Young required more clarity ($50,100 GST exclusive) particularly given that $27,806 was allocated for inkind contribution from other researchers. The TAC would like this to be reconsidered as it did not appear to provide good value for money.

The TAC also offered the applicant the opportunity to rescope the project as a pilot to demonstrate validity of the method and address the above concerns. Six weeks was provided to rescope and resubmit the project (including reassessing the budget) for consideration by the TAC.

# STATUS OF FUNDED PROJECTS » 2020

The project selected for funding in 2020 ("Investigating the spatial ecology and habitat use of the Tasmanian wedge-tailed eagle in unmodified landscapes using high-frequency GPS telemetry" from Professor Cameron and Dr James Pay (UTas), Dr Amelia Koch and Jason Wiersma (FPA), Dr Todd Katzner (US Geological Society)) was completed and the final report received. All payments have been made to the recipients.

## FINAL REPORT ON THE PROJECT

As indicated previously, the project has experienced delays, which have been outside the control of the investigators. The GPS units were ordered but issues were encountered as detailed in the 2021 Annual Report. The investigators sought an extension from the WTE Fund, which the TAC reviewed and then granted.

The following is a summary from the project team of what has been achieved on the project:

Sites were selected based on the following criteria (see Figure 1) –

1. Large areas of reserved land – We selected areas >30 $km^2$ to maximise the area of the home-range of each GPS-tracked eagle that is over reserved land.
2. Known eagle nests or adult eagle activity - The behaviour of adult wedge-tailed eagles is strongly associated with nesting locations (including outside of the breeding season). We therefore selected study areas based on known wedge-tailed eagle nests, with evidence of activity within the last five years (DPIPWE, 2021).
3. GSM data coverage - The GPS transmitters used for this project require mobile phone data signal to transmit the data back to the research team. We therefore targeted areas with reasonable coverage as adult eagles are unlikely to travel large distances from the place of capture.
4. Accessibility - The field work for this research is equipment intensive and requires vehicle access to areas where trapping is attempted.

Five GPS transmitters were deployed. All analyses and data summaries provided were based on data collected from the date the GPS-transmitters were attached until May 25th, 2022. During this period, we collected 246,563 location fixes from the five GPS-tracked eagles.

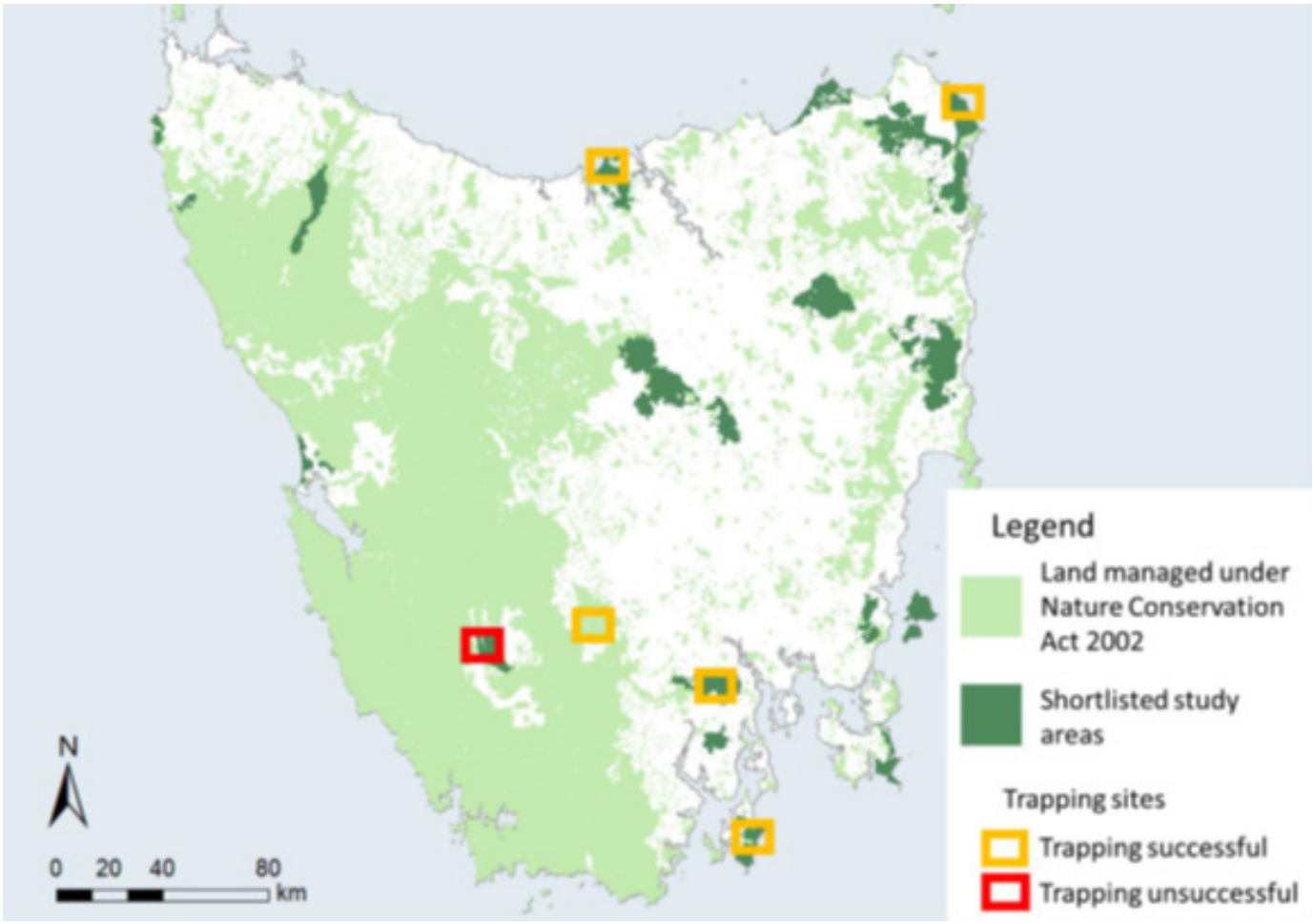


*Figure 1: Map of Tasmania highlighting areas managed under the Nature Conservation Act 2002 and areas short-listed as study sites for this project. Squares indicate the locations that we trapped during the project field work. We carried out trapping at six locations, with one location being unsuccessful.*

Some of the key results were:
The 50% UD (core home range) size was similar for William (5.2 $km^2$), Floki, (5.0 $km^2$) and Bruny (3.9 $km^2$), whereas Blodwyn (9.5 $km^2$) and Giolla (10.7 $km^2$) had much larger 50% UDs (which were also larger than any of the other adult wedge-tailed eagles we are tracking). The mean 50% UD was 6.9 km2, which is slightly larger than the 5.1 $km^2$ mean for resident birds we are tracking in other areas of Tasmania. The 95% UDs followed a similar pattern, with William (19.8 $km^2$), Floki (16.9 $km^2$), and Bruny (19.8 $km^2$) having smaller 95% UDs than Blodwyn (39.2 $km^2$) and Giolla (33.7 $km^2$). The mean 95% UD for the five eagles in this project was 25.9 $km^2$, which is also slightly higher than the 21.8 $km^2$ mean for resident birds we are tracking in other areas of Tasmania. However, UDs are sensitive to the number of fixes and time period used to calculate them (Girard et al., 2002). A full year of GPS data for each individual will allow us to make more defensible conclusions on the UDs of the birds tracked for this project, as well as comparisons with the other birds we are tracking in more anthropogenically modified landscapes. Once we have the larger dataset, we will also be able to assess the landscape and landcover characteristics of the 95% and 50% UDs, and assess how these influence UD size and if the amount of reserved land within the UD influences UD size and shape.

The eagles showed a strong avoidance for landcover classifications of non-native vegetation, residential, and other natural, which were also habitat types that contributed very small areas within the available habitat areas of the eagles. Eagles with any plantation forest within their available habitat area (Blodwyn, Giolla, and Floki) also avoided this landcover type. Dry eucalypt and wet eucalypt forests were generally used by the eagles proportional to their availability, whereas Blodwyn and Giolla selected for areas of non-eucalypt forest. There was a lot of individual variation in how the eagles used other landcover categories. Selection ratios for agricultural areas were particularly varied between individuals, with the selection ratio values strongly driven by the availability of agricultural areas within the available habitat area.

In the respect of the Fund, this project is completed, but the GPS units are continuing to track the eagles and obtain valuable data. Dr Pay has committed to providing the WTE Research Fund the final analysis of the data when it is in (anticipated to be in second half of 2023).

## » 2021

Two projects were supported in 2021, one ("Estimating the population size of the Tasmanian wedge-tailed eagle (*Aquila audax fleayi*) using modern genetic techniques") was fully funded and is due to be completed at the end of September 2022, and the second ("Monitoring wedge-tailed eagle population trends") was partially supported. The latter project was due for completion in April 2022, but has been delayed due to illness and other issues. The final payment for both projects will be made when final reports are received.

# NEXT STAGE IN THE FUND

The funding agreement for the new project (Pay et al. Midlands GPS tracking) will be finalised in the next few weeks. If rescoped projects are received from the two other applicants, they will be reviewed by the TAC and determined if they will be supported.

It is anticipated that the next round of grants will be advertised in the first half of 2023. The documents relevant to this next round will be reviewed prior to the next funding round.

Each year the learnings from the previous round of grants are evaluated and then used to inform the approaches for the upcoming year. Some of the key learnings from the 2022 include:

- The number of applications to the Fund is declining each year. This was discussed at a TAC meeting. It was agreed that it may be necessary to be more proactive in driving research in key areas by actively supporting Honours or Postgraduate studies studying specific topics.
- Some applicants were confused about how to manage GST in their applications. The guidelines and application form were made clearer about how to document GST, but it was also decided to provide additional funds for the GST component to all successful grant recipients as some had not adequately budgeted for it. This had a small impact on the amount of funds available in the 2022 round.
- There were further minor refinements to the assessment criteria to assist with selecting projects.

# FINANCIAL STATEMENT

| **Details** | **2021** | |
|---|---|---|
| | *Contribution* | *Costs* |
| Funds received (incl. GST) | $94,578.94 | |
| Bank interest | $7.12 | |
| Set up administration cost (15%) | | $0 |
| Ongoing administration (8%) | | $6,878.47 |
| Advertising for grants | | $95 |
| Graphics design for application and advertisements | | $250 |
| Milestone payments to grant recipients | | $52,036.36 |
| GST paid | | $5,263.14 |
| Total | $94,586.06 | $64,522.97 |
| Carried forward | | $118,248.14* |

**majority allocated to grant recipients. Remaining funds will be allocated to future grant rounds*