NRM SOUTH
NATURAL RESOURCE MANAGEMENT

Image credit: John Tongue

WEDGE-TAILED EAGLE RESEARCH FUND

2021 ANNUAL REPORT

SEPTEMBER 2021

CONTENTS

GLOSSARY

ANU	Australian National University
DAWE	Commonwealth Department of Agriculture, Water and the Environment
DPIPWE	State Department of Primary Industry, Parks, Water and Environment
EMOP	Eagle Mortality Offset Plan
FPA	Forest Practices Authority
TAC	Technical Advisory Committee
UTas	University of Tasmania
WTE	Wedge-tailed Eagle, *Aquila audax fleayi*

INTRODUCTION

This is the 2021 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 Agriculture, Water and the Environment) 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 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. 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.

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.

[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.

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 relevant 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.

GOVERNANCE OF THE FUND

The Fund is overseen by an independent Technical Advisory Committee (TAC).

The TAC comprises:
- A representative of the Department of Primary Industries, Parks, Water and Environment,
- A representative from the administering body, NRM South,
- A representative of the Commonwealth Department of Agriculture, Water and the Environment (as an observer) and;
- At least two scientists experienced in wildlife ecology, with a strong background in research and publishing. 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.

Image credit: Eric Woehler

ACHIEVEMENTS DURING 2021

The second year of The Fund built on the achievements of the first year.
Details of the achievements:

1. The second 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.
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.
4. The second round of grants was advertised in May 2021. Five applications were received.
5. Grant applications received were reviewed and discussed by the TAC.
6. All applicants to The Fund were notified of the outcome of their application.
7. Funding agreements were prepared and provided to the successful grant recipients.

PROJECTS SUPPORTED IN 2021

Five applications were received to 2021 grant round, with The Fund once again significantly (100%) oversubscribed.

The TAC unanimously supported one project to fully fund "Estimating the population size of the Tasmanian wedge-tailed eagle (*Aquila audax fleayi*) using modern genetic techniques" from:

- Dr James Pay (UTas) Project Lead
- Associate Professor Chris Burridge (UTas)
- Dr Catherine Young (ANU) Adam Cisterne (ANU)
- Dr Judy Clarke (TMAG), Dr Jakob Butler (UTAS)

The project will use modern genetic analysis techniques to develop more precise population size estimates. Researchers will also be investigating how the Tasmanian Wedge-tailed Eagle population has changed over the last century by analysing and comparing contemporary and historical museum specimens.

The TAC agreed to partially fund "Monitoring wedge-tailed eagle population trends" from:

- Dr Clare Hawkins (Bookend Trust, Pennicott Foundation) Project Lead
- Dr Joanne Potts (The Analytical Edge)

This project will analyse data collected by the Where? Where? Wedgie! project, a state-wide population long-term monitoring project that aims to guide recovery efforts for Tasmanian Wedge-tailed Eagles. Funding will be used to assess and control for variation in detection from the survey volunteers, for example how landscape features or prevailing conditions might impact on visibility.

The project was only partially funded because the guidelines for The Fund state that education projects cannot be supported. Hence, the component of the project that will be supported is for analysis of existing data and not the other components requested relating to promoting the project and education of participants.

Both of these projects are addressing one of the key issues for the Wedge-tailed Eagle population in Tasmania, understanding its size and status, but using very different techniques. Knowing the size of a population is an important step in developing conservation strategies, but this isn't always a simple task, especially where a species is elusive and has a big home range.

The funding agreements for both these projects have been drafted and sent to the grant recipients.

PROJECT FUNDED IN 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)) continues to be supported.

The grant is being paid in three instalments. The first instalment was paid upon signing of the funding agreement, and the second instalment was paid in May 2021 upon receipt of the mid-term progress report. The final payment will be made on completion of the project and once the final report is received.

PROGRESS ON THE PROJECT

Image credit: Dr James Pay, as part of a project funded by Woolnorth Renewables.

This project has experienced some delays, which have been outside the control of the investigators. The GPS units were ordered but issues were encountered as detailed in the excerpts of the mid-term report below. The investigators sought an extension from the WTE Fund, which the TAC reviewed and then granted.

Since the submission of their progress report, a GPS unit has been attached to an adult eagle in August and it is hoped more will be attached before the field work must cease for the eagle breeding season (to minimise disturbance to breeding birds).

The following is a summary from the project team of what has been achieved on the project to date (taken from the mid-term report):

We identified potential study areas during Q4 2020. We selected sites based on the following criteria –

1. *Large areas of reserved land - to maximise the likelihood that the entire home-range of each GPS-tracked eagle is within land managed under the Nature Conservation Act 2002 we have selected areas >30 km^2.*
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 have 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. It was therefore important that we 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.*

The shortlisted study areas are presented in Figure 1.

Most of the extensive areas of reserved land in the west of Tasmania were unsuitable for the study. This was mostly due to these areas not meeting selection criteria 2, 3, or 4. During the selection process we first intersected all areas managed under the nature conservation act with areas that have 3G GSM coverage (see Figure 2). This excluded most of the reserved areas in the west of Tasmania from the study. There were some small areas of the Tasmanian World Heritage Area (TWHA) that had 3G GSM coverage, but most of these were along the eastern edge, where known eagle nests were associated with forestry landscapes.

Accessibility also precluded much of the extensive reserved area from inclusion in the study, as we require vehicle access to transport equipment. Finally, we checked known wedge-tailed eagle nests within the areas that met criteria 3 and 4.

There has been considerably less search effort in the extensive reserved areas of Tasmania, and

there is often a lack of information on nest use over the last 10 years for the nests that are known. To maximise the efficiency of field work (and the likelihood of catching five eagles within the allocated field budget), it is important that we target areas nearby to frequently used nests or areas with known adult eagle activity. For these reasons there were limited areas within the west of Tasmania that could be shortlisted. That said, we are checking for any adult eagle activity whilst we are travelling between field sites, which will allow us to potentially include other areas in the study that met criteria 1, 3, and 4 (but not criterion 2 based on Natural Values Atlas data; DPIPWE, 2021).

We purchased 24 units (including the five for this project) during October 2020. The units initially arrived on schedule (January 2021), however, there was a hardware issue with the transmitters meaning they could not connect to Tasmanian GSM networks. We therefore had to send the GPS-tracking units back to the manufacturer to update the hardware. We eventually received the functional transmitters mid-March 2021.

This delay has impacted our current field season. We have a tight field work schedule this year due to several different projects contributing to the broader study involving the GPS-tracking of 50 adult wedge-tailed eagles across Tasmania. The issue with the transmitters has meant that field work for some of these projects has had to be rescheduled for next year. We have prioritised two projects for completion during the current field season (April-August 2021), the WTERF project and a collaboration with the Forest Practices Authority (FPA) testing for evidence of disturbance caused by forestry operations within certain distances of active eagle nest. The field work for the FPA project is currently underway, as it requires the GPS-tracking of adults at target nest sites early this year to allow time for the forest industry to arrange operations in the target zones. The field work for the WTERF project will be carried out June-August 2021 (see Table 1).

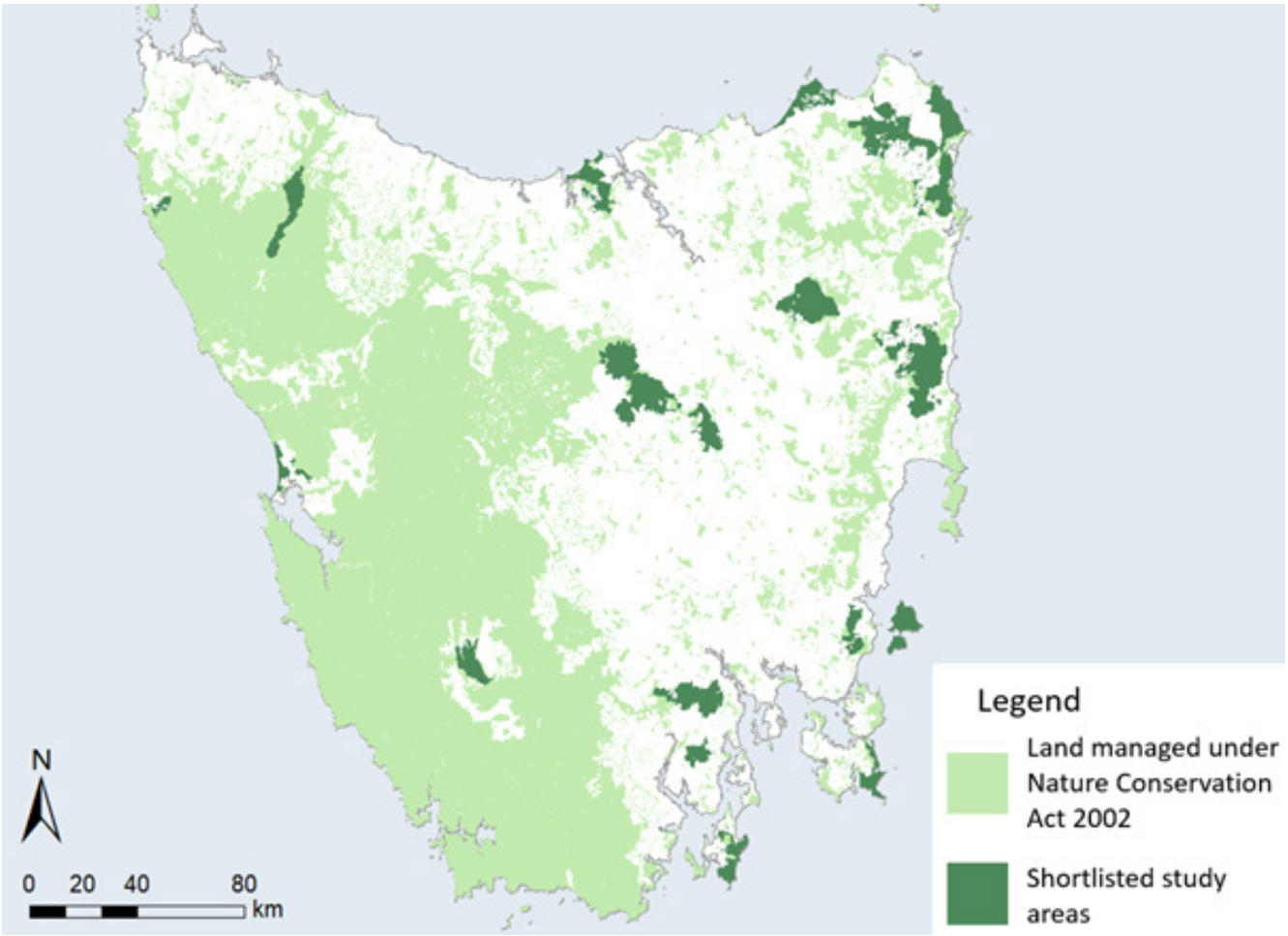

Figure 1. Map of Tasmania highlighting areas managed under the Nature Conservation Act 2002 and areas short-listed as study sites for this project. We have selected larger areas of reserved land to increase the likelihood that the home-ranges of the GPS-tracked individuals are within the protected areas. The shortlisted study areas also have sufficient GSM data coverage to allow data transmission from the GPS-tracking units.

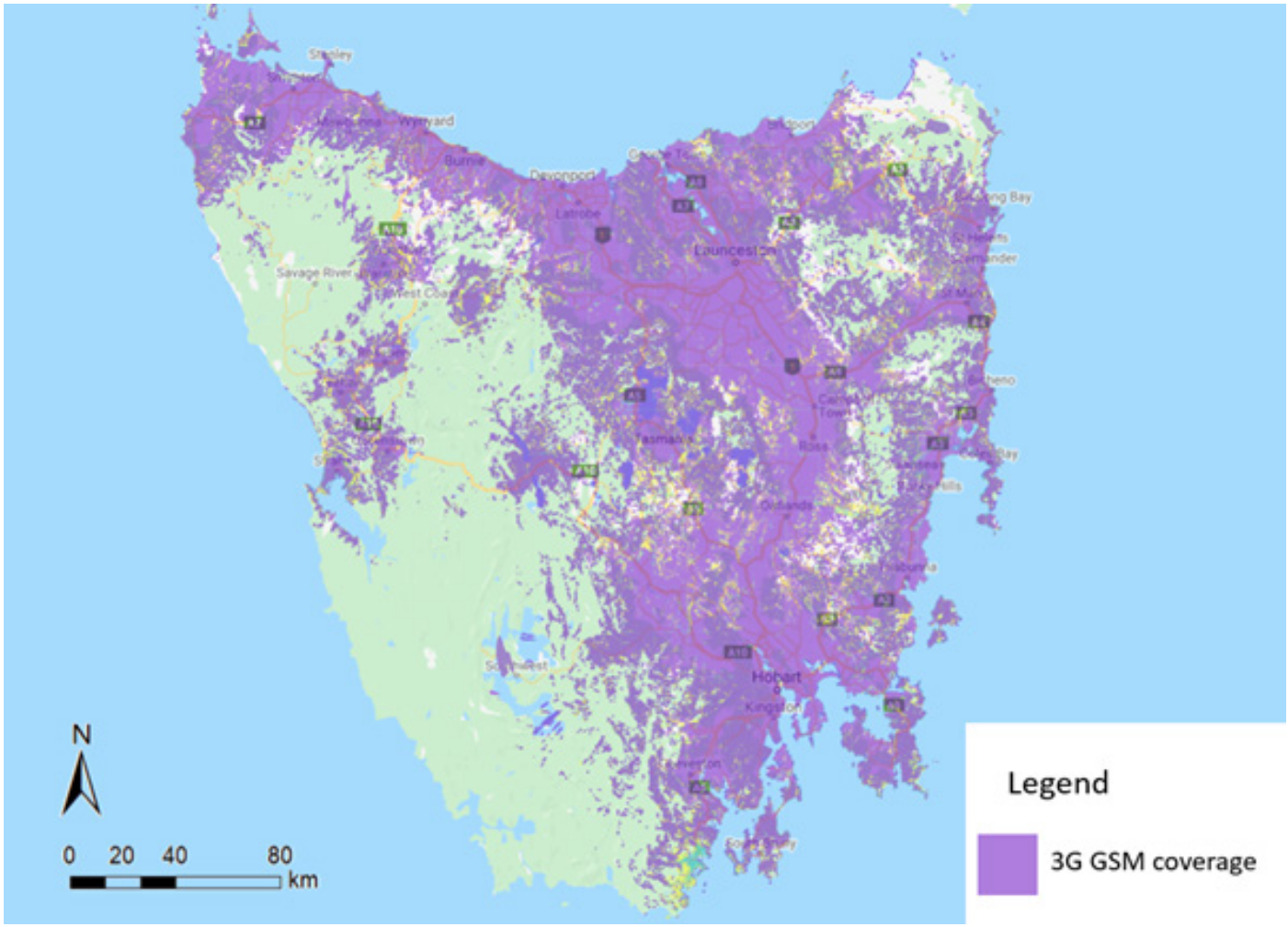

Figure 2. Map of Tasmania presenting the areas with 3G coverage.

Table 1. Timeline of project milestones, including the members of the project team responsible for each task. The initial timing of task completion presented in the original project proposal as well as the updated schedule are presented. Deliverables that have been impacted by the delay to the project are highlighted.

Item	Details and task responsibility		Timing	
			Initial	Updated
Site selection	Trapping sites selected. Coordinate with rangers and land managers to plan field work. (Responsible - JP, JW)	2020	Oct –Dec 2020	*Completed*
Equipment purchases	Purchase GPS-telemetry units and required field work equipment. (Responsible - JP)		Oct 2020 – Feb 2021	*Completed*
Field work for GPS-tracking eagles	Conduct field work to attach GPS-transmitters to five adult Tasmanian wedge-tailed eagles. (Responsible - JW, JP)	2021	Mar-Jun 2021	Jun – Aug 2021
Blood analyses	Blood samples analysed to confirm genetic sex of each eagle and to assess contaminant (lead and rodenticides) concentrations. (Responsible - JP)		Jun 2021	Sep - 2021
Data collection and monitoring	Continued collection and monitoring of GPS-tracking data. Field work to check eagles as required. (Responsible - JP, JW)		Jun 2021 – Jun 2022	Aug 2021 – Jun 2022
Preliminary report	Initial report on the habitat use of the five GPS-tracked eagles using the first 6-months of data. (Responsible - JP, EC, TK)		Oct 2021	Jan 2022
Report	Final report on the habitat use of the five GPS-tracked eagles. A year of GPS-data is needed for a comprehensive analysis that allows the incorporation of seasonal behavioural changes. (Responsible - JP, EC, TK)	2022	Jun 2022	Jun 2022
Data collection and monitoring	Continued collection and monitoring of GPS-tracking data for the first three-years of the lifespan of the GPS transmitters. Field work to check eagles as required. (Responsible - JP, JW)		Jun 2022 – Jun 2024	Jun 2022 – Jun 2024
Scientific publication on habitat use by Tasmanian wedge-tailed eagles	The GPS-data from the five eagles tracked during this project will be combined with data from ~45 GPS-tracked adult wedge-tailed eagles from throughout Tasmania for a comprehensive analysis of habitat use. Findings will be submitted for publication as a scientific paper. (Responsible – JP, AK, JW, EC, TK)		Aug 2022	Aug 2022

NEXT STAGE IN THE FUND

The funding agreements for the new projects will be finalised in the next few weeks. The support for the existing fund will continue under the updated timeframes.

It is anticipated that the next round of grants will be advertised in early 2022 (similar to that for 2021). The documents relevant to this next round will be reviewed prior to the next funding round.

REFERENCE

DPIPWE, 2021. Natural Values Atlas, Resource Management and Conservation Division, State Government of Tasmania, Hobart.