

# LORD HOWE ISLAND BOARD

## Business Paper

### OPEN SESSION

#### ITEM

Update on revegetation of Blackburn Island.

#### RECOMMENDATION

That the Board note the information.

#### BACKGROUND

The Lord Howe Island Biodiversity Management Plan 2007 includes several actions relevant to the revegetation of Blackburn Island, which aim to protect and enhance habitat for threatened fauna and rehabilitate high conservation priority areas. These include Action 15.3.1 Revegetate and control Rhodes Grass on Blackburn Island (to protect and enhance habitat for the critically endangered LHI Wood feeding Woodroach) and Action 18.2.2 to reintroduce the LHI Phasmid to the main island. Revegetation of cleared areas dominated by the exotic Rhodes Grass will also protect and enhance habitat for LHI Gecko and LHI Skink.

Blackburn Island is 1.9 hectares in size and provides important habitat for the critically endangered LHI Wood Feeding Roach, the threatened LHI Gecko and LHI Skink and provides nesting habitat for Wedge-tailed Shearwater. The area where the Banyan grows provides the best habitat for the Woodroach, Gecko and Skink and is readily utilised by nesting Wedge-tailed Shearwater's, which nest both on the surface and in burrows across the island. Revegetation that replaces the exotic Rhodes Grass with native species will benefit all these species through enhancing habitat structures and resources including food and shelter. Surveys by Nicholas Carlile in 2009 found the Rhodes grass on Blackburn Island supports the highest density of nesting Wedge-tailed Shearwater in the LHI Group, but he also identified this exotic grass as a risk to the nesting colony due to its high flammability. This research estimated the number of breeding pairs on Blackburn to be 7517 (+\_ 649) (Carlile *et al* Corella 2013).

Revegetation efforts first commenced in 2001 with planting of Bullybush and Hopwood by Board staff around the edges of the Banyan in an effort to increase the area of native vegetation. Since then revegetation work mainly focused on controlling grass around native plants. The revegetation site was expanded from the Banyan to the walking track in winter 2018 with assistance from Melbourne Zoo staff and Conservation Volunteers. A watering system was installed in 2018 that enables watering via the Board's quick spray unit located on the punt during dry conditions.

In September 2018 the Board was awarded \$55,366 by the NSW Environmental Trust's Restoration and Rehabilitation grants program to complete a project titled Restoring Blackburn Island in Preparation for the Translocation of the LHI Phasmid. The project aims to reconstruct suitable habitat to enable the future translocation of LHI Phasmid to Blackburn Island as a trial site prior to considering translocation to the main island, but to also enhance habitat for other species that currently use the site including the three threatened species listed above. The revegetation program will convert highly flammable Rhodes Grass to low flammability closed forest.

The project aims to reconstruct up to 1 hectare of wind sheared oceanic rainforest and coastal heathlands. Pickard 1983 mapped the site as *Drypetes deplanchei* (Greybark) and *Cryptocarya triplinervis* (Blackbutt) canopy and understorey destroyed. Sherringham *et al* 2016 mapped the site as a mix exotic vegetation (Rhodes grass), Tea Tree Shrubland on exposed rocky slopes and Greybark – Blackbutt rainforest. The fertile basalt soil suggests the site supported closed forest prior to clearing for grazing by goats and rabbits, the latter of which were no longer present when visited by Etheridge in August 1887.

During the winter of 2019 three thousand native plants were planted throughout the revegetation area utilising ET funds. The work was conducted by Board staff with assistance from Melbourne Zoo, Taronga Zoo, contractors and the Conservation Volunteers This work primarily focussed on extending the area of closed forest from the remnant Sallywood trees and Norfolk Island Pines eastward. Ongoing maintenance will be undertaken by Board staff until canopy closure. Revegetation works are only conducted outside the nesting season for Wedge-tailed Shearwater.

On 28 January the locally elected Board members sent a letter to the Boards CEO regarding the abandonment of eggs within the revegetation area on Blackburn Island. The points raised were acknowledged by the Manager Environment & World Heritage (MEWH) who reviewed the project to reduce potential impacts to nesting success in future.

## **CURRENT POSITION**

Site maintenance of the revegetation site during the winter of 2019 was delayed due to ECS staff being utilised for priority REP work. Following the planting conducted earlier in the winter, treatment of exotic grasses within the revegetation area was conducted in late October prior to Wedge-tailed Shearwaters laying eggs. This was to reduce competition of planted trees with exotic grasses in order to increase access to water and nutrients and improve tree survival should drought conditions prevail. However, by the time the grass had completely died off, Wedge-tailed Shearwaters had laid eggs within the revegetation and as the grasses decomposed during summer, nests became exposed and egg abandonment was observed.

In March 2020, Nicholas Carlile – DPIE Principal Scientist and Terry O'Dwyer conducted research on Roach Island on White-bellied Storm Petrel nesting. They found large-scale nest abandonment of Wedge-tailed Shearwaters on Roach Island and concluded that this year's nesting failure was likely due to at sea conditions that limited their foraging ability rather than habitat manipulation for revegetation. Attached is a detailed report from Nicholas detailing nesting success across the Lord Howe Island Group. Note that figure 1 illustrates the highly variable feeding range of Wedge Tailed Shearwaters between years and the proximity of feeding rounds close to nesting sites can have a significant impact on breeding success.

Notwithstanding, the potential impact of miss-timed revegetation maintenance to localised nesting success (or failure) on Blackburn Island is acknowledged and can be rectified in future through

better time managed revegetation maintenance, as undertaken in 2018. It is also recommended to install cattle covers that were used during the REP within the revegetation area as sheltering habitat for Wedge-tailed Shearwaters and to undertake infill planting in the winter of 2020 to replace plants that died due to drought, weed competition or salt spray.

The revegetation maintenance approach used in winter 2018 did not result in any egg abandonment. This involved keeping the revegetation area free of Rhodes Grass and other exotic weeds during the winter growing season so that the site is less enticing for surface nesting until canopy cover of planted vegetation is achieved. The plants established in winter 2018 are exhibiting good growth and are expected to provide suitable nesting cover by the summer of 2020/2021. Ongoing infill planting during winters will assist to develop canopy where plants have died and provide long term shelter and nesting habitat resources. Inclusion of native grasses and sedges will provide shelter in more exposed areas and in the lower strata. The same maintenance approach used in winter 2018 will be re-instated in future years to reduce the potential for Wedge-tailed Shearwaters to be exposed during the nesting season and to improve plant survival during drought conditions.

The conversion of exotic Rhodes Grass to closed forest comprising species native to Lord Howe Island will increase habitat variability for the suite of species that utilise Blackburn Island, will reduce the flammability and therefore risk of fire which would decimate the island's wildlife and will improve chances for species with habitat on the main island to establish on Blackburn (eg Silvereye, Golden Whistler, Currawong etc).

## **SUMMARY**

Revegetation of Blackburn Island with native plants will improve habitat for numerous species including threatened species and will provide a suitable trial site to monitor the success of translocating LHI Phasmids.

The nest failure in summer 2019/20 is most likely due to at sea conditions of foraging rather than habitat manipulation for revegetation alone. However the timing of herbicide treatment of grasses within the revegetation area just prior to nesting reduced shelter for surface nesting birds and is likely to have increased nest failure in that area. Ensuring the revegetation area is maintained during the non-nesting season so that grasses do not regenerate and create suitable surface nesting substrate whilst reconstructing a closed forest to provide suitable sheltering and nesting habitat will reduce risk of nest abandonment until the revegetation site develops canopy cover.

## **RECOMMENDATION**

That the Board note the information.

**Prepared:** Hank Bower, Manager Environment and World Heritage

**Endorsed:** Peter Adams, Chief Executive Officer

### **Attachments:**

Attachment A: Report on Wedge-tailed Shearwater – Nicholas Carlile

## ATTACHMENT

WTSW on Blackburn Island in 2019-20 breeding season.

Wedge-tailed Shearwaters (WTSW) on LHI have had variable breeding success in the last decade or so. A long-term study of WTSW on Blackburn Island by Carlile and Hiscox (2007-08 to 2009-10) showed significant variation in breeding success over the years. The study was ended earlier than planned because it was very difficult to draw any conclusions with so much natural variation occurring and because so few chicks survived in those years. The population on Blackburn Island in 2009-10 was estimated at 7500 pairs, with most nesting on the surface and less than 20% in soil burrows. The introduced Rhodes grass provides a habitat that encourages a high breeding density due to partial cover for surfacing nesting birds but also a potential significant fire risk. The LHIB have decided to increase the natural vegetation on the island, to reduce fire risk, provide habitat for potential LH Stick insect populations and provide a more natural low vegetation cover for the shearwaters.

In 2018, successful revegetation activities replaced some areas of introduced grass without leading to direct impact of breeding WTSW, using carefully timed spraying and planting schedules. In 2019, planting was carried out successfully but herbicide spraying of Rhodes grass was delayed due to staffing constraints related to the Rat Eradication program. This allowed courting WTSW to arrive and select nesting sites prior to secondary grass treatment. These birds and their nests were then left exposed as the introduced grass died off due to the later timed spraying. It was apparent by January 2020 that eggs had been abandoned in the revegetation area. Due to very dense nature of untreated Rhodes grass areas outside of the revegetation area, anecdotal observations of egg abandonment of these grassed areas were not reported, so the extent of abandonment in full grassed areas compared treated areas is unknown.

DPIE officers attended Blackburn Island in early February 2020. This coincided with the end of the incubation period for WTSW when unattended eggs (yet to be broken and consumed by lizards/inverts) are still in evidence. A comparative sample count of number of eggs abandoned at the revegetation site relative to elsewhere on the island was planned to determine whether the revegetation program had impacted on WTSW breeding. However, by this time the exposed eggs within the revegetation site had been inadvertently removed by LHIB staff, who were unaware of the proposed DPIE check, so no comparative sampling could be made.

DPIE officers visited Roach Island (WTSW 15,700 pairs) in early March 2020. While the visit was to examine breeding of White-bellied Storm-petrels, observations were also made of WTSW breeding. At this time of the year, WTSW chick development is half way to fledging. The number of chicks observed on Roach Island was very low. There were no dead chicks in evidence and very high numbers of 'unemployed' breeding birds (in pairs) over all parts of the island at night (up to one pair of birds every two sq meters). These data together indicate that the hatching success rate this year for WTSW on Roach Island was very low. In seabird colonies, a low hatching success is generally linked to poor foraging opportunities during the egg incubation period. If parents are unable to find sufficient prey

while it is their turn off the egg, they are forced to forage further afield or remain at sea for longer than normal searching for food. This results in the other incubating bird eventually abandoning the nest to forage for food, rather than starve on the nest. The result is large numbers of abandoned eggs in a colony. Those that manage to successfully incubate the eggs to hatching have a good chance to raise successful chicks as competition for available food resources is reduced as other nests fail and lower numbers of provisioning birds remain in the region. Birds no longer incubating may still stay in the area, in between these longer feeding trips. The observation this season, that those birds that had managed to hatch young were feeding them successfully, is in line with the expected pattern of a poor food season.

This season was also a period of higher than average summer temperatures and lower than average rainfall on LHI. On Roach Island, the surface vegetation was noticeably sparse compared to observations in previous years, leaving nests exposed to the elements.

It is reasonable to assume that the poor WTSW breeding success observed on Roach Island would also have extended to Blackburn Island. The observed eggs exposed on the surface of Blackburn Island during January may have been due to at sea conditions of foraging rather than habitat manipulation for revegetation. This could not be conclusively determined due to a lack of survey opportunity in February. Additionally, the lack of regular annual surveys of Blackburn Island WTSW breeding precludes any information on how common such egg abandonment events are, regardless of revegetation activities. Anecdotal surveys by Hiscox of Blackburn Island WTSW breeding were discontinued some years ago due to low numbers of chicks at nests and few successful breeding attempts.

Better time management of revegetation activities on Blackburn Island in the future will undoubtedly improve the perception of impacts on breeding WTSW, regardless of the quality of any season for the successful breeding of this species here. It is advisable that any changes in LHIB management activities in or around any seabird colonies that will involve manipulation or reduction in seabird habitat, that the Board seeks advice from a wide range of people experienced in those species.

While the revegetation of Blackburn Island will provide a more resilient ground and shrub cover for shearwater breeding in the long-term, the bigger issue of poor breeding conditions for offshore foraging of this species may continue for the foreseeable future. Due to different foraging techniques and area of foraging searches, such poor foraging for WTSW may not be reflected in the breeding success of other shearwater or petrel species on LHI.

Nicholas Carlile.

Principal Scientist

Ecosystems & Threatened Species, DPIE

13<sup>th</sup> March 2020

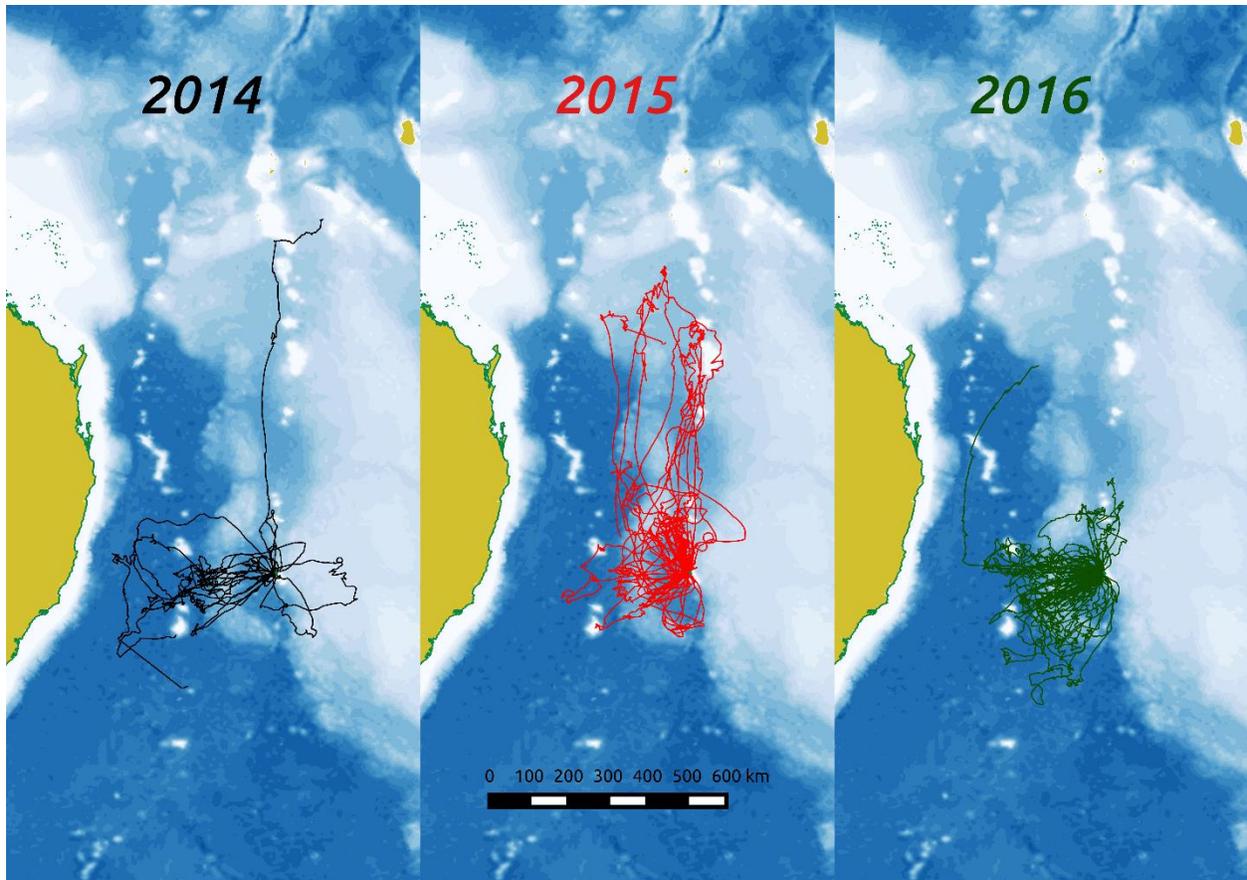


Figure 1. Three years of GPS tracking of foraging trips (adults provisioning chicks) of Wedge-tailed Shearwaters from Lord Howe Island (Mark Miller PhD JCU).