



# Annual Report

## Lutregala Marsh Reserve 2018-19



## INTRODUCTION

The Tasmanian Land Conservancy (TLC) protects important natural areas as permanent reserves and aims to demonstrate excellence in reserve management for biodiversity conservation. The TLC has adopted an adaptive management framework – the Open Standards for the Practice of Conservation which comprises 5 key steps – planning, implementing, monitoring, reporting, review/adaptation and communication.

Lutregala Marsh Reserve was acquired by the TLC in 2005 and protects 41.9 hectares of saltmarsh and coastal forest on Bruny Island in southeast Tasmania. The Reserve adjoins the Neck Game Reserve and forms part of a large block of native vegetation that straddles the Bruny Island Isthmus. The management of the Reserve is guided by the Lutregala Marsh Reserve Management Plan. The plan is implemented by TLC staff through an Annual Work Plan and Monitoring Plan. Details of ecological monitoring methods can be found in TLC's Ecological Monitoring Procedures Manual on [www.tasland.org.au](http://www.tasland.org.au).

This report describes progress made towards delivery of the management plan in 2018-19, and is divided into three sections:

1. Reserve Scorecard – a table summarising the results of management effectiveness and ecological monitoring to date;
2. Management Effectiveness Summary – providing details of the implementation of key management strategies and making recommendations for plan improvement;
3. Ecological Monitoring Summary – providing details of the status of conservation targets and trends of key ecological indicators

The recommendations made in this report are used to adapt and improve management of the Reserve, update the management plan, and revise work and monitoring plans for the coming year. Key findings of this report are communicated to TLC Board, supporters and other stakeholders.

Cover image: White morph Bennett's wallaby on monitoring camera at Lutregala Marsh Reserve Nov 2018: Photo TLC

## LUTREGALA MARSH RESERVE SCORECARD 2018-19

<b>Monitoring</b>						
<b>Target</b>	<b>Indicator</b>	<b>Status 2015-16</b>	<b>Status 2016-17</b>	<b>Status 2017-18</b>	<b>Status 2018-19</b>	<b>Trend</b>
Saltmarsh	Floristic diversity Structural complexity	No monitoring	6.5 species / site 4.8 lifeforms / site	5.3 species / site 4.5 lifeforms / site	No monitoring	Slight decline in diversity and structural complexity across all vegetation types.
Coastal forest	Floristic diversity Structural complexity Canopy recruitment	No monitoring	10.3 species / site 5.7 lifeforms / site 1 cohorts / site	10.0 species / site 5.7 lifeforms / site 1 cohorts / site	No monitoring	
Terrestrial mammals (whole reserve)	Species richness	7 native species 4 introduced sp	5 native species 2 introduced species	6 native species 3 introduced sp	6 native species 2 introduced sp	Stable - natural fluctuations
	Proportion native sp	0.63	0.71	0.67	0.75	
	Native species diversity indices	Simpsons 0.71 Shannon-Wiener 1.44	Simpsons 0.68 Shannon-Wiener 1.19	Simpsons 0.71 Shannon-Wiener 1.39	Simpsons 0.70 Shannon-Wiener 1.34	
<b>Management Effectiveness</b>						
<b>Strategy</b>	<b>Indicator</b>	<b>Status 2015-16</b>	<b>Status 2016-2017</b>	<b>Status 2017-18</b>	<b>Status 2018-19</b>	<b>Trend</b>
Weed management	Weed extent	No monitoring	<1 ha	<1 ha	No monitoring	Improving
	Treatment extent (ha)	No monitoring	90%	90%	No monitoring	Improving
	Weed density	No monitoring	Sparse	Sparse	No monitoring	Improving
Stock exclusion	Instances of stock access	1 - cattle incursion	0 – no stock access	0 – no stock access	0 – no stock access	Stable
Feral animal management	Cat activity	0.13 (22 detections from 175 trap nights)	0.07 (12 detections from 180 trap nights)	0.05 (7 detections from 154 trap nights)	0.17 (35 detections from 210 trap nights)	Fluctuating activity following decline in 2015.
	Cat occupancy	1.00 (detected at 5 of 5 sites)	0.67 (detected at 4 of 6 sites)	0.67 (detected at 4 of 6 sites)	0.67 (detected at 4 of 6 sites)	
	Fallow deer activity	not detected	0.05 (9 detections from 180 trap nights)	0.10 (16 detections from 154 trap nights)	0.06 (13 detections from 210 trap nights)	Stable activity and greater occupancy since 2016.
	Fallow deer occupancy	Not detected	0.5 (detected at 3 of 6 sites)	0.5 (detected at 3 of 6 sites)	0.67 (detected at 4 of 6 sites)	
Woodland restoration	% native tree cover	No monitoring	<5%	<5%	No monitoring	Flat
Regenerating cleared land	Floristic diversity Structural complexity Canopy recruitment	No monitoring	12 species/ site 4 lifeforms/site 0 cohorts/site	10 species/ site 3 lifeforms/site 0 cohorts/site	No monitoring	Some decline in diversity and structural complexity across all vegetation types.
Fire management	No of unplanned fires	0- no fires	0 – no fires	0 – no fires	0 – no fires	Flat

## MONITORING SUMMARY

<b>Saltmarsh</b>		<b>Status: Very Good</b>		
<b>Goal</b> The condition of saltmarsh is maintained		<b>Outcome: Some declines observed</b>		
<b>Description</b> Saltmarsh vegetation occupies the low marsh land around the estuary of Lutregala Creek. Saltmarsh is a vegetation type of national conservation significance and is threatened by sea-level rise. The saltmarsh at Lutregala forms a complex mosaic dominated alternately by sedges shrubs or succulent herbs depending on the frequency of inundation by salt water.		Saltmarsh veg monitoring site. Photo: S Bryant 		
<b>Ecological indicator</b>	<b>Status 2015-16</b>	<b>Status 2016-17</b>	<b>Status 2017-18 Trend</b>	<b>Status 2018-19</b>
Floristic diversity	No monitoring	6.5 species / site	5.3 species / site - decrease	No monitoring
Structural complexity	No monitoring	4.8 lifeforms / site	4.5 lifeforms / site - decrease	No monitoring
<b>Key findings 2018-19</b>				
<ul style="list-style-type: none"> <li>• Key findings from repeat monitoring were a slight decline in flora diversity and structural complexity across all vegetation types. This may be natural variation but should be reviewed during the next round of veg monitoring in case deer are impacting.</li> <li>• Fallow deer grazing may be impacting saltmarsh health and condition</li> <li>• Research into sea level rise being undertaken by Dr Patrick Moss Deputy Head of School, Associate Professor, School of Earth and Environmental Sciences, The University of Queensland, Email: <a href="mailto:patrick.moss@uq.edu.au">patrick.moss@uq.edu.au</a>. This information will be relevant to saltmarsh status.</li> </ul>				
<b>Recommendations</b>				
<ul style="list-style-type: none"> <li>• Re-monitor saltmarsh vegetation in 2019-20. Pay particular attention to the dominant / palatable species at each site, where a change may indicate that deer browsing or inundation is having an impact.</li> <li>• Increase efforts to remove fallow deer from Bruny Island as a matter of environmental concern</li> <li>• Investigate the potential of conserving more land at higher elevations to the south of the Reserve to enable dispersion of saltmarsh species in anticipation of sea level rise.</li> </ul>				

<b>Coastal woodland</b>			<b>Status: Good</b>		
<b>Goal</b> The condition of coastal woodland is maintained			<b>Outcome: On track</b>		
<b>Description</b> Coastal Forest occupies a relict dune system where a ridge of sandy soil has provided sufficient drainage for trees to establish. Forest dominated by black peppermint occupies the eastern side of the Reserve. The vegetation in this area is floristically diverse and in good condition. Forest dominated by black gum occupies the western side of the Reserve. This area has been partially cleared for agriculture and is in poor condition, with a modified understorey, a high proportion of exotic species and significant infestations of blackberries. The diversity of vertebrate fauna on the Reserve is high, despite a high density of feral cats.					
Coastal monitoring site from photosphere. Credit: TLC					
<b>Target</b>	<b>Indicator</b>	<b>Status 2015-16</b>	<b>Status 2016-17</b>	<b>Status 2017-18</b>	<b>Status 2018-19</b>
<b>Coastal forest</b>	Floristic diversity Structural complexity Canopy recruitment	No monitoring	10.3 species / site 5.7 lifeforms / site 1 cohorts / site	10.0 species / site 5.7 lifeforms / site 1 cohorts / site	No monitoring
<b>Regenerating cleared land</b>	Floristic diversity Structural complexity Canopy recruitment	No monitoring	12 species/ site 4 lifeforms/site 0 cohorts/site	10 species/ site 3 lifeforms/site 0 cohorts/site	No monitoring
<b>Woodland restoration</b>	% native tree cover	No monitoring	<5%	<5%	No monitoring
<b>Terrestrial Mammals (whole reserve)</b>	<b>Indicator</b>	<b>Status 2015-16</b>	<b>Status 2016-17</b>	<b>Status 2017-18</b>	<b>Status 2018-19</b>
	Species richness	7 native species 4 introduced sp	5 native species 2 introduced species	6 native species 3 introduced sp	6 native species 2 introduced sp
	Proportion native species	0.63	0.71	0.67	0.75
	Native species diversity indices	Simpsons 0.71 Shannon-Wiener 1.44	Simpsons 0.68 Shannon-Wiener 1.19	Simpsons 0.71 Shannon-Wiener 1.39	Simpsons 0.70 Shannon-Wiener 1.34
<b>Key findings 2018-19</b>					
<ul style="list-style-type: none"> <li>• Key findings in 2018-19 were a slight decline in flora diversity and structural complexity across all vegetation types.</li> <li>• Terrestrial mammals recorded every year in 4 yrs of monitoring: Rednecked wallaby, pademelon, potoroo, echidna, brushtail possum. Others include Eastern quoll in 2015, 2017; ringtail possum 2015, 2018. Water rat were also detected in 2018 but were outside the survey period.</li> <li>• Exotic mammals recorded: feral cat (annually), fallow deer (annually since 2016), black rat (2015, 2017), house mouse (2015), cow (2015).</li> <li>• Fallow deer first detected in Aug 2016 and recorded annually. Deer grazing during 2018-19 is likely to be impacting woodland health and condition.</li> <li>• The fauna data was recalculated this year and standardised across 6 survey sites during the four years of monitoring. This will now be the standardised data set for the Reserve.</li> </ul>					
<b>Recommendations</b>					
<ul style="list-style-type: none"> <li>• Develop an ecological burn plan and continue to control weeds in disturbed areas</li> <li>• Continue support for the Bruny Island Cat Management Plan, and partnerships with UTAS and other stakeholders into cat removal</li> <li>• Increase efforts to remove fallow deer from Bruny Island as a matter of environmental concern</li> </ul>					

## MANAGEMENT EFFECTIVENESS SUMMARY

<b>Weed management</b>			
<b>Key objective(s)</b>		<b>Status 2018-19</b> <b>On track but needs re-assessment</b>	
<ul style="list-style-type: none"> <li>All areas of weeds have been treated by 2017</li> <li>Weeds are eradicated by 2020</li> </ul>			
<b>Strategy description</b>		Blackberry infestation near the boundary. Photo: Arwen Dyer	
Blackberry ( <i>Rubus fruticosus</i> ) occurs in areas of regenerating cleared land on the western boundary of the property, along with several other weed species. Control of this infestation of weeds is a management priority, as directed by the Lutregala Marsh Weed Strategy. The TLC has been undertaking annual weed control since 2012. Follow-up weed control will occur for five years following initial treatment. The annual reserve assessment will include weed monitoring to ensure that any new infestations of blackberry or other weeds are identified and controlled.			
<b>Indicator</b>	<b>Status 2016-17</b>	<b>Status 2017-18</b>	<b>Status 2018-19 Trend</b>
Weed extent	<1 ha	No data – but observed declining	No data – but observed declining
Treatment extent	90%	No data - but observed declining	No data - but observed declining
Weed density	Sparse	No data - but observed declining	No data - but observed declining
<b>Progress in 2018-19</b>			
<ul style="list-style-type: none"> <li>No specific weed work was undertaken during 2018-19, however, it is unlikely that the status of weeds has changed substantially and observations show a decline in density and area.</li> <li>Weeds such as blackberry, scotch thistle and pasture grasses treated regularly in previous years are reducing in area and density across the site</li> <li>Weed seeds can be carried by large herbivores e.g. browsing fallow deer so a reassessment of extent and rate of spread will be required in the near future.</li> </ul>			
<b>Key recommendations for future management</b>			
<ul style="list-style-type: none"> <li>Ensure weeds are reviewed in 2019-20 and control program is maintained where needed</li> <li>Complete follow up mapping and update measures for extent and rate of spread of weeds</li> <li>Increase efforts to remove fallow deer from Bruny Island as a matter of environmental concern</li> </ul>			

**Stock exclusion**

**Key objective(s)**

- Access by neighbouring stock is prevented (ongoing)

**Status 2018-19**

**On-track**

**Strategy description**

Livestock are grazed on neighbouring properties to the west and south of Lutregala Marsh Reserve. Livestock have the potential to reduce vegetation condition, particularly in saltmarsh areas of the reserve. Existing fences prevent stock from accessing the reserve. Fence condition will be checked during the annual reserve assessment and fences will be repaired as necessary.



Rusty fencing on Lutregala lagoon edge. Photo: S Bryant

Indicator	Status 2015-16	Status 2016-17	Status 2017-18	Current status 2018-19 Trend
Instances of stock access	1 – cattle incursion	0 stock	0 stock	0 – stable, no incursions

**Progress 2018-19**

- Cattle incursion were first detected in 2015 on fauna monitoring cameras and by reserve staff. Fences were repaired afterwards and landholder notified.
- Boundary fences are checked annually and remain intact. No stock have been identified breaching the fence or entering the reserve since 2015 including during this 2018-19 period.
- Fallow deer remain at this site and have the potential to damage fences and browse the regeneration area. Their removal is a priority.

**Key recommendations for future management**

- Continue to monitor fences and repair fences when necessary in consultation with adjoining neighbours.
- Increase efforts to remove fallow deer from Bruny Island as a matter of environmental concern

## Feral animal control

### Key objective(s)

- Help implement the Bruny Island Cat Management Plan
- Help support the removal of fallow deer from Bruny Island

**Status 2018-19**  
**Pests persisting**

### Strategy description

Feral cats pose a significant threat to wildlife on the Reserve and in particular to nesting shore birds. A feral cat management plan has been prepared by Kingborough Council and Bruny Island Environment Network. TLC will help implement the plan on our Reserve. Fallow deer have also been detected on Lutregala Marsh Reserve in 2016 and more widely across Bruny Island. Their removal is a high priority for conservation.

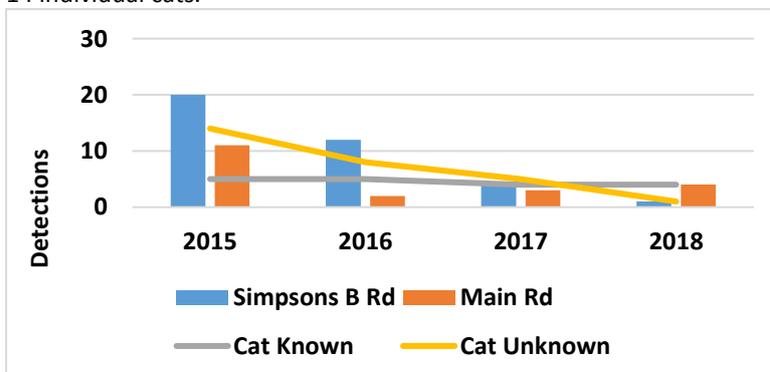
Feral cat detected on Lutregala monitoring camera Nov 2018.



Indicator	Status 2015-16	Status 2016-17	Status 2017-18	Status 2018-19 Trend
Cat activity	0.13 (22 detections from 175 trap nights)	0.07 (12 detections from 180 trap nights)	0.05 (7 detections from 154 trap nights)	0.17 (35 detections from 210 trap nights) - increasing
Cat occupancy	1.00 (detected at 5 of 5 sites)	0.67 (detected at 4 of 6 sites)	0.67 (detected at 4 of 6 sites)	0.67 (detected at 4 of 6 sites) - stable
Fallow deer activity	not detected	0.05 (9 detections from 180 trap nights)	0.10 (16 detections from 154 trap nights)	0.06 (13 detections from 210 trap nights) - stable
Fallow deer occupancy	Not detected	0.5 (detected at 3 of 6 sites)	0.5 (detected at 3 of 6 sites)	0.67 (detected at 4 of 6 sites) - increasing

### Progress 2018-19

- 4-5 individual cats were detected on Lutregala Reserve during 2018-19 monitoring
- Extract from BI Cat Project update June 2018 – Feb 2019 from Kaylene Allen (Cat Management Officer Kingborough Council) "Conrad Daniels and Paul Hansson of Bruny Farming, continue to monitor and control stray and feral cats focussing within and around the Neck Game Reserve (including the Simpsons Bay and Alannah areas). Since May 2018 another 23 stray and feral cats have been managed bringing the total number since the program began (in late 2016) to 102 cats. Our trapping work is being compared with independent monitoring of feral cats within the Lutregala Marsh reserve (immediately south of the Neck) by the Tasmanian Land Conservancy (TLC). In November 2018 they identified around 4 to 5 cats in their reserve which supports our current monitoring. This number has reduced from 2015 when TLC recorded between 5-14 individual cats."



- Monitoring shows fallow deer persist on the Reserve and the TLC is supporting community efforts to eradicate deer and advising the government to assist their removal

### Key recommendations for future management

- Continue to support the Bruny Island Cat Management Plan in partnership with other stakeholders
- Increase efforts to have fallow deer removed from Bruny Island as a matter of environmental significance

<b>Fire management</b>				
<b>Key objective(s)</b>			<b>Status 2018-19</b> <b>On-track</b>	
<ul style="list-style-type: none"> <li>No unauthorised fires occur on the reserve (ongoing).</li> </ul>				
<b>Strategy description</b>		TLC signage saying 'no fires'. Photo: A Dyer		
<p>At Lutregala Marsh Reserve fire sensitive wetlands occur alongside fire adapted coastal forest vegetation communities. Fire management will only be undertaken after an ecological burn plan has been developed.</p>				
<b>Indicator</b>	<b>Status 2015-16</b>	<b>Status 2016-17</b>	<b>Status 2017-18</b>	<b>Status 2018-19 Trend</b>
No of unplanned fires	0- no fires	0 – no fires	0 – no fires	0 – no fires
<b>Progress 2018-19</b>				
<ul style="list-style-type: none"> <li>There were no unauthorised fires on the Reserve in 2018-19</li> <li>A fire risk assessment has been completed for all TLC reserves and a fire management policy is being implemented.</li> <li>A fuel stove only policy is in place on all reserves with signage advising this status.</li> <li>The use of fire to manage blackberry infestations was abandoned in favour of slashing and spraying, due to continuous high fuel loads between blackberries and saline grasslands.</li> </ul>				
<b>Key recommendations for future management</b>				
<ul style="list-style-type: none"> <li>Continue to implement a fuel stove only policy for the Reserve.</li> <li>Continue to implement the whole-of-TLC fire management strategy.</li> </ul>				

**Woodland restoration**

**Key objective(s)**

- Native plant species will be the dominant cover class in the revegetation zone by 2020

**Status 2018-19**  
**On-track**

**Strategy description**

An area of regenerating cleared land on the western margin of the property is scheduled for restoration to coastal Eucalypt woodland. Ongoing weed control works in this area will make more land available for restoration, and TLC intends to establish a diverse planting of local provenance species.

Old trees fringing Lutregala marshland Photo: S Bryant



Indicator	Status 2015-16	Status 2016-17	Status 2017-18	Status 2018-19 Trend
% native tree cover	Not measured	<5%	<5%	Not measured

**Progress 2018-19**

- Visual site inspection shows regeneration in cleared areas is on-track
- In 2012 approx. 20 white gums were planted in this area. These trees are due to be re-checked and if necessary extended or replaced.
- In 2012 approx. 100 seedlings of *Eucalyptus globulus*, *Eucalyptus ovata* and *Acacia melanoxylon* were planted along the western boundary in areas previously dominated by blackberries. These areas have shown good regeneration and due to be reassessed.

**Key recommendations for future management**

- Ensure annual reserve assessment monitors restoration activity
- Continue weed control.
- Include *E. viminalis* in restoration plantings
- Increase efforts to remove fallow deer from Bruny Island as a matter of environmental concern