



The Royal
BOTANIC GARDEN
Sydney

Grey-headed Flying-fox dispersal from the Royal Botanic Garden, Sydney

**Seventh Annual Report
2019**

**Commonwealth approval: 2008/4646
New South Wales approval: C0004672**

Document Control

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1 INTRODUCTION

The relocation of Flying-foxes from the Royal Botanic Garden Sydney started in June 2012. The program was implemented because of damage to culturally significant trees and palms. The main relocation of the colony was completed within 10-days.

The following paragraph is paraphrased from the Public Environment Report (van der Ree and North 2009) submitted to the Commonwealth in 2009:

*The Royal Botanic Garden, Sydney (RBG) is a significant cultural and botanical icon for Australia and the world. Located on Sydney Harbour, the RBG contains numerous historic and heritage listed specimens that are of enormous cultural, scientific, horticultural and educational value. In 1989 Grey-headed Flying-foxes (*Pteropus poliocephalus*, GHFF) established roosting in the Palm Grove, which is the oldest and most significant planted area of the RBG.*

Within the RBG the roosting behaviour of the GHFF colony has contributed to the death of 33 trees and 35 palms prior to the dispersal, primarily through sustained defoliation. Immediately prior to the commencement of the dispersal an additional 60 trees and palms were assessed to be in a critical condition, due to the damage they sustained. To conserve the significant heritage site that is the RBG the Royal Botanic Gardens and Domain Trust (the Trust) determined to seek approval to disperse the GHFF colony.

The Trust received a Section 95(2) certificate of conditional approval from the New South Wales Office of Environment and Heritage for the relocation and ongoing disturbance of the GHFF from the RBG, effective from 6 February 2009 until 31 December 2014 (Certificate 1097285). The certificate 1097285 was closed by OEHL in 2015. Renewal of the licence was discussed with OEHL at the time, and it was agreed that the action was covered by Commonwealth approval (John Martin, *pers.comm.*, 19 March 2019).

OEHL were advised that passive measures were being implemented in March 2019, and a decision was made that a new Threatened Species licence application should be submitted. Following this, a Biodiversity Conservation Licence under Part 2 of the Biodiversity Conservation Act 2016 was issued by OEHL on 22 March 2019 (Licence No C0004672) until 2039.

The Trust received conditional approval from the Commonwealth Department of the Environment, under sections 130(1) and 133 of the Environment Protection and Biodiversity Conservation Act 1999, effective from 13 May 2010 until 2039 (Approval 2008/4646).

This document is designed to comply with the annual reporting requirements of the NSW and Commonwealth conditional approvals, in a streamlined format. The information reported relates to the implementation of passive measures to prevent GHFF re-establishing roosting within the RBG during the reporting period.

2 UPDATE FOR 2018-19

For the 2018-19 reporting period, the seventh year following the dispersal in June 2012, roosting and deterrence actions occurred between February and April 2019.

- a) Number of days on which deterrence actions are required.
 - Pre-dawn noise was undertaken on 39 days to deter GHFF from roosting at the RBG, starting from Thursday 7th Feb until Sunday 7th April 2019.
 - Pre-dawn noise activities were undertaken daily when bats were observed roosting in the Garden, depending on availability of staff. The timing of noise was prior to sunrise, with a maximum period of an hour and a half, from approximately 5 am to 6.30 am.
- b) Numbers of flying-foxes that succeed in roosting at the RBG on each day.
 - Low numbers of bats (generally <50) were recorded roosting between Feb and April 2019.
 - The peak number of daytime roosting animals was 205 bats on 8 March 2019 (See Figure 1.).
 - Areas that were subject to flying-fox roosting are shown in Figure 2 and are referred to as:
 - Palm grove, Tropical beds; Lower Palace & Rathborne Lodge.

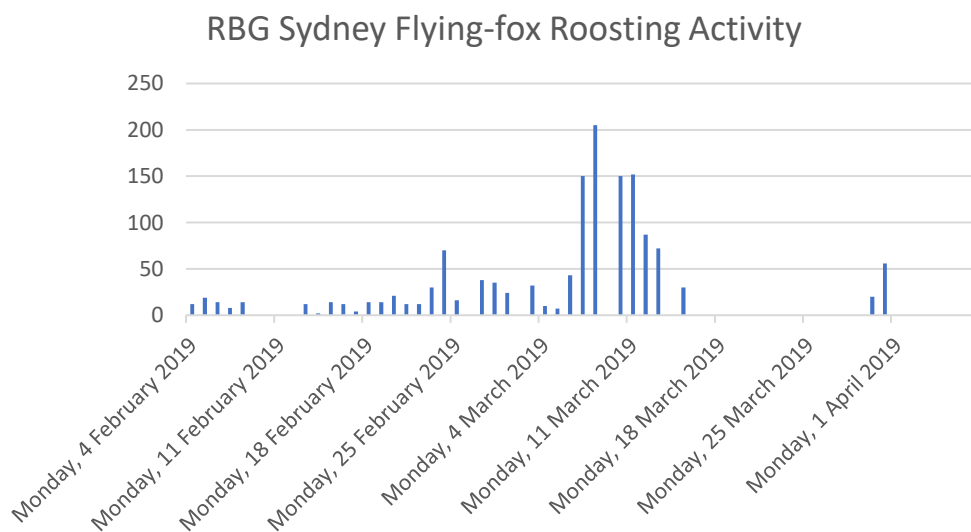


Figure. 1 Flying-fox roosting activity during 2018/19

**the gaps in data shown on the graph is a result of no formal observations being made.*

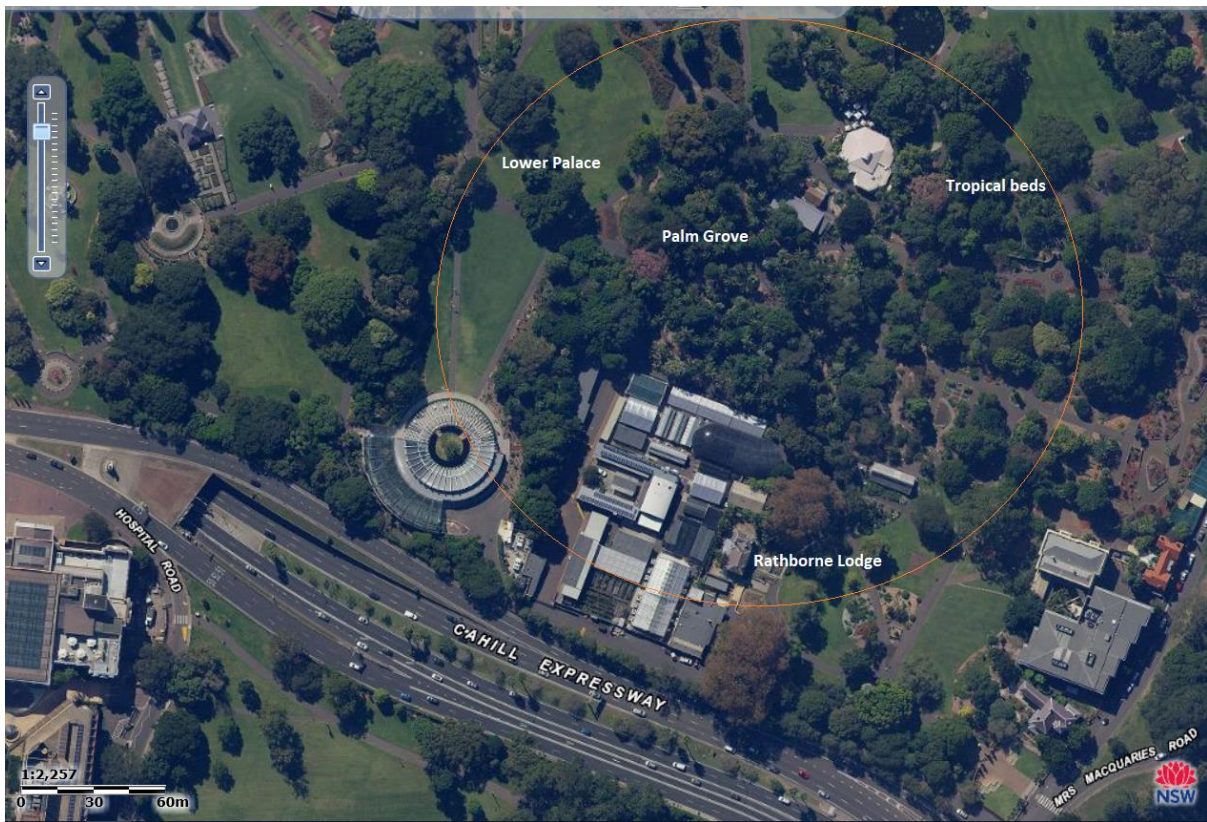


Figure 2. Camp extent, RBG Sydney 2018-19

- c) Numbers of days for which deterrence is unable to be undertaken for any reasons.
- There were no occasions where the deterrence action was unable to be undertaken, i.e. severe weather, heat wave or stress to flying-foxes.
 - No disturbance activities were undertaken during the period when females are carrying young (October to December).
 - Tree works were undertaken in the Palm Grove, however, no GHFF were roosting in the vicinity at the time.
 - Three incidents, including two incidents of dead bats were reported (cause of death unknown). These deaths occurred outside of the time when deterrence actions were taking place (See Attachment B).

Conclusion

The colony of GHFF was humanely dispersed from the RBG within one week during June 2012. Based on the data collected and reports received from the community, to our knowledge:

1. no new colonies established,
2. no welfare issues have resulted from the dispersal or passive measures,
3. GHFF reproductive output was greater than 70%, on average, as measured across six colonies within the Sydney region for three years following the dispersal (Eby, 2014).

The RBG Sydney will continue to be monitored daily and ongoing maintenance deterrence deployed to prevent resettlement and establishment of a GHFF colony.

TABLE 1 INVENTORY OF THE EXPERT PANEL SIGN-OFF OF THE ANNUAL REPORT

Annual Report	Submitted to Panel	Endorsed by Panel
Seventh Report 2018-19	23 August 2019	30 August 2019

3 DISPERSAL ACTIONS RECORD - RBG SYDNEY FLYING FOX COLONY

Report Year	Dispersal Activities
Sixth Annual Report (2017/18)	For the 2017-18 reporting period, the sixth year following the dispersal in June 2012, roosting of less than 10 individuals occurred on less than 10 days (generally one individual). No noise was made to prevent GHFF from re-establishing roosting within the RBG, and the small number of individuals roosting left of their own accord.
Fifth Annual Report (2016/17)	For the 2016-17 reporting period, the fifth year following the dispersal in June 2012, roosting occurred on three separate occasions totalling 88 days (24, 60 and 4 days, respectively) and passive measures (including noise and lights) were implemented on 29 days to deter Grey-headed Flying-foxes from re-establishing roosting within the Royal Botanic Garden Sydney.
Fourth Annual Report (2015/16)	For this reporting period, 2015-16, the fourth year following the dispersal in June 2012, no roosting occurred and no passive measures (including noise and lights) were implemented to deter Grey-headed Flying-foxes roosting.
Third Annual Report (2014/15)	Passive measures, in the form of pre-dawn noise deterrence, were used on 34 days during the period 18 June 2014 to 17 June 2015. The number of GHFF counted pre-dawn flying-over the RBG, possibly attempting to roost, has been highly variable. During this reporting period GHFF were observed to roost on 32 days, with a maximum of 60 and an average of 13 animals observed. A consistent period of roosting occurred from late August into September (2014). Following consultation with the Expert Panel the methods approved in 2013, the implementation of passive measures until sunrise, were again approved. In general, noise was stopped 10-minutes prior to sunrise. This occurrence highlights that GHFF may attempt to resume roosting within the RBG at any point in the future.

Report Year	Dispersal Activities
Second Annual Report (2013/14)	<p>Passive measures, in the form of pre-dawn noise deterrence, were used on 206 days during the period 13 June 2013 to 17 June 2014. The passive measures employed are consistent with the noise and lights used during the primary relocation. Over the course of the program the intensity has decreased, specifically the number of staff operating on-ground and the frequency that disturbance has been implemented.</p> <p>The number of GHFF counted pre-dawn flying-over the RBG, possibly attempting to roost, has been highly variable. GHFF were observed to roost within the RBG on 33 occasions, 13 of which involved less than 10 GHFF. A consistent period of roosting occurred from late October through November (2013).</p>
First Annual Report (2012/13)	<p>The action commenced on 4-06-12 following compliance with condition 2. The predawn and sunset noise deterred the GHFF from roosting within the RBG within 10-days. At this time the panel approved the use of passive measures to deter the re-establishment of GHFF roosting within the RBG, under condition 10. The passive measures included the existent relocations methods, including pre-dawn noise disturbance, within the scope of condition 4b.</p>

4 LEGAL CONSENTS

COMMONWEALTH APPROVAL CONDITIONS

The Trust received conditional approval from the Commonwealth Department of the Environment, under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act* 1999, effective from 13 May 2010 until 2039 (Approval 2008/4646).

A consolidated approval notice with variations to conditions was approved in 2017; <http://epbcnotices.environment.gov.au/entity/annotation/974c80d5-d08f-e811-95dc-005056ba00a8/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1566525595379>

Excerpt of Conditions:

10. If greater than 90% of the Botanic Gardens GHFF colony has not returned to the Botanic Gardens for more than 5 consecutive days, the approval holder must implement passive measures to prevent the re-establishment of the colony at the Botanic Gardens. These measures must be approved by the Panel.

10A. The approval holder has prepared and committed funding for the implementation of a vegetation rehabilitation plan for the necessary sites (as determined by the Panel) of the new colony or colonies from the Botanic Gardens within the Sydney region. The vegetation management plan must detail commitments as to the provision of expert advice in seed collection, horticulture and ecology at the sites. The approval holder must provide for up to \$10,000 per year (including in kind contributions) for a period of 5 years to fund activities implemented under the vegetation rehabilitation plan.

16. By 31 August of each year, following commencement, the approval holder must publish a report on their website addressing compliance with the conditions of approval, including implementation of any plans as specified in the conditions. Attached to the report must be a written and signed confirmation by the Group and the Panel verifying the accuracy of the information provided. The approval holder must provide the Department with evidence of publication on the same day the report is published. The approval holder must continue to meet the requirements of this condition until such time as agreed to in writing by the Minister.

NSW APPROVAL CONDITIONS

The Trust received a Biodiversity Conservation Licence under Part 2 of the Biodiversity Conservation Act 2016 on 22 March 2019 (Licence No C0004672).

Relevant Conditions:

The licence holder must ensure that:

1. The action is carried out in accordance with the application dated 13 March 2019.
2. The action shall be overseen by an appropriately qualified flying-fox expert, approved by OEH.
3. Deterrence actions shall not be undertaken during periods when there is a severe weather warning or severe thunderstorm warning issued by the Bureau of Meteorology for the Sydney local forecast area.
4. Deterrence actions shall not be undertaken on a day when the maximum temperature is predicted to exceed 38 degrees at Observatory Hill.
5. If at any time, the expert approved under Condition 2 considers that the flying-foxes are under unacceptable levels of stress, such that their welfare is jeopardized, then deterrence actions will cease. Deterrence actions will only recommence if the GHFF expert considers that it is prudent to do so.
6. Deterrence actions must cease immediately where any flying-foxes, as a result of the activity, have been or appear to have been killed or injured. Deterrence actions may not recommence without the approval of OEH.
7. Deterrence actions shall cease if creching young stay in the camp during the day.
8. Incidents that require deterrence actions to cease shall be reported to OEH within 24 hours.
9. Annual monitoring reports shall be submitted to OEH. Matters to be reported include:
 - a. Number of days on which deterrence actions are required
 - b. Numbers of flying-foxes that succeed in roosting at the RBG on each day
 - c. Numbers of days for which deterrence is unable to be undertaken for any reasons.
10. An annual monitoring report shall be submitted to OEH by 31 August each year.
11. OEH is to be notified whenever deterrence actions need to be recommenced after they have not been required for a period of four weeks or more.

References

Eby, P. (2014). Patterns of Reproduction in Grey-headed flying foxes at six colonies in the Sydney urban area: results from spring 2014 and project summary. Report to the Royal Botanic Gardens and Domain Trust.

van der Ree, R. & North, J.M. (2009). Public Environment Report: Proposed relocation of a camp of Grey-headed Flying-foxes (*Pteropus poliocephalus*) from the Royal Botanic Gardens Sydney. A report prepared for the Royal Botanic Gardens and Domain Trust and submitted to the Commonwealth Department of the Environment.

ATTACHMENT A – RECORD OF FLYING-FOX DETERRENCE ACTIONS 2019

Date	Deterrence actions	No of staff*
Thursday, 7 Feb 2019	Pre-dawn noise	2
Friday, 8 Feb 2019	Pre-dawn noise	1
Monday, 11 Feb 2019	Pre-dawn noise	1
Wednesday, 13 Feb 2019	Pre-dawn noise	1
Thursday, 14 Feb 2019	Pre-dawn noise	1
Monday, 18 Feb 2019	Pre-dawn noise	1
Tuesday, 19 Feb 2019	Pre-dawn noise	1
Wednesday, 20 Feb 2019	Pre-dawn noise	1
Thursday, 21 Feb 2019	Pre-dawn noise	1
Friday, 22 Feb 2019	Pre-dawn noise	1
Saturday, 23 Feb 2019	Pre-dawn noise	1
Sunday, 24 Feb 2019	Pre-dawn noise	1
Monday, 25 Feb 2019	Pre-dawn noise	1
Wed, 27 Feb 2019	Pre-dawn noise	2
Thursday, 28 Feb 2019	Pre-dawn noise	1
Friday, 1 March 2019	Pre-dawn noise	1
Sunday, 3 March 2019	Pre-dawn noise	1
Monday, 4 March 2019	Pre-dawn noise	1
Tuesday, 5 March 2019	Pre-dawn noise	1
Thursday, 7 March 2019	Pre-dawn noise	1
Friday, 8 March 2019	Pre-dawn noise	1
Saturday, 9 March 2019	Pre-dawn noise	2
Sunday, 10 March 2019	Pre-dawn noise	2
Monday, 11 March 2019	Pre-dawn noise	2
Tuesday, 12 March 2019	Pre-dawn noise	3
Wednesday, 13 March 2019	Pre-dawn noise	2
Thursday, 14 March 2019	Pre-dawn noise	3
Friday, 15 March 2019	Pre-dawn noise	2
Saturday, 16 March 2019	Pre-dawn noise	3
Sunday, 17 March 2019	Pre-dawn noise	4
Monday, 18 March 2019	Pre-dawn noise	2
Tuesday, 19 March 2019	Pre-dawn noise	3
Wednesday, 20 March 2019	Pre-dawn noise	1
Friday, 22 March 2019	Pre-dawn noise	1
Saturday, 30 March 2019	Pre-dawn noise	2
Sunday, 31 March 2019	Pre-dawn noise	2
Monday, 1 April 2019	Pre-dawn noise	2
Thursday, 4 April 2019	Pre-dawn noise	2
Sunday, 7 April 2019	Pre-dawn noise	2

* Number of people involved in the noise disturbance was 18 (not including Management staff).

ATTACHMENT B – INCIDENT RECORD

Date	Reported by	Incident Number	Location	Report
April 2019	Environmental Officer	n/a	Royal Botanic Garden Sydney	Bat collided into a pole that was put up for West Side Story on Sydney Harbour. Bat fell onto a visitor, and then flew away. Note that this incident was not formally reported to RBG Sydney.
18 June 2019	Ranger Services	BGCP-2019-06-00045	Royal Botanic Garden Sydney	RBG, dead flying fox.
22 June 2019	Ranger Services	BGCP-2019-06-00055	The Domain, Phillip Precinct	RBG, The Domain, Phillip Precincts, Lawn DL10a. Dead bat by tree.