

The National Flying-fox Monitoring Program

Report on the February 2015 survey

Background

Data on population size and distribution is essential to inform the conservation management of any species. Monitoring programs are essential to enable the collection of these data and, over time, to identify trends. The aim of this project is to establish a baseline estimate and eventually to estimate population trends.

Monitoring of flying-foxes is required because they are often the focus of conflict. Furthermore, two species, the grey-headed flying-fox (GHFF) and the spectacled flying-fox (SFF), are listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and legislation in some states. This program will provide data to inform decision making for flying-fox conservation and will also help inform responses to public concerns about the impact of flying-foxes on industry, agriculture and public health, including Hendra outbreaks.

The large size of flying-fox aggregations (or camps) and their extreme mobility means that flying-fox monitoring is not a straightforward task. The National Flying-fox Monitoring Program (NFFMP) uses a method that is specifically designed to collect data on the abundance and distribution of flying-foxes in eastern Australia. This method has been developed to:

- i. be appropriate for the spatial ecology and behaviour of flying-foxes, and,
- ii. allow estimation of the errors associated with counting animals.

This last point is critical as all monitoring methods have errors and without quantifying these it is impossible to determine the degree of confidence that we have in any population estimate.

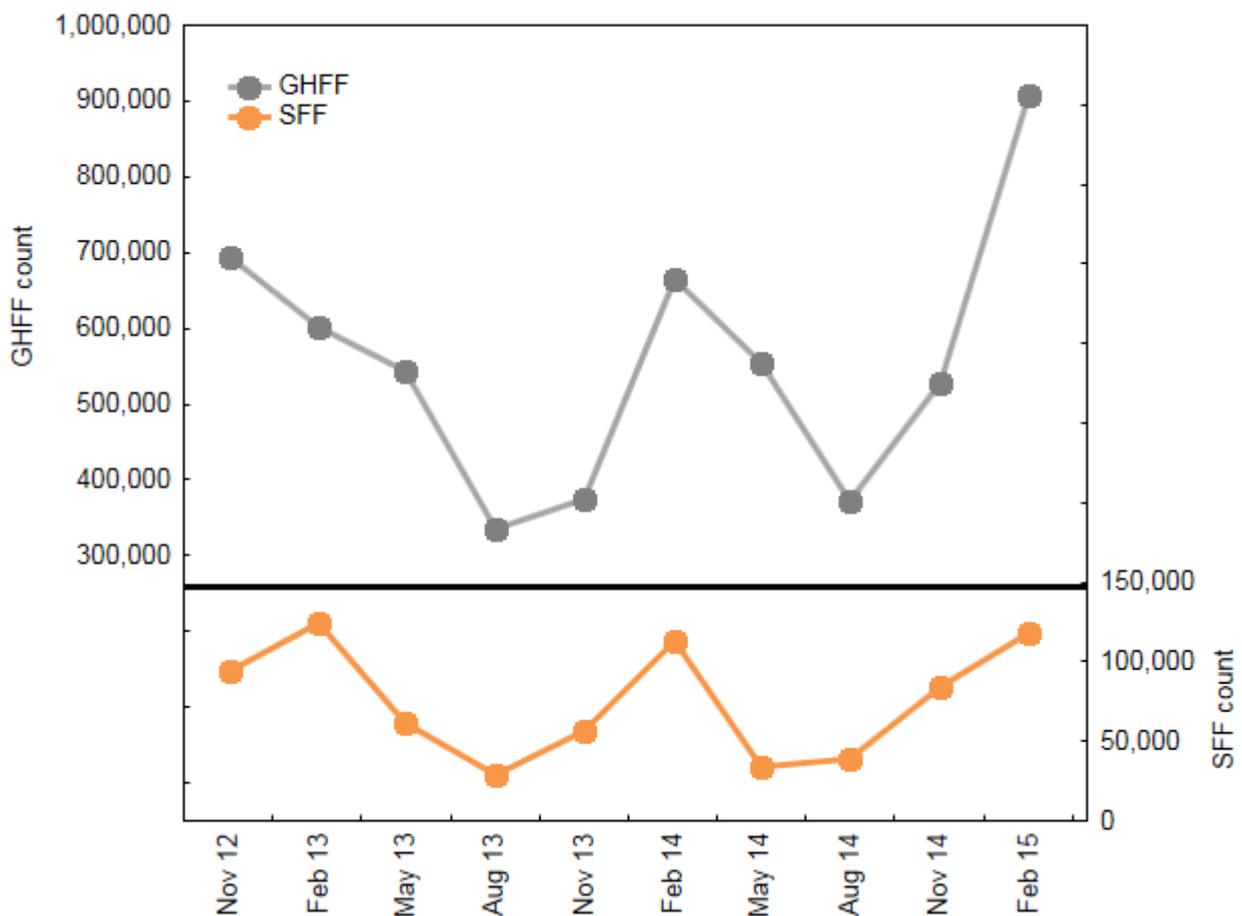
In the NFFMP, the flying-foxes at small camps are counted directly while a method called distance sampling is used at larger camps where the animals tolerate counters and area sampling where they don't. Distance sampling uses estimated flying-fox density and the area of the camp to provide an estimate of the number of animals present at a camp. It uses changes in the detection of flying-foxes with distance from the observer to estimate detection error, a key type of error. The NFFMP is attempting to simultaneously monitor all known camps of both EPBC-listed species each quarter. The program also aims to monitor as many camps of little-red (LRFF) and black flying-foxes (BFF) that occur in eastern Australia as resources allow.

The February 2015 Survey Results - a Summary.

The February 2015 survey marked the tenth count of the project. At present we have 98% of the data verified and entered from 289 counted camps. The estimate for the total GHFF population in these camps was a record 908,000 animals from 101 active camps. The vast majority of the animals were found in NSW (89%), with Qld and Victoria having a lower proportion of the total numbers than is usually the case (7 and 3% respectively), and SA and ACT having good numbers at their camps. Twenty-five camps were reported

as having more than 10,000 animals, and 4 camps were reported as having more than 50,000 animals (Bob's Farm, Glen William, MacLean and Nimbin).

One interesting observation that is confirmed in this count is that the GHFF appear to be showing a pattern of higher numbers in the summer months and lower numbers during the winter months. This is a similar, though less extreme, pattern to that observed in the SFF over the last 11 years. For SFFs this pattern appears to largely be due to seasonal changes in camp use, i.e. adults moving out of camps after mating and during the winter months and moving back into camps during pupping and the warmer months, as well as the presence of young bolstering numbers during the summer.



SFF numbers totalled 118,000 animals and these were distributed across 10 camps, with the largest numbers being at Daintree, Port Douglas and Goldsborough. A new camp is now being monitored on Normanby Island (quite the hardship!).

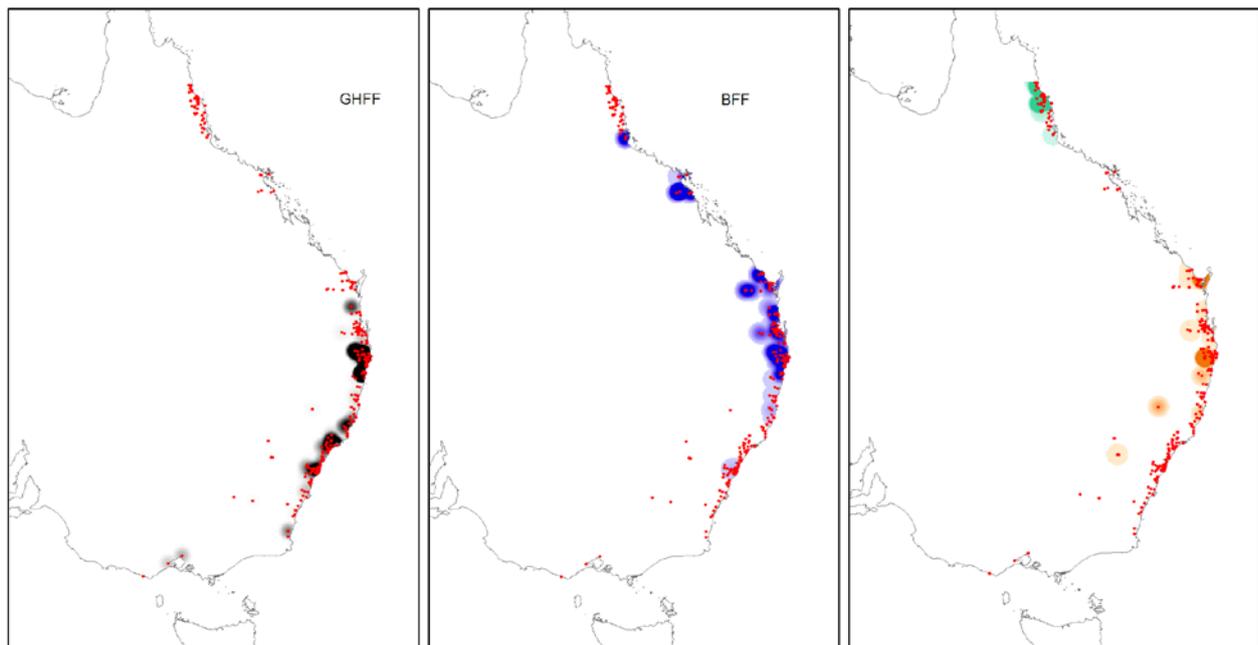
The NFFMP covers only part of the range of the BFF and LRFF, so while we present results from that part of the range, it needs to be remembered that these are not estimates of the total population size for these two species. In total 147,000 BFF were recorded, with 95% of those in Qld. Almost 452,000 LRFF were recorded across the counted camps, with large numbers at Hervey Bay, Casino and Tolga Scrub in FNQ.

A map of the camps covered in the NFFMP surveys can now be viewed at <http://www.environment.gov.au/node/16393>. Clicking on a camp icon will show a plot of species composition and numbers recorded at that camp during NFFMP surveys.

Where were the flying-foxes in February?

The heat maps below show the distribution of the different flying-fox species across the region of the NFFMP. The darker the colour the greater the abundance of flying-foxes in an area, black shading refers to GHFFs, blue to BFFs, green to SFFs and orange to LRFFs. Red triangles represent visited camps

As usual a reminder, the numbers presented here represent the reported numbers. While these are a reasonable guide, our final estimates of the population size differ slightly once our estimates of the errors associated with the counts are taken into account. We provide the reported numbers to give counters a feel for the outcome of the count.



The aim of the program is to establish a reliable baseline estimate of the flying fox populations and over time to estimate trends. This will take a number of years since each quarterly count will be subject to various factors which will influence the results, making assessment of population size more difficult. We are currently in the second year of the counts.

In order to achieve the best possible estimate it is important that surveys are performed using the methods correctly. We are continuing to conduct training sessions and the CSIRO urges any counters who have any questions or concerns about count methodology to contact Dr David Westcott at david.westcott@csiro.au or Mr Adam McKeown at adam.mckeown@csiro.au.

We are continually updating the database and adding new camps as we are made aware of them. If you know of camps that are not being counted please contact us at the CSIRO.

Thank you to all the counters who put in the hours to assist the program. Your effort is greatly appreciated.

If you would like to participate please contact:

New South Wales – Mike.Roache@environment.nsw.gov.au

Queensland — Pauline.Fitzgibbon@ehp.qld.gov.au

If you know of additional camps or have questions about the counts please contact:

david.westcott@csiro.au or adam.mckeown@csiro.au

Additional information about the program can be found at:

www.environment.gov.au/biodiversity/threatened/species/flying-foxes-monitoring-program.html

The National Flying-fox Monitoring Program is collaboration between the Australian Government, the South Australian, Victorian, New South Wales, Australian Capital Territory and Queensland governments, CSIRO, local governments and volunteers in New South Wales and Queensland. The CSIRO was contracted by the Rural Industries Research and Development Corporation to undertake this research project. This research was funded by the Commonwealth of Australia, the State of New South Wales, the State of Queensland and RIRDC under the National Hendra Virus Research Program.