

The National Flying-fox Monitoring Program

Report on the November 2013 count

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.

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 relevant state legislation. 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. 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 November Survey Results - a Summary.

The November 2013 survey marked the fifth count of the project. In November counts were conducted at a total of 308 grey-headed flying-fox camps with flying-foxes found at 101 of these. With 95% of the data

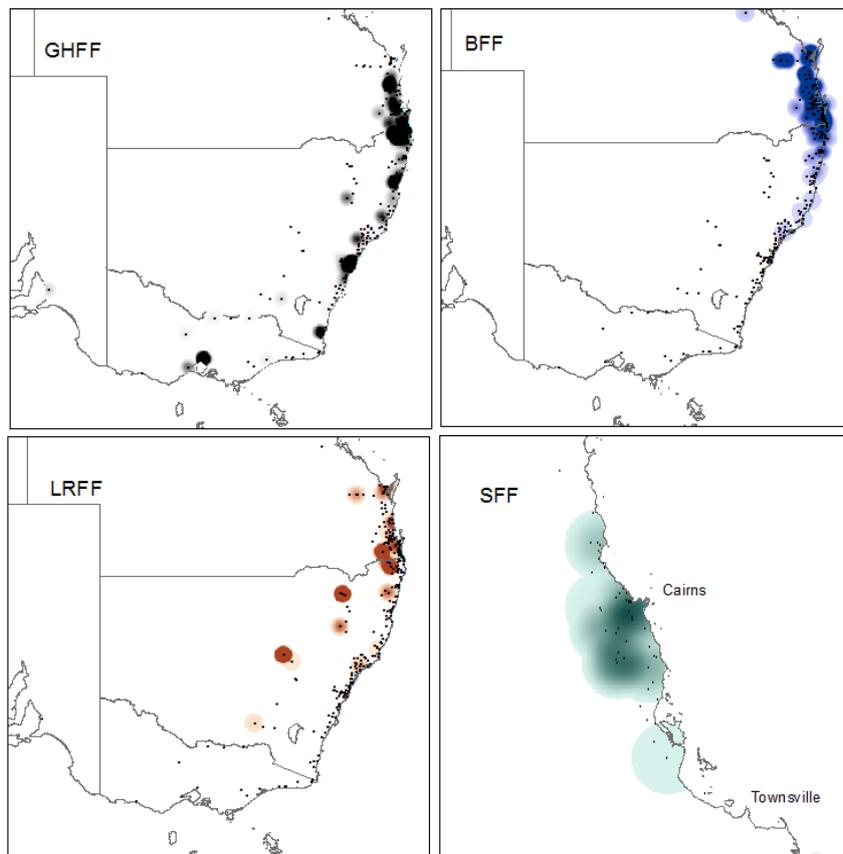
submitted the estimate for the total grey-headed flying-fox population in these camps was 365,000 animals. In this count 63% of the counted grey-headed flying-foxes were in NSW, 28% in Qld, 9% in Victoria and <1% were recorded in SA and the ACT. In Far North Queensland 56,000 spectacled flying-foxes were counted.

The largest recorded GHFF camp was one of 30,000 individuals at Kandanga near Gympie. This was an area where large numbers were recorded 12 months ago, but overall the area's numbers were well down this year. The northern rivers and Border ranges regions of NSW had fairly large numbers of animals, but over the whole range there were significantly lower numbers recorded than 12 months ago. Similar changes within the seasons have been observed in SFF. It's unclear what the drivers are for these low numbers, but the results from this survey show that there can be large differences both between and within seasons.

While the counts focused on the grey-headed and spectacled flying-foxes, black and little-red flying-foxes were also counted in the same geographic region. In total 126,000 BFF were recorded at 76 camps, the lowest numbers recorded so far in the surveys. However 78,000 LRFF were recorded, an increase on the numbers recorded during the cooler months, suggesting that they tend to return to NSW & SEQ during the summer months.

Where were the flying-foxes in November?

The heat maps 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 dots represent visited camps



As usual a reminder, we have provided numbers to give counters a feel for the outcome of the count and caution that at this point in time they are indicative only. We are still refining analysis methods and estimating some errors. As a consequence it is not yet possible to say what level of confidence can be assigned to the estimate. Describing the errors is a focus of our ongoing research.

The aim of the program is to establish a reliable baseline estimate of the flying fox populations in 2013 and over time to estimate trends. This will take a number of years. Each quarterly count will be subject to various factors which may influence the results. For example, the February 2013 count took place shortly after severe storms and flooding in northern Queensland and an unprecedented January heat wave in south-eastern Australia, which saw many flying foxes stressed or killed.

Comparing current monitoring to previous monitoring efforts is also difficult at this stage due to differences in the time of year in which surveys were conducted, the number and distribution of camps counted and the methods used.

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 on david.westcott@csiro.au or Mr Adam McKeown on adam.mckeown@csiro.au.

We are continually updating the database and adding new camps as we were 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 — Sarah.Pizzey@environment.nsw.gov.au

Queensland — Katrina.Prior@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 the Corporation under the National Hendra Virus Research Program.