SAVING OUR SPECIES

# Flying-foxes in Maclean

## Camp management case study


### Summary

The grey-headed flying-fox (*Pteropus poliocephalus*) is vulnerable to extinction in New South Wales. The Maclean flying-fox camp is an example of a historical roost site increasingly encroached upon by urban development. As a result, this camp has one of Australia's longest histories of ongoing human flying-fox conflict. Despite several attempts to disperse flying-foxes from town, the camp has remained within a series of small forest remnants close to residential properties, the Maclean High School and Maclean TAFE. However, dispersal attempts have also seen new camps form elsewhere, creating new conflicts.


Flying-foxes began seasonally roosting in Maclean as early as the 1890s. Since the 1990s, the camp has been continuously occupied. Three species of flying-fox may be found at the camp, which at times collectively number tens of thousands. Community concerns have focused on perceived disease risks to students and issues of faeces, noise and odour.


**Flying-foxes roosting immediately adjacent to school buildings.** Photo: Matthew Mo.

# Attempts to disperse flying-foxes

Historical records show that the community has repeatedly disturbed flying-foxes, initially to reduce numbers, then to disperse the entire camp. There are numerous reports of private and government sponsored hunts to kill or disperse flying-foxes using shooting, fires, explosives and, more recently, noise, light and smoke.

Despite disturbances, flying-foxes continued to return to Maclean. Moreover, disturbances and a lack of rainforest restoration caused flying-foxes to spill over into nearby forest remnants even closer to the school and residential properties. During dispersals, flying-foxes have also formed new camps elsewhere, including other urban areas, leading to conflict with residents in new locations. In effect, the problem has been spread over a broader area.

Management costs have not been readily available but conservative estimates of known costs have so far exceeded $900,000. This is a huge financial burden considering that flying-foxes returned, and dispersal actions spread the conflict to other parts of the Clarence Valley.

# More recent actions to manage flying-foxes *in-situ*

Clarence Valley Council and then Department of Environment, Climate Change and Water (DECCW) established the Maclean Flying-fox Working Group in 2009, which comprised representatives of Maclean High School, local residents, community groups and relevant state government agencies. This arrangement provides a more collaborative, consultative and informed approach to management. In 2010, DECCW, in collaboration with the working group, coordinated the preparation of the Maclean Flying-fox Management Strategy 2010, which was updated in 2018. Under both strategies, priority management actions focused on:

**Flying-foxes roosting immediately adjacent to school buildings.** Photo: Matthew Mo.

- increasing and maintaining separation between flying-foxes and the community
- improving community amenity around the camp
- the creation and improvement of flying-fox roost habitat in low conflict areas away from the community.

As funding was made available, Council and the working group have implemented recommendations from the strategy including hiring a project officer dedicated to dealing with communication and complaints around flying-foxes and installing tree-mounted sprinklers around Maclean High School for future deterrence trials.

# Habitat creation away from high conflict areas

Maclean was one of few locations where land managers partially offset the removal of vegetation to create buffers with rehabilitation of roost habitat. Replanting of a cleared and unused road reserve away from human occupation commenced in 2010. An experienced botanist was engaged to ensure that species selected for replanting were fast-growing and tolerant to flying-fox usage.

The core roost area was planted using a mix of emergent and mid/upper stratum species. In order to provide effective roost habitat, the emergent species were also chosen for their potential to develop wide spreading crowns, and included brush box (*Lophostemon confertus*), forest red gum (*Eucalyptus tereticornis*), flooded gum (*E. grandis*) and strangler fig (*Ficus watkinsiana*). Mid stratum species included a mix of bank-stabilising species such as swamp oak (*Casuarina glauca*), rainforest species and acacias.

**Flying foxes in roost vegetation established seven years prior.** Photo: Matthew Mo

There were initially concerns from the broader community that it would take at least 10 years for planted trees to constitute roosting habitat and that the young vegetation may be destroyed during times when large numbers of flying-foxes are present. However, trees reached approximately five metres in height and were used by roosting flying-foxes within as little as seven years. Similar timeframes have been achieved in habitat restoration programs in Wingham Brush and the Tweed Valley.

# Lessons learnt

- Attempts to disperse flying-foxes from Maclean were repeatedly ineffective and instead created problems for the broader Clarence Valley community.
- Approaches that have been implemented to help reduce community conflict in Maclean over the past decade have included:
  - establishing a diverse, multiagency working group that involves members of the public
  - managing flying-foxes *in-situ*
  - consistent, open and accurate messaging between organisations and the community, minimising misinformation.
- Resident involvement in working group meetings is vital to inform their understanding of the issues involved in flying-fox camp management. This can be challenging when tensions are high, but the Maclean Flying-fox Working Group is actively seeking to increase resident membership on the committee.
- Helping the community understand that there are no quick solutions and usually no long-term solutions that please everyone is important for encouraging realistic community expectations.
- Land managers should consider developing flying-fox management plans that include emergency management triggers with clear actions to address problems such as sudden increases in flying-foxes or new camps forming in urban areas.
- Habitat restoration and creation is achievable in the medium term (six to seven years) and is a sustainable strategy for expanding the camp away from human occupation.

**Bushland adjacent to a house that was not part of the camp prior to dispersal attempts.**
Photo: Matthew Mo.

# Further information

This case study has been prepared by the Department of Planning, Industry and Environment in collaboration with Clarence Valley Council and the Maclean Flying-fox Working Group.

More detailed accounts of this case study are published by the Royal Zoological Society of NSW:

- Contemporary issues in managing flying-fox camps: a publicly-documented conflict from Maclean on the north coast of NSW
- The outcomes and costs of relocating flying-fox camps: insights from the case of Maclean, Australia

Department of Planning, Industry and Environment,
email: info@environment.nsw.gov.au; website www.environment.nsw.gov.au.
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