

ABSTRACTS

LEARNING TO GIVE A FLYING FOX ABOUT BATS

Exploring ways to affect positive behaviour change towards a maligned species

Tyron de Kauwe | Environmental Operations, Sunshine Coast Council

Flying foxes have long standing negative associations as being dark, mysterious, creatures of the night. They have been feared for generations through their proliferation in vampire mythology and more recently through negative media campaigns associated with health concerns and nuisance value.

Misunderstanding and media sensationalism has perpetuated inherent fear of this species, so how do we draw focus back onto their keystone pollinating services and get people to give a flying fox about them?

Sunshine Coast Council has explored inclusive, immersive, interactive and innovative ways of engaging and educating the community on the critical ecosystem services of these farmers of the forest.

The success of the program has been demonstrated environmentally, socially and educationally including transforming 'bat haters' into 'bat cheerleaders'.

The presentation will cover the tools we have developed and future plans, such as:

- Bat Pod - A first of its kind educational podcast which sends students (10-15 years) on a conservation mission with a twist. A choose-your-own-adventure journey where participants tackle a challenge that Council faces on a regular basis – trying to balance the wellbeing of community with conservation of flying fox roosts.
- Bat Map – A Queensland-first interactive and data driven map for Council and community use which shows near-time flying fox population numbers across all current roosts, historic numbers and management actions.
- Guided Roost Tours – Connect with the species by seeing them up close and chatting to bat ecologists
- Follow Frankie board game – A large educational board game
- Co-developed multi-media game – An educational multi-media game following the journey and threats of Frankie the flying fox
- Interpretive signage
- Immersive sound pods and 360' virtual roost tours – We are exploring partnerships to bring people into a roost, without having a potential impact on the species
- And of course, our mascot FRANKIE THE FLYING FOX.

POPULATION AND MOVEMENT DATA FOR AUSTRALIAN FLYING-FOXES

Adam McKeown¹ | Dr Eric Vanderduys² | CSIRO Land & Water, ¹SA & ²Qld

COMMONWEALTH UPDATE

Christopher Hicks, Dr Sandra Abell, Peter Latch, Tim McGrath | Department of Climate Change, Energy, the Environment and Water

QUEENSLAND UPDATE Michael Messer ¹ , Lindsay Delzoppo ² ¹ Governance and Operational Policy ² Wildlife and Threatened Species Operations Department of Environment Science and Innovation
AUSTRALASIAN BAT SOCIETY FLYING-FOX UPDATE Jess Bracks, Maree Treadwell Kerr, Sarah Curran, Justin Welbergen Flying-fox Expert Group Co-Conveners Australasian Bat Society
NEW SOUTH WALES UPDATE Matthew Mo Senior Project Officer NSW Department of Environment and Heritage
SOUTH AUSTRALIAN UPDATE <u>Jason Van Weenen</u> , Liberty Olds Green Adelaide Department for Environment and Water
VICTORIAN UPDATE <u>Dr Leila Brook</u> , Warrick McGrath, Angus Willianson, Vural Yazgin Biodiversity Division Department of Energy, Environment & Climate Action
AUSTRALIAN CAPITAL TERRITORY UPDATE <u>Clare Wynter</u> ¹ and <u>Dr Veronica Rodriguez</u> ² ¹ ACT Wildlife ² Biodiversity Policy, Office of Nature Conservation, ACT Government

SPECTACLED FLYING-FOX RECOVERY TEAM UPDATE

Maree Treadwell Kerr, Sera Steves | The Spectacled Flying-Fox Recovery Team

The Spectacled Flying-fox (SFF) is a priority threatened species. The population declined by 75% between 2004 and 2017, and subsequently 23,000 animals died in a heat stress event in November 2018. The SFF was uplisted to Endangered under the EPBC Act in February 2019, under Queensland legislation in July 2019 and listed as endangered by IUCN in 2020.

The [SFF Recovery Team](#) (SFFRT) was formed in late 2021 to draft a new recovery plan and implement recovery actions. The team comprises Traditional Owners, regional NRM bodies, land managers and conservation organisations, rainforest regenerators, wildlife rescue and care organisations, local, state and Commonwealth government representatives, and, importantly, flying-fox researchers and ecologists.

In 2021 the team held a workshop to identify threats to assist drafting the Plan. After a dedicated Commonwealth Officer joined the team, a workshop was held in 2023 to prioritise research and management actions, including incorporating Traditional Ecological Knowledge, for recovery of the species. A workshop outcomes report was prepared to guide drafting the next phase of the Recovery Plan and the Draft Plan was reviewed by SFFRT members and flying-fox experts in late February 2024.

We will give an update on progress of the Plan and present the timeframe for endorsement by the Commonwealth and Queensland governments and proposed public consultation dates. We will describe some current funded recovery actions and research including community and traditional owner engagement in these activities. We will discuss some vital research and management gaps, that are still unfunded, to identify and protect critical foraging habitat and what needs to be done here.

We will finish on an inspiring note with some bold ideas from the new Communications Strategy funded by the Commonwealth to the major Wet Tropics NRM, Terrain, as part of their works program, with the remit: Make the SFF popular.

20 YEARS OF THE BAT HEALTH FOCUS GROUP

Shana Ahmed, Keren Cox-Witton | Wildlife Health Australia

20 years ago, Wildlife Health Australia (then called the Australian Wildlife Health Network) established a Bat Health Focus Group (BHFG) with the goal of identifying areas for future research and to act as a catalyst to improve collaboration, communication and coordination of Australian bat lyssavirus work for the region. Two decades on, the BHFG is an engaged and active group with an expanded scope and membership. The BHFG today uses a collaborative One Health approach and considers all bat health issues in the broader context of biosecurity, public health, livestock health and environmental impacts.

A lot has changed for Australia's flying-foxes in the past two decades. Research developments mean our understanding of their health, ecology and behaviour have progressed, and new challenges for their continued survival have arisen. The BHFG demonstrates how One Health focused, inclusive stewardship can make a real contribution to policy development, reporting, research, incident response and overall collaboration across multiple sectors to the benefit of flying-foxes. This presentation will highlight several of the key achievements from this group since its commencement in 2004 as well as providing a summary of more than 15 years of Australian bat lyssavirus testing data collated by the BHFG.

MITIGATING HEAT STRESS IN AUSTRALIAN FLYING-FOXES

Samantha Yabsley¹, Jessica Meade¹, Christopher Turbill¹, Matthew Mo², Eliane McCarthy¹, Annabel Dorrestein¹, John Martin^{1,3}, Justin Welbergen¹ | ¹Western Sydney University | ²NSW DCCEEW | ³Ecosure

Extreme heat events (EHEs) are a serious concern for the conservation management of flying-foxes (*Pteropus* spp.), as exposure to air temperatures (T_a) > 42°C can result in mass mortality, sometimes at biblical scales. To address this, land managers and wildlife rehabilitators sometimes use sprinklers to cool the roosting environment or flying-foxes directly. However, until recently there has been a lack of empirical evidence to support the use of sprinklers for heat stress mitigation. There are concerns that sprinklers may exacerbate heat stress under certain starting weather conditions because high humidity is known to impair evaporative cooling in other mammals. We used an automated split-system sprinkler in a grey-headed flying-fox (*P. poliocephalus*) roost near Sydney, Australia, to examine the effects of sprinklers on roost microclimatic conditions. Experiments were conducted across a range of ambient starting conditions, including during an EHE where flying-foxes died throughout the region. On average, sprinklers decreased T_a and increased dewpoint temperature, and during the EHE the sprinklers resulted in microclimatic conditions not known to be associated with mortality, thus providing local protection from the lethal conditions that prevailed elsewhere in the roost. However, the effects of the sprinklers were highly localised to the treatment area, and during the EHE the flying-foxes relocated from the sprinkler treatment site hours before they were activated, highlighting some important challenges for management. While our findings are promising, further research is needed to understand flying-fox behavioural and thermoregulatory responses to altered microclimatic conditions.

THE UTILITY OF GPS TRACKING FOR FLYING-FOX MANAGEMENT

Dr John Martin^{1,2}, Jessica Meade², Eliane McCarthy², Samantha Yabsley², Annabel Dorrestein², Ram Mohan², Senna Grady², Justin Welbergen² | ¹Ecosure | ²Western Sydney University

Learning about the movement behaviour of flying-foxes has profoundly informed their conservation and management, and in turn, associated community education initiatives. Grey-headed flying-foxes (*Pteropus poliocephalus*) have been shown to be nomadic, moving short (~10 km) and long (~300 km) distances between several hundred roosts spanning South Australia to Queensland. Roost occupancy may be continuous or variable, and the number of flying-foxes can rapidly fluctuate. Yet, most of the time this species moves to multiple foraging sites within ~20 km of the site where they are roosting. Here we report on the movement behaviour of 10 adult female grey-headed flying-foxes caught at the Campbelltown roost in 2023 in southwest Sydney, NSW. GPS tracking provided new understanding of local foraging movements to natural and urban areas surrounding the roost. Tracking showed the connectivity between local roosts and roosts across the species distribution. Grey-headed flying-foxes were recorded moving to western NSW, Victoria, Queensland, and South Australia from the Campbelltown camp. Valuable new information about the movement behaviour of all four mainland Australian flying-fox species remains to be assessed through future GPS tracking projects across each species distribution.

DO REHABILITATED AND HAND-REARED FLYING-FOXES SURVIVE IN THE WILD?

Dr Kerryn Parry-Jones¹, Sue Preston², Anja Divljan³ | ¹University of Sydney | ²Wildlife Animal Rescue and Care Society | ³Australian Museum

Flying-foxes that sustain injuries, fall ill, or are orphaned may find refuge in the care of rehabilitation societies across Eastern Australia. Following rehabilitation, these flying-foxes are released back into the wild, with uncertainty surrounding the success of the rehabilitation process and the survival of the released individuals. There was a general belief that hand-reared flying-foxes would struggle to adapt to the wild and that a significant number would die shortly after release. To address these concerns, a banding project was initiated in 1986 to assess the effectiveness of rehabilitation efforts and the viability of reintegrating flying-foxes into their natural habitat.

The primary objective of the project was to evaluate the success of rehabilitating flying-foxes in the wild, as well as to study their movements, longevity, and potential impact on species conservation. Over the course of 38 years, a total of 14,011 rehabilitated flying-foxes, predominantly the vulnerable Grey-headed Flying-fox (*Pteropus poliocephalus*), were banded and released under the Australian Bird and Bat Banding Scheme (ABBBS). While a significant number of banded flying-foxes remain unaccounted for post-release, those that have been recovered demonstrate that rehabilitated individuals can thrive in the wild, have extensive travel patterns, and contribute to the conservation of these species.

FLYING-FOX PARALYSIS SYNDROME

Dr. Alison Peel¹, on behalf of the Joint Flying Fox and Lorikeet Paralysis Syndromes Working Group
¹ Sydney School of Veterinary Science, University of Sydney, Sydney, NSW, Australia.

In recent summers, wildlife rehabilitators and veterinarians in southeast Queensland and New South Wales (NSW) have reported large numbers of flying foxes, presenting with neurological signs, including paralysis, protruding tongue, inability to swallow and respiratory difficulties. Affected species have included black flying-foxes (*Pteropus alecto*), grey-headed flying-foxes (*P. poliocephalus*), and little red flying-foxes (*P. scapulatus*). Many affected bats die or are euthanased, although cases with less severe symptoms often recover with supportive care. Laboratory investigations have failed to definitively identify a cause of this paralysis syndrome, now known as "Flying Fox Paralysis Syndrome (FFPS)". Importantly, bats infected with Australian Bat Lyssavirus (ABLV) can present similarly and should always be a consideration for bats presenting with neurological signs. Currently, a toxicosis is considered the most likely cause of FFPS, however screening for botulism, pesticides or plant-related toxins have not yet produced any conclusive results. While some localised clustering of cases has been observed, the wide-ranging movements of flying-foxes make it very difficult to determine where bats are exposed and to identify the causative agent.

Similarities have been identified between the clinical presentation, timing, and geographic distribution of flying fox paralysis cases with Lorikeet Paralysis Syndrome, which primarily affects rainbow lorikeets (*Trichoglossus haematodus*). Therefore, a multidisciplinary team is working to jointly investigate the cause of both Flying Fox Paralysis Syndrome and Lorikeet Paralysis Syndrome (LPS). Currently, this includes representatives from government, universities, wildlife veterinary hospitals, wildlife carer organisations, and a non-governmental coordinating body (Wildlife Health Australia). This talk will provide an update on current knowledge and actions within the joint LPS-FFPS working group.

WHERE THE BLOODY HELL ARE YOU? THE DECLINING OCCUPANCY OF KU-RING-GAI FLYING-FOX RESERVE

Haley Henning | Natural Areas | Ku-ring-gai Council

Where the bloody hell are you? The declining occupancy of Ku-ring-gai Flying Fox Reserve

We've protected your reserve;

We've removed the weeds and planted trees;

We've monitored your environment;

We've buffered the neighbours and educated the community...

So, *"where the bloody hell are you?"*

Since 1991 the Ku-ring-gai Flying Fox Reserve in Gordon, NSW, has been under a conservation agreement to protect and enhance roosting habitat for the Grey-headed Flying Fox. Ku-ring-gai Council has managed the reserve and monitored the colony in conjunction with Ku-ring-gai Bat Conservation Society (KBCS) since the 1980's. A Technical Advisory Group was formed and draws from expert advice across operational and strategic council teams, volunteer organisations including KBCS, and independent Flying-fox experts.

There has been long term bush regeneration and bushcare programs targeting priority weeds and maintaining habitat, including multiple revegetation efforts. Colony extents, flyout counts, noise levels and microclimate data have been consistently monitored to help us track and understand population fluctuations.

Council has worked to improve co-existence between the flying-fox colony and the local community. Through educational outreach and targeted mitigation strategies, we actively seek to foster a deeper appreciation for this critical species while minimising the impact on nearby residents.

Despite all our efforts, a gradual downward trend in occupancy can be seen through the years. Now, the camp has been largely vacant for 3 years with only small, transient groups stopping by unpredictably.

And so, just like Lara Bingle, we find ourselves asking – *"where the bloody hell are you?"*

Is the recent decline related to local management actions, or is there something happening outside the Flying Fox Reserve in Gordon that has impacted the camp? Understanding the potential causes for this decline is essential for guiding priority actions for long-term management of the reserve.

THE APPLICATION OF LONG-TERM FLYING FOX COLONY FOOTPRINT DATA AND HOW IT CAN BE APPLIED TO CONFLICT MANAGEMENT

Jess Gorrington and Andrew Evans | Environmental Services | City of Moreton Bay

City of Moreton Bay (Council) has over 50 flying fox colonies within its local government area, and the majority are located within the urban footprint with varied levels of community conflict. In 2020, Council adopted its Statement of Management Intent (SoMI) for managing flying fox colonies. This SoMI is based on the principle of co-existence between flying foxes and the community and does not support dispersal. The SoMI supports education, monitoring, research and on ground works to encourage co-existence with flying foxes through buffers, deterrents, etc.

Regular monitoring of flying fox colonies has been a key element of Council's flying fox management and has been used for community education and to inform on ground actions. Recently Council has digitised its long-term flying fox colony footprint dataset. The digitalisation of this data has allowed for GIS analysis of site occupancy and potential factors that influence site occupancy of a colony such as seasons, lifecycle stages and influx events.

This presentation will focus on the following:

- An overview of potential influencing factors to colony footprints and what this could mean for on ground actions; and
- How Council is implementing this dataset into community engagement.

FLYING-FOX HABITAT CONSERVATION AND PUBLIC HEALTH MANAGEMENT

Amanda Davis | Griffith University | Bat Conservation and Rescue Qld

This presentation addresses aspects of three of the themes from the National Flying-fox Strategic Vision:

- species and habitat conservation
- policy and research
- responsibilities, stewardship, education.

'Can flying-fox habitat conservation be a tool in public health management in Queensland?' was a Master of Environment research project which aimed to investigate whether habitat conservation can be proven to help keep flying-foxes away from humans, thereby reducing the number of human-bat interactions which can lead to bat bites and scratches and require costly Australian Bat Lyssavirus (ABLV) post exposure vaccinations. The initial quantitative analysis of monthly ABLV vaccinations in Queensland's Hospital and Health Service areas over 14 years, and the degree to which different factors influence these, showed differences across Queensland. The study revealed challenges in data availability and quality which have potential to hamper similar analyses in future. The study also highlighted the variety of geographic boundaries of bodies which play a role in flying-fox conservation, human health management, and local area governance in Queensland.

Information from the study has been combined with Bat Conservation and Rescue Queensland's bat rescue records to support a successful application for free billboard advertising in the Greater Brisbane area in January 2025 which aims to:

- 1) increase positive attitudes towards bats by raising awareness of the pollination benefits provided by flying-foxes and showing beautiful photographs of them
- 2) reduce the number of people requiring ABLV vaccinations in high-vaccination rate areas, by promoting the message that members of the public should not handle a bat themselves and so reducing public health risks
- 3) increase bats in trouble's chances of survival by encouraging members of the public to contact a rescue organisation if they see a bat needing help

In addition, the study has helped illuminate how the removal of flying-fox habitat for a proposed urban development has potential cross-boundary human impacts with implications for not only Local Government Authorities operations, but demand for medical attention in Hospital and Health Service areas.

BURDEKIN SHIRE'S JOURNEY - REACTIVE TO PROACTIVE

Dr Preeti Prayaga | Public Health and Environment | Burdekin Shire Council

Burdekin Shire Council (Council) has a relatively small flying fox population and human/flying fox conflict compared to other councils, however considering public expectations, Council faces increasing pressure from the public to solve instances of interactions and is therefore shifting from a reactive approach to proactive.

Historically all human/flying fox incursions have occurred around the township of Home Hill and Ayr with one roost existing away from the township for more than three decades. Council initiated reactive nudging/dispersal 3 to 4 times a year from early 2000 which reached its peak to 30 plus times a year from 2020 stretching Council resources and establishing three new areas of infestation within the town. Numbers range from hundreds of predominately black flying foxes, to a few thousand. Consultants were engaged post COVID when infestation were detected at 4 sites, in the two to three thousand range to conduct active dispersal in September 2022 at a huge cost. This reduced the population to nil at some sites to a maximum of 2 to 10 for a period. Continuous monitoring and nudging are undertaken to maintain the low numbers.

Council invested in training and resources and the modes of disturbance techniques were changed based on the

Flying fox response.

The council is interacting with other local governments and specialists within the field to build knowledge and expertise within the team.

The council views long-term management as essential to move away from reactive management and is currently implementing a long-term flying fox management plan.

The highlighted challenges are;

- Community perception and expectation
- Landscape – limited access to alternative open space to develop habitat
- Limited resources

To address challenges, the key components of the long-term management plan, include community education, development of key stakeholder relationships and review of policies and procedures.

FLYING-FOX HABITAT RESTORATION PROGRAM

Emmett Weatherford | Biodiversity Monitoring and Assessment | Shellharbour City Council

In May of 2022, Shellharbour City Council commenced a project as part of the Flying-fox Habitat Restoration Program, assisted by the New South Wales Government through its Environmental Trust in association with Local Government NSW.

The Shellharbour LGA is home to one permanent maternal Grey-headed Flying-fox colony (though other species of Flying-fox have also rarely been observed using the camp), in Blackbutt Forest Reserve.

The project covers an area of 2 hectares across two sites, Blackbutt Forest Reserve and Croom Reserve, and aims to provide new foraging habitat opportunities by revegetating land that is currently covered by a mix of exotic grasses and annuals.

To date, the habitat restoration side of the project has encountered a variety of challenges, including having to change site locations, difficulty sourcing seed and plant stock, staff shortages, and concerns about site damage through vandalism. Despite this, we have managed to complete the first stage of planting within schedule, getting 16,000 new plants into the ground, with survival rates of ~95%.

There is also a community engagement and education component to the project, which has so far had positive results. This has included in-person events such as a Dusk Fly-out Picnic and Nature Talk, kids' library story-times, Nature Talks in the Library, targeted workshops with local residents concerned about the project, community and school planting days, as well as several articles in our Sustainable Shellharbour e-Newsletter and social media posts about the project.

We are also undertaking monitoring of both the habitat restoration and community engagement aspects of the project, though at this early stage, no clear impacts are evident.

BRINGING BACK FLYING-FOX HABITAT TO THE KYNNUMBOON FLOODPLAIN

Matthew Bloor | Waterways | Tweed Shire Council

Council received funding from Local Government NSW through the Flying-Fox Habitat Restoration Program to create 4 hectares of flying-fox camp habitat on private property at Kynnumboon, near Murwillumbah, NSW. The intent of the program is to reduce human/flying-fox conflict by being proactive in creating potential roost habitat away from urban areas. The project combines habitat creation on 3.2ha of land previously under sugar cane cultivation, restoration works in 0.8 hectares of existing riparian vegetation, monitoring and annual community engagement activities. Around 12,000 native plants have been planted on the project site since June 2023. In

total, 145 species are establishing on the site, including pioneers, secondary and mature phase rainforest trees, plus selected sclerophyll and wetland species providing important foraging resources for flying-foxes. A constructed wetland has been created to capture and retain water from 2 hectares of the project area. Community engagement and participation has involved over 200 volunteers planting around 3,000 trees at two public events. Indigenous cultural heritage assessment, monitoring and inductions have been delivered by the Tweed Byron Local Aboriginal Land Council. The site has also been used to run workshops on propagating and raising native plants and Aboriginal use of plants. Further community engagement activities will be delivered each year to raise the profile of flying-fox conservation in the Tweed Shire. The eight-year project is part-funded by Tweed Shire Council and will be completed in 2030.

FRANKIE JR'S FLIGHT PATH: NAVIGATING CONSERVATION AND COMMUNITY NEEDS IN BYRON SHIRE'S FLYING-FOX MANAGEMENT PLAN

Claudia Caliri | Biodiversity Team | Byron Shire Council

Byron Shire Flying-Fox Camp Management Plan 2024-2029 is a comprehensive framework to balance community concerns with the flying-fox conservation needs. This updated plan builds on the previous 2018-2023 version, incorporating new research, best practices, and First Nations knowledge to enhance management strategies.

Byron Shire is home to the Black Flying-fox and the endangered Grey-headed Flying-fox. These species, vital for pollination and seed dispersal, face significant challenges due to their complex ecological roles, pressures from habitat clearing and sensitivity to environmental changes. The plan addresses these challenges by expanding its scope to include information on all known urban and rural camps, not just the urban ones previously presented. This reflects a shift towards a more holistic approach, recognizing the interconnected nature of flying-fox populations across their habitats.

Key successes of the revised plan include its integration of recent scientific findings, improved community engagement, and incorporation of First Nations perspectives. The plan navigates through critical issues such as climate change impacts, habitat fragmentation, and historical conflicts between flying-foxes and agriculture. It also responds to community feedback, which emphasized the need for better habitat management, education about flying-foxes, and mitigation of impacts from climate change and inappropriate netting practices.

Challenges remain, particularly in managing the impacts of flying-foxes on local communities while ensuring their conservation. The plan aims to bridge this gap by providing clear science-based guidelines for managing flying-fox populations and fostering greater community understanding and collaboration using creative strategies, such as Frankie Jr. histories.

Overall, the Flying-Fox Camp Management Plan 2024-2029 represents a significant step forward in managing and conserving Byron Shire's flying-foxes, supporting both ecological health and community well-being.

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