



Environmental
Defenders Office

Flying-fox roost management reform for Queensland

The Environmental Defenders Office and CAFNEC recognises the Traditional Owners and custodians of the land, seas and rivers of Australia. We pay our respects to Aboriginal and Torres Strait Islander elders past, present and emerging, and aspire to learn from traditional knowledge and customs so that, together, we can protect our environment and cultural heritage through law.

We acknowledge Jiritju Fourmile, a Gimuy Walubara man from Yidinji Nation. Jiritju's generous sharing of Cultural knowledge and expertise has shaped and guided our roost management framework reforms recommended in this report. If we can change our law, to reflect traditional knowledge and Lore, Flying-foxes will have a chance at recovery and save Spectacled Flying-foxes from extinction.

About CAFNEC

The Cairns and Far North Environment Centre (CAFNEC) is a not-for-profit incorporated association that acts as a conservation council for the region from Cardwell north to Torres Strait and from the east coast to the Gulf of Carpentaria. We work to protect the environment by enhancing the capacity of local groups and community members to act for conservation, strengthening networks within FNQ, facilitating region-wide cooperation to identify and coordinate action on issues of regional significance and when necessary, engaging in campaigns that are strategically important for the region.

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About EDO

Environmental Defenders Office (EDO) is the largest environmental legal centre in the Australia-Pacific, dedicated to protecting our climate, communities and shared environment by providing access to justice, running groundbreaking litigation and leading law reform advocacy.

We are an accredited community legal service and a non-government, not-for-profit organisation that uses the law to protect and defend Australia's wildlife, people and places.

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Executive Summary

“Flying foxes are intelligent and remarkable. These unique animals help regenerate our forests and keep ecosystems healthy through pollination and seed dispersal. They are a migratory and nomadic ‘keystone’ species; meaning a species that many other species of plants and animals rely upon for their survival and wellbeing. Flying foxes, like bees, help drive biodiversity, and faced with the threat of climate change, land clearing, and other human-caused ecological pressures, we need them more than ever.”

The Spectacled Flying-fox is a particularly important species as it is a keystone species of the Wet Tropics World Heritage Area. Listed as endangered, the species is under threat from climate change induced mass death events and human conflict threats. At this time of population stress, the preservation and enhancement of roosting habitat is more important than ever. The Spectacled Flying-fox is on the brink of collapse. The time for reform is now, or we will lose this vital species.

Flying-fox roosts in urban environments can be a source of human-Flying-fox conflict. The current Queensland framework for managing roosts and resolving conflict provides that the solution is the removal of the Flying-foxes from their roosts. This approach to Flying-fox management is outdated and ineffective. Additionally, it often increases stress on the species. Given the species’ decline and the known impacts from climate change, we cannot be taking any actions that will hasten them into extinction.

Overarching recommendation:
A modern framework is needed to enable the co-existence of humans and Flying-foxes in urban environments. Such a framework must be developed in conformity to First Nations’ Cultural Protocols and up to date scientific knowledge, and approach conflict resolution with co-existence and recovery at its core.



This report was prepared by the EDO on behalf of the Cairns and Far North Environment Centre. **Part One** identifies the cultural and ecological significance and the current threats to the Spectacled Flying-fox. **Part Two** examines current laws and regulations for the management of Flying-fox roosts in Queensland, and under national law. It also identifies approaches in other jurisdictions. **Part Three** makes recommendations for reform to establish a modern framework for roost management.

Summary of Recommendations

Recommendation: Repeal local government's 'as of right' authority to manage Flying-fox roosts under the *Nature Conservation Act 1996* and the *Nature Conservation (Animals) Regulations 2020* to ensure activities which exceed a low impact threshold are appropriately assessed through a permit system.

Recommendation: Design and implement a modern framework for roost management in Queensland informed by First Nations' Lore and science to ensure Flying-foxes are sustainably managed and protected for the conservation of our natural environment.

Recommendation: The modern framework be underpinned by the principles of co-existence and restoration with non-interference management actions prioritised for conflict resolution.

Recommendation: Local governments are funded to develop and implement Management Plans for the roosts in their area which identify likely sources of conflict and appropriate management actions and triggers.

Recommendation: Management Plans must be co-designed, developed and implemented with local First Nations Peoples to ensure conformance with Cultural Protocols.



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Part One:

Status of the Flying-fox

Introduction

Queensland is home to four species of Flying-foxes whose populations range from least concern to endangered. One of these four, the Spectacled Flying-fox is facing serious threat from climate change, urban encroachment and conflict with humans. While the Spectacled Flying-fox is currently listed as Endangered, scientists have nominated the species for listing as critically endangered after the severe heat event in Far North Queensland in November 2018. Despite the decline of this protected keystone species, local governments throughout North Queensland have been using their “as of right” powers under the *Nature Conservation (Animals) Regulations 2020* (Qld) (“**Regulations**”) to disperse and deter the animals from city centres, including removal

of the species from the Cairns City Library nationally significant camp. Scientists, Traditional Owners, environmental councils and conservation groups hold the view that the current framework is inappropriate, and a modern management framework is required to sustainably manage human conflict with Flying-foxes and promote recovery of the Spectacled Flying-fox.

Table 1 sets out the current conservation status of the four Flying-fox species under the Queensland *Nature Conservation Act*, the Commonwealth *Environmental Protection and Biodiversity Conservation Act*, and the *International Union for the Conservation of Nature Red List of Threatened Species*.

Name	NCA status	EPBC status	IUCN status
Spectacled Flying-fox (<i>Pteropus conspicillatus</i> subsp. <i>conspicillatus</i>)	Endangered	Endangered	Endangered
Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)	Least concern	Vulnerable	Vulnerable
Black Flying-fox (<i>Pteropus alecto</i> subsp. <i>gouldii</i>)	Least concern	Not listed	Least concern
Little Red Flying-fox (<i>Pteropus scapulatus</i>)	Least concern	Not listed	Least concern

Table 1 - Current conservation status of the four Flying-fox species.

Aboriginal Culture and Lore in our environment

First Nations' Lore is a way of living and interacting with Country that balances human needs and environmental needs to ensure that the environment and ecosystem which nurtures, supports, and sustains human life, is also nurtured, supported, and sustained. Country is sacred and spiritual, with Culture, Law, Lore, spirituality, social obligations and kinship all stemming from relationships to and with the Land.²

Spectacled Flying-foxes are of special importance to the Wet Tropics World Heritage Area. The Gimuy Walubara Yidinji People are Custodians of the Wet Tropics Country and they have long cared for and protected the species in accordance with their Cultural Protocols.

Case study: Cultural Protocol

I am Jiritju Fourmile, a Gimuy Walubara man from the Yidinji Nation. My totem is the cassowary. "Gimuy" is the traditional name for Cairns. "Walu" means "side" and "barra" means mountain. This name means that I am from the area now called Cairns (Gimuy) on the mountain side. The boundary of the Yidinji Nation runs from south of the Barron River, down to Russell River, along the coast out to the Great Barrier Reef, and inland out to the south of the Atherton Tablelands.

If I could summarise our culture, I would say that the core of culture is survival. Survival is integrated into our songs, dances and teachings. We hunt, we forage for bushfoods that sustain us and in order to survive in the future, we protect the Country and nurture it. Tied up in this is the interconnection, between animal and animal, animal and plant and environment and person, all in a web. Health of people and health of Country are the same thing.

A huge part of our culture is watching, monitoring and observing. To continue it, we need to know what's happening on Country. This includes learning how to navigate and orienteer using landscapes, knowing which reefs to fish off and where the best hunting places are.

Part of why we know our Country so well is because we are nomadic people, we like to walk around sometimes. Historically, we have always moved from place to place, every couple of months, with the seasons. In some areas, people still do that. But for us, our Country on Gimuy is now partly taken up by city. Our places that we would go are now housing developments or parks.

Because culture is so interlinked, it only takes one thing to collapse for everything to begin a slow decline. Now, in our environment, things are starting to collapse one by one. This is causing a series of flow on effects to our culture, and eventually, our survival.

If I had to tell that story to my grandkids and to the next generation, that would be a very sad occasion. I would have to say, "when I was a young boy, there was plenty here, but now there is nothing."

The decline in the availability of animals and plants due to increasing heat and other climate change impacts, has meant that we cannot always eat food in the traditional way. Instead, we are having to eat more foods that we have not eaten culturally or traditionally.



My biggest concern is the possibility that the reduction in availability of food will mean that our sharing practice becomes limited only to immediate families. This would significantly affect the way that we live. I hope that our practice of sharing will always be there and that it will not come to reducing the amount of people that we share with.

In November 2018, in Gimuy, we saw a huge Spectacled Flying-fox die-off. Over a period of about a week, a third of the Australian population perished. The temperatures at the time were around 47°C as far as I remember. The Flying-foxes just couldn't handle the heat and they were lying in piles on the ground from where they had fallen. The roofs of people's houses in the area where the colonies lived were covered with dead Flying-foxes. I remember hearing the pups crying as they clung to their dead mums. Many thousands of Flying-foxes died that week. That was their next generation gone.

The Flying-fox is a big part of our Aboriginal community. Our mobs eat Flying-foxes and have throughout history. They have been an important medicine for us as they help people with respiratory problems like asthma. Now, we don't really eat Flying-fox anymore. At this rate, their populations are struggling so much that it wouldn't be sustainable. That is a loss for the animals and a loss for the black community as well. Despite our best efforts, we were only able to save about 12 a day. At a site where there was a mass-death of Flying-foxes, just down the road in Edmonton, I can't see any left when I drive past.

One of the most magical things about Gimuy used to be watching the Flying-foxes cover the evening with a curtain of black. Now, we barely see any. Soon, we will probably see none. I expect that we are probably going to see another mass die-off of the species in the very near future. I suspect that there won't be any Flying foxes in Gimuy within five years. This will mean

another connection to Country gone. What else will then keep us connected to the land? One less animal means one less Goopi, one less spirit. When we are losing spirits, our storylines are changing. We have stories about the fish, the crabs, the prawns, the reefs and the Flying-foxes too. We will always tell stories, but as the animal's lives are changing, so must the stories.

Law reform should align with cultural practices and protocols. Taking only during certain periods when population allows. Local and state government must follow Aboriginal Cultural Protocols which ensures the survival of any flora or fauna species. The knowledge to protect species and the land is within the Lore. Government must actively engage with us and accept our knowledge and cultural practices to ensure our Cultural Protocols is adhered to and imbedded as the foundation of our management policies for the Flying-foxes moving forward.

Basically, our way of ensuring that the next generation has food for themselves and the next must be followed. Western policies that align with the Lore should be in place, then you will never go wrong. Having local and state government following the Lore, then you will always be about protecting these species and the land. That is what Lore is always about, you are not thinking about yourself and when following Protocol, you will be doing what is right by the land and the people. An example of this Lore is only taking what you need and not what you want. There is a right time to take and a time to give.
– Jiritju Fourmile, Yidinji Nation.

Spectacled Flying-fox and the Wet Tropics World Heritage Area

The Wet Tropics is under pressure from climate change impacts with long term declines expected in distribution and population of many rainforest species, with declines already being observed earlier than anticipated.³

The interconnection and importance of the Spectacled Flying-fox to the Wet Tropics and coastal rainforests is recognised by western science. The species can travel great distances and act as both a pollinator and propagator for many rainforest species. They are particularly important for the recovery of fragmented areas due to their wide range of travel.

The sustainable management of the Spectacled Flying-fox is imperative for the health and survival of our World Heritage Wet Tropics. The case study below by Dr Noel Preece highlights the role of the Spectacled Flying-fox and the threats it faces.

Case study: Spectacled Flying-fox biology, ecosystem importance and threats

Spectacled Flying-foxes (Pteropus conspicillatus Gould 1850) are specialists of the rainforests in the Wet Tropics region of far north Queensland.⁴ They are the only Australian Flying-fox closely associated with rainforests. They also use eucalypt and mangrove forests near rainforests. They feed mainly on fruit, pollen, nectar and leaves of a wide variety of tree species and are critical to rainforest regeneration and seed distribution in both rainforests and eucalypt forests.⁵ Spectacled Flying-foxes fly frequently and in large numbers between their preferred habitats and play an important role not only in pollination and seed dispersal⁶ but also act as mobile links between habitat patches and different vegetation communities (Westcott and McKeown, unpubl. data).⁷

In Australia the Spectacled Flying-fox ranges patchily from Cape York (Iron and McIlwraith Ranges), to the Wet Tropics, and some small populations in coastal central Queensland between Mackay and Rockhampton.⁸ The Mackay population seems to

have gone as it has not been recorded there since 2007 (D. Westcott pers. comm. March 2021). Most of the Australian population (>98%) is found in the Wet Tropics in the Ingham to Cooktown region, with a small population, on the order of hundreds of individuals, occurring in the Iron and McIlwraith Ranges of Cape York.⁹

They roost in camps of up to tens of thousands of individuals, and may sometimes share their roosts with other mainland species of Flying-foxes¹⁰ such as the Little Red Flying-fox. There are currently 64 known camps in the Wet Tropics Bioregion which are used seasonally with highest numbers on camps from November to February.¹¹

The Spectacled Flying-fox's range covers a number of National Parks, the Wet Tropics World Heritage Area, Nature Refuges and Indigenous Protected Areas. Critically, however, 86% of camps and roosts fall outside these protected areas.¹²



The Spectacled Flying-fox population has suffered a population crash (>80%) over the past 15 years.¹³ From the Wet Tropics population of around 326,000 in 2004,¹⁴ and possibly around 800,000 in the 1980's,¹⁵ the species suffered a 75% decline to about 78,000 in 2017 due to cyclones, habitat loss and persecution.¹⁶ A single heat event killed 23,000 animals in Cairns in 2018.¹⁷ From once being common and abundant, the Spectacled Flying-fox has declined to low numbers that could have pushed the species towards being functionally extinct.¹⁸ This would mean that they no longer function to distribute seeds across landscapes because they have crossed what is known as an ecological threshold.¹⁹ The consequences of loss of function are that rainforest trees lose one of the main means of moving seeds and pollen to other areas, reducing cross-fertilization within species and deposit of seeds into areas where they could germinate and maintain forests.

The primary known threat to the survival of the Spectacled Flying-fox is global warming and associated extreme heat events and intense storms such as cyclones, and loss and degradation of foraging and roosting habitat. Conflict with people, including disturbance in camps and mortality from actions to manage commercial fruit crops, is considered to be a moderate threat, but is increasing in urban areas. The level of threat caused by electrocution on power lines and entanglement in netting and barbed-wire fences is relatively low. Some animals succumb to paralysis from tick paralysis, which appears to be localised to the Atherton Tableland. – Dr Noel Peece.

Why is the Spectacled Flying-fox in decline?

The previous case studies have described the threats to Flying-foxes in Queensland. Science and Cultural knowledge state that threats have had a significant impact on the decline of the Spectacled Flying-fox in recent years with climate change being a major threat to their roosting habits. Human impacts from urban encroachment are reducing the habitat where Flying-foxes can live, including the dispersal of maternity camps where the next generation of Flying-foxes were to be born and raised.

The sustainability of maternity camps is integral to the recovery of the species. Despite this, dispersals are occurring at maternity camps across Queensland during late term pregnancy, and pup rearing season. These dispersals have occurred within 3 years of a mass death heat event and as such greatly reduced the numbers expected for that generation.

Case study: Dispersals across the state – where do the Flying-foxes go?

In 2013 the Queensland Newman Government made changes to the Nature Conservation Act 1999 and introduced an ‘as of right’ authority and Code of Practice for the Ecologically Sustainable Management of Flying Fox Roosts. The laws effectively devolved the management of Flying-foxes to regional councils, allowing them to disperse Flying-foxes without impact assessments, public consultation, with minimal notice and no reporting.

Since the introduction of these laws there has been a wave of dispersal activity across the State. However, there is no publicly available record that lists where activities have occurred, and no requirement of

the State to do so. Figure 1 shows current and historical dispersal activities that have featured in public news channels across Queensland. It is likely that this map is not a comprehensive picture of the dispersal activities of Flying-foxes across the state, however it demonstrates that dispersal is a common management practice.



Figure 1: Dispersal Activities Qld 2020

- Orange: Current dispersals
- Blue: Historical dispersals
- Green: Dispersal decision pending

Most of these dispersals occurred without oversight from the Commonwealth Government under the *Environmental Protection and Biodiversity Conservation Act 1999* (“EPBC Act”), as the activities often fall below the “significant impact” threshold. It could be argued that individually these dispersals wouldn’t result in a significant impact to the population of a species, but with the number of dispersal actions occurring across the state, there are likely to be cumulative impacts to the populations, and leaves the question; where are the Flying-foxes allowed to roost?



- Spectacled flying-fox
- Black flying-fox
- Grey-headed flying-fox
- Little red flying-fox

Figure 2: Distribution of Australia’s four mainland Flying-fox species

Currey K, Kendal D, Van der Ree R, Lentini PE, Land Manager Perspectives on Conflict Mitigation Strategies for Urban Flying-fox Camps. *Diversity*. 2018; 10(2):39 <https://doi.org/10.3390/d10020039>

As Figure 2 shows, the distribution of Queensland’s Flying-fox populations are predominantly coastal, aligning with increasing urbanisation of the Queensland coast as human population increases. The current Flying Fox management laws will allow for the dispersal of Flying-foxes across the State to continue without a full understanding of the impacts to the populations of the species, or the cumulative impact of such actions.

Currently 2 of the 4 species of Flying-fox found in Qld are listed as threatened, requiring the Queensland Government and Commonwealth Government to act for the protection and recovery of the species. The current management laws are allowing for Flying-foxes to be subject to distressing and disruptive actions without any proper understanding of the impacts to their survival through proper environmental impact assessments. Certainly these actions are not assisting in the recovery of the species. A framework of management needs to be developed which allows for the management of Flying-foxes in a way that assesses the impacts of management actions, their cumulative impacts and delivers on recovery objectives for threatened species. – Lucy Graham, Director of Cairns and Far North Environment Centre



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Part Two:

Current laws for the Spectacled Flying-fox

The current management laws are hastening the decline of the Flying-foxes in Queensland and most importantly the likely extinction of the keystone Spectacled Flying-fox. This section examines how Flying-fox roosts are managed:

- in Queensland;
- nationally under the *Environmental Protection and Biodiversity Conservation Act*; and
- in other jurisdictions.

Flying-fox roost management in Queensland

Flying-fox roosts are uniquely managed under the Nature Conservation Act 1992 (“NCA”) and the Regulations. All animals protected under the NCA are protected from being killed, injured, or harmed (among others)²⁰; this includes Flying-foxes. In addition to the general protection, Flying-foxes have a dedicated section in the NCA. Section 88C prevents the unauthorised disturbing and driving away of Flying-foxes from roosts, and destruction of Flying-fox roosts.

While this special protection exists, there is much scope within the legislation to interfere with the species. These interference actions can be authorised in four ways:

1. Damage mitigation permit;
2. Flying-fox roost management permit;
3. Low impact activities; and
4. Under the local government’s “as of right” authority.

Damage mitigation permit

Damage mitigation permits (“DMP”) are not intended for the purpose of roost management, but to protect commercial crop growers from damage or economic harm.²¹ Flying-foxes killed under a damage mitigation permit must conform with the Code of Practice— *Ecologically sustainable lethal take of flying-foxes for crop protection*. While the DMP cannot authorise the killing for the endangered Spectacled Flying-fox,²² Little Reds, Black and Grey-headed Flying-foxes may be killed under this permit. Before a DMP is issued, the Chief Executive must be satisfied that there has been a reasonable attempt to implement non-lethal methods, and the damage which may be suffered is significant.²³

Despite permit allocations occurring as recently as 2021, data on the numbers killed under the DMP has not been published since 2017 when 207 were killed.²⁴

Flying-fox roost management permit

Any member of the public may make an application for a Flying-fox roost management permit provided it is for the purpose to prevent damage to or loss of property caused by Flying-foxes, or preventing or minimising a threat to human health and wellbeing.²⁵

If the purpose is to prevent damage or loss to property, the Chief Executive must be satisfied that:

- the Flying-foxes are causing or may cause damage;
- the landholder has made a reasonable attempt to prevent or minimise damage;
- if the damage is not prevented or controlled that person may suffer significant economic loss or that the ecological sustainability of nature is likely to be harmed;
- the action under the permit would not adversely affect the survival of Flying-foxes in the wild; and
- the proposed way of taking action under the permit is humane.²⁶

If the purpose is to prevent or minimise threat to human health and wellbeing, the Chief Executive must be satisfied that:

- the threat exists;
- the action is unlikely to detrimentally affect the survival of Flying-foxes in the wild; and
- the proposed way of taking action under the permit is humane and not likely to cause unnecessary suffering to the Flying-foxes.²⁷

The Chief Executive may impose a condition to comply with the *Code of Practice: Ecologically sustainable management of flying-fox roosts*. The Code is for use by local governments when they are undertaking roost management activity within their “as of right” authority under the Regulations. The Chief Executive may require individual permit holders to comply with all or part of the Code.

Low impact activities

Some low impact activities which affect Flying-fox roosts can be undertaken by any person and do not require a permit. These activities relate to roosts trees and include:

- cut the branches of the tree;
- put mulch near the tree;
- mow grass near the tree;
- cut, remove or destroy vegetation near the tree;
- use a hose or water sprinkler near the tree; and
- build, maintain or remove infrastructure near the tree.²⁸

When performing low impact activities, they must be done in accordance with the *Code of practice - Low impact activities affecting flying-fox roosts* (“Low Impact Code”).

The Low Impact Code sets out how a person may undertake low impact activities at or near Flying-fox roosts in Queensland. The Low Impact Code also places limitations and restrictions on the above activities such as limiting tree trimming to 10% and only where there are no flying-foxes near the roost tree.

Under the Low Impact Code all activities must cease if a Flying-fox is found killed, injured or found on the ground as a result of the activity, or when 30% or more of the colony leave the roost and remain airborne for five minutes or more.²⁹

The Low Impact Code further states that the person in charge of an activity must **consider** avoiding undertaking the activity during periods where pregnant females or dependent young are in the roost, during or immediately after extreme weather events.³⁰ This merely requires consideration and does not prohibit activities when Flying-foxes are most vulnerable.



“As of right” authority

Section 61 of the Regulations provides local governments with special authority (“as of right” authority) to destroy a Flying-fox roost, drive away Flying-foxes from a roost, and disturb Flying-foxes in a roost if they adhere to the *Code of Practice - Ecologically sustainable management of flying-fox roosts* (“**Management Code**”). The *Flying-fox roost management guidelines* have also been published by the Department of Environment and Science (“DES”) to assist local government and individuals to meet the requirements of the Management Code.

The Management Code prohibits certain actions including destroying a roost tree while Flying-foxes are nearby, driving away Flying-foxes outside the ‘fly-in, fly-out’ period, continuing actions for longer than 3 hours each period, and the use of lethal measures. If a Flying-fox is found killed, injured, or on the ground, all actions must cease until the Flying-fox has been removed and the person in charge considers that the resuming of the action poses no risk to other Flying-foxes on the advice of a knowledgeable person.

At 2.6, the Management Code notes that management actions **may** be taken at any time of the year, but the *person in charge must consider* avoiding management actions:

- during certain periods of the year, e.g. when females are in late stages of pregnancy or when there are dependant pups;
- during or immediately after extreme climate or weather events; and
- when actions may negatively impact the conservation of Flying-fox species listed as threatened wildlife under the NCA.

Like the Low Impact Code, the Management Code merely requires consideration of these conditions and does not prohibit activities when Flying-foxes are most vulnerable (or listed for protection under State or Commonwealth laws).



How have local governments used this authority?

Conflict between humans and Flying-foxes can arise when existing in close proximity. The current outdated framework to manage this conflict was introduced by the Newman government in 2013 and focuses on removing the Flying-foxes from the conflict rather than taking a modern approach to develop a sustainable management system.

Under the current Queensland framework, local governments with authority to manage roosts and the community conflict which may arise, may use the discretion provided for in the Regulations to take management action with poor outcomes for Flying-foxes, particularly for those suffering acute population stress. Further, the cumulative impact of successive decisions which may have minor impacts on Flying-foxes for each action, are not considered as a whole, resulting in overall poor outcomes. The approach of the Cairns Regional Council in managing the Cairns City Library Spectacled Flying-fox roost exemplifies this.

Currently there is no application or consideration of significant impacts or the need to refer activities to the Commonwealth Department of Agriculture, Water and Environment (“DAWE”) for assessment in the Code of Practice. This means the onus is on the proponent to refer the activity upon their own assessment if the proposed activity will have a significant impact on the species. There are no longer opportunities for the public to refer the activity under the *Environmental Protection and Biodiversity Conservation Act 1999* (“EPBC Act”) which means the Flying-foxes are relying on the local governments to make the assessment of what will or will not have a significant impact on the species. Historically local governments focused on the human interaction impacts and not on the survival of the species.

The EPBC Act

The EPBC Act protects listed threatened species in Australia. As noted above in Table 1, of the four species of Flying-foxes native to Queensland, the Spectacled Flying-fox is listed as endangered and the Grey-headed Flying-fox is listed as vulnerable under the Commonwealth legislation. The scientific community has now nominated the Spectacled Flying-fox to be uplisted as critically endangered due to the population loss as result of the heat wave event in Far North Queensland in November 2018.

If an action is going to have a “significant impact” on a threatened species, the action may only proceed if approved by the Commonwealth Environment Minister and may be subject to any conditions deemed necessary.

Relating to endangered species, the *Matters of Environmental Significance – Significant impact guidelines* 1.1 state that an action is likely have a significant impact if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of a population;
- reduce the area of occupancy of the species;
- fragment an existing population into two or more populations;
- adversely affect habitat critical to the survival of a species;
- disrupt the breeding cycle of a population;
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;

- result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat;
- introduce disease that may cause the species to decline; or
- interfere with the recovery of the species.

Despite the rapid decline in Spectacled Flying-fox numbers and the increasing external threats posed to the species, often actions have not been deemed to be significant enough to fall under the protection of the EPBC Act. Further, the cumulative impacts of successive actions are not assessed.



“The Australian Government Minister for the Environment may make or adopt and implement recovery plans for threatened fauna, threatened flora (other than conservation dependent species) and threatened ecological communities listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. Recovery plans set out the research and management actions necessary to stop the decline of, and support the recovery of, listed threatened species or threatened ecological communities. The aim of a recovery plan is to maximise the long-term survival in the wild of a threatened species or ecological community.”³¹

Spectacled Flying-fox Recovery Plan

The Spectacled Flying-fox Recovery Plan expired in April 2020. The Spectacled Flying-fox Recovery Team is currently drafting a new Recovery Plan for the species. At the time of writing this Report the Commonwealth Government is reviewing which species may have a Recovery Plan. There are grave concerns that the Spectacled Flying-fox will be denied the protections of a Recovery Plan. This makes the need for law reform at State level even more urgent to prevent the extinction of the keystone species.

Case study: Cumulative impacts on Spectacled Flying-foxes

Examining the management of the Cairns City Library Spectacled Flying-fox Camp, a nationally significant roost, demonstrates how legislation has failed to protect Spectacled Flying-fox. Particularly, the lack of consideration of cumulative impacts has allowed for serious impacts to the roost. Since the Spectacled Flying-fox were listed as vulnerable in 2002 there has been ongoing destruction of roost trees at the Cairns Library Roost, including:

- 2013 approval saw trimming of roosts³²
- 2014 saw the removal of 11 trees from the Novotel section of the city roost³³
- 2016 removal of 16 trees from the Novotel site³⁴
- 2017 Five trees cleared for the Crystalbrook development³⁵

It could be argued that individually these approvals wouldn't result in a significant impact, but cumulatively it has resulted in the destruction of 32 roost trees from a nationally significant camp. The loss of habitat is a significant stress to the species and the EPBC Act has failed to protect significant habitat.

With only 5 trees left in a roost that once had 32 trees, Flying-foxes were forced into a much smaller habitat, meaning that there was a lot more pressure on the remaining trees. Flying-foxes continued to regularly roost in the trees and concerns were raised (but not thoroughly researched) about the capacity of the trees to continue to accommodate the roost. In 2020 these arguments were used to justify the dispersal of the Flying-fox roost. This dispersal action still continues more than a year later, with Flying-foxes still returning to roost.

Additionally, the consultant who prepared and delivered the management plan for the dispersal, was also the person hired to be the knowledgeable person to monitor the program. There is no independence between the consultant who is delivering the activity and the person who is assessing the impacts of the delivery.

We are seeing an ongoing failure of current legislation to ensure effective management of Spectacled Flying-fox and their roosts to reverse population decline. The Recovery Plan for Spectacled Flying-fox has proven to be ineffective. Without the consideration of cumulative impacts in the legislation we have witnessed the legislation permitting the persistent clearing of a nationally significant Flying-fox roost over a period of 5 years. The apparent 'poor health' of the roost has been subsequently used to justify the year long dispersal activity that continued through breeding and pup-rearing season.

The Nature Conservation Act is designed to protect our threatened species but is failing. Amendments must be made to ensure that these types of cumulative impacts are considered, and that any high-impact activities for roost management are assessed under the Nature Conservation Act. Spectacled Flying-foxes are only steps away from extinction. We must ensure that legislation is effectively protecting them. – Lucy Graham, Director of Cairns and Far North Environment Centre



The cumulative impacts of successive decisions which undermined the viability of a nationally important camp resulted in the approval under the EPBC Act to remove that camp in entirety. Specific conditions to limit the impact on the Flying-foxes were imposed and approval was granted for a term of five years. The conditions included that dispersal actions were not to occur during the breeding, birthing, and rearing season, and were limited to 30 days. An ecology report was then due 40 days thereafter to determine the impact and effectiveness of dispersal.³⁶

After the dispersal had started DAWE varied the EPBC Act approval to allow the dispersal to continue for 90 days,³⁷ and then subsequently varied the approval again to limit the activities covered by the approval from dispersal and deterrent activities, to only dispersal activities.³⁸

Subsequently, Cairns Regional Council decided that they were no longer acting under the approval and were no longer bound by the conditions as they deemed the 'dispersal' complete and further actions were 'deterrent' activities which were not covered in the EPBC Act approval due to the second variation. This occurred prior to the breeding season and any ecology report being undertaken. All further activities by Cairns Regional Council to drive away the camp were deemed to have fallen under the jurisdiction of the Queensland NCA and the Management Code, rather than the EPBC Act. This meant that the prohibition of certain activities under the original EPBC Act approval no longer applied, and they were able to undertake activities during late pregnancy and pup rearing season.

Crucially, this means an even lower level of protection is applied. The Management Code does not distinguish between dispersal and deterrence activities, with both falling within the 'drive away' activity. Further, the Management Code does not prohibit actions from occurring during the birthing and rearing season but requires the person in charge for the action to consider avoiding that period.³⁹

The lack of a prohibition in the Management Code allowed Cairns Regional Council to continue its actions through the vulnerable breeding period and pup rearing season, resulting in an increase in mortality of Spectacled Flying-fox.

The loss of habitat is a significant stress to the species and the EPBC Act has failed to protect significant habitat.

Case study: Spectacled Flying-fox mortality during the Cairns dispersal

The ongoing dispersal at the Cairns City Library Camp has not considered the impact on breeding adult Spectacled Flying-foxes. The 2021 birthing season has seen a marked increase in the casualties of breeding adult Spectacled Flying-fox. Spectacled Flying-foxes are capable of giving birth at two years old but not usually successful until three years of age.

Cairns City Library Spectacled Flying-fox mortality

Rescues	Aug 2019 – Jul 2020	Jul 2020 – Aug 2021	Difference
Alive	413	382	-8.51%
Dead	376	440	+17.02%
Total	789	822	+4.18%

In relation to the November 2018 the heat event, it was found that of the 23,000 Spectacled Flying-fox (1/3 of the species total) which died, over 80% of casualties were breeding adults. As a result of this impact to the breeding population, we expect a population decline each year for the 3 years following, as there are fewer breeding adults to produce young.

The dispersal of the Cairns City Library Camp began in the third year after this event, whilst the species would still be in decline. Further pressure on the species could see further drops in breeding adult numbers and an increased pressure on the species. Which may push the species closer to becoming functionally extinct. There is not currently a sound scientific understanding of the impact of dispersal on flying-foxes, certainly for endangered species, we should be applying the precautionary principle.

We have seen an increase in birth abnormalities in the past 3 years including Spectacled Flying-fox born with physical deformities such as large overbites and Anophthalmia.

Unfortunately, studies are not being undertaken to determine the cause of these. However, it is reasonable to consider this as a result of the decreased gene pool.

Increased protections on new and existing Spectacled Flying-fox camps would be beneficial to this species to assist stabilising numbers and giving them a greater chance of increasing in numbers.

The dispersal at the Cairns City Library began in the breeding season and continued through birthing and rearing seasons. During this time there were no safeguards in place to assess any increase in fatalities or injuries found outside the camp itself. Animals commonly affected by methods/incidents causing injury or death can and will often leave the initial place of exposure and be found in neighbouring camps.

Methods such as the Longe Range Acoustic Device (“LRAD”) can use a decibel level which could cause permanent injury or death to Spectacled Flying-fox. The levels used in this dispersal were not monitored and were delivered at short range as no trees in the



Image 1 - Pup with Anophthalmia 2021



Image 2 - Pup with extreme overbite 2019

camp are above 20 meters in height. LRADs were placed at the base of each tree and delivered in a vertical direction.

Flying-foxes are habitual. They will display roost fidelity to a site even if that site has become unsuitable, because of this the Spectacled Flying-fox will return to the Cairns City Library Camp site this upcoming season and each season that follows to give birth to their young. Numbers have started to increase now and will further increase up until September where they will inevitably be subjected to the same methods that saw them dispersed in June 2020.

This ongoing and repeated cycle is unlikely to resolve the human to animal conflict at the Cairns City Library Camp, only putting continued pressure on an already endangered species. This keystone species is the only long distance pollinator and seed disperser for the wet tropics region and it is imperative that every measure to protect their survival is taken. The first step ceasing any dispersal activity. – Rebecca Koller, FNQ Wildlife Carer.

The management of the Cairns City Library roost makes it clear that providing local government with the 'as of right' authority to manage roosts does not afford Flying-foxes with the protection required and envisioned under the NCA. The EPBC Act has also failed the Spectacled Flying-fox in allowing a nationally important roost to be successively degraded to the point where an argument that the roost is no longer viable was made and accepted.

Modern local government approaches in Queensland

There are a number of Local Government Areas in Queensland that have identified that dispersal is not an effective management tool for Flying-fox roosts in urban areas, and have developed Statements of Management Intent that explicitly rule out dispersal. Both Brisbane City Council and Moreton Bay Regional Council have cited the following reasons for excluding dispersal in their Statement of Management Intent:

- Uncertainty of outcomes
 - Can result in the relocation of Flying-foxes to less suitable locations and splinter colonies
 - Flying-foxes will usually return to the area they were moved from, providing no measurable benefit for local residents
- Additional disruption to the community
 - Methods of dispersal can be extremely distressing for residents and domestic animals
- High costs
- Likelihood of need for on-going/follow up dispersal efforts.

While some Local Governments learn from the failures of dispersal in the past and move forward to management that results in positive outcomes for the community and Flying-foxes, other local governments have not necessarily had the opportunity to learn from these experiences.

Since devolving the management of Flying-foxes to Local Governments, the State has at times financially supported Local Governments to manage Flying-foxes. In 2021, the Qld State Government created a \$2 million grants scheme to assist local governments, including a grant to Brisbane City Council to create an in-situ management plan for the 30 roosts in the LGA.⁴⁰

In the same moment, the Cairns Regional Council has spent an estimated \$1.68 million in a financial year to disperse a nationally significant camp of Flying-foxes in Cairns. Further, the council has budgeted another \$660,000 for the dispersal.⁴¹ Despite this, Flying-foxes still return to the site. A local government, who has not had the privilege of learning from past experience, is spending more on dispersal, than the state government is committing to Flying-fox management across Queensland. Without reform, we will continue to see local governments in Queensland spending large sums of money on in-effective management options, despite the availability of knowledge and funding for better management. DES is funding and encouraging local governments to develop modern management plans, this modernisation must be continued and cemented into a modern roost management framework.



Roost management frameworks in other jurisdictions

Across Australia, most states and territories use a permit system to managed interfering with or killing Flying-foxes and other bats. The two outliers are QLD which allows Flying-foxes to be dispersed by local government without a permit, and NSW which allows local government to undertake specific management actions in accordance with an approved management plan. South Australian legislation allows for a permit to kill but current policy is not to issue any.

Table 2 compares roost management approaches jurisdictions.

Jurisdiction	Who	Trim or remove roost tree	Disperse a roost	Kill a Flying-fox
QLD	Individuals ⁴²	Yes	Permit	Permit (not Spectacled Flying-fox)
	Local government ⁴³	Yes	Yes	Permit (not Spectacled Flying-fox)
NSW	Individuals ⁴⁴	Yes	Permit	Permit
	Local government ⁴⁵	Yes	Permit OR Management Plan ⁴⁶	Permit
SA ⁴⁷	Individuals	Yes	Permit	Permit (N/A) ⁴⁸
	Local government	Yes	Permit	Permit
VIC ⁴⁹	Individuals	Yes	Authorisation	Authorisation
	Local government	Yes	Authorisation	Authorisation
WA ⁵⁰	Individuals	Yes	Licence	Licence
	Local government	Yes	Licence	Licence
NT ⁵¹	Individuals	Yes	Permit	Permit
	Local government	Yes	Permit	Permit
TAS ⁵²	Individuals	Yes	Permit	Permit
	Local government	Yes	Permit	Permit

Table 3 - Roost management by jurisdiction

The most successful management approaches take a holistic view of roost management across a region, identifying roost locations and points of community conflict with the aim of resolving the conflict with the least intrusive methods. Dispersing roosts are the absolute last available method of resolving conflict and can only occur after other methods including habitat restoration have proven ineffective. Even where dispersals are the last available method, dispersals have proven to be extremely costly with a high likelihood of failure.

Case study: Victoria Yarra Bend Park Roost

In 2003, an attempt was made to disperse the Flying-fox colony located in the Royal Botanic Gardens Melbourne to an identified site on the Yarra River at Ivanhoe. After 8 months of effort and expense, the colony was dispersed. However, the majority of flying-foxes settled at Yarra Bend Park instead of the identified site in Ivanhoe; as such, it is difficult to characterise the dispersal as a success.

Despite the Yarra Bend site not being the intended location for the colony, the site was suitable for the colony with the potential community conflict able to be mitigated. To ensure the safety of the colony and encourage Flying-foxes to remain at the site, a management plan was developed.

The management plan set out following goals:

1. Successfully develop a sustainable flying-fox campsite in Yarra Bend Park.
2. Enhance vegetation and other environmental values in and near campsite.
3. Minimise any negative impacts of flying-foxes on residents and park users.
4. Provide improved visitor facilities at and near campsite.
5. Increase community understanding and support for flying-fox conservation.

Each goal had a number of management actions and measures of success. Central to these management actions are revegetation of undergrowth and roost trees, creating natural barriers to areas of conflict, and landscaping to encourage habitation in preferred areas.

A six year review of the management plan found that natural environmental augmentation and increasing the number of potential roost trees resulted in the colony largely remaining in the preferred location, limited damage to roost trees compared to other sites, and anecdotal evidence of heat stress resilience.





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Part Three:

A modern framework for roost management

Co-existence and recovery

The current management framework in Queensland is one that addresses human-flying-fox conflict from a human centric perspective. The result of that perspective is that conflict will often be resolved to the detriment of Flying-foxes. The management actions detailed in the Codes are all ones of interference.

There was a commitment made by the Queensland Minister for Environment and the Great Barrier Reef to repeal the Newman government changes to the NCA and *Regulations* and return to a modern framework of protection. This is still commitment is still unmet.⁵⁴

A modern framework for Flying-fox roost management places co-existence and recovery at its core. Flying-foxes have an important role in our ecosystem must be respected for their environmental values, not just managed for human conflict. First Nations Lore requires maintaining a balance, to ensure all interconnected species can survive and flourish. At times where a species is under threat they must be supported, and no action should be taken which could cause harm. Roost habitat should be protected from a planning perspective and potential conflicts and cumulative impacts should be pre-emptively addressed in Management Plans.

When a conflict arises, the conflict must be assessed. Conflict reduction actions which have a positive impact on a species must be undertaken

first. An example of this is where there is a concern that a Flying-fox roost is negatively affecting the health of roost trees. Firstly, the conflict would need to be assessed. How significant is the conflict? Is it caused by a transient population spike making it temporary in nature? Non-interference action to reduce this conflict may take the form of planting additional roost trees to distribute the load.

In circumstances where low impact and non-interference actions have not resolved or reduced the conflict to acceptable levels, higher impact actions may be considered. In such circumstances where this means a reduction in Flying-fox habitat, additional suitable habitat must be provided and protected.

When considering higher impact action, care must be taken to ensure the action conforms with First Nations Lore. This means decision makers must consider whether the action aligns with Cultural Protocols for the species and land which the species relies. For example, interfering with a Flying-fox roost during breeding, birthing or rearing season would breach Cultural Protocols and not conform with Lore. Further, where a species or ecological balance is already upset, such as when a population is endangered or within 3 years of a mass death event, higher impact actions must not be approved.



Decision making in a modern framework

EDO has developed a decision making process under a modern framework to assist DES. Diagram 1 shows a tiered approach to management actions ranging from Level 1 actions to Level 3. Management Plans should be created to identify areas of potential conflict, triggers for escalation higher tier management action, and planning mechanisms to protect the viability of roosts.

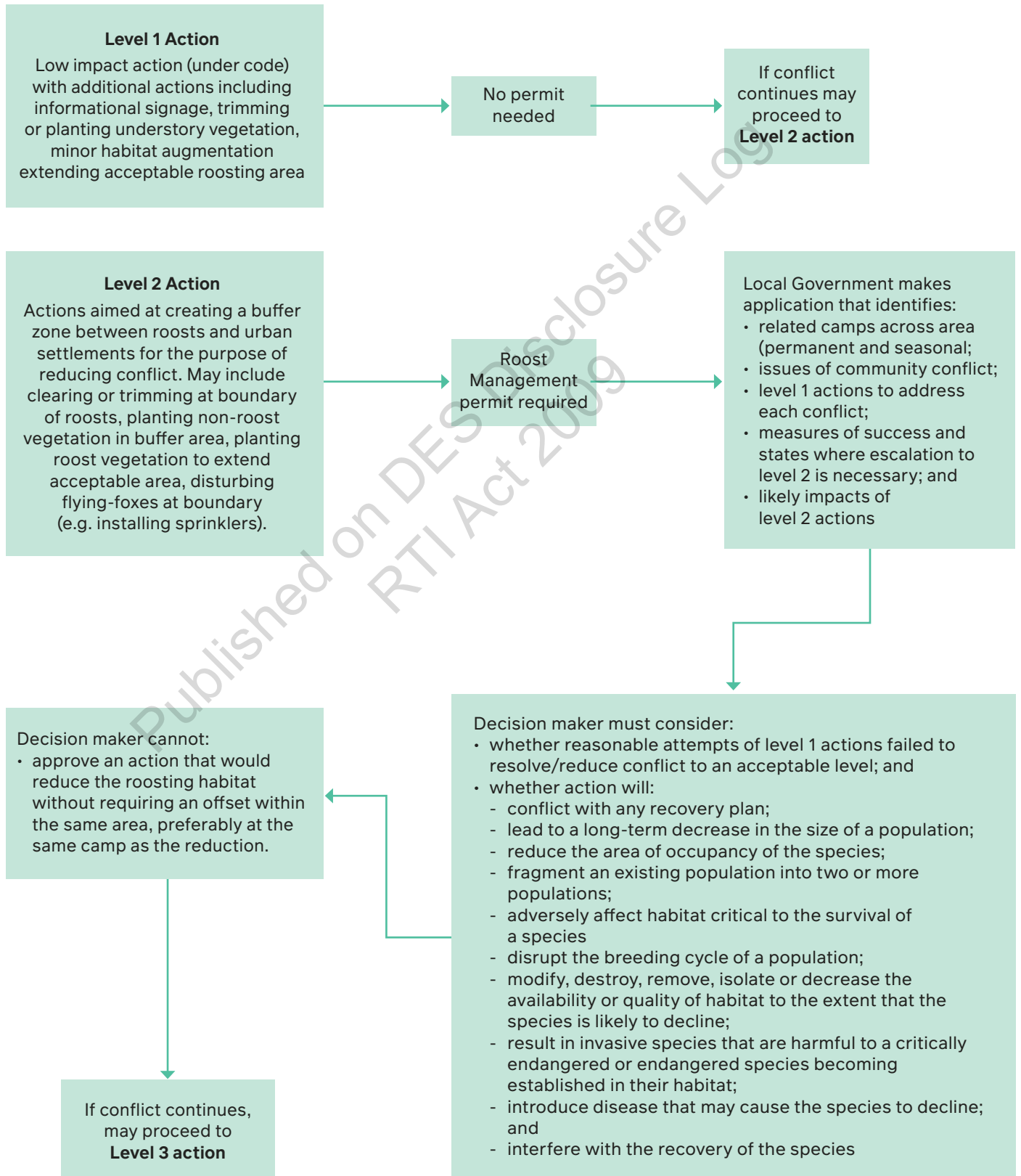
Level 1 actions are non-interference actions designed to enhance and maintain roosts which may include minor trimming, erection of signage and planting supporting vegetation. These actions can be undertaken by local government without permit.

Level 2 actions are actions which augment the roost environment to create a buffer between the roost and areas of human conflict. This may be done by encouraging the roost to shift away from conflict areas by reducing or removing roost trees in conflict areas of a roost and planting additional roost trees in other areas. All reductions of roost habitat must be offset by replacement habitat, ideally in the same camp.

Level 3 actions are actions which disturb or disperse a roost. They may only be considered when all other actions to address or reduce the conflict have been exhausted. Local governments who wish to undertake Level 3 actions must make an application accompanied by an Environmental Impact Statement. Decision makers cannot authorise Level 3 actions if the action would breach Cultural Protocol, occur during a sensitive period, or would adversely affect the recovery of a vulnerable, threatened, endangered or critically endangered species.

The Queensland Government has provided funding for Local Government to move towards long-term and sustainable roost management. Some Local Governments are using this to develop management plans similar to what is being advocated. However, until the legislative and policy framework for Flying-fox roost management is modernised, Local Governments will continue to utilise the authority to disturb important roosts.

Diagram 1 - Modern roost management framework decision making process





Recommendations

Recommendation: Repeal local government's 'as of right' authority to manage Flying-fox roosts under the *Nature Conservation Act 1996* and the *Nature Conservation (Animals) Regulations 2020* to ensure activities which exceed a low impact are appropriately assessed through a permit system.

Recommendation: Design and implement a modern framework for roost management in Queensland informed by First Nations' Lore and science to ensure Flying-foxes are sustainably managed and protected for the conservation of our natural environment.

Recommendation: The modern framework be underpinned by the principles of co-existence and restoration with non-interference management actions prioritised for conflict resolution.

Recommendation: Local governments are funded to develop and implement Management Plans for the roosts in their area which identify likely sources of conflict and appropriate management actions and triggers.

Recommendation: Management Plans must be co-designed, developed and implemented with local First Nations Peoples to ensure conformance with Cultural Protocols.



Endnotes

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