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To: [Agriculture Resources and Environment Committee](#)
Subject: Land Protection Legislation (Flying-fox Control) Amendment Bill 2012
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Agriculture, Resources and Environment Committee

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Land Protection Legislation (Flying-fox Control) Amendment Bill 2012

Rem Veg (Livingstone Remnant Vegetation Study Group) have been involved with the preservation of remnant vegetation and native habitat since 1994

We strongly oppose the proposed Land Protection Legislation (Flying-fox Control) Amendment Bill 2012.

Flying foxes are an ecologically critical species adapted to Queensland's diverse natural environment and instrumental in the dispersal of the seeds of some native flora. Hard won protection for our five species (two listed as vulnerable) would be lost if decades of research and enlightenment of the community and the horticultural industry is tossed out for populist knee-jerk reactions based on fear and ignorance.

Flying fox populations in Queensland are in decline and under increasing pressure from past land clearing for agriculture, coastal urban and industrial expansion. The increasing destruction of remnant vegetation in Central Queensland from rapidly expanding open cut mining, rail, road and gas corridors will place remaining populations at great risk. Despite offset policies and rehabilitation requirements the removal of riparian vegetation and other patches and corridors means that natural bat habitat is being lost much faster than the 20-50+ years needed for mature diverse forests capable of supporting viable flying fox colonies to return.

Low reproductive rates and the predicted greater extremes of longer, hotter dry periods combined with less frequent but more severe storm events on top of the landscape changes could lead to devastating local population collapses.

Native vegetation, the main source of food and shelter for flying foxes is facing multiple pressures from every kind of development and also the potential huge loss of forest cover from the recently introduced exotic Myrtle Rust. The loss of rural bushland causing colonies to migrate and the encroachment of urban areas into natural flying fox roosts may have given the public misconception of flying fox 'plagues'. The planting of urban hedges and low shrubs, for example the exotic *Durante* sp., may be attracting flying foxes into closer human interaction and visibility adding to the belief that populations are increasing and heightening unrealistic fears for human health.

Expert advice from ecologists and horse specialists indicate that disturbing feeding flying foxes, attempting to cull or eliminate colonies and natural roosting sites are ineffective, inhumane, and ecologically unsustainable. Sustainable horticultural practices should support the protection of biodiversity not attempt to reduce it.

Allowing lethal means to disturb flying foxes through the issue of damage mitigation

permits to horticulturists may kill or main some individuals and reduce the breeding viability of a local colony. Any deterrent or dispersal effect is likely to be temporary and force populations closer to human settlements where they are will come under even greater threats. Self assessment and reporting by industry and individual damage mitigation permit holders would not give a valid scientifically based assessment of longer term impacts on flying foxes and subsequent impacts dependent forest communities.

Much greater scientific understanding is needed of:-

bat population, colony demographics, threats to species, opportunities for better management of land degradation, forest restoration, plantings, and cumulative state / nation-wide data on the status of vegetation corridors in order to enable migration through varying seasonal and potential climatic changes.

Greater emphasis is needed to improve community understanding and appreciation of the ecological importance of flying foxes. (Two flying species coexist in a point colony in the Cairns CBD and are not only tolerated but celebrated as part of the tourist attraction to appreciate nature)

Changing legislation to allow uncontrolled destruction of flying-fox species has the potential to: raise stress in flying-fox and by so doing, increase the spread of Hendra. Increased contact between flying-fox, livestock and people can increase the risk of zoonotic disease transfer. Decreasing flying fox numbers to a critical level where they cease to disperse seed for forest replenishment will have a detrimental effect on vegetation in many areas. Unmonitored culling is abhorrent and will result in cruelty that is not consistent with contemporary standards of humane treatment of animals.

The indiscriminate or targeted killing of flying foxes is not in general considered as an effective Hendra virus management strategy. As these bats are nomadic, culling may create a niche that other bats fill, possibly increasing rather than decreasing the number of flying foxes in the target area, whilst at the same time pushing some threatened species even nearer to extinction

The results of changing this legislation are not known to be effective and in fact studies suggest that these management strategies will not be effective while the risks identified are derived from sound research. Additionally as flying foxes are a highly mobile species these risks will not only be locally significant but may impact regionally and nationally.

The results from changing this legislation have not been recognised as being effective, in fact studies suggest quite the opposite, sound research however has identified risks that would be involved. Additionally as flying foxes are a highly mobile species these risks will not only be locally significant but may impact regionally and nationally.

Our response to the reasons for the bill are out lined below and in consideration of this we are opposed to the proposed legislative changes both in part or in full.

Flying –fox populations are known to carry viruses deadly to humans. The Australian Bat strain of Lyssavirus has caused two human fatalities since it was discovered in Australia in 1996:

- No deaths have occurred since the vaccine.
- Lyssavirus is only contracted by being directly bitten by a bat. This is much more likely to occur if the general community are enabled to interfere and cull the animals.

More concerning is the growing number of Hendra virus outbreaks amongst horse populations and the increased exposure to humans as a result:

Introducing stress to a species that is likely to increase the distribution of a disease that does not yet have a vaccine, is negligent and poses an increased risk to public health locally and potentially nationally.

- Introducing stress to flying foxes, such as the suggested chemical, electrical, physical interference or habitat destruction, is likely increase the drop of Hendra into species droppings. (*Plowright RK, Field HE, Smith C, Divljan A, Palmer C, Tabor G, Daszak P andFoley JE (2007) Reproduction and nutritional stresses are risk factors for Hendravirus infection in little red flying foxes (Pteropus scapulatus). Proc Royal Soc LondB, 275: 861-859.*)
- Results suggest that anthropogenic changes to flying fox ecology may result in more intense, sporadic, lethal outbreaks of HeV in livestock and people. (**Plowright R. K., P. Foley, H. E. Field, A. P. Dobson, J. E. Foley, P. Eby and P. Daszak. 2011. Urban habituation, ecological connectivity and epidemic dampening: the emergence of Hendra virus from flying foxes (Pteropus spp.). Proceedings of the Royal Society B-Biological Sciences. doi:10.1098/rspb.2011.0522**)
- Research implicates that to protect human health; we should conserve flying-foxes and reduce environmental stresses that increase their rate of infection and the risk of spillover of. Research indicates human driven environmental changes are ultimately responsible for disease emergence. (*Breed, A.C., Field, H.E., Epstein, J.H. & Daszak, P. (2006) Emerging henipaviruses and flying foxes - conservation and management perspectives. Biological Conservation 131: 211-20.*)

The emerging conditions of rising flying-fox populations, especially black flying-foxes, in urban areas of Queensland and subsequent increased exposure of domestic animals to flying-foxes and the associated risk to human life necessitate review of legislation limiting dispersion and removal methods of flying-fox populations from residential settings:

Flying-fox do not pose a direct Hendra threat to humans and urban populations are not a threat to humans where horse exposure to flying foxes is managed. Culling flying-fox for public health is dubious. It is practically impossible to cull enough to reduce flying fox populations to a level acceptable to communities. If pursued, the risk of increased virus secretion as a result of stress is real and the public health benefit minimal

- The rising number of flying-fox numbers in urban areas is not due to increase in numbers of flying-fox but a decrease in alternative areas to roost and feed through clearing and encroachment of urban area on flying fox habitat.
- Research stipulates that the horse is an amplifier of the Hendra virus and domestic animals and humans do not contract the disease directly for flying-fox. (*Field H.. The ecology of Hendra virus and Australian bat lyssavirus. PhD thesis, University of Queensland.*)

It is necessary to place appropriate prioritization on the risk of contracting a fatal disease as a result of community exposure to flying foxes against the environmental effect of reduced flying-fox populations.

In placing appropriate prioritization on the risk of contracting Hendra Virus versus the environmental effect of reduced flying-fox populations we need to consider two things; Firstly the transfer of Hendra to humans is preventable and a vaccine is being developed; and secondly the possible environmental costs could be far reaching and include the increase in arthropod species, the decrease in forests and agro-ecological support systems and increase cost in managing the health of our environment.

- Effectively managing the risk of contracting fatal disease as a result of community exposure to flying foxes will come through preventing the transfer of the Hendra from flying-fox to Horses.
 - Research suggests that ensuring horses are adequately fed will reduce their risk of contracting Hendra. (<http://www.uq.edu.au/agriculture/poor-pasture-increases-risk-of-hendra-virus-infections>)
 - Pending release of a vaccine against Hendra virus, managing the immediate risk to horses and humans is simple – follow simple hygiene and feed management practices that reduce horse and horse feed exposure to bats and their excretions. This is the approach recommended by Biosecurity Queensland and the Queensland Horse Council. Additional work is still being undertaken by CSIRO, the regulating bodies and the commercial partner before a large-scale production of the vaccine can start.
- Flying-fox play a key role in the pollination and seed dispersal for a large number of plants. Without flying foxes, we wouldn't have any eucalypt forests, rainforests and Melaleucas and removing them is certain to have wide-ranging but unquantifiable long-term effects on agro-ecological support systems and contribute to altering the ecology of the region. While flying foxes remain relatively conspicuous in some areas, many of their current populations are in rapid decline and require protection. Studies suggest:
 - Humans derive benefits from bats through arthropod suppression, forest regeneration, and maintenance via seed dispersal and pollination of a wide variety of ecologically and economically important plants. (*I. Kunz TH, Braun de Torrez E, Bauer D, Lobova T, Fleming TH (2011) Ecosystem services provided by bats. Annals of the New York Academy of Sciences 1223: 1–38.*)
 - As long-range pollinators, flying-foxes promote genetic flow between eucalypts and other Myrtaceae at greater distances apart (> 5 km) than most other pollinators. (*Eby P. (1996) Interactions between the Grey-headed Flying-fox Pteropus poliocephalus (Chiroptera: Pteropodidae) and its diet plants - seasonal movements and seed dispersal. PhD Thesis, University of New England, Armidale, NSW.8*)
 - Flying-fox may cease to be effective seed dispersers long before becoming rare as they have a threshold population density which needs to be maintained to allow them to remain ecologically effective. (*McConkey K, Drake D. (2006) Flying foxes cease to function as seed dispersers long before they become rare. Ecology 87(2): 271-76.*)
 - Some flying-foxes feed on fruit of more than a dozen rainforest species for which no other seed dispersers are known and can spread ingested seeds up to 80 km away. Such long-range capacity for spreading pollen and seeds is very important to genetically re-link habitats fragmented by clearing. (*Birt, P. (2005) Mutualistic interactions between the nectar-feeding little red flying fox Pteropus scapulatus*

(Chiroptera: Pteropodidae) and eucalypts: habitat utilisation and pollination. PhD thesis. University of Queensland, Brisbane)

If there is genuine interest in managing present and emerging zoonotic disease we must deal with major drivers of disease emergence such as habitat loss. Furthermore the considerable cost involved in the proposed cull and flying fox disturbance could contribute to the development and administration of the Hendra Vaccine which would provide real protection from Hendra. The community needs to be provided with opportunities to better understanding how to appreciate flying foxes and their critical ecological role and to live along-side and protect Queensland's biodiversity.



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