

Lorikeet paralysis syndrome

Fact Sheet

April 2024

Key points

- Lorikeet paralysis syndrome (LPS) is a seasonal paralytic disease that mainly affects wild rainbow lorikeets (*Trichoglossus moluccanus*) in northern NSW and southern Qld.
- The cause of the disease is unknown; however an environmental toxin is considered most likely.
- Large numbers of affected birds are submitted to veterinarians and wildlife rehabilitators each year.
- With supportive care, many birds can be successfully treated and released.
- The summer of 2023-24 has seen a particularly high number of cases in northern NSW and southern Qld with thousands of lorikeets afflicted.

Aetiology

The cause of the syndrome is unknown. It was previously thought to be the same as “clenched claw syndrome”. Numerous causes have been proposed, including heavy metal poisoning, thiamine deficiency, viral infections, botulism and exposure to other toxins, but none have been proven. An environmental toxin is thought to be the most likely cause of LPS. There is no indication of heavy metal toxicity, alcohol, pesticides, avian influenza or paramyxovirus disease in LPS-affected lorikeets [1].

One Health implications

Wildlife and the environment: there is no indication of transmission from LPS affected birds to other wildlife species. It is not known if LPS has a population level impact on lorikeets. A similar paralysis syndrome in flying-foxes has been identified, and the potential for a common cause for both syndromes is being considered. The potential for an environmental cause may have wider implications (e.g. plant species used in landscaping and council plantings in affected areas).

Domestic animals and humans: there is no indication of transmission from LPS-affected birds to other species, including domestic animals or humans.

Natural hosts

Rainbow lorikeets are mainly affected, although the condition has also been described in scaly-breasted lorikeets (*T. chlorolepidotus*) [2, 3].

World distribution and occurrences in Australia

The condition has only been recognised in Australia.

The condition has most commonly been described from affected birds in southeast Qld and northeast NSW ^[4]. Hotspots for this syndrome have been identified at the Sunshine Coast and in the south of Brisbane ^[1]. Cases demonstrating clinical signs consistent with LPS have also been recognised outside of the normal range of this disease in Darwin (NT), Gladstone (Qld) and Townsville (Qld) ^[5, 6].

The summer of 2023-24 saw an unprecedented number of birds affected with LPS in both southern Qld and northern NSW. WIRES launched an emergency response centre in Grafton to assist in triaging hundreds of affected birds each day ^[7, 8].

See <https://wildlifehealthaustralia.com.au/Incidents/Incident-Information/incident-lorikeet-paralysis-syndrome-nsw-qld-ongoing> for more information about ongoing incidents.

Epidemiology

The syndrome mostly affects adult and sub-adult birds but has also been described in some juvenile lorikeets. No sex predisposition has been found. LPS is a seasonal disease, with most cases occurring between October and June, peaking during summer (December–February) ^[1], although cases have been seen throughout the year ^[9-11].

Between 5 to 10% of lorikeets rescued annually in south-east Qld and coastal NSW present with this syndrome ^[3]. LPS cases represented 26% of all lorikeet submissions over a 2 year period to RSPCA Wacol and RSPCA Eumundi Qld wildlife hospitals. This syndrome impacts the resources (both financially and in time spent for rehabilitation) of wildlife veterinarians and rehabilitators ^[1].

Associations between LPS and a range of potential causes have been investigated, with no consistent associations yet detected. Investigations have shown little evidence of heavy metal toxicity, and it is considered an unlikely cause. Clostridial toxins, avian influenza, paramyxovirus, alcohol ingestion and exposure to various anthropogenic toxins were not detected in affected lorikeets ^[1].

Earlier investigations in rainbow lorikeets found some evidence of lead and cadmium exposure, but no evidence of lead poisoning. These findings should be interpreted with caution as cases may have been attributable to “clenched claw syndrome”, or other disease, rather than LPS ^[9].

Clinical signs

Birds with the syndrome are unable to fly but have no evidence of physical trauma. The severity of disease is varied and can be categorised based on clinical signs. Mild signs include hindlimb weakness and ataxia, while more severe cases have flaccid paralysis of all limbs and the neck, with voice changes and an inability to stand, blink and swallow ^[1].

Diagnosis

Diagnosis is based on clinical signs in conjunction with the time of year and location. Veterinary practitioners in Australia should consider LPS in lorikeets presenting with weakness and voice change.

A complete necropsy should be performed. A range of tissues, including brain, spine and peripheral nerves (sciatic and brachial) should be collected and submitted in formalin for histopathology. Frozen tissues should be held for possible further testing.

Pathology

Notably, there are no consistent gross lesions found in affected lorikeets. On serum biochemistry, most affected lorikeets demonstrate increased levels of muscle enzymes such as creatinine phosphokinase and aspartate aminotransferase, and elevated uric acid ^[1].

Differential diagnoses

Differential diagnoses include traumatic injury, clenched claw syndrome, avian avulavirus 5 (paramyxovirus) and polioencephalomalacia.

Treatment, prevention and control

Most severe cases of LPS are euthanased. However, with intensive care and a long rehabilitation process (median 7-15 weeks), recovery is possible in around 60% of treated cases. Less severe cases can be successfully treated and released (80-93% treatment success depending on severity category). LPS treatment should include pain relief, addressing electrolyte imbalances and supporting kidney function. Meloxicam and fluids should be provided to all LPS lorikeets, with more severely affected individuals requiring fluid therapy over multiple days. Additionally, eye-drops are required for lorikeets that are unable to blink. Some lorikeets may need to be assist fed. Once able to use their wings, lorikeets require a flight aviary to build fitness before release ^[1].

Prevention and control of the disease is not possible at this stage because the aetiology is unknown. See also WHA Fact Sheet “Biosecurity Concerns in Feeding Wild Birds”.

Research

Further investigation into the cause of LPS is required. Wildlife disease experts (including veterinarians, pathologists, epidemiologists and rehabilitators) have been working in collaboration with government environment and biosecurity agencies to investigate and respond to this syndrome since its emergence. Diagnostic investigations are currently exploring plant and environmental toxicities as the most likely cause of LPS. Current research aims to:

- understand the flowering and fruiting patterns of plant species on which rainbow lorikeets feed in LPS-affected areas ^[1]
- gather information on the plant species on which affected birds have been feeding. See <https://www.inaturalist.org/projects/lorikeet-paralysis-syndrome-project> ^[5]
- conduct molecular sequencing of lorikeet faeces and gut content

- map both plant and LPS locations ^[5].

See www.sydney.edu.au/science/our-research/research-areas/veterinary-science/lorikeet-paralysis-syndrome-project.html and <https://wildlifehealthaustralia.com.au/Incidents/Incident-Information/incident-lorikeet-paralysis-syndrome-nsw-qld-ongoing> for more information.

Surveillance and management

Wildlife Health Australia administers Australia's general wildlife health surveillance system, in partnership with government and non-government agencies. Wildlife health data is collected into a national database, the electronic Wildlife Health Information System (eWHIS). Information is reported by a variety of sources including government agencies, zoo based wildlife hospitals, sentinel veterinary clinics, universities, wildlife rehabilitators, and a range of other organisations and individuals. Targeted surveillance data is also collected by WHA. See the WHA website for more information <https://wildlifehealthaustralia.com.au/Our-Work/Surveillance> and <https://wildlifehealthaustralia.com.au/Our-Work/Surveillance/eWHIS-Wildlife-Health-Information-System>.

There is no formal targeted surveillance program for rainbow lorikeet paralysis syndrome. Wildlife hospitals and rehabilitation organisations are collating data on LPS cases while citizen science is gathering further information on the plant species lorikeets feed on in southeast Qld and northeast NSW (see above). Wildlife Health Australia is assisting with the coordination of wildlife expertise in Qld and NSW to promote investigation of these syndromes.

We are interested in hearing from anyone with information on this condition in Australia, including laboratory reports, historical datasets or survey results that could be added to the National Wildlife Health Information System. Negative data are also valuable. If you can help, please contact us at admin@wildlifehealthaustralia.com.au.

Acknowledgements

We are grateful to the people who contributed to this Fact Sheet.

Wildlife Health Australia recognises the Traditional Custodians of Country throughout Australia. We respectfully acknowledge Aboriginal and Torres Strait Islander peoples' continuing connection to land, sea, wildlife and community. We pay our respects to them and their cultures, and to their Elders past and present.

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References and other information

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To provide feedback on Fact Sheets

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Email admin@wildlifehealthaustralia.com.au

Or call +61 2 9960 6333