

# Lorikeet paralysis syndrome

## Fact sheet

May 2023

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### Key points

- Lorikeet paralysis syndrome is a seasonal disease that affects primarily rainbow lorikeets in northern New South Wales and southern Queensland.
- The cause of the disease is unknown; however a plant toxin is considered most likely.
- Large numbers of affected birds are submitted to veterinarians and wildlife rehabilitators each year.
- With supportive care, most birds can be successfully treated and released.

### Introductory statement

Lorikeet paralysis syndrome (LPS), has been recognized as a disease of wild lorikeets (*Trichoglossus* spp.), mainly rainbow lorikeets (*T. haematodus*) throughout eastern Australia since the 1970s. This paralytic disease causes large numbers of cases in northern NSW and southern Qld, ranging from hundreds to thousands of afflicted lorikeets. It was previously thought to be the same as “clenched claw syndrome”.

### Aetiology

The cause of the condition is unknown. Numerous causes have been proposed, including heavy metal poisoning, thiamine deficiency, viral infections, botulism and exposure to other toxins, but none have been proven. A plant toxin is thought to be the most likely cause of LPS. There is no indication of heavy metal toxicity, alcohol, pesticides, botulism toxins, avian influenza or paramyxovirus disease in LPS-affected lorikeets <sup>[1]</sup>.

### 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 is 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 for the plant species used in landscaping and council plantings in affected areas.

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

**Humans:** there is no indication that LPS can be transmitted to humans.

## Natural hosts

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

## World distribution

The condition has only been recognised in Australia.

## Occurrences in Australia

The condition has most commonly been described from affected birds in southeast Qld and northeast NSW<sup>[4]</sup>. Hotspots for this syndrome have been identified at the Sunshine Coast and in the south of Brisbane<sup>[1]</sup>. 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)<sup>[5, 6]</sup>.

## Epidemiology

The disease 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 majority of cases occurring between October and June, peaking during summer (December–February)<sup>[1]</sup>, although cases have been seen throughout the year<sup>[7-9]</sup>.

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

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<sup>[1]</sup>.

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” rather than LPS<sup>[7]</sup>.

## Clinical signs

Birds with the disease 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<sup>[1]</sup>.

## 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

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 <sup>[1]</sup>.

## Differential diagnoses

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

## Treatment, prevention and control

Although most severe cases of LPS are euthanised, 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 flight fitness before release <sup>[1]</sup>.

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. Current research is investigating a plant toxin as the possible cause of LPS. This research aims to understand the flowering and fruiting patterns of plant species on which rainbow lorikeets feed in LPS-affected areas, and to use genetic sequencing to identify plants ingested by LPS-affected lorikeets <sup>[1]</sup>. A citizen science project aims to gather information on the plant species on which affected birds have been feeding. Citizen scientists are recording the plants that they see rainbow lorikeets feeding on during the year in areas where the syndrome occurs <sup>[5]</sup>. Next generation molecular sequencing of lorikeet faeces and gut content aims to further identify ingesta and gain an understanding of plant species that may be causing the syndrome. Additionally, the next generation sequencing data will allow researchers to determine if lorikeets with LPS might be exposed to a biting or stinging insect or toxic fungi growing on the

plants on which they are feeding <sup>[5]</sup>. Mapping of plant locations is being compared with locations where sick lorikeets have been identified. See [www.sydney.edu.au/science/our-research/research-areas/veterinary-science/lorikeet-paralysis-syndrome-project.html](http://www.sydney.edu.au/science/our-research/research-areas/veterinary-science/lorikeet-paralysis-syndrome-project.html) for more information.

## Surveillance and management

Wildlife disease surveillance in Australia is coordinated by the Wildlife Health Australia. The National Wildlife Health Information System (eWHIS) captures information from a variety of sources including Australian government agencies, zoo and wildlife parks, wildlife carers, universities and members of the public. Coordinators in each of Australia's States and Territories report monthly on significant wildlife cases identified in their jurisdictions. NOTE: access to information contained within the National Wildlife Health Information System dataset is by application. See the WHA website for more information: <https://wildlifehealthaustralia.com.au/ProgramsProjects/eWHIS-WildlifeHealthInformationSystem.aspx>

There is no formal targeted surveillance program for rainbow lorikeet paralysis syndrome. Current citizen science surveillance is targeted at plant species lorikeets are feeding on in southeast Qld and northeast NSW (see above)

Wildlife Health Australia is interested in receiving reports of this condition in wild birds in Australia. Contact [admin@wildlifehealthaustralia.com.au](mailto:admin@wildlifehealthaustralia.com.au).

## References and other information

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## Acknowledgements

We are grateful to the people who contributed to this fact sheet.

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### To provide feedback on fact sheets

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. If you can help, please contact us at [admin@wildlifehealthaustralia.com.au](mailto:admin@wildlifehealthaustralia.com.au).

Wildlife Health Australia welcomes your feedback on facts sheet. Please email [admin@wildlifehealthaustralia.com.au](mailto:admin@wildlifehealthaustralia.com.au). We would also like to hear from you if you have a particular area of expertise and are interested in creating or updating a WHA fact sheet. A small amount of funding is available to facilitate this.

### Disclaimer

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