Biosecurity Alert

Australian Government
Parks Australia

Species: *Enterococcus* sp. – a bacterium known to affect multiple reptile species

Status: Unknown, recently detected on Christmas Island

Location: Christmas Island (10°25'50"S, 105°40'50"E) **Date:** 03/07/2017

An emergent multi-systemic bacterial infection in Christmas Island reptiles.

This is a previously unrecorded species of bacterium in any Australian Territory and may be new to science. It has been recorded to affect at least four species of reptile on Christmas Island and may pose a risk to native ecosystems if it spreads to other islands or the Australian mainland

Quarantine Officers are urged to be vigilant and report any sightings.

Figure 1: Infected *Gehyra mutilata*. Source: Karrie Rose, Taronga Conservation Society Australia

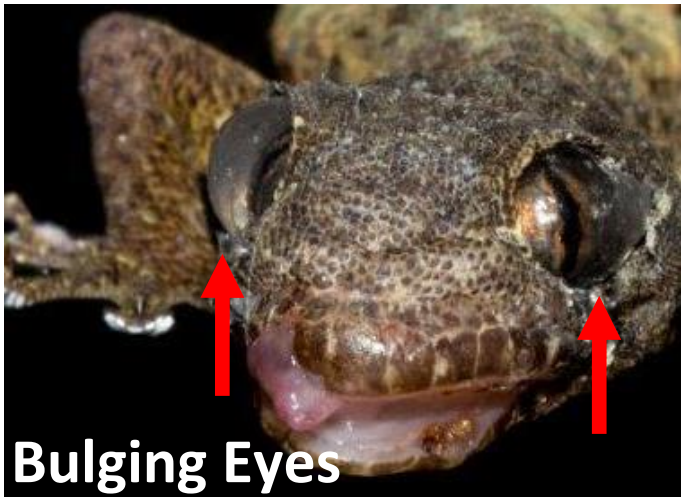

Figure 2: Infected *Gehyra mutilata*. Source: Justin Welbergen, University of Western Sydney

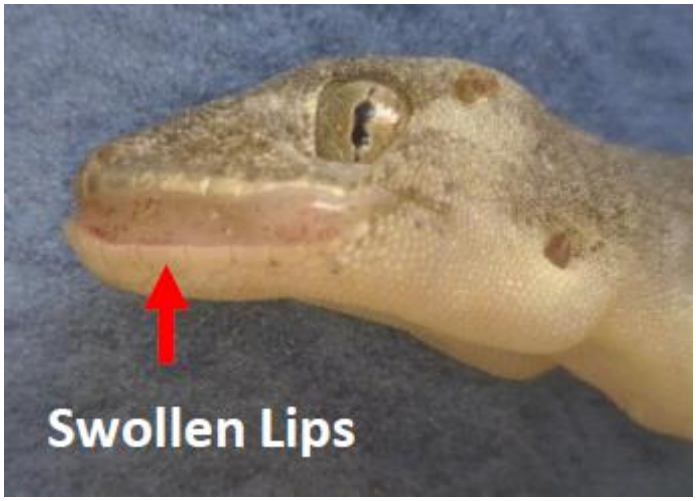

Figure 3: Infected *Hemidactylus frenatus*. Source: Karrie Rose, Taronga Conservation Society Australia

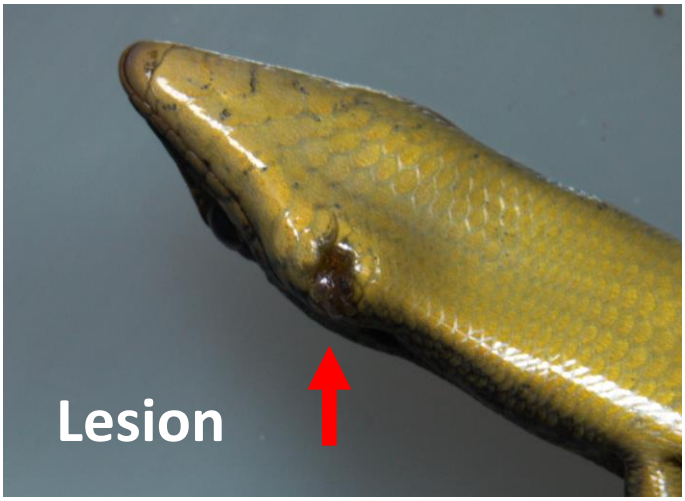

Figure 4: Infected *Cryptoblephaurus egeriae*. Source: Director of National Parks

Record of sighting

Since late 2014, an emerging syndrome of facial deformity and ill-thrift has been detected by Christmas Island National Park staff in four wild, free-ranging and captive species of reptile on Christmas Island. These species include two endemic; the Lister's gecko (*Lepidodactylus listeri*) & Blue-tailed skink (*Cryptoblephaurus egeriae*) and two introduced; the barking gecko (*Hemidactylus frenatus*) & Mute gecko (*Gehyra mutilata*).

Due to the unusual nature of the organisms, the emergence of the disease through the captive and free ranging geckos on the island and the fact that it was previously unrecorded in any Australian Territory, the situation was reported to the NSW, WA and Commonwealth Agriculture departments in 2016 as a notifiable animal disease.

Risk

The *Enterococcus* sp. bacterium appears to be a recent emergent on Christmas Island. It was not detected during a wildlife health field trip in 2010, which included gross and microscopic post mortem examinations on more than 400 Christmas Island reptiles. Retrospective surveys of specimens collected in the 1970's, 1980's and 2010 and stored in ethanol at the Australian Museum did not identify infected animals. Furthermore, there appears to be only a single report of a seemingly identical disease in two Singapore House Geckos (*Gekko monarchus*) donated to the New York Zoological Society in 1988.
In captivity, reptiles exposed to this *Enterococcus* bacterium appear to have 100% mortality rate. Declines have been observed in populations of wild, free-ranging gecko species on Christmas Island. It is spread through direct contact between reptiles. **A significant threat exists for the potential spread of this *Enterococcus* species to Cocos Islands and the Australian mainland** where many native and endemic species would be at risk.

To date, no known case has been reported from any other class of animal and the potential threat to other animals is uncertain.

Vigilance is crucial, to ensure this species of *Enterococcus* sp. does not reach Cocos Islands or the mainland. The bacteria may spread via infected reptiles in sea freight cargo, or commercial passenger and freight aircraft.

Identification

Clinical signs in affected animals include fluid accumulation in the sub-spectacular space (bulging eyes), lumpy lesions around the mouth and remainder of the head, and animals that are lethargic. Microscopic examination reveals vast pools of organisms within the soft tissues of the head and often extending throughout the body. The most severely affected animals have pools of the organism replacing 30-60% of some vital organs, associated with very mild to non-existent host inflammatory response.

Any reptile displaying the symptoms consistent with those described here (see photos) should be treated as an animal carrying the *Enterococcus* sp. bacterium and therefore a high risk exotic introduction.

We urge that all quarantine officers are aware of this risk. Further instructions are at Attachment A to this document

If found, please contact Christmas Island National Park
Park Manager, Christmas Island National Park P: 08 9164 8700 E: ChristmasIslandNP@environment.gov.au

Distribution

On Christmas Island, infected animals have been detected in the settled areas and at the Pink House research station. At this stage no confirmed detections have been made at either the CI Airport or Wharf areas.

Reference:

Rose K, Agius J, Hall J, Thompson P, Srivastava M, Tiernan B, Jenkins C, Phalen D. (2017). Emergent Multisytemic Enterococcus Infection Threatens Endangered Christmas Island Reptile Populations. Plos One

McNamara TS, Gardiner C, Harris RK, Hadfield TL, Behler JL. (1994). Streptococcal bacteraemia in two Singapore house geckos (*Gekko monarchus*). J Zoo Wildl Med;25(1):161-6.

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Attachment A to the Biosecurity Alert for this species

Further instructions for Biosecurity officers

- Always handle an animal suspected of carrying the infection with PVC nitrile gloves
- Where possible take identifying photographs of the animal and lesions/deformities
- Place the animal into sample jar of ethanol (70-100% concentration) and contact Christmas Island National Park on 08 9164 8700 or ChristmasIslandNP@environment.gov.au for further information

If this is not possible in the circumstance, please follow standard procedure.