

First record of gastroliths in a green iguana from Singapore

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Subject: Green iguana, *Iguana iguana* (Reptilia; Squamata; Iguanidae).

Subject identified by: Mackenzie L. Kwak.

Location and date: Singapore Island, Jurong Hill area. Specimen examined at Singapore Zoo on 27 July 2018.

Habitat: Urban parkland.

Observer: Mackenzie L. Kwak.

Observation: An adult male green iguana of approximately 100 cm total length from the Jurong Hill area, which had died, was necropsied during a routine parasitological examination. During the course of this examination, gastroliths (stomach stones) were found in the large intestine of the animal (Fig. 1). The largest gastrolith was approximately 3cm in length.

Remarks: Although rare in many vertebrates, several avian and reptilian groups have been recorded to utilise gastroliths, but for markedly different purposes. Fossil evidence suggests that some Mesozoic marine reptiles, notably plesiosaurs, used gastroliths to aid in buoyancy (Taylor, 1993). Gastroliths have also been recorded in dinosaurs, in which they are believed to have aided in mechanical digestion (Farlow, 1987). In some modern day lizards and birds, gastroliths are also believed to aid in digestion, particularly in a number of species with high fibre diets (Sokol, 1971; Webb, 1994). Although Sokol (1971) first reported geophagy in the green iguana, it was not known until now if this behaviour occurred in introduced populations outside of their natural range. However, based on the findings featured here, this appears to be the case.



Fig. 1. Gastroliths recovered from the large intestine of a wild male green iguana in Singapore.

Photograph by Mackenzie L. Kwak

The green iguana is a non-native lizard in Singapore with records from various parts of Singapore Island (Yeo, 2014; Ng & Lim, 2015; Tay, 2015; Khoo, 2016; Chew & Low, 2017). Its presence at the Jurong area has been documented by Low et al. (2016) (see Fig. 2).



Fig. 2. An apparently free ranging adult green iguana of about 2 m total length in the grounds of the Jurong Bird Park at Jurong Hill in December 2010. Photograph by Kelvin K. P. Lim

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