

Brown anoles at Jurong Lake Gardens

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Subjects: Brown anole, *Anolis sagrei* (Reptilia: Squamata: Sauria: Dactyloidae).

Subjects identified by: Cai Hongxia, Wu Zhiyuan and Sankar Ananthanarayanan.

Location, dates and time: Singapore Island, Jurong Lake Gardens, area around Fusion Spoon restaurant (see Fig. 11); 31 July 2020 around 1812 hrs, 1 August 2020 around 1127 hrs, 2 August 2020 from 0800 to 0900 hrs, 3 August 2020, from 1628 to 1706 hrs.

Habitat: Urban parkland by artificial freshwater lake. Managed vegetation of ornamental shrubs and trees.

Observers: Cai Hongxia, Wu Zhiyuan and Wu Chenxuan.

Observations: On 31 July 2020, after a day-long rain, a brown anole with a distinct crest on its back was observed on a tree trunk with its head facing downwards (Fig. 1, red circle on Fig. 11).

On the morning of 1 August 2020, a dark male was found basking on the same tree as the day before (Fig. 2, red circle on Fig. 11). He also displayed bright orange dewlap and showed signs of sloughing (Fig. 3, red circle on Fig. 11).

On the morning of 2 August 2020, one example (Fig. 4) was spotted on a lamp-post (red circle on Fig. 11), and three examples (Fig. 5-7) were seen within the irregular area marked by red dashes (in Fig. 11). Individuals in Fig. 5-7 displayed their bright dewlaps. The individual in Fig. 4 was observed chasing a gecko on the lamp post.

On the afternoon of 3 August 2020, no anole was seen on the trees and lamp-post (marked by red circle on Fig. 11) despite the observers having spent about 40 minutes searching. There were, instead, three changeable lizards (*Calotes versicolor*) in the area. Within the irregular area marked by red dashes (in Fig. 11), 13 brown anoles (7 males and 6 females) were counted (Fig. 8-10). In addition, one anole quickly crossed the footpath at the red triangle (in Fig. 11). The snout to tail lengths of the anoles observed were around 12 cm, but an exceptionally large male was around 20 cm (Fig. 10). In this area, no changeable lizard was spotted.

Remarks: The brown anole, also referred to as *Norops sagrei*, is believed to have been accidentally introduced to Singapore during the planting of Gardens by the Bay (Tan & Lim, 2012). Originally restricted to the Marina Bay area where it seems to be established (Leong & Lim, 2015; Tan & Zhou, 2016), individuals have subsequently showed up at Bishan (Woo & Wee, 2015), the Botanic Gardens (Tan et al., 2017) and Thomson Road (Tay, 2019). The featured sightings at Jurong Lake Gardens indicate that it has spread to the western part of Singapore Island.

The observation of many brown anoles at Jurong Lake Gardens suggests that a small population is already established there. They could have been introduced with the many ornamental vegetation that were transplanted there. It is interesting to note that anoles were not observed sharing the same immediate space as changeable lizards (*Calotes versicolor*), another introduced reptile. They could be avoiding the larger lizards which may have the capability of preying on the anoles.

References:

- Leong KWC & Lim KKP (2015) Brown anoles mating at Marina Bay. Singapore Biodiversity Records, 2015: 123-124.
- Tan CLY, Chua JLE & Woo HPM (2017) Brown anole at the Singapore Botanic Gardens. Singapore Biodiversity Records, 2017: 48.
- Tan HH & Lim KKP (2012) Recent introduction of the brown anole *Norops sagrei* (Reptilia: Squamata: Dactyloidae) to Singapore. Nature in Singapore, 5: 359-362.
- Tan HH & H Zhou (2016) Male brown anoles displaying at Gardens by the Bay. Singapore Biodiversity Records, 2016: 171-172.
- Tay A (2019) Brown anole in a plant nursery at Thomson Road. Singapore Biodiversity Records, 2019: 82.
- Woo WX & Wee SXR (2015) Brown anole at Bishan. Singapore Biodiversity Records, 2015: 61.



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9



Fig. 10

Fig. 1-10. Brown anoles at Jurong Lake Gardens from 31 July to 3 August 2020. Photographs by Wu Zhiyuan

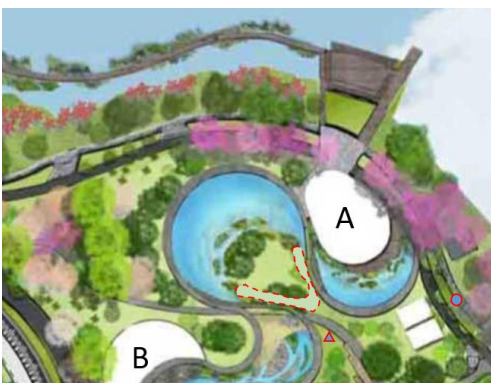


Fig. 11. Map of Jurong Lake Gardens with sites where brown anoles were observed:

Red circle - tree and lamp post where anoles were seen on 31 July, and 1 & 2 August.

Red triangle - footpath where one anole crossed on 3 August.

Irregular area marked by red dashes - where 13 individuals were counted on 3 August.

A - Fusion Spoon restaurant; B - Clusia Cove.

Map adapted from website of National Parks Board Jurong Lake Gardens.