

Biodiversity Record: First record of breeding attempts of ruby-cheeked sunbird in Singapore

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Subjects: Ruby-cheeked sunbird, *Chalcoparia singalensis* (Aves: Passeriformes: Nectariniidae).

Subjects identified by: Albert Low, Adrian Silas Tay, Francis Yap, Kelvin Ng, Raghav Narayanswamy, Raymond Siew, Wee Aik Kiat, Vincent Ng, Yasuko Chow and Ying Loong Chan.

Location and dates: Singapore Island, Sungei Buloh Wetland Reserve, Migratory Bird Trail; 30 April to 25 July 2022.

Habitat: Mangrove forest.

Observers: Albert Low (AL), Adrian Silas Tay (AST), Francis Yap (FY), Kelvin Ng (KN), Raghav Narayanswamy (RN), Raymond Siew (RS), Wee Aik Kiat (WAK), Vincent Ng (VN), Yasuko Chow (YC), and Ying Loong Chan (YLC).



Fig. 1: Ventral view of male ruby-cheeked bird collecting nesting material (fibres from bark) on 5 June 2022. (Photograph by: Vincent Ng). Fig. 2: Lateral view of the female ruby-cheeked sunbird, appearing stunned and calling loudly, after being attacked by a female brown-throated sunbird, on 14 June 2022 (Photograph by: Raymond Siew).

Observations: Sightings of a pair of ruby-cheeked sunbirds in April 2022 were an early signal of possible attempts to breed in Singapore. On 30 April, AL observed a male and female near the Aerie Tower on the Migratory Bird Trail, less than 100 m from the site where a male was present in the summer of 2021 (Bird Society of Singapore, 2024). Sightings in the following month confirmed the presence of at least three birds—two males and a female—at the same site, as well as a separate female ringed in April (NParks, unpublished data).

On 5 June, a male and a female were seen collecting nesting material from a cluster of small trees next to the pond near Shelter S1, at around 0900 hrs. They were seen to meticulously move through the trees, using their beaks to pry fibres off one by one from thin branches (Fig. 1). Upon collecting several fibres, they would fly towards the Aerie Tower, apparently towards a nest. Later that morning, RN located the nest along the main trail about 20 m north of the tower (Fig. 4 — 4A). It was built hanging about 8 m above the path from a frond of a fishtail palm (*Caryota mitis*). Although construction of the nest appeared to be almost complete, nest building behaviour continued to be exhibited by the birds in the next few days.

In the afternoon of 11 June, RN observed the female sitting in the nest for a period of at least 30 minutes, after which she flew off for about 10 minutes before returning to continue sitting in the nest, presumably to incubate eggs. The male was also seen in the vicinity, but he did not go near the nest. The following morning, FY noted the female in the nest. However, after the sighting on 12 June, the nest near the Aerie Tower appeared to be abandoned, with no further sightings of birds at the nest in the weeks that followed.

On 13 June, YC observed a pair of ruby-cheeked sunbirds collecting nesting material near Observation Screen 1.9, nearly 300 m south of the original nest (Fig. 4 — 4B). FY later located the birds and their nest in its early stages of construction at the same site. Construction of the nest could have commenced either in the afternoon on 12 June, or in the morning on 13 June. Although this cannot be confirmed, it is presumed that the second nest was built by the same pair of ruby-cheeked sunbird. Over the following days, there were multiple sightings of the pair continuing to build their nest throughout the day. The birds were always observed collecting nesting materials, consisting mostly of plant fibres and spiderwebs, within a small radius from the nest, and adding these to the nest. As with the first nest, it was hanging from a fishtail palm about 6–7 metres from the ground, but it was comparatively more concealed and not built directly over a path.

FY also noted that there was a pair of brown-throated sunbird (*Anthreptes malacensis*) nesting a few metres away, feeding their fledged chicks nearby. On 14 June, RS observed the female brown-throated sunbird attacking the female ruby-cheeked sunbird in flight, after which the latter was seen perching on a low branch and calling loudly after nearly falling to the ground (Fig. 2). On 19 June and 23 June, the male brown-throated sunbird was seen pulling nesting material from the ruby-cheeked sunbird nest (YLC, KN). By 20 June, nest building activity by the ruby-cheeked sunbirds appeared to have slowed down, and by around 23 June, they no longer returned to the nest. Although two ruby-cheeked sunbirds were seen in the vicinity of the Aerie Tower on 25 June, they were not observed nesting.

The first nest (Fig. 3) was retrieved on 27 June, about two weeks after it was abandoned. It was still in excellent condition and measured 15 cm in height (excluding the portion linking the nest to the palm frond), 5 cm in width and 5 cm in depth (10 cm including overhanging porch at entrance). The opening to the nest was 3 cm in diameter. The nest was pear-shaped, with a circular entrance, and appeared larger and sturdier than the nests built by the locally far more common olive-backed sunbird (*Cinnyris jugularis*) and brown-throated sunbird (*Anthreptes malacensis*). While those species also build nests with porches overhanging their entrance, the porch in this nest was much longer and seemed to droop such that it nearly obstructed the entrance. No eggs were found in the nest. As the female ruby-cheeked sunbird was observed sitting for long periods in the nest on 11 and 12 June, there could have been eggs, but these may have been preyed upon either before or after the nest was abandoned.

After the failed nesting attempts, sporadic sightings, mostly of male birds, were made until July 2022. The last sighting was on 25 July 2022 (WAK). Despite extensive searches by the authors and other birdwatchers over two years, there were no records of ruby-cheeked sunbirds anywhere in Singapore at the time of writing (September 2024).



Fig. 3: Side view of the first nest, with the opening and overhanging porch on the left (Photograph by: Adrian Silas Tay).



Fig. 4: Locations of ruby-cheeked sunbird sightings at Sungei Buloh Wetland Reserve (Bird Society of Singapore, 2024; NParks, unpublished data): 1. One male at Coastal Trail on 14 Oct 2020. 2. One male at Migratory Bird Trail from 11 Jul to 5 Sep 2021. 3. One female (ringed) at Freshwater Pond on 27 Apr 2022. 4. Two males and one female (not ringed) at Migratory Bird Trail from 30 Apr to 25 Jul 2022. 4A and 4B are the locations of the first and second nests respectively.

Table 1. Records of ruby-cheeked sunbird in Singapore (Bird Society of Singapore, 2024; NParks, unpublished data).

Date	Location	Number of individuals
24 September 2005	Central Catchment Nature Reserve: MacRitchie Reservoir	1 female
4 March 2018	Pulau Ubin: Chek Jawa	1 female
14 October 2020	Sungei Buloh Wetland Reserve: Coastal Trail,	1 male
11 July – 5 September 2021	Sungei Buloh Wetland Reserve: Migratory Bird Trail	1 male
4 November 2021	Pulau Ubin: surroundings of Ketam Quarry	1 male
4 April – 23 April 2022	Pulau Ubin: Chek Jawa	1 male
27 April 2022	Sungei Buloh Wetland Reserve: Freshwater Pond	1 female (ringed)
30 April – 25 July 2022	Sungei Buloh Wetland Reserve: Migratory Bird Trail	2 males and 1 female (not ringed)

Remarks: The ruby-cheeked sunbird is widely distributed throughout Southeast Asia and the northeastern Indian subcontinent (Grimmett et al., 2012). It is regionally common and inhabits a variety of habitats including primary rainforest, mangroves, and degraded landscapes (Birand & Pawar, 2004). Although considered as a data deficient native species in the third edition of the Singapore Red Data Book (Yong et al., 2024), it was first recorded in Singapore in 2005 with sporadic records since 2018 (Table 1), and hence, regarded as a rare visitor (Bird Society of Singapore, 2024).

Sporadic sightings of ruby-cheeked sunbirds at Sungei Buloh Wetland Reserve have been noted, with an increase from one male in 2020 to two males and two females in 2022 (Table 1). Although an increase in observer effort has coincided with this increase in sightings, the species, despite its distinctive plumage, again went undetected since August 2022. It appeared that these are new dispersals to Singapore, likely from Malaysia across the Johor Strait, rather than an undetected population that was present throughout.

The recent increase of visiting bird species from adjacent extralimital areas has been of species highly dependent on primary forest (e.g., white-crowned hornbill, *Berenicornis comatus*, see Narayanswamy & Sin, 2024) and those that occupy more degraded habitats (e.g. Malayan swamp babbler, *Trichastoma rostratum*, see Bird Society of Singapore,

2024). This may suggest that breeding attempts are likely to be replicated in more species as deforestation continues in Peninsular Malaysia. The blue-winged pitta (*Pitta moluccensis*) has over the last two decades extended its breeding range through Peninsular Malaysia, and colonised Singapore by 2016 (Hutchinson & Mears, 2006; Bird Society of Singapore, 2024). The first breeding record on Singapore Island was in 2021 (Low et al., 2016). Individuals of this species have been observed displaying breeding behaviour at Sungei Buloh Wetland Reserve in 2022 and 2023 (Adrian Silas Tay, pers. obs.). The mangrove whistler (*Pachycephala cinerea*) appears to be re-establishing itself on Singapore Island after 70 years with the first confirmed nesting record in 2024 (Niessen et al., 2024). While this species likely has populations on Pulau Tekong and the Southern Islands, most recent sightings on Singapore Island have apparently been of visitors (Bird Society of Singapore, 2024). The black-and-red broadbill (*Cymbirhynchus macrorhynchos*), believed to be locally extinct since 1949, was recorded in 2004 and 2006. Since 2016, it has been observed on many occasions at Sungei Buloh and Pulau Ubin where the documentation of at least three separate birds in 2023 represents a significant increase in individuals observed (Bird Society of Singapore, 2024). Consistent sightings of individuals at Sungei Buloh between March 2019 (when one was ringed) and August 2024 suggest its continued presence in Singapore. The Malayan swamp babbler (*Trichastoma rostratum*) occupies mangrove and coastal habitats like the ruby-cheeked sunbird. Although believed to be extirpated from Singapore Island around 2005, and given its well-documented poor dispersal abilities (Yong, 2009), two sightings in 2023 at Chek Jawa and Pasir Ris Park (Bird Society of Singapore, 2024) give hope to its recolonisation of Singapore Island.

The different trajectories of these species illustrate the range of outcomes of dispersal. The blue-winged pitta's colonisation of Singapore Island was rapid and preceded by breeding records in the north. The other three species, like the ruby-cheeked sunbird, are historically resident in Peninsular Malaysia and have the capacity to cross the Johor Strait. That individuals of these species were being seen increasingly in Singapore suggests that they may establish or re-establish populations there if suitable habitats are available, such as the protected mangrove and coastal forests at Sungei Buloh and Pulau Ubin. At the same time, it is possible that birds have been missed by low or no observer coverage in wider areas of suitable habitat with limited access. On Pulau Ubin, the public is limited to walking trails that cover a small proportion of the island's land area. On Pulau Tekong, access to such habitats is highly restricted due to the entire island being a military base. In April 2022, Pulau Ubin produced an influx of rare bird sightings that included large woodshrike (*Tephrodornis gularis*), black-and-white bulbul (*Pycnonotus melanoleucos*), and scarlet-breasted flowerpecker (*Prionochilus thoracicus*) (Bird Society of Singapore, 2024). Presumed to be 'very rare visitors' (Bird Society of Singapore, 2024), these dispersing birds could also represent future residents in Singapore given their status in the wider Sundaic region.

The two nesting attempts recorded in 2022 at Sungei Buloh, although unsuccessful, represent the first documented evidence of breeding of the ruby-cheeked sunbird in Singapore. Their failure to raise chicks could be attributed to competition with resident con-familials, such as the brown-throated sunbird (*Anthreptes malacensis*), crimson sunbird (*Aethopyga siparaja*), and copper-throated sunbird (*Leptocoma calcostetha*), all of which had their own nests within 100 metres of the second ruby-cheeked sunbird nest. From the observations, the attack of the female ruby-cheeked sunbird by the female brown-throated sunbird, as well as the robbing of nesting material from the ruby-cheeked sunbird's nest by the male brown-throated sunbird, appear to be likely causes for the ruby-cheeked sunbirds abandoning their second nest. Considering the ruby-cheeked sunbird's relatively high tolerance to disturbance and presumed capacity for undertaking short-distance movements, future nesting attempts in this species are likely.

Literature cited:

- Birand A & Pawar S (2004) An ornithological survey in north-east India. Forktail 20: 15–24.
- Bird Society of Singapore (2024) Singapore Bird Database. <https://records.singaporebirds.com/record/> (Accessed 21 September 2024)
- Grimmett R, Inskipp C & Inskipp T (2012) Birds of India, Pakistan, Nepal, Bangladesh, Bhutan, Sri Lanka, and the Maldives. Second edition. Princeton University Press, USA, 480 pp.
- Hutchinson R & Mears A (2006) Extension of the breeding range of Blue-winged Pitta *Pitta moluccensis* in peninsular Malaysia. Forktail 22: 119–120.
- Low BW, Chia A, Tan GC, Yap WJ & Lim KK (2016) First documented records of the Blue-winged Pitta *Pitta moluccensis* breeding in Singapore. BirdingASIA, 26: 43–46.
- Niessen RAH, Narayanswamy R & Sin YCK (2024) Biodiversity Record: First breeding record of mangrove whistler on Singapore Island in over 70 years. Nature in Singapore, 17: e2024060. DOI: 10.26107/NIS-2024-0060
- Narayanswamy R & Sin YCK (2024) Singapore's first wild white-crowned hornbill, assessments by the Singapore Bird Records Committee. Hornbill Natural History and Conservation, 4: 29–33.
- Yong DL (2009) Persistence of babbler (Timaliidae) communities in Singapore forests. Nature in Singapore, 2: 365–371.
- Yong DL, Chia A, Jain A, Lee BPY-H, Li DZW, Davison GWH, Lim G, Tan GC, Lee J, Lim KC, Lim KS & Nyanasengaran M (2024) Checklist of bird species with their category of threat status for Singapore. In: Davison GWH, Gan JWM, Huang D, Hwang WS, Lum SKY & Yeo DCJ (eds.) The Singapore Red Data Book. Red Lists of Singapore Biodiversity. Third edition. National Parks Board, Singapore, pp. 675–683.