

FLORAL VISITATION OF A PASSERINE *YUHINA GULARIS* HODGSON ON
ENKIANTHUS DEFLEXUS (GRIFF.) C.K. SCHNEID. VAR. *DEFLEXUS*
(FAMILY ERICACEAE): FIRST GLOBAL RECORD FROM THE OUTSKIRTS OF
SINGALILA NATIONAL PARK IN DARJEELING HIMALAYA, INDIA¹

SUBHASIS PANDA²

¹Accepted May 25, 2021

First published: March 31, 2022 | doi: 10.17087/jbnhs/2022/v119/153907

²Angiosperm Taxonomy Lab, Dept of Botany, Maulana Azad College, Kolkata 700 013, West Bengal, India.

Email: bgc.panda@gmail.com

Introduction

Enkianthus deflexus (Griff.) C. K. Schneid., a member of the family Ericaceae, has three extant varieties, namely var. *deflexus*, var. *glabrescens* R.C. Fang, and var. *acuminatus* S. Panda & Sanjappa. *E. deflexus* var. *deflexus* appears to be restricted to India, eastern Nepal, Bhutan, south-western China, and northern Myanmar. In India, var. *deflexus* is reported only from Eastern Himalaya [West Bengal (Darjeeling), Sikkim, and Arunachal Pradesh].

During field studies at different sites in Singalila National Park, Darjeeling Himalaya, in May 2019, the author observed a pale olive-brown crested passerine bird on the bright red campanulate flowers of *Enkianthus deflexus* var. *deflexus*, just outside the Singalila National Park Gate near Tumling, at an altitude of c. 2,936 m. After a critical study based on photographs taken in Tumling and consultation with ornithology experts in Erfurt Naturkunde Museum, Germany, Zoological Survey of India, Dehradun, WWF-Sikkim, and East India Birding the passerine was identified as Stripe-throated Yuhina *Yuhina gularis* Hodgson (1836), locally known as *Sano Jureli* (in the Gurung Nepalese dialect of Tumling). Dr Mathias Hartmann and Professor Martens of Erfurt Naturkunde Museum confirmed the identity as ‘young Stripe-throated Yuhina *Yuhina gularis*’. A survey of literature (Baker 1975; Cronk and Ojeda 2008; Georgian *et al.* 2015; Huang *et al.* 2017; Proctor *et al.* 1996; Quian *et al.* 2017; Stevens *et al.* 2004) reveals that the observed floral visitation by *Yuhina gularis* on *E. deflexus* var. *deflexus* is the first global record of such an event, from the outskirts of Singalila National Park in Darjeeling Himalaya.

Stevens *et al.* (2004) in their monograph on Ericaceae Juss. mentioned “flowers are usually animal-pollinated and bees are common and effective pollinators”. They did not mention bird pollinators. But in other taxa, Georgian *et al.* (2015) experimentally determined *Yuhina diademata* Verreaux (1869) as a potential pollinator of a Chinese ericoid *Rhododendron floccigerum* Franch. Huang *et al.* (2017) reported ornithophily in *Rhododendron sinogrande* Bulf. f.

& W.W. Sm. by *Yuhina occipitalis* Hodgson (1836). Quian *et al.* (2017) also reported ornithophily by *Yuhina nigrimenta* Blyth with a non-ericoid species, *Brandisia hancei* Hook. f. (Scrophulariaceae).

Enkianthus deflexus (Griff.) C.K. Schneid. var. *deflexus* (*Phulo*: Nepalese of Tumling): Stout, erect shrub up to 3 m tall with reddish branches. 4–7 leaves in pseudowhorl, papery to chartaceo-coriaceous; petioles spatulate, pink to pale green. Inflorescence axillary to terminal corymbs, drooping, 8–14-flowered. Flowers drooping, 4–5 cm long; pedicels 3–4 cm long, deflexed. Corolla broadly campanulate to rarely urceolate-campanulate, blood red (Tumling population), 10–15 mm long. Stamens 10, usually in 2 whorls (5+5), each anther lobe with single slightly recurved warty awn of 1–1.5 mm long. Pistil c. 1 cm long; ovary ovoid, densely puberulous. Fruit loculicidally 5-valved capsule, globose to oblong.

Distribution: INDIA: Eastern Himalaya [West Bengal (Darjeeling), Sikkim, and Arunachal Pradesh]; EXTRALIMITAL: Eastern Nepal, Bhutan, south-western China; northern Myanmar, at 2,100–3,450 m above msl, growing gregariously on loose rocky slopes and in crevices in temperate forest of the Himalaya.

Flowering: May to early June. **Fruiting:** June–July.

Specimens examined: INDIA: Eastern Himalaya, West Bengal (Darjeeling), right bank of Tumling (Indian side), toward Gairibas, 2,936 m, 27° 01.053' N & 88° 03.057' E, 17.v.2019, S. Panda 94 (Maulana Azad College Herbarium, MAC).

Observations

The bird was identified as *Yuhina gularis* as it had olive and dull brown plumage with a tall, upswept crest, with a black and dull orange panel on the wings, black streaking on pale vinaceous throat and pale brownish-orange belly and vent. The olive tail had a black tip and grey-brown undertail feathers. Call: loud, nasal notes while moving in flocks. The bird was seen on May 17, 2019, twice at 13:00 to 13:05 hrs and 14:30 to 14:32 hrs in flocks of 10 to 12 birds.

The geographical range of *Yuhina gularis* extends from Eastern Himalaya [West Bengal (Darjeeling), Sikkim, Arunachal Pradesh] to the Northeast, including Nagaland, Manipur, and Mizoram. Extralimitally, it is found in Nepal, Bhutan, China, Myanmar, NW Vietnam, Laos.

Pollination or visitation?

Enkianthus deflexus var. *deflexus* observed at Tumling possesses bright red odourless flowers, in close clusters (10–14 in inflorescence) drooping downwards, with transparent, mildly sweet nectar, about 0.5 ml per flower, secreted by basal discs encircling the ovary and alternating with stamens inside the corolla. The broadly bell-shaped corolla is nearly equal in length to the *Yuhina*'s beak, so the bird easily reaches the nectar discs through the encircling stamens. The absence of any kind of nectar guides (unlike the majority of Indian *Rhododendron* spp.) suggests that these are not bird-pollinated flowers (Cronk and Ojeda 2008; Proctor *et al.* 1996). The question remains, whether *Yuhina gularis* is merely a flower visitor or also a pollinator of var. *deflexus*

flowers. Detailed field study with pollination exclusion experiments (caged and bagged methods, Huang *et al.* 2017), and other experimental investigations are urgently required to analyze the relation of *Yuhina gularis* to *Enkianthus deflexus* var. *deflexus* flowers, as ornithophily or as a flower visitor.

ACKNOWLEDGEMENTS

The author is grateful to the Curator of Central National Herbarium (CAL) for permission to consult *Enkianthus deflexus* herbarium specimens, DFO (Wildlife) Darjeeling for permission to survey, Dr Matthias Hartmann, Director of Erfurt Naturkunde Museum, Germany, Dr S. Babu, Sr Scientist, SACON, Dr Anil Kumar, Scientist-E, NRC, Zoological Survey of India, Dr Sujan Chatterjee, (www.eastindiabirding.com), and Dr Dipankar Ghose, WWF-Sikkim, for their kind help during identification of the passerine. The author is also thankful to Dr Subhasis Dutta, Principal, Maulana Azad College, for his kind permission to conduct this work.

REFERENCES

- BAKER, H.G. (1975): Sugar concentration in nectars from hummingbird flowers. *Biotropica* 7(1): 37–41.
- CRONK, Q. & I. OJEDA (2008): Bird-pollinated flowers in an evolutionary and molecular context. *Journal of Experimental Botany* 59(4): 715–727.
- GEORGIAN, E., Z.D. FANG, E. EMSWILLER & A. PIDGEON (2015): The pollination ecology of *Rhododendron floccigerum* Franchet (Ericaceae) in Weixi, Yunnan Province, China. *J. Pollination Ecol.* 16: 72–81
- HOOKE, J.D. & T. THOMSON (1855): On *Enkianthus Himalaicus* and *Cassiope selaginoides*, two new species of Himalayan Ericaceae. *Hooker's Journal of Botany* 7: 124–125.
- HUANG, Z.-H., Y.-P. SONG & S.-Q. HUANG (2017). Evidence for passerine bird pollination in *Rhododendron* species. *AoB PLANTS* 9: 1–10.
- PROCTOR, M., P. YEO & A. LACK (1996): The Natural History of Pollination. Timber Press, Portland, USA. Pp. 83–84.
- QIAN, Y., Y.X. LI, X. ZHANG & Q.M. QUAN (2017): *Yuhina nigrimenta* Blyth (Zosteropidae) as a bird pollinator of *Brandisia hancei* Hook. f. (Scrophulariaceae) during winter. *Turk. J. Bot.* 41: 476–485.
- STEVENS, P.F., J. LUTEYN, E.G.H. OLIVER, T.L. BELL, E.A. BROWN, R.K. CROWDEN, A.S. GEORGE, G.J. JORDAN, P. LADD, K. LEMSON, C.B. MCLEAN, Y. MENADUE, J.S. PATE, H.M. STACE & C.M. WEILLER (2004): Ericaceae. P. 152–53. In: Kubitzki, K. (Ed.) The Families and Genera of Vascular Plants, Vol. 6. Springer, Berlin.

Recommended Citation

Panda, Subhasis (2022): Floral visitation of a passerine *Yuhina gularis* Hodgson on *Enkianthus deflexus* (Griff.) C.K. Schneid. var. *deflexus* (Family Ericaceae): First global record from the outskirts of Singalila National Park in Darjeeling Himalaya, India. *J. Bombay Nat. Hist. Soc.* 119. doi: 10.17087/jbnhs/2022/v119/153907

