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CONTRIBUTIONS TO THE GENUS *HETAERIA* (ORCHIDACEAE: GOODYERINAE) IN VIETNAM

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ABSTRACT. As a result of Hon Ba nature reserve survey, *Hetaeria finlaysoniana*, previously recorded from Thailand, Myanmar and southern China, is newly recorded from Vietnam. Description of studied plants is presented together with notes on ecology and photographic documentation. These plants were collected in southern Vietnam (Hon Ba Nature Reserve, Khanh Hoa), which is located quite far from other known localities and thus a larger distribution of this possibly overlooked species could be expected. Additionally, *H. youngsayei* is newly recorded from the same reserve, 540 km from the nearest previously known locality. Distribution of both species is discussed and an updated identification key for all Vietnamese members of the genus *Hetaeria* is presented.

KEY WORDS: *Hetaeria finlaysoniana*, *youngsayei*, new record, distribution, Hon Ba, Khanh Hoa

Introduction. *Hetaeria* Blume is a genus of about 30 species (Pridgeon *et al.* 2003, Chen *et al.* 2012) belonging to the Goodyerinae subtribe of family Orchidaceae (subfamily Orchidoideae, tribe Cranichideae; Pridgeon *et al.* 2003). It is distributed from tropical Africa through tropical Asia to the Pacific islands (Pridgeon *et al.* 2003, Chen *et al.* 2012). There are 5 species reported to-date from Vietnam (Averyanov 2008); however, this number may not be final. Members of this genus are inconspicuous plants, often present in low densities of flowering individuals which can be easily overlooked by botanists. Moreover, the Vietnamese flora as whole with its very high diversity is still poorly explored (Averyanov *et al.* 2009).

Hetaeria finlaysoniana Seidenf. is a species similar to other taxa in which the labellum is narrowed toward the apex, often with a poorly differentiated epichile. It was first mentioned in 1832, in Wallich's catalogue as *Etaeria elongata*, but not validly described until 1840 when Lindley named it *Goodyera elongata*. Eventually Trimen made the combination *Hetaeria elongata* in 1885

but he overlooked the earlier use of the same epithet in 1859 by F.A.W. Miquel for a New Guinea species, now known as *Vrydagzynea elongata* Blume. Since *Hetaeria elongata* (Lindl.) Trimen is a homonym, and thus illegitimate, Seidenfaden proposed the new name *H. finlaysoniana* in 1997. To date, this species has been recorded from Thailand, Myanmar (Ormerod & Sathish Kumar 2003) and southern China (Guangxi, Hainan; Chen *et al.* 2012).

Material and methods. Plants were collected in the field and stored in plastic bag with a wet moss until planted in Prague Botanical Garden (CITES permission No: 12CZ022452). Plants were growing in a mix of Seramis, perlite, pumice and peat in a plastic pot and kept slightly shaded in a glasshouse with day / night temperature (20 – 30) / (18 – 25)°C. Pots were watered regularly to be still moist. When flowering in cultivation, photographs were taken using a digital camera with a macro lens (Canon EOS 60D with Canon Macro EF 100mm 1:2,8 L IS USM) or a digital camera mounted on a stereomicroscope (Canon EOS 60D on Olympus SZ X7).

Results and discussion

Hetaeria finlaysoniana Seidenf., Contr. Orchid Fl. Thailand 13: 10. 1997 = *Etaeria elongata* Lindl., Wall. Cat. 1832, No. 7384, 18. nom. nud. = *Goodyera elongata* Lindl., Gen. Sp. Orchid. Pl. 494. 1840 = *Hetaeria elongata* (Lindl.) Trimen, Syst. Cat. Fl. Pl. Ceylon: 10, 1885 [not (Blume) Miquel 1859]; Seidenf., Dansk Bot. Ark. 32(2): 99, fig. 61 = *Rhamphidia elongata* (Lindl.) Lindl., J. Proc. Linn. Soc., Bot. 1: 181, 1857.

TYPE: Origin unknown, possibly Thailand, Surat Thani province (Seidenfaden 1997) (K 000873768 & 000387653, *Finlayson s.n.* in *Herb. Wallich* 7384, Photo!). FIG. 1, 3.

Plants terrestrial, creeping, 40 to 50 cm tall. *Rhizome* elongate, creeping, glabrous. *Stem* erect, brown, 2.3–5.7 mm in diameter, bearing 4 to 5 leaves, scattered along stem while growing, clustered at stem apex when flowering, approximately 5–15 cm above the ground. *Leaves* oblong to elliptic, base obtuse, apex acute, blade 4.5–6.0 × 2.5–3.0 cm, glabrous, green with distinctly darker reticulate veins. Petiole-like base 1.5–2.0 cm long (including tubular sheath). *Peduncle* pubescent, pale green to brownish yellow, 20 cm long, 2 mm wide, with 3 sterile bracts 11–18 mm long. *Rachis* pubescent, about 15 cm long with subdensely arranged flowers. *Floral bracts* pubescent, pink, lanceolate, cymbiform, 5–8 mm long, shorter than ovary. *Flowers* not resupinate, half open, spaced on rachis into four sides, inflorescence slightly spirally twisted. *Ovary* pubescent, 8–12 mm long, 2 mm wide, placed nearly parallel to the longitudinal axis of the inflorescence. *Sepals* sparsely pubescent at outer side, oblong to ovate-oblong, 5–6 × 2.8–3.0 mm. *Lateral sepals* pink to reddish pink. *Dorsal sepal* pink to white. *Lateral petals* white, thin and translucent, rhombic-obovate, 5–6 × 3 mm. *Lip* yellow, oblong-lanceolate, 4.5 × 2.2 mm, hypochile saccate, epichile attenuated into acuminate apex with involuted parts of margins. *Column* 2.0–2.5 mm long.

DISTRIBUTION. So far, this species has been recorded from tropical evergreen forests in Chantaburi, Kanchanaburi and Surat Thani provinces in Thailand (Seidenfaden 1997, Pedersen 2011), Myanmar (Ormerod & Sathish Kumar 2003) and provinces Guangxi and Hainan in southern China (Chen *et al.* 2012), nevertheless

records from China require to be verified due to common confusion of taxa in this group (reviewer note). Material presented here was collected in Hon Ba reserve in Khanh Hoa province of southern Vietnam which is located relatively far from other collections and thus larger distribution could be proposed for this taxon, perhaps including also Cambodia.

FLOWERING TIME. Perhaps from January to the beginning of March in Hon Ba, February to April in Thailand (Pedersen 2011), March in Myanmar.

POLLINATION. We have not observed fruit production from any flower except those which were previously hand-pollinated. Based on this we propose that these plants are allogamous.

ECOLOGY. Plants were growing in leaf litter on a ground in evergreen tropical lowland primary forest with granite bedrock. The locality is in close proximity to the river, however prominently above the water level during periodical floods; the habitat is a rather dry slope in the broad-leaved forest. Other terrestrial orchids growing in the same place are *Erythrorchis altissima* (Blume) Blume and *Zeuxine glandulosa* King & Pantl. On more wet places along stream grows *Neuwiedia zollingeri* var. *javanica* (J.J.Sm.) de Vogel.

SPECIMENS SEEN. Czech Republic, cultivated in Prague Botanical Garden, 13 March 2013 (originally collected in Vietnam, Khánh Hòa province, Cam Lâm District, Hòn Bà Nature Reserve, lowland evergreen forest near the Day river (Song Day), alt. 250 m, 4 March 2012), *J. Ponert* 523 (PRC!).

Hetaeria youngsayei Ormerod, Oasis Suppl. 3: 7, 2004 = *Hetaeria shiuyingiana* L.Li & F.W.Xing, Novon 19: 187, 2009. *Hetaeria nitida* auct. non Ridl., J. Linn. Soc., Bot. 32: 404, 1896 – FIG. 2.

This species has been recorded from the province Ha Giang in northern Vietnam and province Quang Tri in central Vietnam under the name *Hetaeria nitida* Ridl. (Averyanov 2008) which was misapplied for this taxon many times (see Ormerod, 2004). Our collection was made in Khanh Hoa province, about 540 km as the crow flies far from the nearest locality in Quang Tri province, and it is the first record for southern part of Vietnam. Interestingly this species has been



FIGURE 1. *Hetaeria finlaysoniana*. A. Flower from the front. B. Flower. C. Flower from the side. D. Leaves. E. Habit. F. Inflorescence. G. Peduncle with sterile bract. H. Closeup of the inflorescence. Scale bars: A, B, C, G = 1 mm; D, E, F, H = 1 cm. Photo J. Ponert. Cultivated in Prague Botanical Garden (Leg. J. Ponert 523, PRC!).

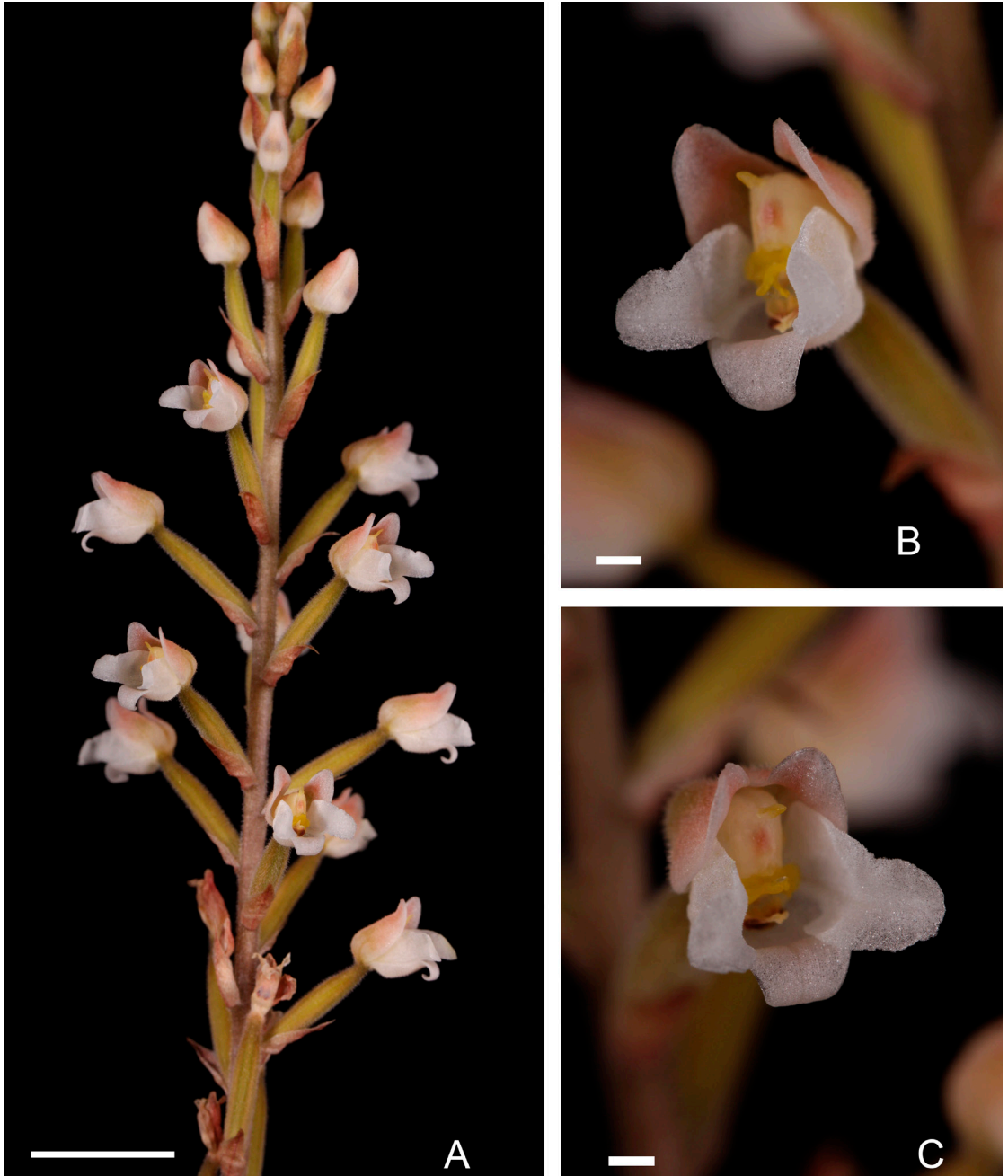


FIGURE 2. *Hetaeria youngsayei*. A. Inflorescence. B-C. Details of flowers. Photo J. Ponert. Cultivated in Prague Botanical Garden (Leg. J. Ponert 524, PRC!).

reported from Thailand, Hainan and Hong Kong but not yet from Cambodia or Laos which lie between Vietnam and Thailand. Our collection shows that this species may be distributed not only in northern part of Vietnam, but more likely in nearly the whole country,

because of the long distance between available records. Similarly as in *H. finlaysoniana* mentioned above we hypothesize a larger distribution area which may extend from Thailand through Laos and Cambodia to Vietnam, Hainan and Hong Kong.

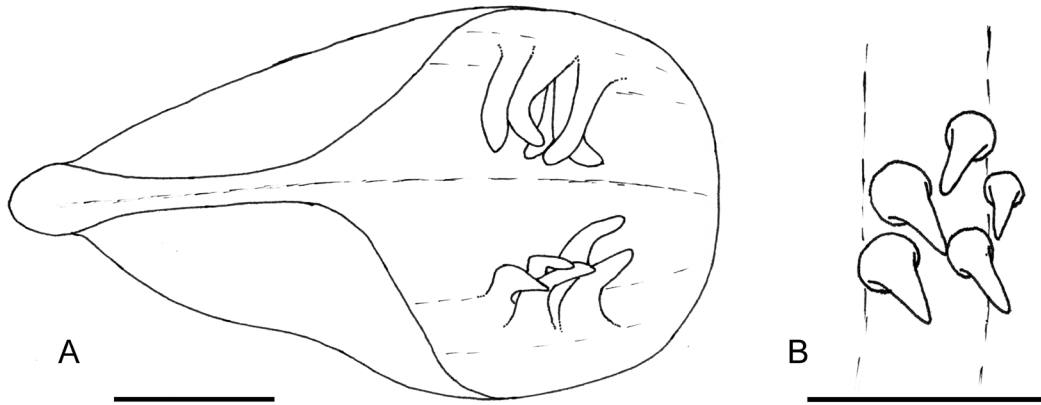


FIGURE 3. Lip of *Hetaeria finlaysoniana*. A. Lip from above in native shape. B. Top view of a cluster of glands when lip is flattened. Scale bars = 1 mm. Drawn by J. Ponert (Leg. *J. Ponert* 523, PRC!).

FLOWERING TIME. Flowering specimens were observed from January to February in Hon Ba what is the same as reported from other places (Pedersen 2011).

POLLINATION. We have not observed fruit production in culture from any flower except those which were previously hand-pollinated. Based on this we propose that these plants are allogamous.

ECOLOGY. Plants were growing in leaf litter on a ground in evergreen tropical primary forest with granite bedrock at elevations from about 600 m to 1000 m on slopes of the Hon Ba massive. Other terrestrial orchids growing in the similar places are *Didymoplexis* sp., *Erythrorchis altissima* (Blume) Blume and *Zeuxine affinis* (Lindl.) Benth. ex Hook.f..

SPECIMENS SEEN. Czech Republic, cultivated in Prague Botanical Garden, 17 March 2013 (originally collected in Vietnam, Khánh Hòa province, Cam Lâm District, Hòn Bà Nature Reserve, trail in evergreen tropical forest near the road, alt. 836 m, 14 March 2012), *J. Ponert* 524 (PRC!).

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Artificial identification key to the Vietnamese species of *Hetaeria**

- 1a. Lip dividend into hypochile, mesochile and epichile. Epichile large, two-lobed, c. 2.5 mm wide *H. anomala*
- 1b. Lip without distinguishable mesochile, epichile entire and very small 2
- 2a. Epichile dilated and broadly ovate, apex obtuse *H. affinis*
- 2b. Epichile linear, abruptly attenuate, sometimes with a small terminal lobule 3
- 3a. Lip basal part inside with 1 to 2 simple or multiarmed glands on either side *H. alta*
- 3b. Lip basal part inside with 3 to 8 separated (sometimes connate at base) glands on either side 4
- 4a. Glands inside the lip fleshy, 3 to 5 on either side, arranged in one dense cluster, inflorescence rather lax *H. youngsayei*
- 4b. Glands inside the lip filiform, 4 to 8 on either side, at least some of them clearly separated from each other, inflorescence rather dense 5
- 5a. Dorsal sepal 3–4 mm long, petals 0.8–1.3 mm wide, leaves 3–9 cm long *H. oblongifolia*
- 5b. Dorsal sepal 5–6 mm long, petals 1.6–2.1 mm wide, leaves 8–11 cm long *H. finlaysoniana*

* This key is based on data from Seidenfaden & Wood (1992), Ormerod (2004), Averyanov (2008), Lin & Fu-Wu (2009), Pedersen & Ormerod (2009), Pedersen (2011) and Chen *et al.* (2012).

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