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Two new records of non-photosynthetic *Burmannia* species (Burmanniaceae) from Laos and Vietnam

Maxim S. Nuraliev, Dianxiang Zhang, Andrey N. Kuznetsov &
Svetlana P. Kuznetsova

Summary: Two new national records are reported, i.e. *Burmannia nepalensis* from Laos and *B. lutescens* from Vietnam. Both of them are supplied by photographs of the studied plants in living state. Species diversity of *Burmannia* in Laos and Vietnam is briefly discussed.

Keywords: Indochina, Laos, Vietnam, mycoheterotrophic plants, flora, biodiversity

The genus *Burmannia* is the largest in the family Burmanniaceae (at least if Thismiaceae is treated as a separate family). It comprises 59 currently accepted species (Govaerts et al. 2011). This genus is distributed in tropical and subtropical regions of the Old and the New World with about one half of its species occurring in Asia. *Burmannia* represents a notable group of plants as it contains both photosynthetic and mycoheterotrophic species (Maas-Van de Kamer 1998; Wu et al. 2010; Merckx et al. 2013).

Taxonomy and geographical distribution of *Burmannia* species, especially of the mycoheterotrophic ones, are far from being sufficiently studied (Zhang 1999). Since 2000, at least three currently accepted species (Averyanov 2005; Tsukaya & Darnaedi 2012) and a number of range extensions have been published. Here we report two further new records, i.e. *B. nepalensis* Hook. f. from Laos and *B. lutescens* Becc. from Vietnam.

Burmannia nepalensis Hook. f. (Fig. 1)

Studied specimen. Laos: Bolikhamsai province, Thaphabat district, Phou Khao Khouay Nat. Biodiv. Conserv. Area, 5.5 km NNW of Hat Khay village, forest edge, 18°27'20"N 103°08'40"E, 300 m, 09 December 2015, *M.S. Nuraliev 1420* [spirit material: IBSC, MW].

Notes. Presence of *B. nepalensis* in Laos was rather expectable because it is known to have a wide distribution area from India to Japan, Philippines and Indonesia (Zhang 1999; Wu et al. 2010).

Prior to our finding, five species of *Burmannia* were known from Laos (Newman et al. 2007), of which only one species, *B. wallichii* (Miers) Hook. f., is non-photosynthetic.

Burmannia lutescens Becc. (Fig. 2)

Studied specimen. Vietnam: Kon Tum province, Kon Plong district, Thach Nham protected forest, 17 km N of Mang Den town, in the forest, on slope, 14°45'05"N 108°18'25"E, 1150 m, 09 June 2016, *M.S. Nuraliev*, *A.N. Kuznetsov*, *S.P. Kuznetsova 1657* [spirit material: IBSC, MW].

Notes. *Burmannia lutescens* was believed to be a 'typical Malesian species', endemic to this area (Zhang 1999). Among its previously known locations, the ones closest to Vietnam are found on

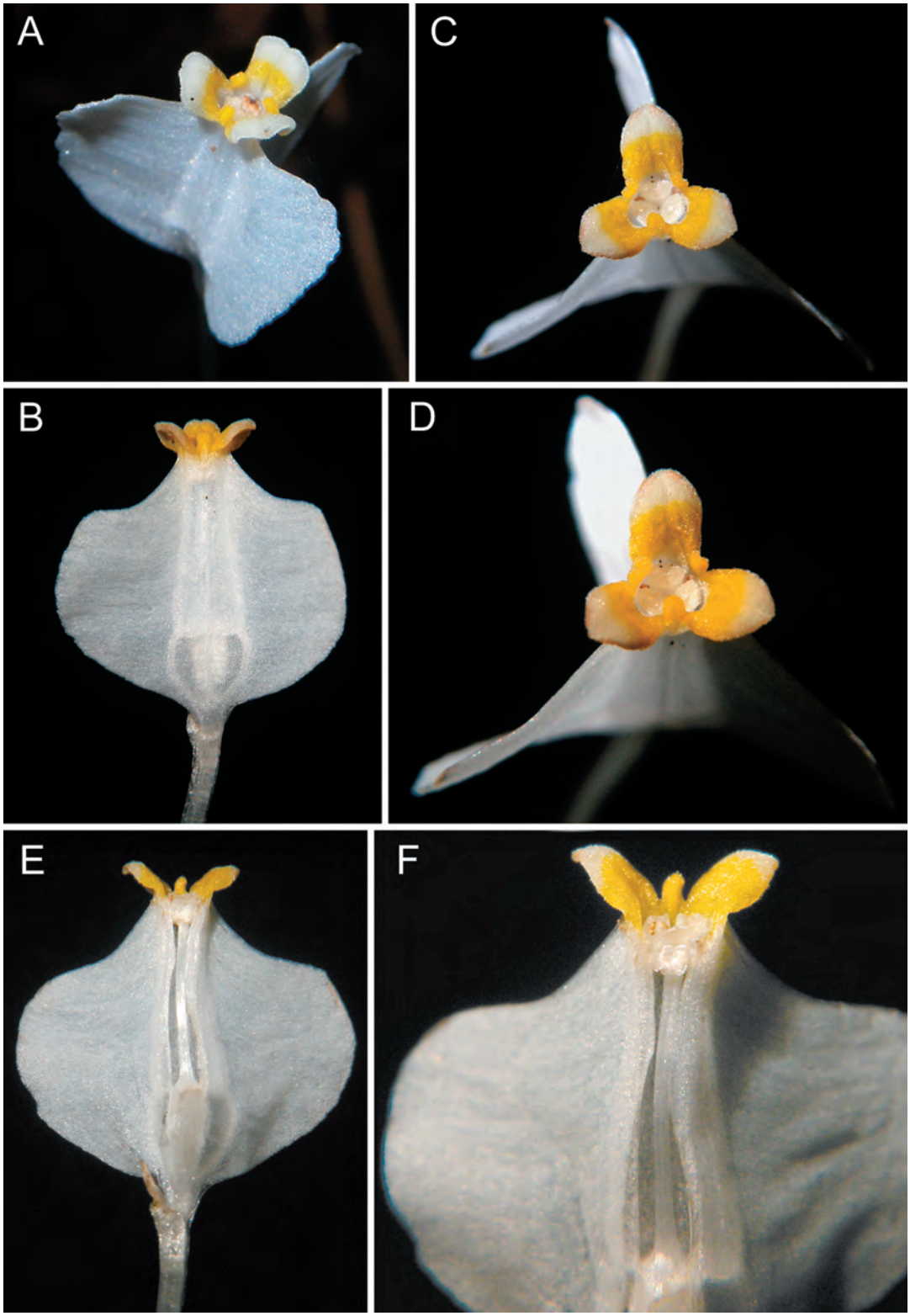

Figure 1. Flower of *Burmannia nepalensis* in Phou Khao Khouay Nat. Biodiv. Conserv. Area (Laos). A – oblique view; B – side view; C, D – top view; E, F – longitudinally opened flower showing stamens and style. *Nuraliev 1420*. Photos by M. Nuraliev.

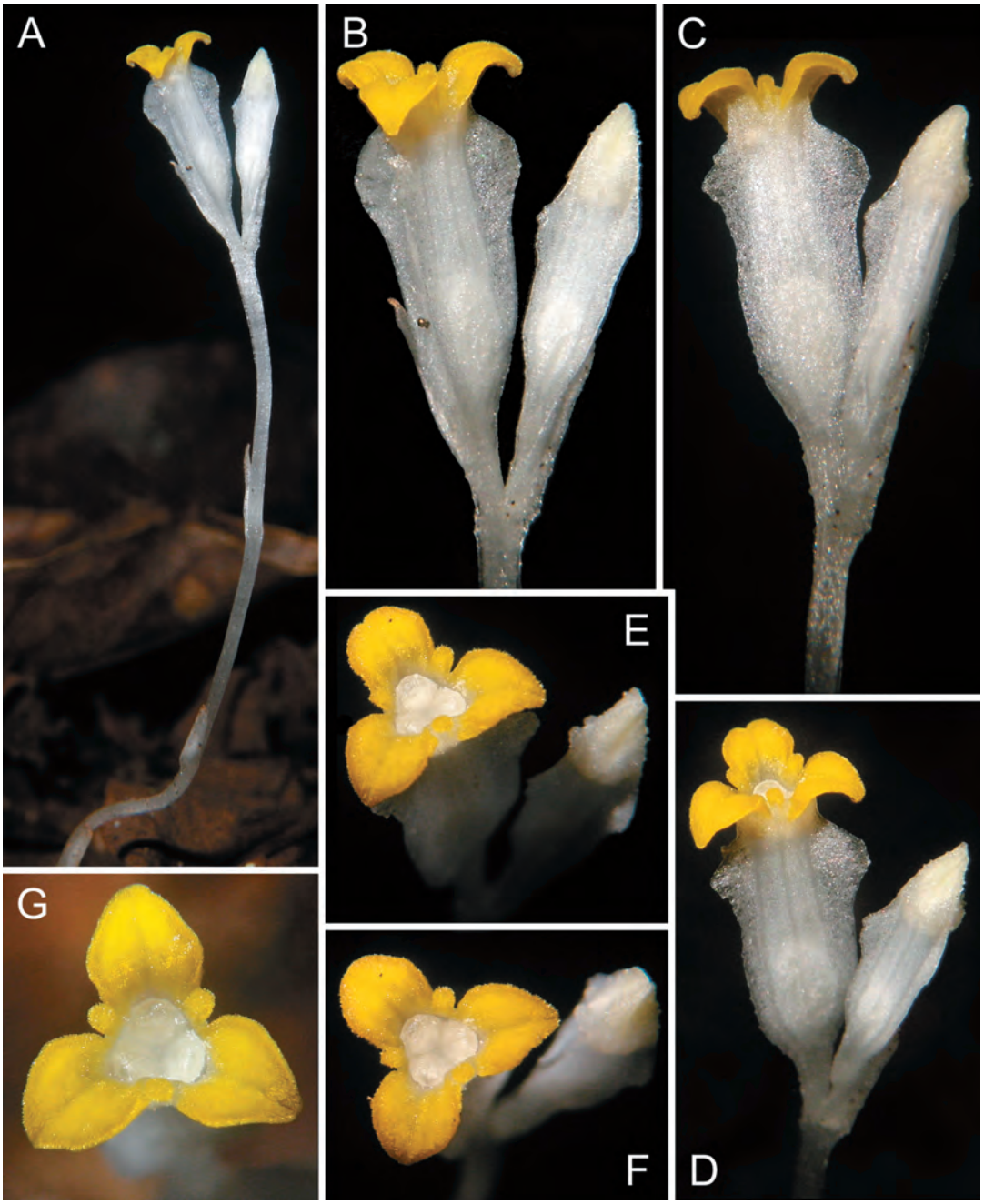

Figure 2. *Burmannia lutescens* in Thach Nham forest (Vietnam). A – plant in natural habitat; B, C – side view of inflorescence; D – oblique view of inflorescence; E–G – close-up of flower. *Nuraliev*, *Kuznetsov*, *Kuznetsova 1657*. Photos by M. Nuraliev.

Palawan island of the Philippines and in Sarawak (Borneo) (Zhang 1999). Jonker (1948) also included Malay Peninsula in distribution area of *B. lutescens*; this is probably a consequence of his different view on the species delimitation in this group in relation to the treatment by Zhang (1999; see also Govaerts et al. 2011) which is followed here. Anyway, in Jonker's account this species is also restricted to the Malesian region.

Similar findings of Malesian species in Southern Vietnam were recently reported for other groups of plants, e.g. *Plocoglottis quadrifolia* J.J. Sm. (Orchidaceae; Nuraliev et al. 2015) and a mycoheterotroph *Petrosavia stellaris* Becc. (Petrosaviaceae; Remizowa et al. 2017). It is likely that Southern Vietnam shows a considerable floristic relation with northern Malesian areas and more examples of common floristic elements are to be discovered in future.

Nguyen Thi Do (2003) as well as Pham Hoang Ho (2000) list nine species of *Burmannia* occurring in Vietnam. Two species new to science (Averyanov 2005) and one new record (Dang Van Son et al. 2015) were added afterwards. Together with our finding, the number of *Burmannia* species known from Vietnam reaches 13, of which seven are mycoheterotrophs; Dang Van Son et al. (2015) erroneously indicated *B. luteoalba* Gagnep. as 'saprophytic' in their key as this species is in fact autotrophic.

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Addresses of the authors:

Maxim S. Nuraliev (corresponding author)
Joint Russian-Vietnamese Tropical Scientific and Technological Center
Cau Giay
Hanoi
Vietnam
M.V. Lomonosov Moscow State University
Faculty of Biology
Leninskie Gory 1, 12
119234 Moscow
Russia
E-mail: max.nuraliev@gmail.com

Dianxiang Zhang
South China Botanical Garden of the Chinese Academy of Sciences
Xingke road 723
510650 Guangzhou
China
E-mail: dx-zhang@scbg.ac.cn

Andrey N. Kuznetsov
Svetlana P. Kuznetsova
Joint Russian-Vietnamese Tropical Scientific and Technological Center
Cau Giay
Hanoi
Vietnam
A.N. Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences
Leninsky av. 33
119071 Moscow
Russia
E-mail: forestkuz@mail.ru