Nervilia kasiensis (Orchidaceae), A NEW RECORD FOR THE FLORA OF VIETNAM

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ABSTRACT

Nervilia kasiensis is reported here as a new record for the flora of Vietnam. It is illustrated with detailed photographs made in the field. A key for the identification of all species of Nervilia genus known in Vietnam is presented.

Keywords: Lam Dong province, orchids, plant diversity, southern Vietnam.


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INTRODUCTION

The genus Nervilia Commerson ex Gaudichaud (1829: 42) is characterized by having a prominent fan-shaped venation of leaves and hysteranthous annual flowering (Pridgeon et al., 2005). This genus comprised approximately 80 species (www.plantsoftheworldonline.org), distributed from tropical, subtropical and warm temperate regions of Africa, Asia, Australia, to the southwest Pacific islands (Govaert et al., 2017). Of these, eleven species are known from Thailand (Gale & Watthana, 2014; Gale & Phaxaysombath, 2017), nine from China (Chen et al., 2009), and five from Laos (Schuiteman et al., 2008; Gale et al., 2016).

Due to the fugacious leafless flowering, species of the genus are often overlooked in the field surveys, and not well presented in herbaria. The genus Nervilia continues to grow with the addition of at least one new species every year during the last decade (Averyanov, 2011a, b; Gale et al., 2016; Gale & Phaxaysombath, 2017; Tang et al., 2018; Hsu, 2020; Averyanov et al., 2020). The recent discoveries of new species of Nervilia genus in Indochina show that this area has certain potentials for the finding here of other novelties belonging to this genus.

During our field surveys in the Da Lat Town area in southern Vietnam, we came across an unusual specimen of Nervilia, which after critical studies of the relevant literature and herbarium specimens, was identified as Nervilia kasiensis S.W.Gale & Phaxays., a taxon never reported from Vietnam. Before this report, only ten species of Nervilia genus were recorded from Vietnam (Pham Hoang, 1999; Averyanov, 2011a, b; Chen et al., 2009; Hsu, 2020; Averyanov et al., 2020). The present report brings the total number of the species of Nervilia genus in Vietnam to eleven.

MATERIALS AND METHODS

Samples of the newly recorded species were collected in the Da Lat Town area of the Lam Dong province in Vietnam during 2013. Specimens were processed using the methods of Jain & Rao (1977) and deposited in the Herbarium of Tay Nguyen Institute for Scientific Research. Photographs of the taxonomically important plant organs were taken from the fresh materials in the field. Species identification was based on morphological characters reported by Pham Hoang (1999), Chen (2009), Averyanov (2011), and Gale et al. (2016, 2017). The morphological features of discovered species were compared with herbarium specimens stored in herbaria of the Institute of Ecology and Biological Resources, the Institute of Tropical Biology, as well as with digital images available in databases of the Muséum National d’Histoire Naturelle (https://science.mnhn.fr/), the Chinese Virtual Herbarium (http://www.cvhl.ac.cn/), Royal Botanic Gardens Kew (http://apps.kew.org/), JSTOR Global Plants (https://plants.jstor.org/), and the Herbarium of Vascular Plants of the Komarov Botanical Institute of the Russian Academy of Sciences (http://en.herbariumle.ru/).

RESULTS

Key to the species of Nervilia genus in Vietnam

(Based on Pham Hoang, 1999; Chen, 2009; Averyanov, 2011a, b; Gale et al., 2016, 2017; Hsu, 2020; Averyanov et al., 2020 and the authors’ field observations).

1a. Flowering plant has fully developed leaves ........................................... N. marutana
1b. Flowering plant has no leaves, plant forms leaves after flowering (leaves completely die before the next flower formation) ................................................. 2

2a. Leaf blade pubescent .............................................................................. 3
2b. Leaf blade glabrous .................................................................................. 4
3a. Inflorescence 1-flowered; flowers erect; leaf blade cordate or polygonal ……N. crociformis
3b. Inflorescence normally 2-flowered; flowers nodding; leaf blade orbicular-cordate

4a. Inflorescence 1-flowered .................................................................5
4b. Inflorescence with 2 or more flowers ............................................7
5a. Leaves broadly cordate-reniform, with 9 veins .........................N. mekongensis
5b. Leaves broadly cordate-ovate, with more than 10 veins ..............6
6a. Petals pale green with purplish venation; floral bracts linear; disk densely villous especially toward apex ..............................................................N. fordii
6b. Petals yellowish green; floral bracts narrowly lanceolate; disk villous mainly along veins ..............................................................N. concolor

7a. Flowers erect .................................................................8
7b. Flowers nodding ............................................................................10
8a. Flowers widely opening ..............................................................N. infundibulifolia
8b. Flowers not widely opening .........................................................9
9a. Sepals and petals similar, lanceolate, yellowish-brown to greenish-brown, with purple-brown streaks and flecks ..............................................N. gracilis
9b. Sepals and petals subsimilar, broadly lanceolate or narrowly elliptic, uniformly pale olive greenish .....................................................N. appressifolia
10a. Flowers widely opening; sepalis and petals subsimilar, uniformly yellowish green ..............................................................................N. pubilabia
10b. Flowers not widely opening; sepals and petals similar, outer surfaces cream-beige with irregular pink-violet flecks, glossy white inside ……….N. kasiensis

The description of the newly recorded species

Nervilia kasiensis S. W. Gale & Phaxays., 2017, Blumea 62: 1–5 (Fig. 1).

Type: LAOS, herbarium specimen prepared from cultivated plant in 11 March 2016 by Gale & Phaxaysombath, HNL-KFBG 537b (holotype HNL).

Paratype: LAOS, Vientiane Province, Kasi District, Khoun Lang Cave, 29 November 2015, Gale & Phaxaysombath, HNL-KFBG 537a (HNL).

Description: Terrestrial herbs, inflorescence 5–12 cm long. Tubers light yellowish to white, ovoid to globose, 1–1.5 mm in diam., 3–4-noded. Leaf blade cordate-polygonal, 11–12.5 cm long, 10–11 cm wide, deeply cordate, acute, 7-veined, glabrous. Inflorescence 5–12 cm long, 1-flowered; peduncle greenish brown with pink-violet flecks, with 2–3 tubular sheaths; sheaths 1.5–2 cm long, brown, acute; floral bract elliptic, 4.5–5 mm long, greenish brown, acute. Flower, nodding, not widely opening, 15–20 mm in diam.; pedicel and ovary brown to greenish brown with pink-violet flecks, 3–5 mm long. Sepals and petals similar, elliptic-lanceolate, 15–20 mm long, 2.5–4 mm wide, brown to greenish brown with purple flecks, attenuate; lip narrowly obovate-spatulate, 15–20 mm long, white with pink-violet flecks and blotches; hypochile oblong, 10–12 mm long; epichile narrowly ovate, 8–9 mm long. Column white, slender, 0.8–1 cm long; pollinia enclosed behind the stigma, 2.4–2.6 mm long; stigma shield-shaped. Flowers in March.
Figure 1. The species *Nervilia kasinensis*. A. Habitat; B. Leaf in natural habitat; C. Flattened flowering plant; D. Flower, view from above; E. Flower with recurved median sepal; F. Dorsal sepal and petals; G. Lateral sepals; H. Side view of the ovary, column and labellum; I. Frontal view of labellum; J. Pollinarium [Photos by Nong Van Duy]
Distribution and ecology: *N. kasiensis* grows in the understory with deep soils rich in humus, along streams under the canopy of the evergreen broad-leaved forest, at an elevation of about 1315 m a.s.l. In Vietnam, it is recorded only from the Da Lat Town area of Lam Dong province in southern Vietnam. However, its occurrence in similar habitats elsewhere in Vietnam is not unlikely.


Conservation status: A small population with less than 200 mature individuals was found. It is expected that more populations may be found in similar forests. However, the ongoing destruction of primary moist broad-leaved forest in southern Vietnam posing a considerable threat due to habitat loss. This species is also reported from two locations in Laos. The current conservation status of this species in IUCN terms and categories may be estimated provisionally as Data Deficient (IUCN, 2019).

Note: *Nervilia kasiensis* is similar to *Nervilia muratana* by its leaf shape, deeply cordate base, acute apex, and 1-flowered inflorescence. However, *N. kasiensis* is distinguished from *N. muratana* by elliptic-lanceolate, brown to greenish brown sepals (vs. sepals linear-lanceolate, white), lip obovate-spatulate, 15–20 mm long (vs. lip ovate-triangular, ca. 12 mm long).

CONCLUSION

The occurrence of species *N. kasiensis* in Vietnam is not surprising as both Vietnam and Laos have similar climates, vegetation and other natural conditions typical for the type location of this species.

This report brings the total number of known the species of *Nervilia* genus in Vietnam to 11.

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