

Short Communication

***Lecanorchis vietnamica* (Orchidaceae), a newly recorded mycoheterotrophic genus and species from Cambodia**

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Lecanorchis Blume comprises about 30 species of mycoheterotrophic orchids characterized by numerous long, thick, horizontal roots produced from a short rhizome, the presence of a calyculus (i.e., a cup-like structure located between the base of the perianth and apex of the ovary) and an elongate column with a pair of small wings on each side of the anther (Hashimoto, 1990; Pridgeon *et al.*, 2003).

Species within the *Lecanorchis* genus are distributed across a wide area in South, Southeast and East Asia and the Pacific region, including China, India, Indonesia, Japan, Korea, Laos, Malaysia, New Guinea, Pacific islands, the Philippines, Taiwan, Thailand and Vietnam (Seidenfaden, 1978; Hashimoto, 1989, 1990; Pearce & Cribb, 1999; Szlachetk & Mytnik, 2000; Pridgeon *et al.*, 2003; Averyanov, 2005, 2011, 2013; Suddee & Pedersen, 2011; Ong, 2017). In Cambodia, no species of *Lecanorchis* has been recorded so far. Although the distribution map of Pridgeon *et al.* (2003) indicated the occurrence of the genus in the country, Suddee & Pedersen (2011) noted that they were unable to find any records of *Lecanorchis* from Cambodia with a voucher specimen.

During a field survey in Bokor National Park, Kampot Province, southern Cambodia in 2012, we discovered one species of *Lecanorchis*: *L. vietnamica* Aver. (Fig. 1). We therefore document the occurrence of *L. vietnamica* as a newly recorded genus and species for the flora of Cambodia. The following description is derived from our Cambodian material.

Lecanorchis vietnamica Aver., *Rheedea*, 15, 92 (2005).

Type: Vietnam, Thua Thien-Hue Province, A Luoi District, A Roang Municipality, Tra Lenh Forestry Department station, around point 16°04'38"N, 107°29'10"E, elevation 700–800 m, on tops of ridge, 20 April 2005, *L. Averyanov*, *P.K. Loc*, *N.T. Vinh et al.* HAL 724 (holotype HN [Vietnam Academy of Science and Technology], image!; isotype LE [Komarov Botanical Institute of the Russian Academy of Science], image!).

Synonym: *Lecanorchis flavicans* Fukuy. var. *acutiloba* T. Hashim., *Annals of the Tsukuba Botanical Garden*, 8, 8 (1989).

Type: Japan, Kagoshima Prefecture, Yakushima Island, Mt. Motchomu, 24 July 1979, *Y. Hanei s.n.* (holotype TNS [National Museum of Nature and Science]!).

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Terrestrial, mycoheterotrophic herb, 20–30 cm tall. Roots not seen. Stem usually branched or occasionally simple, blackish brown, glabrous, 0.5–1 mm in diameter, with several membranous scale-like sheaths along stem. Inflorescences loosely (1–)2–4 flowered, rachis up to 3 cm long; floral bracts triangular, 0.6 mm long, apex obtuse or broadly acute, glabrous; pedicellate ovary ascending, ca. 12 mm long, dull olive-brown, glabrous. Calyculus somewhat rugose, ca. 0.5 mm long. Flowers hardly opening; sepals similar, olive-brown to yellowish-brown, oblong-spathulate, 10.5–12 mm long, ca. 3 mm wide, apex obtuse, with three indistinct veins; petals olive-brown to yellowish-brown, obliquely oblong-spathulate, 10.5–12 mm long, ca. 3.5 mm wide, apex obtuse, with three indistinct veins; lip slightly longer than other tepals, 11–13 mm long, ca. 8 mm wide when fattened, adnate at the base to lateral sides of column and forming an inflated sac-like nectary, ca. 2.5 mm long; lip blade broadening to 3-lobed apex; lateral lobes erect, triangular, ca. 2 mm long, apex acute, margins slightly irregularly denticulate; midlobe semiorbicular, slightly recurved, 3 mm long, 4 mm wide, densely covered with long, flexuose, white to light yellow hairs. Column clavate, 5–6 mm long, about halfway connate with the lip, with obtuse-trapezoid lateral wings. Anther cap hemispheric, ca. 1 mm across. Fruit capsules, cylindrical, 18–23 mm long, black.

Specimen examined: Cambodia, Kampot Province, Bokor National Park, moist evergreen forest near Popokvil Waterfall, 10°39'35.42"N, 104°03'03.09"E, elevation 903 m, 13 May 2012, Toyama H., Tagane S., Mishima T., Tagawa K., Zhang M., Chhang P., Iwanaga F., Nagamasu H. & Yahara T. 3156 (deposited in the herbarium of Forest Administration in Cambodia).

Distribution: Cambodia (Kampot Province, new record), Japan (Tokushima Prefecture, Kagoshima Prefecture [Yakushima and Amami-oshima Islands], Okinawa Prefecture [Okinawa Island]), Laos (Saravan Province), Taiwan (New Taipei City and Yilan City) and Vietnam (Thua Thien-Hue Province).

Habitat and ecology: Only three individuals were found in a 3×3 m area near *Castanopsis acuminatissima* (Blume) A.DC. in the understory of evergreen forest along the stream below Popokvil Waterfall. The forest nearby was surveyed using a 100×5 m plot (Zhang *et al.* 2016: Fig. 1, plot 7). In the plot, dominant trees were *Beilschmiedia penangiana* Gamble (Lauraceae), *Macaranga andamanica* Kurz (Euphorbiaceae), *Baccaurea ramiflora* Lour. (Phyllanthaceae), *Nephelium hypoleucum* Kurz (Sapindaceae), and *Timonius corneri* K.M.Wong (Rubiaceae) for which we recorded more than five trees taller than 4 m and *Dacrycarpus imbricatus* (Blume) de Laub. (Podocarpaceae) for



Fig. 1 Flowering plant of *Lecanorchis vietnamica* at Bokor National Park, Cambodia.

which we recorded two large trees taller than 20 m. The flowering specimen was collected in May.

Conservation status in Cambodia: *Lecanorchis vietnamica* is only known from a single population in Bokor National Park, where the aforementioned specimen was collected. Given that mycoheterotrophic plants are highly dependent on the activities of both the fungi and the trees that sustain them (Suetsugu *et al.*, 2017b), they are particularly sensitive to environmental disturbance. Because deforestation for resort development is rapidly expanding very near the locality of this species, urgent attention is needed to conserve the Cambodian population.

Notes: *Lecanorchis vietnamica* is most similar to *L. triloba* J.J.Sm. in having relatively small flowers whose tepals are less than 15 mm and whose lip midlobe is covered with a dense mass of white hairs. However it can be distinguished by its (1–)2–4-flowered inflorescences (vs. frequently more than 10-flowered) and lip without a pair of calli on the disc (vs. lip with a pair of calli on the disc; Hsu *et al.*, 2016; Suetsugu *et al.*, 2017a). Our Cambodian specimen possesses these characters. Considering

that botanical surveys have recently discovered many new species and distribution records for the *Lecanorchis* genus (Suddee & Pedersen 2011; Suetsugu & Fukunaga 2016, 2018; Suetsugu *et al.*, 2018), *L. vietnamica* could also prove to be more widespread in future. Our report of the species in Cambodia constitutes the most southerly locality currently known for the species.

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