

Aphyllorchis rotundatipetala (Orchidaceae), a new species from Taiwan

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Aphyllorchis rotundatipetala C.S. Leou, S.K. Yu & C.T. Lee, a new species of Orchidaceae discovered in Taiwan, is described and illustrated. It is related to *A. montana* and *A. simplex*. The distinguishing characters of *A. rotundatipetala* are peloric and yellow flowers, obtuse apex of petals and lip, pinnate veins at the lip's top, and entire apex of the rostellum.

The genus *Aphyllorchis* comprises about 30 species distributed in the tropics and the Himalayas, extending as far north as Japan and south to Australia (Chen & Gale 2009). Species of the genus are holomycotrophic, leafless terrestrial herbs with a short erect rhizome, an erect stem and a terminal inflorescence of a few to many resupinate flowers (Averyanov 2011, Barretto *et al.* 2011). The flowers are often with a long pedicellate ovary and two granular-farinaceous pollinia (Tang & Wang 1951, Chen 1978, Fan *et al.* 2011). The sepals and petals are similar and free. The flowers of all species of *Aphyllorchis* are often overlooked during field surveys. In 2012, an undescribed species of this genus was discov-

ered at two sites in Taiwan. One site is located in northern Taiwan and was discovered by Sheng-Kun Yu, Chun-Chu Hsu, and Shih-Hsiung Lin. The other site is located in central Taiwan and discovered by Chi-Te Lee.

***Aphyllorchis rotundatipetala* C.S. Leou, S.K. Yu & C.T. Lee, *sp. nova* (Figs. 1 and 2).**

HOLOTYPE: Taiwan. New Taipei City, Sanxia district, 24°52'35"N, 121°22'27"E, 400 m a.s.l., 30 August 2012 C. T. Lee 033 (TAI).

ETYMOLOGY: The epithet *rotundatipetala* refers to the apex of petals which are rotundate or obtuse.

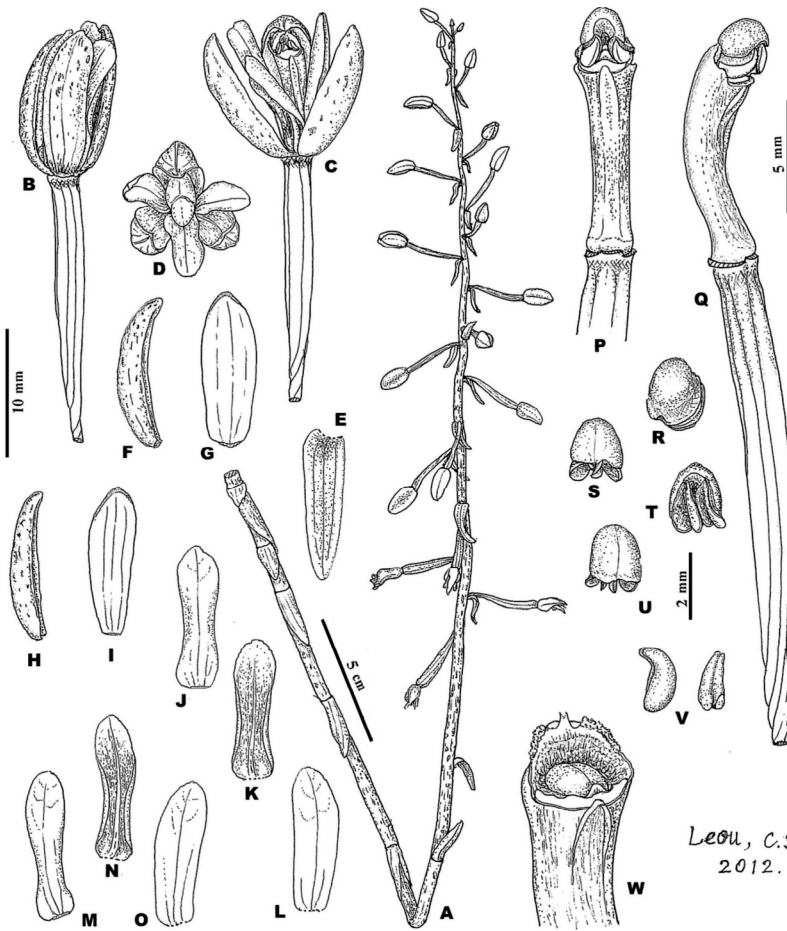


Fig. 1. *Aphyllorchis rotundatipetala* (from the holotype). — **A:** Habit. — **B:** Flower, side view. — **C:** Flower, ventral view, perianth slightly opened. — **D:** Flower, top view, perianth slightly opened. — **E:** Floral bract, adaxial side. — **F:** Dorsal sepal, side view. — **G:** Dorsal sepal, ventral view. — **H:** Lateral sepal, side view. — **I:** Lateral sepal, ventral view. — **J:** Petal, adaxial side. — **K:** Petal, abaxial side. — **L:** Petal, flattened. — **M:** Lip, adaxial side. — **N:** Lip, abaxial side. — **O:** Lip, flattened. — **P:** Column and apex of ovary, ventral view. — **Q:** Column and ovary, side view. — **R–U:** Anther, varied views. — **V:** Pollinia, right one imperfect. — **W:** Apex of column, anther and pollinia removed.

Leou, c.s.
2012.

Achlorophyllous erect herbs 30–56 cm tall, stem yellowish brown or grey purple, scattered with purple stripes or dots, glabrous, 6 or 7 noded, internodes much shorter at proximal end, each node with a scale 10–23 mm long, scales on distal end oblong-lanceolate, sheathed toward proximal end. Inflorescence loosely racemose, 13–19-flowered; floral bracts reflexed, oblong-lanceolate, 10–16 mm long, 2.5–4 mm wide, purple-striped, 3-nerved. Flowers resupinate, yellow, erect or ascending when young, more or less perpendicular to rachis during blooming, hardly opened or rarely spreading; pedicel and ovary straight, 16–26 mm long, 2–2.5 mm thick, glabrous when viewed with naked eye but bearing sparse or dense glandular hairs when observed under high magnification; sepals similar, yellow, oblong-cymbiform, apex obtuse, 9.5–12 mm long, 3.5–4 mm wide, (10–12 × 4–5.5

mm when flattened), purple-dotted abaxially, lateral ones narrower; petals yellow, oblong, 9.5–11.5 mm long, 2–3 mm wide, (9.5–11.5 × 3.5–4 mm when flattened), thinner, straight or slightly falcate at apex, base subtruncate, apex rotundate or obtuse, margin entire and recurved backward at middle, entire or minutely denticulate or rarely praemorse at apex, 3-nerved at base, pinnate-veined above, keeled abaxially along midrib; lip yellow, undivided, similar to petals. Column erect, subterete 10 mm long, arched, yellow, apex slightly dilated, bearing 2 yellow staminodes on dorsal side, slightly protruding or bearing 1 or 2 linear appendages on ventral side, appendages 0.5–1.5 mm long; stigma subterminal; rostellum ovate-ligulate, appressed to stigma, apex entire and bent upward; anther ellipsoid, orange-yellow, 2 mm long, 1.5 mm wide, 2-celled; pollinia 2, each 2-partite, soft, lunar, yellow.

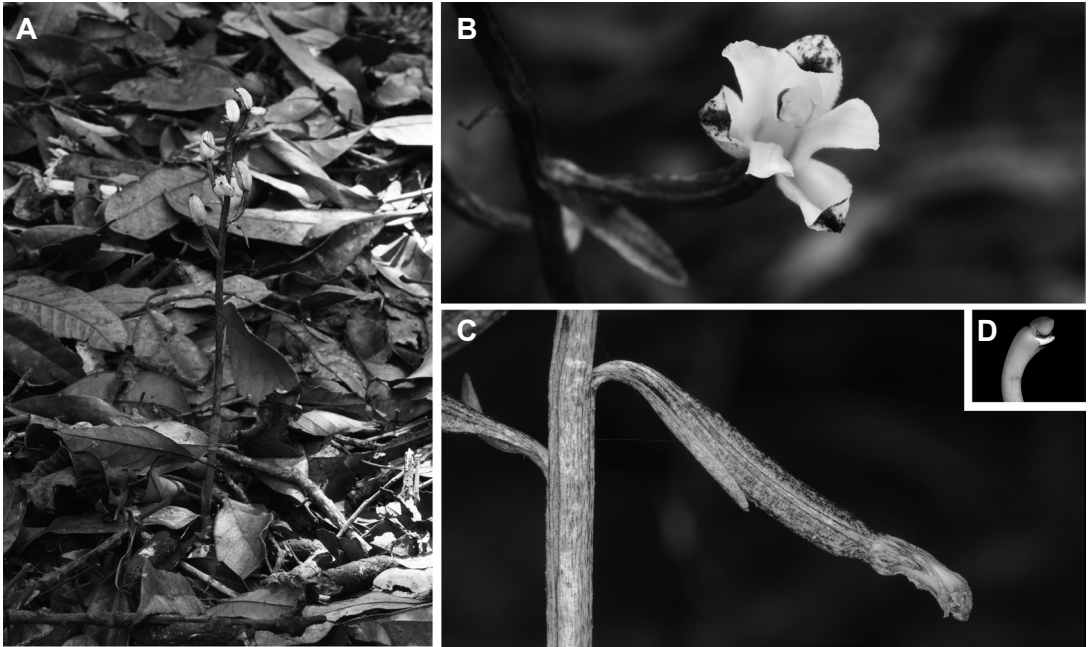


Fig. 2. *Aphyllorchis rotundatipetala*. — A: Habit. — B: Flower. — C: Fruit. — D: Upper part of column, side view.

Scanning electron microscope (SEM) observations of *Aphyllorchis rotundatipetala* revealed that it bears dense glandular hairs on the ovary surface and has adjoining single-pollen grains. The pollen shape is variable. The grains have simple apertures and large pores. The exine of pollen grains is reticulate. The pollen grains of *A. rotundatipetala* are similar to those of *A. borneensis* (Ackerman & Williams 1980).

Aphyllorchis rotundatipetala grows in the humus in a broad-leaved forest, and it has been found in two localities. In northern Taiwan (Sanxia District) approximately ten plants were found at about 400 m a.s.l. In central Taiwan (Heping District), a small population of three plants were found at about 700 m a.s.l.

Before the present report, *A. montana* was the only species of *Aphyllorchis* recorded in Taiwan (Su 2000). *Aphyllorchis montana* is widely distributed at altitudes ranging from 350 m to 1500 m in the mountains of Taiwan (Su 2000). Both species grow at similar altitudes, but in different habitats. Although *A. rotundatipetala* resembles *A. montana*, the former can be recognized by its peloric flowers.

Aphyllorchis rotundatipetala is similar also

to *A. simplex*, which also has an unmodified lip. According to the records, *A. simplex* is distributed only in Kwangtung (China) (Chen & Gale 2009).

Although *A. rotundatipetala* is morphologically close to *A. montana* and *A. simplex* (Lang 1999, Chen & Gale 2009, Averyanov 2011), it is clearly different from them (see Appendix).

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Appendix. Morphological differences among *Aphyllorchis rotundatipetala*, *A. montana* and *A. simplex*. Data of *A. simplex* is based on the descriptions in Tang and Wang (1951), Chen (1978), and Chen and Gale (2009).

Characters	<i>A. rotundatipetala</i>	<i>A. montana</i>	<i>A. simplex</i>
Flower	peloric	prominent lip	peloric
Flower color	yellow	yellow	white
Shape of petal apex	obtuse	obtuse	acute
Shape of lip	similar to petals, obtuse at apex	3-lobed, acute and crisped at apex	similar to petals, acute at apex
Color of staminode	yellow	n/a	silver
Shape of rostellum	ovate-ligulate, entire apex	tongue-like, entire apex	ovate, emarginate apex