

A new species of *Zingiber* (Zingiberaceae) from Lao P.D.R.

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ABSTRACT. *Zingiber nitens* M.F.Newman from Lao P.D.R. is described and illustrated.

Keywords. IUCN conservation assessment, Lao P.D.R., new species, *Zingiber*

Introduction

Rhizomes of a wild ginger collected in 2011 by Dr Vichith Lamxay of the National University of Laos and his colleagues were donated to the Royal Botanic Garden Edinburgh for cultivation. As the material they collected was without flowers but had the remains of a terminal inflorescence, the rhizomes were labelled *Alpinia*. When the plant flowered in the living collection at Edinburgh in 2012, it was immediately apparent that this was a new species of *Zingiber*.

Zingiber Mill. is among the larger genera of Zingiberaceae with 144 species (Govaerts et al., 2015) distributed from Sri Lanka and India to southern China, Japan and SE Asia. Schumann (1904) classified the genus into four sections, two of which, *Zingiber* section *Dymczewiczia* (Horan.) Benth. and *Z.* section *Pleuranthesis* Benth., contained species with terminal inflorescences. What Schumann did not observe was that some species in *Zingiber* section *Zingiber* and *Z.* section *Cryptanthium* Horan., such as *Zingiber barbatum* Wall., *Z. gramineum* Noronha ex Blume, and *Z. junceum* Gagnep., could produce inflorescences both radically and terminally (Triboun et al., 2014). Schumann (1904) placed *Zingiber barbatum* in *Zingiber* section *Cryptanthium* Horan. and *Z. gramineum* in *Zingiber* section *Zingiber* (which he called *Zingiber* section *Lampugium* Horan., nom. inval.); Gagnepain (1906) placed *Z. junceum* in *Zingiber* section *Zingiber* (again as *Zingiber* section *Lampugium*).

Now, there are at least eight species of *Zingiber* known to produce terminal inflorescences. They are found from the eastern Himalaya (*Z. capitatum* Roxb. and *Z. clarkei* King ex Baker in India and Sikkim) to Papua New Guinea (*Z. brevifolium* K.Schum.). *Zingiber confine* Miq. is from southern China, *Z. pellitum* and *Z. rufopilosum* Gagnep. are found in Continental SE Asia, *Z. gramineum* is from Java, and *Z. marginatum* Roxb. is a poorly known species of unknown origin.

Theerakulpisut et al. (2012) estimated the phylogeny of 23 species of *Zingiber* using ITS sequences and concluded that *Zingiber* sections *Zingiber*, *Dymczewiczia* and *Pleuranthesis* were individually weakly supported but together formed a well-supported clade sister to a well-supported clade consisting of *Z.* section *Cryptanthium*.

The following description and illustration were made from a full-grown, living plant and the IUCN assessment uses the criteria given in IUCN version 3.1 (2012).

Zingiber nitens M.F.Newman, **sp. nov.**

Belongs to *Zingiber* section *Dymczewiczia* (Horan.) Benth. because the inflorescences are produced terminally on the leafy shoots; similar to *Zingiber capitatum* Roxb. in its slender habit with narrow leaves and terminal inflorescences but differs from it by its glabrous, glossy, dark green bracts which remain green even at fruiting (not green bracts which turn red at fruiting, and are sparsely to densely villose at the margins). – TYPE: Originally a living collection from Lao P.D.R., Bolikhamxai prov., Khamkeut district, Ban Thongpe, Nakai-Nam Theun NPA, Lao-Vietnam Border Protected Area, 18°11'54" N 104°35'52.9"E, 573 m altitude, primary evergreen forest along river, 1 August 2011, Lamxay, V., Lanorsavanh, S., Souvannakoummai, K. & Somphone VL2188, grown on as cultivated material at RBGE acc. no. 20111043A, vouchered and selected as type as Newman, M.F. 2647 (holotype E, incl. spirit). (Fig 1, 2)

Clump-forming herb 0.65–1 m tall. **Rhizome** c. 1 cm in diameter. **Leafy shoots** composed of c. 12 leaves, leaf sheaths dark brownish green, especially lower ones, coarsely white villose, hairs pointing in all directions; pseudostem c. 1 cm in diameter; ligule 3–5 mm long with truncate apex, translucent green when young, soon becoming light brown, especially at margin, coarsely white pubescent; swollen petiole light green. Leaf blade narrowly elliptic, 18–25 × 2–3 cm, glabrous and shiny adaxially, sparsely white villose abaxially, especially on midrib, base rounded, apex very long acute. **Inflorescence** a terminal, erect thyrse, 9–13 × 1.3–2 cm, cylindrical to fusiform, composed of 9–15 bracts, wrapped round and obscuring rhachis. Bracts subtending to 3–4 flowers, somewhat obovate, c. 35 × 33 mm, glossy, dark green, glabrous, surface with minute oil glands, apex acute, margin translucent. First flower of cincinnus ebracteolate, subsequent flowers with a boat-shaped bracteole, open to base, c. 20 × 6.5 mm, translucent at base, green at apex, glabrous. **Flower** exerted from its bract; 4 cm long, calyx 13–16 × c. 4 mm, tubular, inflated, translucent, glabrous, split halfway down one side, apex with 2 short, blunt teeth; floral tube 30–31 mm long, widening slightly towards apex, white at base, pale yellow at apex, lobes pale yellow, glabrous, dorsal corolla lobe triangular, 19–21 × c. 6 mm, margins slightly inrolled, lateral corolla lobes 18–20 × 5–5.5 mm; lateral staminodes triangular, 2.5–6 mm long, almost free from labellum, pale yellow, sometimes with a few red dots; labellum elliptic, c. 18 × 11–12.5 mm, dark maroon with small yellow dots and yellow patch in throat, margins deflexed, apex bifid for 3 mm. **Stamen**: filament 2.5–3 × 3 mm long, yellow; anther c. 11 × 4 mm, connective tissue yellow, thecae dehiscing by longitudinal slits; anther crest 9–10 mm long, wrapped around stigma, curved down into cleft of lip, dark maroon. **Style** white, glabrous, stigma white, round, scarcely wider than style, ostiole with ring of straight cilia; epigynous glands 2, subulate, c. 3.6 mm long; ovary cylindrical, c. 3.5 × 2.5 mm, glabrous, incompletely trilocular at base, the three placentas forming a very short axis bearing 10–14 ovules, unilocular above,



Fig. 1. *Zingiber nitens* M.F. Newman. **A.** Habit. **B.** Ligule. **C.** Inflorescence. **D.** Cincinnus, bract removed. **E.** Bract. **F.** Bracteoles, showing size range. **G.** Calyx. **H.** Floral tube, corolla lobes, labellum and lateral staminodes, abaxial and adaxial views. **I.** Stamen, style, stigma and dorsal corolla lobe. **J.** Detail showing position of style in corolla tube. **K.** Upper style and stigma, adaxial and lateral views. **L.** Ovary (cross-sectioned in apical part). Scale bars: A = 10 cm, B, J–L = 5 mm, C–I = 2 cm. Drawn by Claire Banks from RBGE living accession 20111043A.



Fig. 2. *Zingiber nitens* M.F.Newman, from RBGE living accession 20111043A. (Photo: Mark Newman)

placentas petering out on inside walls not far from base. Inflorescence c. 10 cm long, mature fruits unknown.

Phenology. The wild collection, *Lamxay et al. VL2188*, had finished flowering in August but detailed observations on phenology will require further collections.

Distribution & ecology. *Zingiber nitens* is only known from the type locality, where it grows in primary evergreen forest along a river at c. 570 m altitude.

Provisional IUCN conservation assessment. Data Deficient (DD). *Zingiber nitens* is a perennial, terrestrial herb which may be expected to support a certain amount of disturbance. The area in which it was found has a degree of legal protection and there is no evidence that the species is being harvested or otherwise targeted. Until the extent of the wild population is better known, it is impossible to give a more precise assessment.

Etymology. The epithet “nitens”, Latin for shining, refers to the shiny bracts of the inflorescence.

Notes. One of the vegetative characters of *Zingiber*, and many other Zingiberoideae, is the presence of an abscission layer at the base of the pseudostem which allows the plant to shed its pseudostems for the duration of the dormant season, whether that is the dry season in the monsoon tropics, or the winter in more northerly areas. *Zingiber nitens* possesses an abscission layer but, in cultivation in Edinburgh, it does not shed all its pseudostems. Instead, the laminae become rather chlorotic looking in the winter but persist. It is not known what happens in wild populations.

All parts of the living plant give off a foetid smell when bruised, and the flowers also smell foetid.

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References

- Gagnepain, F. (1906). Zingibéracées nouvelles de l’herbier du Muséum. *Bull. Soc. Bot. France* 53: 132–150.
- IUCN (2012). *IUCN Red List Categories and Criteria: v. 3.1*. 2nd ed. Switzerland, Gland & UK, Cambridge: IUCN.
- Schumann, K.M. (1904). Zingiberaceae. In: Engler, H.G.A. (ed) *Das Pflanzenreich: regni vegetabilis conspectus*, IV, 46, Heft 20. Leipzig: W. Engelmann.
- Theerakulpisut, P., Triboun, P., Mahakham, W., Maensri, D., Khampila, J. & Chantaranonthai, P. (2012). Phylogeny of the genus *Zingiber* (Zingiberaceae) based on nuclear ITS sequence data. *Kew Bull.* 67(3) 389–395.
- Triboun, P., Larsen, K. & Chantaranonthai, P. (2014). A key to the genus *Zingiber* (Zingiberaceae) in Thailand with descriptions of 10 new taxa. *Thai J. Bot.* 6(1): 53–77.
- Govaerts, R., Newman, M. & Lock, J.M. (2015). World Checklist of Zingiberaceae. Royal Botanic Gardens, Kew. <http://apps.kew.org/wcsp/> (accessed on 11 Mar. 2015).

