

Ilex namkadingensis: a new species of Aquifoliaceae from central Laos

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Abstract: *Ilex namkadingensis* V.S.Dang, Tagane & Soulad., a new species of Aquifoliaceae from Bolikhamxai, central Laos, is described and illustrated. The new species is morphologically similar to *Ilex rubrinervia* Tardieu but differs in having larger leaf blades, longer petioles, and larger and 6- or 7-seeded fruits. Photographs, descriptions, conservation status and vernacular name of the new species are provided.

Keywords: Bolikhamxai, Indochina, Limestones, Plant diversity, Taxonomy.

Introduction

The *Ilex* L. is a monotypic genus of Aquifoliaceae with 565 species distributed around the world (Loizeau et al., 2016; POWO, 2025). The species are evergreen or deciduous trees, shrubs or rarely climbers, and easily recognized by having simple and mostly alternate leaves, minute stipules, dioecious flowers with pistillode in staminate flowers and staminode in pistillate flowers, superior ovary, drupaceous fruit with four or more pyrenes (Chen et al., 2008; Pruesapan et al., 2017). Currently, nine species of the *Ilex* have been recorded in Laos: *I.*

eugeniifolia Pierre, *I. godajam* Colebr. ex Hook.f., *I. harmandiana* Pierre, *I. memecylifolia* Champ. ex Benth, *I. micrococca* Maxim., *I. rotunda* Thunb., *I. umbellulata* (Wall.) Loes., *I. viridis* Champ. ex Benth., and *I. wallichii* Hook. (Pitard, 1912; Tardieu-Blot, 1948; Newman et al., 2007).

While conducting a field survey to assess the flora of the Nam Kading National Protected Area, Bolikhamxai Province, central Laos, in March 2024, we collected an unknown species of *Ilex* in an evergreen forest. After scrutinizing similar species from Indochina and adjacent countries, it was verified as a species new to science and here described below.

Materials and Methods

The observations and measurements of morphological characters for the description of the new species were based on living plants and dried specimens from Nam Kading National Protected Area, Bolikhamxai Province, central Laos. Morphological comparisons with similar species were made by reviewing the relevant literature from Indochina and neighboring countries (Pitard, 1912; Tardieu-Blot, 1948; Andrews,

2002; Pham, 2003; Hicks, 2006; Chen et al., 2008; Pruesapan et al., 2017; Pruesapan & van Welzen, 2021), as well as herbarium specimens housed at FOF, KAG, HN, VNM (Thiers, 2025 continuously updated), and images available via Natural History Museum Data Portal (<https://data.nhm.ac.uk>), Kew Data Portal (<https://data.kew.org>), AAU Herbarium Database (<https://sciencemuseumne.dk/herbariet>). The voucher specimens were prepared and deposited in the Herbarium of the Faculty of Forest Science, National University of Laos, Vientiane (FOF), Kagoshima University Museum (KAG), and Institute of Life Sciences (VNM). Detailed images of the new species were taken of fresh materials in the field using Olympus E-5 digital cameras.

Taxonomic treatment

Ilex namkadingensis V.S.Dang, Tagane & Soulad., **sp. nov.** Figs. 1 & 2

The new species is clearly distinguished from other species of *Ilex* in Laos, by the following characters: leaves coriaceous, 10–15 cm long; fruits 1.2–1.4 cm in diam.; pyrenes 6 or 7 per fruit, dorsally 2-striate and 1-sulcate (the leaf and fruit size is the largest among the species in Laos). Among the species in the surrounding countries of Laos, it might resemble *I. rubrinervia* Tardieu of Vietnam in leaf shape and texture, but is distinguished by its larger leaf size (10–15 × 2.7–4.7 cm in *I. namkadingensis* vs. 8–10 × 2.5–3 cm in *I. rubrinervia*), longer petioles (2.2–3.4 cm long vs. 1–1.5 cm long), larger fruits (1.2–1.4 cm in diam. vs. 0.6 cm in diam.), and 6- or 7-seeded fruits (vs. 4-seeded).

Type: LAOS, **Bolikhaxai Province**, near Ban Naphong, Nam Kading National Protected Area, in evergreen forest, 18.22257°N, 104.38119°E, 602 m elevation, 18.03.2024, *Tagane S., Souladeth P., Dang V.S., Yamamoto T., Souvannakhommane K., Tanaka N., Kongxaisavath D., Phengmala K., Sengthong A., Nguyen Q.B. & K. Takahashi* Z1169 (holo FOF [FOF0006276!]; iso KAG [KAG187571!], VNM [VNM00074094!]).

Trees, evergreen, up to 10 m tall; bark gray to gray-brown. Twigs subglabrous; older twigs terete, straight, longitudinally fissured, with lenticels;

terminal buds conical. Leaves alternate, crowded around the shoot apex; leaf blades oblong-elliptic or ovate-elliptic, 10–15 × 2.7–4.7 cm, coriaceous, dark green above, light green below, both surfaces glabrous, apex short acuminate, acumen 0.8–1.5 cm long, base cuneate, margin entire, midrib sunken adaxially, prominent abaxially, secondary veins 7–10 on each side of midrib, curved to the margin, prominent on both sides, tertiary veins reticulate, slightly prominent on both sides; petioles 2.2–3.4 cm long, glabrous, narrowly sulcate adaxially, rounded abaxially. Stipules subulate to lanceolate, 1.7–2 mm long, grayish brown, glabrous, acute to acuminate at apex, rounded at base, margin entire, caducous. Inflorescences and staminate flowers not seen. Pistillate flowers (from the remnant after anthesis found on the base of fruits; Fig. 2e) 6- or 7-merous; corolla 4–4.5 mm long, glabrous on both surfaces, lobes 6 or 7, 2.8–3 mm long, apex obtuse to rounded; staminodes 6 or 7, c. 2 mm long, shorter than corolla lobes. Infructescences solitary, cymes, or fascicles of 2- or 3-fruits; fruiting peduncles 2–4 mm long, secondary branch sub-sessile; bracts triangular, c. 1.8 mm long, puberulent, apex acuminate, bracteoles as bracts. Fruits globose, 1.2–1.4 cm in diam., glabrous, red when ripen; persistent calyx explanate, 2.5–3 mm in diam., lobes 6 or 7, broadly ovate, 1.2–1.4 mm long, puberulent to sub-glabrous, apex rounded, margin ciliolate; persistent stigma discoid, 6- or 7-lobed, puberulent; pyrenes 6 or 7, ellipsoid, 6–7 × 2–3 mm, dorsally 2-striate, 1-sulcate, laterally smooth, endocarp woody.

Flowering & fruiting: Flowering? Fruits were collected in March.

Habitat: *Ilex namkadingensis* was collected in evergreen forests at an elevation of 602 m, where the members of Fabaceae, Euphorbiaceae, Rubiaceae, Lauraceae, Myrtaceae, and Fagaceae are dominant.

Distribution: In Laos, this species is currently known only from Nam Kading National Protected Area of Bolikhaxai Province in central Laos.



Fig. 1. Holotype of *Ilex namkadingensis* V.S.Dang, Tagane & Soulad. (FOF [FOF0006276]).

Etymology: The specific epithet is derived from the name of the protected area (Nam Kading) where the new species was discovered.

Vernacular name: ເດູນອກນ້ຳກະດິງ (Deua Nok Namkading, suggested here). In Lao, “Deua Nok” refers to the *Ilex* species in general. The name literally means “bird’s plant,” reflecting the fact that the red fruits of this genus are eaten by the Crested Bulbul Bird. “Namkading” refers to the type locality.

Conservation status: Due to limited field data on the occurrence of *Ilex namkadingensis* in the original locality, it is recommended to assess the conservation status of this species as Data Deficient (DD) according to the IUCN Red List criteria (IUCN, 2024).

Notes: In addition to *I. rubrinervia* mentioned in the diagnosis above, the new species might also be similar to *Ilex phanganensis* Pruesapan & Welzen,

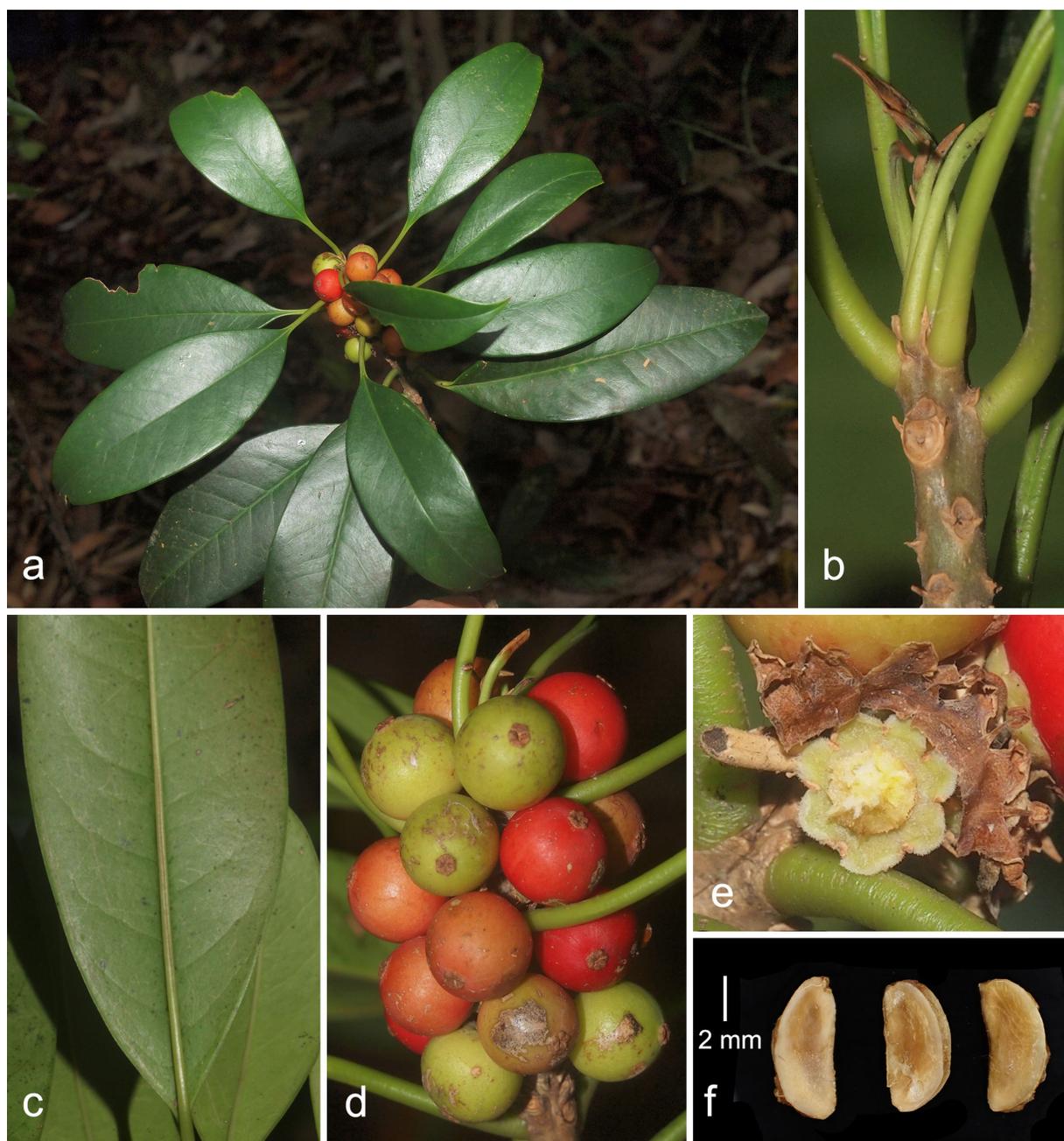


Fig. 1. *Ilex namkadingensis* V.S.Dang, Tagane & Soulad.: **a.** Branch with fruits; **b.** Close-up of shoot apex showing expanding young leaves, leaf scar, and stipules; **c.** Portion of abaxial leaf surface; **d.** Fruits; **e.** Persistent calyx explanate, with dried corolla remnant; **f.** Pyrenes (Photos by Shuichiro Tagane).

which was described from Thailand recently (Pruesapan & Welzen 2021), and *Ilex rotunda* Thunb. which is widely distributed from Japan, China to Indochina. However, *I. namkadingensis* differs from *I. phangangensis* in having 7–9 pairs of secondary veins (*vs.* 6–7 pairs in *I. phangangensis*), longer petioles 2.2–3.4 cm long (*vs.* 0.9–1.2 cm long), and dorsally 2-striate and 1-sulcate pyrene (*vs.* dorsally 3-striate and 2-sulcate), and from *I. rotunda* in its larger leaf blades (10–15 × 2.7–4.7 cm in *I. namkadingensis vs.* 4–9 × 1.8–4 cm in *I. rotunda*), longer petioles (2.2–3.4 cm long *vs.* 0.8–1.8 cm long), larger stipules (1.7–2 mm long *vs.* 1–1.5 mm long), and pyrenes 6–7 mm long, dorsally 2-striate, 1-sulcate (*vs.* pyrenes *c.* 5 mm long, dorsally 3-striate, 2-sulcate).

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