Daphne hekouensis (Thymelaeaceae), a new species from China

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Daphne hekouensis H.W. Li & Y.M. Shui *sp. nova* (Thymelaeaceae) from China (Yunnan Province, Hekou County) is described and illustrated. The new species with its axillary inflorescence and 5-lobed white calyx tube is most similar to *D. axillaris*, but can be easily distinguished by the larger leaves $(13-21 \times 5-8 \text{ cm})$, longer calyx tubes (15-25 mm), larger elliptic or oblong calyx lobes $(10-15 \times 3-4 \text{ mm})$, and upper whorl of stamens located 3–4 mm below the mouth of the tube.

Key words: China, Daphne, new species, taxonomy, Thymelaeaceae

In May 2004, while on a botanical exploration trip in search of Begonia (Begoniaceae) in Hekou County, Yunnan on the border between China and Vietnam, we collected an unknown species assignable to the genus Daphne (Thymelaeaceae) because of its axillary fascicled inflorescences, subsessile peduncles, and annular disk. The genus Daphne includes about 95 species and occurs from Europe to the Mediterranean Sea, Middle Asia, China, India, and Indonesia (Herber 2003). Fifty-two species are found in China and 41 of those are completely endemic to the country (Wang et al. 2007). A comparison of our newly-collected material with herbarium specimens and literature pertaining to China and the neighboring areas of Cambodia and Laos (Pham-Hoang 1992), Vietnam (Pham-Hoang 1992, Tramhuong 2000), and Thailand (Peterson 1997), confirmed that the plant from Hekou represents a distinct new species most morphologically similar to *Daphne axillaris* (Xu & Huang 1997, Huang 1999, Wang *et al.* 2007). We describe the new species here as *Daphne hekouensis*.

Daphne hekouensis H.W. Li & Y.M. Shui, *sp. nova* (Fig. 1)

Arcte affinis D. axillaris (Merr. & Chun) Chun & C.F. Wei e Hainan, sed foliis majoribus 13–21 \times 5–8 (vs. 5–12 \times 2–4.5 cm), apice acuminatis (vs. caudato-acuminatis), tubo calycis ad 15–25 (vs. 6–10 mm) longis, lobis calyces ellipticis vel oblongis (vs. ovatis vel longe ovatis), ad 10–15 \times 3–4 (vs. 2.5–3 \times 1.7–2.1 mm) longis, verticillo



superiore staminum 3–4 mm sub fauci insertis (vs. fauci insertis vel pause exsertis) differt.

TYPE: China. Yunnan Province, Hekou County, alt. 690 m, in dense forest along the moist valley, 6.V.2004 *Y. M. Shui et al.* 40908 (holotype KUN; isotypes IBSC, MO, PE).

Shrub, ca. 2 m tall. Branchlets terete, 3-7 mm in diameter, densely appressed-setose near branch tips, and gradually becoming glabrous; internodes 2–4 cm long; lenticels orbicular, ca. 0.5 mm in diameter, densely arranged. Leaves alternate; leaf blades leathery, oblong to elliptic, $13-21 \times 5-8$ cm, adaxially glabrous, abaxially appressed-setulose, base broadly cuneate, margin entire and revolute, apex acuminate; midrib depressed adaxially, raised abaxially; lateral veins brochidodromous, 10–12 pairs per side, slightly visible adaxially, distinct and raised

abaxially; transverse veins densely arranged, subparallel and subperpendicular with midrib; petioles ca. 1 cm long, densely appressed-setose. Inflorescence axillary, cymose, contracted, 2-5-flowered; inflorescence axis 1-2 mm long, densely appressed-setose. Flowers white, subsessile. Calyx tube cylindrical, 15-25 mm long, densely appressed-setose externally, glabrous internally; lobes 5, elliptic or oblong, $10-15 \times$ 3-4 mm, densely setulose externally, glabrous internally. Stamens 10, in two whorls, lower whorl located in middle of tube, upper whorl 3-4 mm below mouth of tube; filaments almost entirely fused to tube, free portion ca. 1 mm long; anthers narrowly oblong, ca. 2×0.3 –0.5 mm. Disk annular, slightly longer on one side, ca. 0.5×0.5 mm, glabrous. Ovary ellipsoid, ca. 3×2 mm, densely covered by 0.6–0.7 mm long

| Characters | D. hekouensis | D. axillaris |
|---------------|-------------------------------|---------------------------------|
| Leaf blade | 13–21×5–8 cm | 5–12 × 2–4.5 cm |
| Leaf apex | acuminate | caudate-acuminate |
| Lateral veins | 10–12 pairs | 8–10 pairs |
| Calyx tube | 15–25 mm long | 6–10 mm long |
| Calyx lobes | 10–15 × 3–4 mm | 2.5–3 × 1.7–2.1 mm |
| Stamens | upper whorl of stamens 3–4 mm | upper whorl of stamens at mouth |
| | below mouth of tube | of tube or slightly exserted |
| Anthers | ca. 2 mm long | ca. 1.5 mm long |
| Disk | glabrous | setose |
| Ovary | ca. 3×2 mm | ca. 2.5 × 1 mm |
| Stigma | ovoid | capitate or discoid |

Table 1. A morphological comparison between Daphne hekouensis and D. axillaris.

trichomes. Style terminal, slender, glabrous, ca. 1 mm long; stigma ovoid, 1.5–2 mm long.

PHENOLOGY. The new species has been recorded in flower in May.

HABITAT, DISTRIBUTION AND ECOLOGY. Daphne hekouensis is endemic to Yunnan Province, Hekou County, China. The species grows on a limestone hill in seasonal rain forest at 690 m elevation. In this habitat, the tallest trees mainly include Dipterocarpus retusus, Dillenia pentagyna, and Caryodaphnopsis tonkinensis, whereas the most common shrubby species are Aidia canthioides, Heliciopsis terminalis, Licuala dasyantha, Livistona saribus., Syzygium brachythyrsum, S. claviflorum and S. formosanum. Associated herbaceous species are Asarum yunnanense, Begonia psilophylla, Leptomischus erianthus, Mananthes panduriformis, Ophiorrhiza alatiflora, and Phrynium rheedei.

DISCUSSION. Daphne hekouensis resembles D. axillaris by having oblong to elliptic leaves, axillary inflorescences, white flowers, 5 calyx lobes, and 10 stamens. The new species differs by its larger leaf blades $(13-21 \times 5-8 \text{ cm})$ with acuminate apices, longer calyx tube (15-25 mm), larger elliptic or oblong calyx lobes (10–15 \times 3-4 mm), and upper whorl of stamens located 3-4 mm below the mouth of tube. In D. axillaris, the leaf blades are caudate-acuminate and measure $5-12 \times 2-4.5$ cm, the calvx tube is 6-10mm long with elliptic or oblong lobes measuring $2.5-3 \times 1.7-2.1$ mm, and the upper whorl of stamens is borne at the mouth of the tube or only slightly exserted. Some additional morphological differences between the two species are presented in Table 1.

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