*Ann. Bot. Fennici* 45: 296–298 ISSN 0003-3847 (print) ISSN 1797-2442 (online)
Helsinki 29 August 2008 

# *Daphne hekouensis* (Thymelaeaceae), a new species from China

Mei-De Zhang[1,2], Yu-Min Shui[1,*], Hsi-Wen Li[1], Zachary S. Rogers[3], Wen-Hong Chen[1] & Rong-Mei Zhang[1,2]

[1)] *Kunming Institute of Botany, the Chinese Academy of Sciences, Kunming 650204, Yunnan, China (*corresponding author's e-mail: ymshui@mail.kib.ac.cn)*
[2)] *Graduate school of the Chinese Academy of Sciences, Beijing 100049, China*
[3)] *Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, USA*

*Received 12 Dec. 2006, revised version received 26 Oct. 2007, accepted 5 Dec. 2007*

Zhang, M. D., Shui, Y. M., Li, H. W., Rogers, Z. S., Chen, W. H. & Zhang, R. M. 2008: *Daphne hekouensis* (Thymelaeaceae), a new species from China. — *Ann. Bot. Fennici* 45: 296–298.

*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 × 5–8 cm), longer calyx tubes (15–25 mm), larger elliptic or oblong calyx lobes (10–15 × 3–4 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 × 5–8 (vs. 5–12 × 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 × 3–4 (vs. 2.5–3 × 1.7–2.1 mm) longis, verticillo*

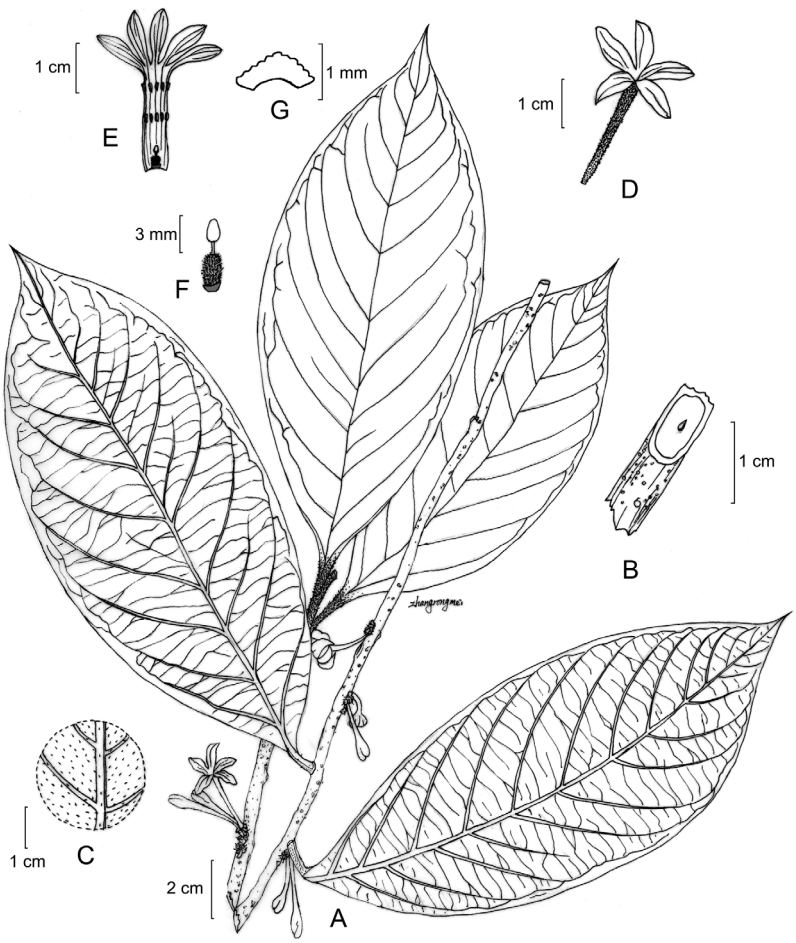


**Fig. 1.** *Daphne hekouensis* (from the holotype, drawn by Rong-Mei Zhang). — **A**: Habit. — **B**: Stem detail, showing lenticels and pith. — **C**: Abaxial leaf surface. — **D**: Flower. — **E**: Flower in longitudinal section. — **F**: Pistil. — **G**: Dissected disk laid flat.

*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 × 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 × 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

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

| 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 below mouth of tube | upper whorl of stamens at mouth 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 |

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 × 5–8 cm) with acuminate apices, longer calyx tube (15–25 mm), larger elliptic or oblong calyx lobes (10–15 × 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 × 2–4.5 cm, the calyx tube is 6–10 mm long with elliptic or oblong lobes measuring 2.5–3 × 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.

## Acknowledgements

The authors thank Dr. Wen-Bo Liao at Zhongshan University (SYS) and Dr. Shi-Jin Li of the South China Botanical Garden of the Chinese Academy of Sciences (IBSC) for assistance with some relevant literature and herbarium specimens. This work was supported mainly by a grant to Yu-Min Shui from the Committee for Research and Exploration of the National Geographic Society (grant no. 8288-07). Additional support was obtained from the National Natural Science Foundation of China (grant no. 30270109), the Natural Science Foundation of Yunnan Province, China (grant no. 2001C0022Q), the Taxonomy and Flora Special Foundation, the Chinese Academy of Sciences (CAS), and the West Glory Project of CAS for Yu-Min Shui.

## References

Herber, B. E. 2003: Thymelaeaceae. — In: Kubitzki, K. (ed.), *The families and genera of vascular plants* 5: 373–396. Springer, Berlin.

Huang, S. C. 1999: Thymelaeaceae. — In: Ku, T. C. (ed.), *Fl. Reipubl. Popularis Sin.* 52(1): 287–400. Science Press, Beijing. [In Chinese].

Peterson, B. 1997: *Daphne* (Thymelaeaceae). — In: Santisuk, T. & Larsen, K. (eds.), *Flora of Thailand* 6(3): 243–245. The Forest Herbarium, Royal Forest Department, Bangkok.

Phamh-Hoang, H. 1992: *Daphne* (Thymelaeaceae). — In: Morat, P. (ed.), *Flora of Cambodia, Laos and Vietnam* 26: 74–80. Museum National d'Histoire Naturelle, Paris.

Tramhuong, H. 2000: *Daphne* (Thymelaeaceae). — In: Pham-Hoang, H. (ed.), [*An illustrated flora of Vietnam* 2]: 38–40. Mekong Printing, Santa Ana, California. [In Vietnamese].

Wang, Y. Z., Gilbert, M. G., Mathew, B., Brickell & C. D. 2007: *Daphne*. — In: Wu, Z. Y. & Raven, P. H. (eds.), *Flora of China* 13: 230–245. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis.

Xu, T. Z. & Huang, S. C. 1997: *Daphne*. — In: Wu, C. Y. (ed.), *Flora Yunnanica* 8: 219–231. Science Press, Beijing. [In Chinese].