

CYSTOPTERIDACEAE

冷蕨科 lèng jué kē

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Plants small to medium-sized, summer-green; rhizomes slender, creeping or ascending; costae articulate to rachis (in *Gymnocarpium*) or not so; lamina pinnate to 3(or 4)-pinnate-pinnatifid; veins free; sori orbicular or elongate, abaxial on veins, indusiate or exindusiate; indusia ovate-lanceolate, ovate, or orbicular, attached proximally to receptacle. $x = 40, 42$.

Four genera and more than 30 species: worldwide, mainly in the temperate and cold temperate zones and tropical mountains; four genera (one endemic) and 20 species (ten endemic) in China.

Wang Zhong-ren. 1999. *Acystopteris*, *Cystoathyrium*, *Cystopteris*, and *Gymnocarpium*. In: Chu Wei-ming, ed., *Fl. Reipubl. Popularis Sin.* 3(2): 38–74.

- 1a. Sori exindusiate 1. *Gymnocarpium*
- 1b. Sori indusiate.
 - 2a. Multicellular articulate hairs present on stipe and lamina; indusia small, often hidden under sporangia 3. *Acystopteris*
 - 2b. Multicellular articulate hairs absent from stipe and lamina; indusia visible.
 - 3a. Lamina deltoid to lanceolate, base slightly narrowed or broadest part of lamina; spore wall echinate 4. *Cystopteris*
 - 3b. Lamina oblong-lanceolate, base gradually narrowed, spore wall with conical spines 2. *Cystoathyrium*

1. GYMNOCARPIUM Newman, *Phytologist* 4: 371. 1851.

羽节蕨属 yu jié jué shu

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Carpogymnia (H. P. Fuchs ex Janchen) Á. Löve & D. Löve; *Currania* Copeland; *Thelypteris* sect. *Carpogymnia* H. P. Fuchs ex Janchen.

Plants terrestrial, summer-green, small to medium-sized. Rhizomes long creeping, blackish brown, glabrate, clothed with brown, thin, broadly lanceolate or ovate-lanceolate scales at apices and stipe bases. Fronds distant; stipe thin, much longer than lamina, dark brown at base, upper part stramineous, U-shaped grooved adaxially; lamina simple-pinnatifid to 3-pinnate-pinnatifid, deltoid-ovate to pentagonal-oval, base articulate to stipe apex, apex acuminate; pinnae stalked or sessile, articulate to rachis, basal pair not shortened. Veins free, pinnate in ultimate segments, lateral veins simple or occasionally forked, terminating at margin. Lamina herbaceous or thinly herbaceous, stipe apex, rachis, costae, and lamina \pm with hyaline or pale yellow glands on surfaces, or glands absent. Sori oblong or orbicular, exindusiate, abaxial on veins, uniseriate along each side of costule or midrib. Spores bean-shaped, perispore surface rugate, folds lobed, foveolate or sometimes reticulate. $x = 40$.

Two sections, ten species, and several hybrids: temperate zone of the N Hemisphere (Asia, Europe, and North America) and subtropical mountains of Asia, occurring in forests; five species (two endemic) in China.

- 1a. Lamina pinnatifid; sori oblong 1. *G. oyamense*
- 1b. Lamina 2- or 3-pinnate; sori smaller, orbicular.
 - 2a. Rachis glandular abaxially.
 - 3a. Stipe sparsely glandular, rachis base and costa base of basal 1–3 pairs of pinnae glandular; veins often forked 2. *G. jessoense*
 - 3b. Stipe apex, rachis, and costae densely glandular abaxially, other parts also glandular; veins usually simple 3. *G. altaycum*
 - 2b. Rachis glabrate, eglandulose.
 - 4a. Lamina ovate-pentagonal or ternate, lowest pinnae nearly as large as rest of lamina, 2-pinnate-pinnatifid; basicopic basal pinnules of lowest pinnae nearly as large as third pinnae; ultimate pinnules oblong, \pm pinnatifid, or shallowly lobed 4. *G. dryopteris*
 - 4b. Lamina deltoid-ovate, lowest pinnae smaller than rest of lamina, 3-pinnate-pinnatifid; basicopic basal pinnules of lowest pinnae nearly as large as fourth pinnae; ultimate pinnules narrowly oblong, usually entire 5. *G. remotepinnatum*

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