

CYSTOPTERIS FRAGILIS AGGREGATE

Cystopteris fragilis is a ubiquitous fern common throughout the northern hemisphere. It is cytologically complex and at least three diploid genomes have been detected in hybrids between the different races. Plants in British Isles are tetraploid or hexaploid; in mainland Europe octoploids occur. The only diploid known is in N. America

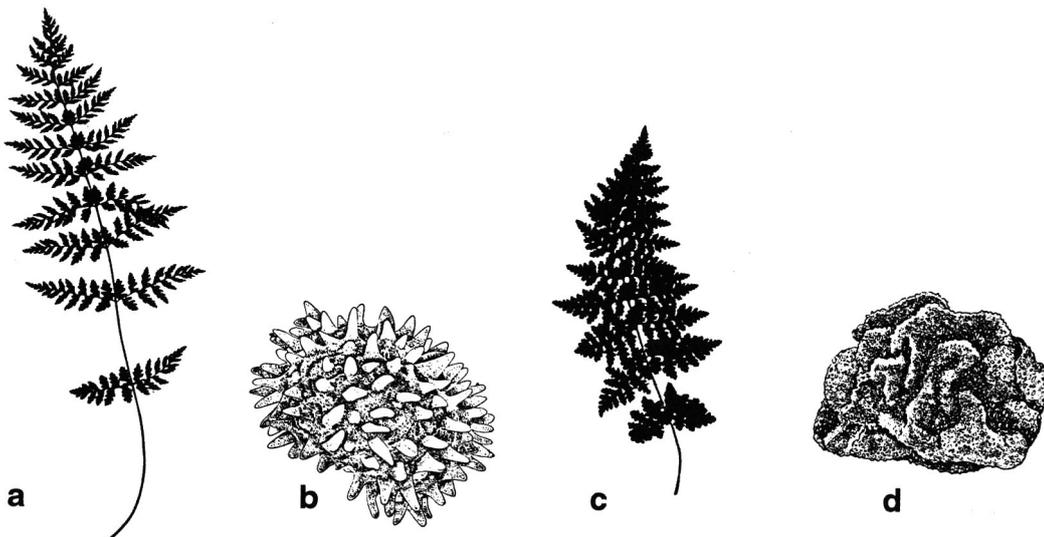
Leaf architecture (degree of cutting) is very variable in both *C. fragilis* and *C. dickieana* and the form described by Sim from caves in Kincardine and subsequently brought into cultivation as a garden plant is morphologically distinct, and is that described and silhouetted here. The spores seen in that population are rugose-verrucate and thereby distinct from the spinulose spores of other *C. fragilis* (see Figs. a and b). The character has little taxonomic significance, however, and on a world basis, research using isoenzyme markers has shown there is little justification in regarding this spore form as anything other than a variety of *C. fragilis* (see Haufler *et al.* 1993).

In Britain, *C. dickieana* is protected under the Wildlife and Countryside Act 1981, and recently has been found in a few new sites, in Perthshire and Easternness (Tennant 1996), and may be elsewhere, especially on limestone, mixed with more typical *C. fragilis*. These later finds are not typical in their cutting (they are more like *C. fragilis* s.s.) but they were usually found in very shady situations and have that jizz of those of the type locality: i.e., a thin, almost translucent leaf which appears distinctly paler, or almost with a glaucous tinge.

The main differences are as follows:

C. fragilis (L.) Bernh.: Leaf-blade mid to deep green, elliptic-lanceolate, tapering below, apex acute usually tapered, 2-3 pinnate, ultimate segments usually with acute apices and margins not overlapping. Veins usually terminating at the leaf margin in the apex of a tooth or lobe. Spores usually densely spinulose. (see Figs a and b).

C. dickieana R. Sim: Leaf-blade translucent in texture, mid- to bluish-green, broadly oblong-lanceolate, tapering slightly below, apex acute but not tapered, 2-pinnate, ultimate segments obtuse to rounded, the margins often overlapping. Veins usually terminating at the leaf margin in a sinus. Spores rugose, minutely verrucate. (see Figs c and d).



Leaf shape and spores morphology of *Cystopteris*: (a, b) *C. fragilis*, (c, d) *C. dickieana*.

Plant Crib

Finely dissected leaf forms on high altitude limestone should be looked for and a voucher, preferably with mature spores, should be taken; they may turn out to be the central European alpine species, *C. alpina* (Lam.) Desv.) (*C. regia* auctt.).

References Haufler, C. H., Moran, R. C. & Windham, M. D. (1993). In *Flora of North America north of Mexico* **1**: 269-270. Oxford University Press, New York.
Tennant, D. J. (1996). *Watsonia* **21**: 135-139.

Authors A. C. Jermy & J. M. Camus (*Field Guide* 1991).