Cooksonia

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Cooksonia is believed to be one of the earliest land plants. The earliest aerial shoot in the fossil record of Cooksonia was reported from Ireland in the year 1937. The author (Lang, 1937) described Cooksonia as "Dichotomously branched, slender, leafless stems, with terminal sporangia that are short and wide. Epidermis composed of elongate, pointed, thick-walled cells. Central vascular cylinder consisting of annular tracheids". Sporangia contain tetrads of spores and the author also discovered fragments of cuticle in situ.

Species of Cooksonia:

1) ***Cooksonia pertoni* (Lang 1937):** Sporangia are considerably stretched horizontally. Their morphology is homogenous, but there is a great variability in size. Lang (1937) observed trilete spores in situ. Several types of spores have later been isolated.

2) ***Cooksonia hemisphaerica* (Lang 1937):** This species was described from the type locality. It differs from *Cooksonia pertoni* in having globose, hemispherical sporangia. Sporangia are approximately as high as they are wide, and the subtending axis widens just below the sporangium. They contain trilete spores.

3) ***Cooksonia crassiparietilis* (Yurina 1969):** This species is known from three specimens only. The sporangium is reniform and shows a thick distal dehiscence line dividing the sporangium into two equal parts.

4) ***Cooksonia caledonica* (Edwards 1970):** This species was included in the genus on the basis of the "wider-than high sporangium" character. This species differs from *Cooksonia pertoni* in the sporangial construction, as Edwards (1970) identified a distal dehiscence line, opening the sporangium into two equal valves.

5) ***Cooksonia cambrensis* (Edwards 1979):** The characters of the species are a spherical or subspherical sporangium and no widening of the axis below the sporangium.

6) ***Cooksonia bohemica* (Schweitzer 1980):** Only one specimen is known. Vegetative parts of this species present original characters: axes are profusely branched and more robust than in other species. Sporangia are badly preserved and present various shapes due to compression.

7) ***Cooksonia paranensis* (Gerrienne, 2001):** This species is close to *Cooksonia pertoni*. A few differences are perceptible: axes are more slender than in

Cooksonia pertoni, the transition between the axis and the sporangium is more gradual, and the sporangium seems to be sunken into the axis.

8) ***Cooksonia banksii* (Habgood, 2002):** It is morphologically very close to *Cooksonia paranensis.* The axis/sporangium transition is gradual, and the sporangium is sunken into the axis. Despite those similarities, a new species was erected because of the two different preservation modes: *Cooksonia paranensis* was created on the basis of compression fossils, and *Cooksonia banksii* was described from permineralizations.

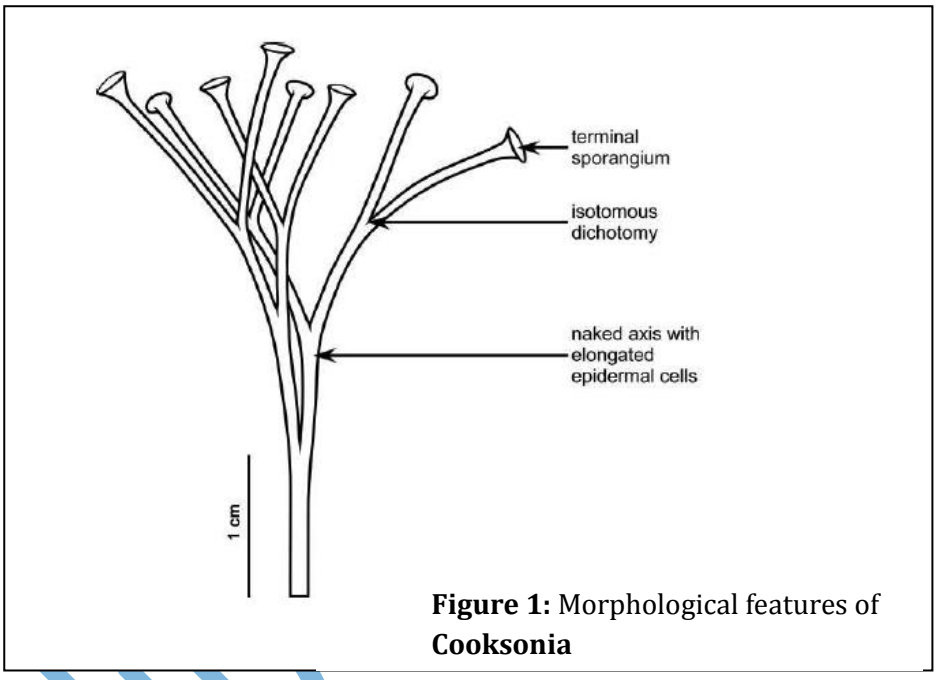

Figure 1: Morphological features of **Cooksonia**

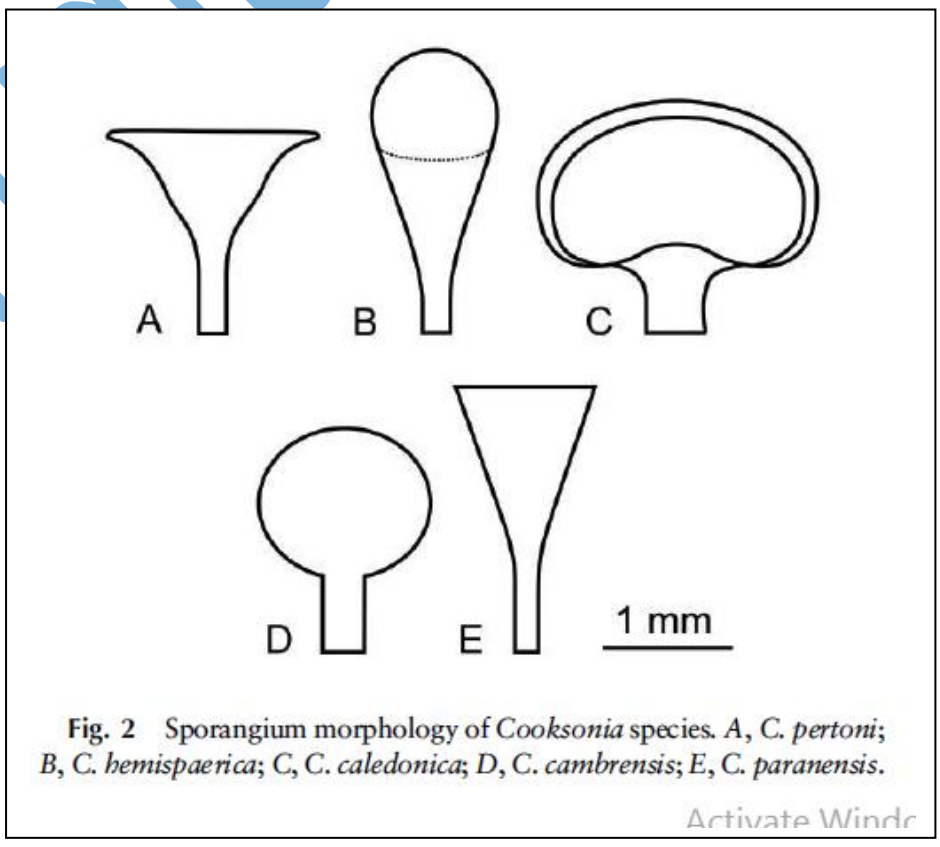

Fig. 2 Sporangium morphology of *Cooksonia* species. *A*, *C. pertoni*; *B*, *C. hemispaerica*; *C*, *C. caledonica*; *D*, *C. cambrensis*; *E*, *C. paranensis*.