Podozamites AND Swedenborgia FROM THE LOWER CRETACEOUS OF TRANSBAIKALIA

Eugenia V. Bugdaeva

Institute of Biology and Pedology, Vladivostok, 690022

Abstract: Swedenborgia is reported for the first time from the Lower Cretaceous of Russia. Late Mesozoic representatives of this genus, known primarily from Early Mesozoic floras, associate with Podozamites leaves. New species of Podozamites and Swedenborgia are described.

Key words: Swedenborgia; Podozamites; Lower Cretaceous; Transbaikalia.

Swedenborgia впервые обнаружена в нижнемеловых отложениях России. Позднемезозойские представители этого рода, более широко распространенного в раннем мезозое, встречаются совместно с листьями подозамитов. Описаны новые виды подозамитов и сведенборгий.

Fossil plants have been collected from the Baisa locality on the Vitim River, Transbaikalia, by V. A. Krassilov and the author [1, 2, 7, 8]. New species of proangiosperms and angiosperms have been described from this locality [7, 8, 10]. Dominant in all the plant-bearing beds are Podozamites leaves and their associating Swedenborgia cone scales. At least two species of Podozamites differ in leaf shape and cuticular characters.

The author collected additional material from the Lower Cretaceous of Gosinoserskaya Depression with V. A. Krassilov in 1985, and from the Bukachacha coal mine with H. G. Yadrischenskaya in 1987. In both localities, Podozamites was found with Swedenborgia scales. These support the earlier suggestion (Krassilov 1982) that Podozamites-Swedenborgia plants were not restricted to the Early Mesozoic but, at least in central Asia, survived as a dominant floristic element through the Late Mesozoic.

Genus Podozamites F. Braun, 1843

Podozamites baissicus Bugdaeva, sp. nov.

Fig. 1a-f

Name. After the Baisa locality.
Holotype. Institute of Biology and Pedology, No. 31/280, western Transbaikalia, left bank of the Vitim River, upstream of the Baisa Creek mouth, Lower Cretaceous, Zaza Formation, bed 31; fig. 1a.

Description. Leafy shoots have an axis 1-3 mm, typically 1.5 mm, thick. Leaves are helically arranged, elongate, 28-60 mm long, 3-4 mm of maximal width in the middle. Base is tapered, apex narrowly pointed, and veins are from 5-6 to 11-12, about 2-3 per 1 mm, ending in the apex.

The cuticle is very thin and hypostomatic. Upper cuticle shows the filed rectangular cells with thin straight anticlinal walls. Costal cells, 28-38 × 72-170 μm, are aligned in 5-6 files and are longer than the intercostal cells; the latter are squarish, about 33-38 × 38 μm. Occasional papillae and hair bases are in groups of 3-5 in the costal zones.

Lower cuticle shows costal zones of elongate cells in 4-5 files. The cells are rectangular elongate, 55-226 × 22-38 μm. Intercostal zones include about 7 files of squarish cells, 28-44 × μm. Stomata are small, abundant, transverse or oblique, and occasionally longitudinal. Guard cells are slightly sunken, 27.5-28 × 22 μm, fabiform, with T-shaped polar thickenings. Subsidiary cells number 4-5.

Comparison. The leaves resemble Podozamites angustifolius and P. gramineus, but differ from them in acutely pointed apex. The cuticular structure is the same type as in P. aff. eichwaldii from the Bureya Basin [3] and P. ex gr. lanceolatus from Primor’ye [5], but the stomata are occasionally longitudinal and differ also in the polar thickenings.

Material. Five leafy shoots and several detached leaves from the Baisa locality.

Podozamites spp.

Fig. 1g-i

In the Baisa locality are leafy shoots with apically rounded leaves (fig. 1g) quite different from P. baissicus, described above. The leaves are 30-50 mm wide with about 32 veins. The marginal veins end in the leaf margin, not reaching to the apex. Celloidin replicas show costal and intercostal zones, the latter with transverse or oblique stomata the details of which are not discernible.

Shoots in figure 1h are from the Lower Cretaceous coal-bearing beds of Goosinoserskaya Depression where they occur with Swedenborgia. They are up to 60 mm wide, with 16 veins. Figure 1i shows dispersed Podozamites-type cuticles, obtained by bulk maceration from the Bukachacha coal beds, and which contain Swedenborgia scales. On the scanty cuticular evidence, all these leaves belong to Podozamites rather than the morphologically similar Leptophyllum.

Genus Swedenborgia Nathorst, 1878

Swedenborgia transbaikalica Bugdaeva, sp. nov.

Fig. 2a-d
**Name.** After Transbaikalia Province.

**Holotype.** Institute of Biology and Pedology, No. P-46/44, Western Transbaikalia, Goosinoserskaya Depression, Lower Cretaceous, Selengin Formation; figure 2c.

**Description.** Cone scales consist of a stalk 3-5 mm long, 1.5-1.7 mm wide, distally expanding into a digitate portion that shows a small triangular bract distinct from the much larger 5-lobed seed scale. The lobes of the latter are narrow, acuminate, curved, and 3.5-4 mm wide.
These scales are found in three successive plant beds of the Selengin Formation occurring in each with Podozamites leaves.

Comparison. These cone scales belong to the 5-lobed group that includes S. cryptomerioides Nath., S. longiloba Stanisl., S. major Harris and S. minor Harris [4, 9]. They differ from S. cryptomerioides in the longer and narrower lobes of the seed scales. S. longiloba is much larger with needle-like lobes which can be fused to various extents. S. major and S. minor differ in dimensions and proportionally shorter lobes.

Swedeborgia sp. from the Lower Cretaceous of Mongolia [6] is fairly similar and perhaps conspecific to the Transbaikalian cone scales.

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REFERENCES