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## [12] The Early Cretaceous flora of Gusinoe Lake Basin (the Buryat Republic, Russia)

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The Gusinoe Lake Basin, located to the east of Lake Baikal, is bounded from the southeast by the Monostoisky Range, and from the northwest by the Khambinsky Range and is filled by the Lower Cretaceous deposits, united in the Gusinozersky Series (Skoblo et al., 2001). In the sedimentary sequence of this basin the following formations are distinguished (from bottom to top):

1) Murtoi Formation consists of sandstones and conglomerates with remains of mollusks, ostracods, vertebrates, and plants (Fig. I). The latter are represented by conifers. The deposits accumulated near a vast lake basin, their thickness is 380-450 m.

2) Ubukun Formation containing mainly siltstones and psammities with remains of bivalves and ostracods. This formation was formed in deep lake setting. The thickness is variable – from 140 to 300 m.

3) The Selenga Formation is represented by a multistage alternation of two-three-membered transgressive rhythms of sediments formed by channel and lacustrine sandstones and overlying thicker fine lacustrine, floodplain-lake psammities and siltstones with brown coal seams. The coal content and the content of fine-grained deposits increase up the section of this stratigraphic unit. The gastropods, bivalves (“ferganoconchids”, unionids), ostracods, fish *Lycoptera fragilis* Hussakof have been found here. Plant remains are numerous, the most characteristic (Fig. II) are ferns *Coniopteris setacea* (Prynada) Vachrameev, *C. sinitzae* Srebrodolskaja, *Cladophlebidium dahuricum* Prynada, bennettite *Nilssoniopteris* sp., umkomasialean (?) *Jarudia zhoui* Shi, Herrera, Herendeen, Clark & Crane, ginkgophytes *Pseudotorellia* sp. A, *Umaltolepis* sp. A, leptostrobaleans *Czekanowskia* sp., *Leptostrobus* sp., conifers *Athrotaxites* sp. A., *Elatides* cf. *zhoui* Shi, Leslie, Herendeen, Ichinnorov, Takahashi, Knopf et Crane, *Pagiophyllum* sp., *Podozamites* sp., *Krassilovia mongolica* Herrera, Shi, Leslie, Knopf, Ichinnorov, Takahashi, Crane et Herendeen, *Samaropsis aurita* Krassilov, *Schizolepidopsis canicularis* Leslie, Glasspool, Herendeen, Ichinnorov, Knopf, Takahashi et Crane, *Swedenborgia transbaikalica* Bugdaeva, *Pityophyllum* sp., *Pityocladus* sp. In addition, as a result of maceration of coals from this formation, remains of wood of conifers were found. The coal-forming plants of this formation are Umaltolepidaceae and conifers (Fig. II).

4) The Kholboldzhin Formation contains sandstones and siltstones with numerous and thick coal seams, its thickness 1000-1200 m. These deposits yield bivalves, ostracods, and abundant plants

leptostrobalean *Phoenicopsis* sp., ginkgoaleans *Ginkgo* cf. *coriacea* Florin, *Karkeniania* sp. *Pseudotorellia* sp., *Pityophyllum* sp., *Pityospermum* sp., umkomasialean (?) *Jarudia zhoui* Shi, Herrera, Herendeen, Clark & Crane (Fig. III).

In the Early Cretaceous floras of Transbaikalia, Mongolia, and China, there are a number of common taxa that can be used for the stratigraphic correlation of the Lower Cretaceous deposits of this region. The species *Coniopteris setacea* is known from the Barremian-Aptian Baisa locality on the Vitim River, *C. sinitzae* - from the Lower Cretaceous of the Chikoi Basin (Central Transbaikalia), *Cladophlebidium dahuricum* - from the Aptian Semyon locality in Elizavetino Basin and "lower coal member of the Gusinoe-Uda Basin" of Transbaikalia, the Barremian-Aptian Ussuri and Starosuchan formations of the South Primorye region, *Samaropsis aurita* - from Bon-Tsagan, Kholbotu-Gol, Shin-Khuduk, Manlaj localities (Mongolia), *Krassilovia mongolica*, *Schizolepidopsis canicularis* - from the Aptian-Albian Tevshin Govi Formation (Mongolia), *Elatides zhoui* - from the Aptian-Albian Khukhteg, Choir-Nyalga Basin (Mongolia). The fossil flora of the Gusinoe Lake Basin can be compared with the flora of the Jehol Biota from the Yixian and Jiufotang formations of Northeast China.

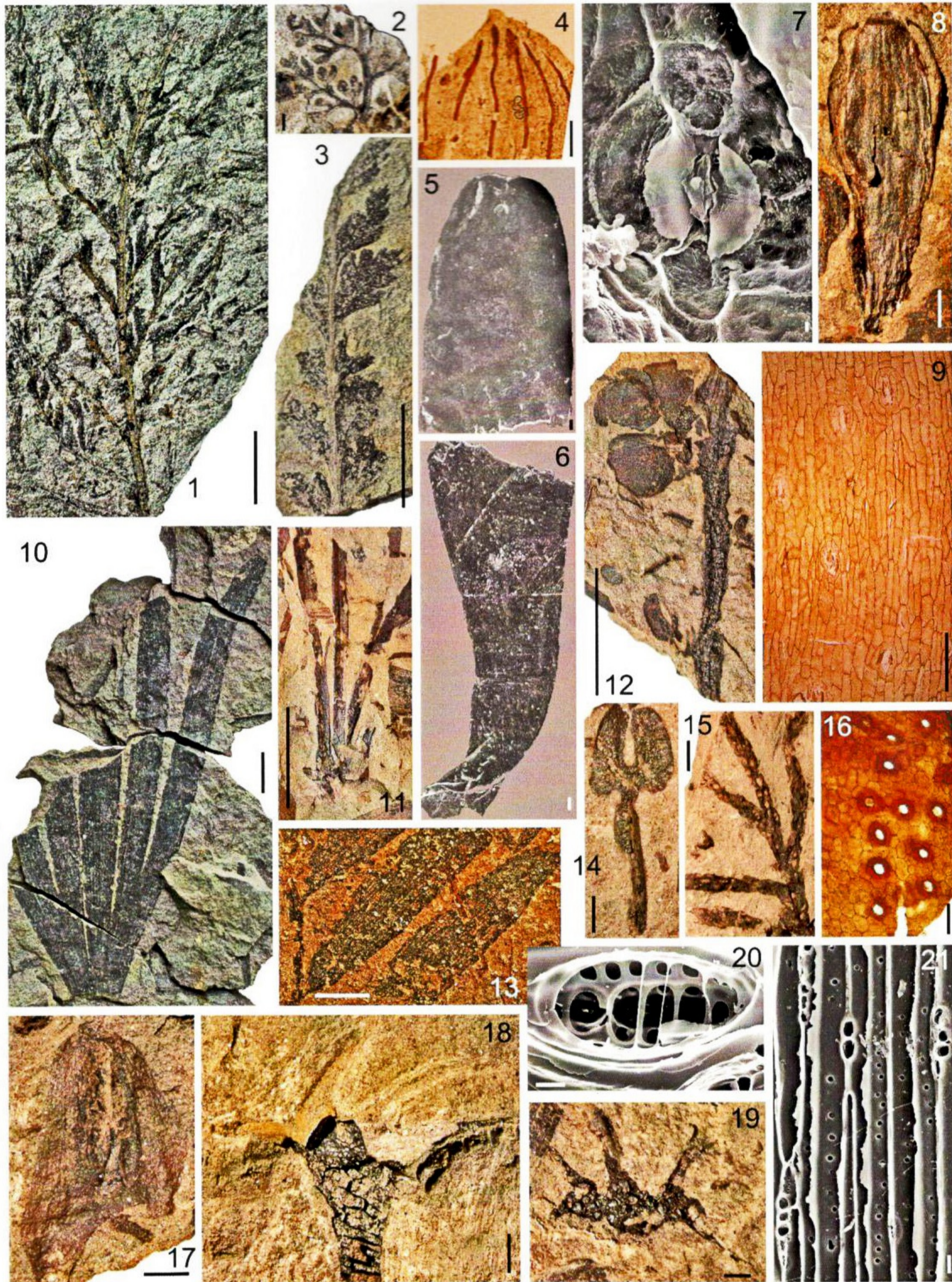
**Keywords:** Early Cretaceous, Selenga Formation, fossil plants, stratigraphic correlation, Buryatia

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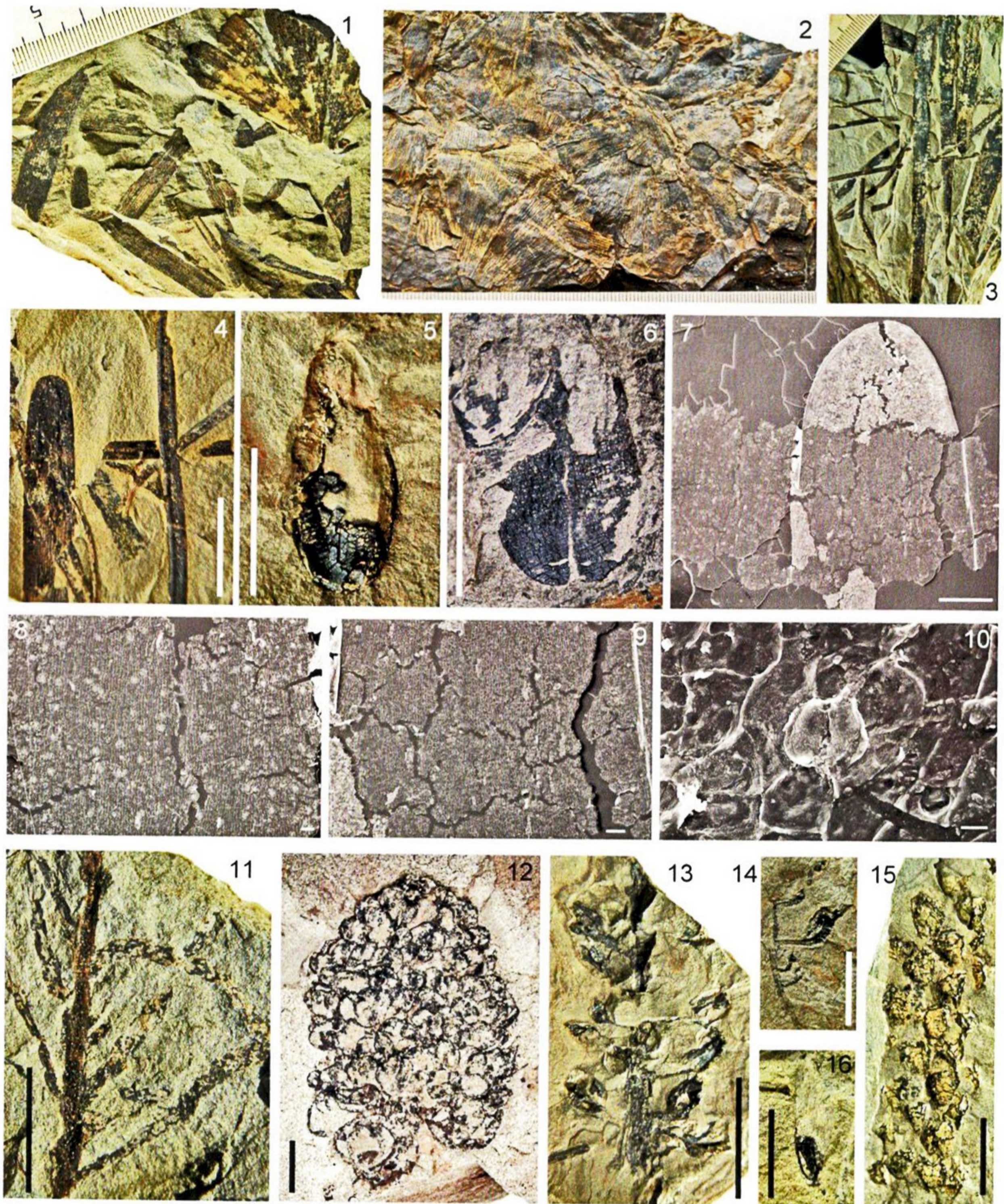
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**Fig. 1.** Fossil plants of the Murtoi Formation, Gusinoe Lake Basin, Early Cretaceous, the Buryat Republic.  
1. Leaves of *Pityophyllum*. 2. *Pityocladus* sp. 3. Cupulate seed-bearing structures (?) *Jarudia zhoui*. Bars: 1 - 1 mm, 2 - 1 cm, 3 - 1 mm.



**Fig. 2.** Fossil plants of the Selenga Formation, Gusinoe Lake Basin, Early Cretaceous, the Buryat Republic.  
 1. *Cladophlebidium dahuricum*. 2. *Coniopteris* cf. *setacea*. 3. *Coniopteris sinitzae*. 4-7. *Pseudotorellia* sp. A. 4-6 – fragments of leaves, 7 – stoma. 8-9. *Umaltolepis* sp. A. 10. *Sphenobaiera* sp. 11. *Czekanowskia* sp. 12. *Leptostrobis* sp. 13. *Podozamites* sp. 14. *Schizolepidopsis canicularis*. 15-16. *Athrotaxites* sp. A. 17. *Samaropsis aurita*. 18. *Swedenborgia transbaikalica*. 19. *Krassilovia mongolica*. 20-21. Fossil wood Coniferales (?). Bars: 1 – 1 cm, 2 – 1 mm, 3 – 1 cm, 4 – 500  $\mu$ m, 5 – 200  $\mu$ m, 6 – 100  $\mu$ m, 7 – 2  $\mu$ m, 8 – 2 mm, 9 – 200  $\mu$ m, 10 – 1 cm, 11 – 1 cm, 12 – 1 cm, 13 – 5 mm, 14 – 2 mm, 15 – 2 mm, 16 – 100  $\mu$ m, 17 – 1 mm, 18 – 1 mm, 19 – 1 mm, 20 – 10  $\mu$ m, 21 – 20  $\mu$ m.



**Fig. 3.** Fossil plants of the Kholboldzhin Formation, Gusinoe Lake Basin, Early Cretaceous, the Buryat Republic.

1. Leaves of *Ginkgo cf. coriacea* and *Phoenicopsis* sp. 2. Leaves of *Ginkgo cf. coriacea*. 3. Leaves of *Phoenicopsis* sp. and *Pityophyllum* sp. 4. Fragments of leaves of *Pseudotorellia* sp. and *Pityophyllum* sp. 5-6. *Umaltolepis* sp. 7-10. *Pseudotorellia* sp. (SEM): 7 – upper part of leaf, 8 – lower cuticle, 9 – upper cuticle, 10 – stoma. 11. *Athrotaxites* sp. 12. *Karkenina* (?) sp. 13-15. (?) *Jarudia zhoui*. 16. *Pityospermum* sp. Bars: 1-3 – 1 mm, 4-6 – 1 cm, 7 – 1 mm, 8 – 100  $\mu\text{m}$ , 9 – 200  $\mu\text{m}$ , 10 – 10  $\mu\text{m}$ , 11 – 1 cm, 12 – 1 mm, 13-16 – 1 cm.

## References



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