

POLYMORPHISM IN *ALVEOLOPHORA* SPECIES (AULACOSEIRACEAE) FROM FOSSIL DEPOSITS IN WESTERN NORTH AMERICA

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Alveolophora Moisseeva & Nevretdinova was first described from the Russian Far East by Moisseeva & Nevretdinova (1990). They applied an illegitimate (later homonym) name *Melosira areolata* Moisseeva (Moisseeva 1971) as the basionym for type species. According to the International Code of Botanical Nomenclature (Art. 6.3, Art. 10.1; McNeill et al. 2006), the generic name *Alveolophora* was legitimately and validly published even though the type species name was illegitimate. In this case, we consider *Miosira* Krammer, Lange-Bertalot & Shiller as a synonym of *Alveolophora*.

Alveolophora as currently understood is entirely extinct, but it existed from the Late Eocene until the end of the Miocene. There are seven species known from the Russian Far East (Moisseeva & Nevretdinova 1990; Khursevich 1994, Kozyrenko *et al.* 2008) and Lake Baikal (Khursevich & Fedenya 2006), as well as from Europe (Krammer *et al.* 1997) (see Khursevich & Kociolek 2012). Only one species *A. jouseana* (Moisseeva) Moisseeva was reported from western North America by Bradbury (1986).

We present three new species of *Alveolophora* - *A. bradburyi* Usoltseva, Kociolek & Khursevich sp. nov., nom. prov., *A. nevadica* Usoltseva, Kociolek & Khursevich sp. nov. nom. prov. and *A. americana* Usoltseva, Kociolek & Khursevich sp. nom. prov. described from late Miocene age 9.5-11.8 ma in the western United States. Despite many reports of *A. jouseana* from diatomites in North America, we have been unable to verify the presence of this species, first described from Russia, in sediments of North America.

These species expressed a high degree of polymorphism (Kociolek & Stoermer 2011) in several valve features. For example, within individual species (*A. bradburyi*) areolae may be present across the valve face, restricted to the margins, widely scattered or lacking. Valve shape may be round, to ovoid to nearly linear in *A. americana*. Tubes of the rimoportulae of *A. bradburyi* can be quite long or short. In all three species the ribs may be longitudinal and/or transverse creating an anastomosing network, and be thin, thick or, in rare cases such as *A. bradburyi*, absent all together. Such polymorphism (either in the number of features or in the variation within any individual feature) is not known in the species described from Asia.

Before this study there were no *Alveolophora* species described with oval valves. *A. americana* is similar to elliptic and oval *Aulacoseira* from early Miocene sediments of Yamato Rise, Japan Sea (Usoltseva & Tsoy 2010) and Japan (Tanaka *et al.* 2008).