Re-emended diagnosis of Annuriopsis bunkeiensis Kimura et Kim from the Amisan Formation, Nampo Group, Korea

Jong-Heon Kim · Won-Kook Lee · Yeong-Sang Kim ·
Chilng-Young Kim · Hee-Soo Kim
Department of Earth Science Education, Kongju National University

The relation between Lobatannularia Kawasaki(1927) and Annulariopsis Zeiller(1903) has been discussed by such authors as Halle(1927), Yabe and Koiwai(1928), Kawasaki(1934), Kon'no and Asama(1950) and Harris(1961).

Annulariopsis has been defined somewhat vaguely for whorls of small lanceolate uni-nerved leaves borne in a terminal position due probably to breaking off a stem or bud above. According to Harris(1961), it is distinguished from Phyllotheca, Schizoneura and Lobatannularia by having leaves which are free even at their bases. It differs from the leafy twigs of Neocalamites chiefly in that the Neocalamites shoots do not originally break just above a leafy whorl but bear successive whorls.

According to Kimura and Kim(1988), it is close in form to Annularia and Lobatannularia because of the recent discovery of shoots bearing successive whorls. Annulariopsis differs from Annularia in its leaves being free to their bases except for about 1 mm at the base, instead of the leaves forming a basal leaf-sheath as in Annularia. On the other hand, Lobatannularia is easily distinguished from Annulariopsis by its whorl consisting of markedly anisophyllous and largely fused leaves. Kimura and Kim(1988) give emended diagnosis of the genus and species of Annulariopsis on the basis of the new material as follows.

Order Equisetales

Genus Annulariopsis Zeiller 1903 emended Kimura and Kim 1988

Emended diagnosis: Articulate plant. Stem slender, marked with longitudinal ridges; internodes rather long. Leaf-whorls circular or oval, often divided into lobes, spread out in one plane, obliquely attached to the stem and persistent. Leaves equal or sometimes

unequal in size. Adjacent leaves united for about 1mm at the base, then free. Leaf linear-lanceolate, or broadly spatulate in form with a round or mucronate apex, generally broadest at or near distal end and uninerved; margins entire or sinuous. Stem easy to break off at the node; thus most of the specimens showing the leaves in a terminal position on the shoot. Fructification unknown.

Annulariopsis bunkeiensis(Kobatake) Kimura and Kim 1988

Emended diagnosis: Stem slender, 1.5mm wide, its surface-ornamentation indistinct. Internode more than 2cm long. Leaf-whorl oval, not divided into two lobes, spread out in one plane, obliquely attached to the stem and persistent; smaller whorl, 1.2cm(major) and 2.0cm(minor) in diameter. Uninerved leaves more than 10 in a whorl, unequal in size, broadly spatulate in outline with mucronate apex and broadest near the distal end; largest one 2.5cm long and 0.8 cm wide; margins entire or faintly undulated. Leaves mostly free but adjacent ones united for about 1 mm at the base. Midnerve thick, persisting to the tip.

Remarks : Leafy stems of Annulariopsis bunkeiensis from the Amisan Formation agree well with Kimura and Kim's diagnosis except for the mucronate apex of leaflet which is lacking in the present leafy stems.

According to the descripion of leaflets described by Kobatake(1954), Kawasaki(1939), Kimura and Kim(1988) respectively, the apices were rounded mucronate apices. However, the apices of leaflets figured by them, were showed mostly emarginate or rounded apices, but they did not mention their details.

Our new materials occurred from the Amisan Formation, showed that each leaflet of leafy whorls has a emarginate apex or rarely rounded apex. Thus, we propose a re-emended diagnosis of Annulariopsis bunkeiensis.