Mariko Yamada and Toshihiro Yamada*: Pinus fujiii (Yasui) Miki from the Middle Miocene Saikawa Formation in Kanazawa, Ishikawa Prefecture, Japan

Pinus fujiii (Yasui) Miki (Pinaceae) is a fossil species endemic to Japan and found from the Lower Miocene to Lower Pleistocene deposits (ca. 17 to 1.75 Ma: Yamada et al. 2014). Pinus fujiii is considered to be a species belonging to the subsection Pinus (section Pinus, Subgenus Pinus) based on spur shoot and cone morphologies: a pair of leaves is enclosed in the persistent sheath and umbo of cone scales has a mucro at the upper-center (perexcentromucronate) (Yamada et al. 2014). Recently, it is proposed that P. fujiii is a possible ancestor of extant Japanese Black Pine (Pinus thunbergii Parl.), because these two species share medially positioned resin ducts in leaves (Yamada et al. 2014).

Although there are many Upper Pliocene to Lower Pleistocene records of P. fujiii, the middle to late Middle to Late Miocene records only come from the Seto and the Tokiguchi Porcelain Clay formations of the Seto Group which are distributed in Aichi and Gifu prefectures, respectively (Yasui 1928; Miki 1939, 1941, 1957; Yamada et al. 2014). Here we report cones of P. fujiii from the Saikawa Formation in Kanazawa-shi, Ishikawa Pref., Japan. The age of the Saikawa Formation is estimated as 13.17–11.03 Ma based on calcareous nanofossils (Takayama et al. 1988), thus slightly older than those of the Seto and the Tokiguchi Porcelain Clay formations (10.5 ± 0.4–9.7 ± 0.4 Ma: Saneyoshi et al. 2000). This is the first finding of late Middle Miocene P. fujiii from the deposits other than the Seto Group.

Pinus fujiii (Yasui) Miki 1939

Pinus premassoniana Su-Ting Ding and Bai-Nian Sun from the upper Miocene of Zhejiang Province, China in umbo characters (Ding et al. 2013). However, these could be distinguished from P. premassoniana in having a weak transverse keel and a vallum.

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Fig. 1. *Pinus fujiii* cones from the Saikawa Formation. A. Lateral view showing general morphology. OSA TB9000. B. Close-up of an umbo in A. C. Lateral view of OSA TB9001. D. Apical view of OSA TB9002. E. Immature cone. OSA TB9003. m, mucro. Bar = 1cm A, C-E and 5mm in B.

References


