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Palaeobotany: Old but new stories on plant diversity

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Palaeobotanical records can increase our understanding of how extant plant diversity is generated. For example, a fossil plant can serve as an intermediate between two extant plant species with very different forms and can be used to study morphological evolution. As a fossil plant may be important when estimating the divergence time of a specific evolutionary lineage, the identification of informative plant fossils could further improve our understanding of extant plants.

Japanese palaeobotany started in 1877 when Hermann T. Geyler reported 12 Mesozoic plant fossils from the foot of Mt. Hakusan, Ishikawa Prefecture, Japan (Geyler 1877). Subsequently, Alfred G. Nathorst published the first comprehensive report on Japanese Tertiary flora in 1883. He described 67 species from the Late Pliocene of Mogi, Nagasaki-shi, Nagasaki Prefecture (Nathorst 1883; see Tanai 1976 for details). These foundational studies on Japanese palaeoflora were conducted by European palaeobotanists, and it was in 1889 that Matajiro Yokoyama published the first palaeobotanical study by a Japanese scientist. He reported 49 species, including 11 new species from the Mesozoic strata distributed in Kaga, Hida, and Echizen (corresponding to the present Ishikawa, Gifu, and Fukui Prefectures, respectively: Yokoyama 1889). Since then, 1,203 species (12 Paleozoic, 379 Mesozoic, and 812 Cenozoic) have been established based on macrofossil specimens collected in Japan (for a summary up to 1999, see Uemura et al. 2002).

The Journal of Plant Research (*JPR*), formerly *the Botanical Magazine*, *Tokyo* (*BMT*), has provided a platform for botany-based palaeobotanical studies (excluding geology-based studies). The first palaeobotanical note appeared in the miscellany of volume 2 (p. 17 of 1888), in which an anonymous editor provided a comment on the phylogenetic position of the Bennetitales by Graf zu Solms-Laubach. Later, Yasushi Suzuki reported permineralized conifers and fungi from the Cretaceous period of Hokkaido, Japan, as a new species (Suzuki 1910, *BMT* vol. 24). This was the first palaeobotanical article published in the *JPR* (*BMT*). By 2013, 72 palaeobotanical studies had been published, and 50 new macrofossil species (2 Paleozoic, 26 Mesozoic, and 22 Cenozoic) had been reported.

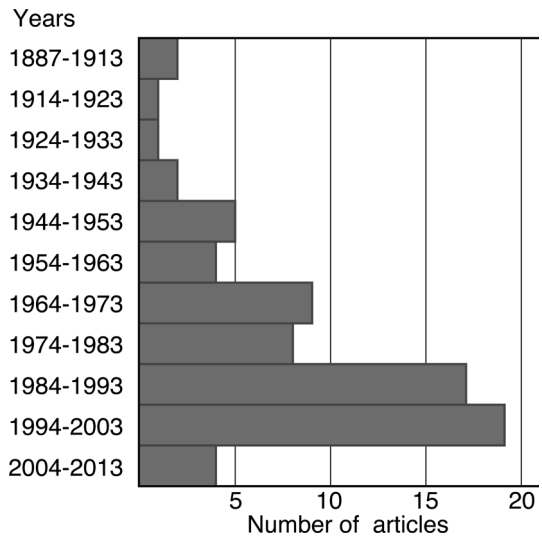

Fig. 1 The number of palaeobotanical articles published in *JPR* (*BMT*) since 1887

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Fig. 2 Participants of XIII IPC/IX IOPC Tokyo (Courtesy of the organizing committee of XIII IPC/IX IOPC Tokyo)

However, the number of palaeobotanical studies has significantly decreased in the past decade (Fig. 1).

From 23 to 30 August 2012, a joint meeting of the 13th International Palynological Congress (XIII IPC) and the 9th International Organisation of Palaeobotany Conference (IX IOPC) was held at Chuo University, Tokyo, Japan (Fig. 2), with the aid of the Botanical Society of Japan. A total of 514 participants from 50 countries attended the conference, and 576 studies were presented. This volume of *JPR* was organized by TY and HN, members of the organizing committee of XIII IPC/IX IOPC Tokyo, as a special issue commemorating the international conference held for the first time in Japan. Along with our request for contributions to the special volume, other palaeobotanical publications were planned in different countries in 2012. To our great pleasure, five contributions from four different countries were submitted to our publication. We would like to thank the authors and reviewers that helped maintain the scientific quality of the present issue. We hope that these articles will bridge paleo- and neo-botanical interests, and will be of interest to all scientists wanting an increased understanding of nature. We believe this volume can further enrich the quality of *JPR*. Finally, we would like to dedicate this special volume to the senior academics that made this meeting a success in 2012.

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