

HQR023-03

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Changes in vegetation and fire regimes since the mid-Holocene around Lake Rara, western Nepal

Nao Miyake^{1*}, Arata Momohara², Atsunori Nakamura³, Yusuke Yokoyama³, Makoto Okamura¹, Hiromi Matsuoka¹, Hideaki Maemoku⁴, Hiroshi Yagi⁵, Vishnu Dangol⁶, Toshiki Osada⁷

¹Faculty of Science, Kochi University, ²Chiba University, ³University of Tokyo, ⁴Hiroshima University, ⁵Yamagata University, ⁶Tribhuvan University, ⁷National Institutes for the Humanities

Vegetation and fire regime changes since the mid-Holocene were investigated using pollen, plant macrofossil and macroscopic charcoal records in a core sediment (Rara09-4) (29.5347°N, 82.0933°E and 3,000 m a.s.l.) from Lake Rara in western Nepal. The pollen record was divided into two local pollen assemblage zones (I and II), even though it was co-dominated by *Quercus* and *Pinus*, with *Abies*, *Picea* and *Betula* pollen throughout the core. In zone I (ca. 6,000 to 3,000 yr B.P.), *Quercus* pollen had high values of more than 50% of total tree pollen. On the other hand, zone II (ca. 3,000 yr B.P. to present) is characterized by the decrease in *Quercus* pollen and increase in *Pinus* pollen. Most of fossil *Quercus* and *Pinus* pollen grains were *Q. semecarpifolia* and *P. wallichiana* types, based on their SEM identification. Fossil leaves of *Q. semecarpifolia* type were founded frequently in the both zones. Macroscopic charcoal influx increased progressively in zone I. Based on these fossil records and spatial patterns of forest vegetation in the present, during the mid to late Holocene, *Q. semecarpifolia* and *P. wallichiana* predominated in the forests mainly on the south-facing slopes, whereas especially on the north-facing slopes evergreen conifer forests consisting of *Abies* and *Picea* with *Betula* were established. The decline of *Q. semecarpifolia* and dominance of *P. wallichiana* in zone I may have been caused by changes in fire regimes associated with combined effects of climate changes and intensified land-use activities around the lake.

Keywords: fire regime, Holocene, Lake Rara, plant remains, pollen, vegetation