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Man, Moa and the Forest

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Abstract

IN this paper, information from botanical, zoological, geological and archaeological sources has been brought together in order to suggest the inter-relationships of man, the forest and the moa. It is essentially a review of available information in an attempt to understand the changing ecological situation of pre-historic man in New Zealand.

IN 1953, C. A. Fleming wrote that "extinction of the moas (and their companions) is the most outstanding faunal change of the Recent Period of New Zealand" (Fleming, 1953: 118). The moa and many of the other birds had survived the Ross, Waimaungan and Otiran glaciations of the Pleistocene. According to the generally accepted theory of moa ecology, these birds belonged to the open tussock areas. If this were so, then the almost tundra conditions during and following the Otiran glaciation should have suited them far better than the previous and subsequent forest-covered landscape. If the moa belonged to an established grass-land habitat, then one would expect to find other open country birds associated with them, but these are relatively rare (Oliver, 1955).

The earliest record of the moa is from Maungapurua, Upper Wanganui, where it occurs in an approximate Upper Kapitean (uppermost Miocene) horizon (Fleming, 1962b: 81). The moas were probably present as early as the Upper Cretaceous (Fleming, 1962a: 272). Climate at this time was probably moist warm temperate (Fleming, 1962b: 66) and shows the rise of *Angiosperm* plants. Oliver (1950: 6), in discussing the fossil pollen of Shag Point in Otago, specifically refers to *Araucariaceae* and *Podocarpaceae*, the former including *Agathis lanceolatus*, a kauri-type tree. Oliver likens the flora to that of the mid-mountain zone of New Guinea (Oliver, 1950: 6). During the late Cretaceous, the land connections which may have existed beyond New Caledonia deteriorated and were not again possible until the Miocene (Fleming, 1962b: 105). By the uppermost Miocene the earliest moa fossil is identifiable as *Pachyornis mappini* (Oliver, 1949: 65), indicating that diversification and speciation had already taken place and suggesting strongly that the postulated Cretaceous immigration of the moa genera could be correct. The diversification of the moa could have been due to the "changing archipelagic stage in New Zealand history during the Tertiary epoch" (Fleming, 1962b: 68). The Paleocene-Eocene periods had a warm tropical climate with many forest plants dominated by the Cretaceous podocarps (Fleming, 1962b: 70), with new arrivals including *Nothofagus* of the *fusca* groups which tended to replace the podocarps

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