

**THE EVOLUTION OF THE SMALL APE NICHE**

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The development of increasingly seasonal terrestrial environments in the late Miocene was reflected in changes in the diversity, distribution, and physical structure of mammalian species. In primate evolution, the late Miocene witnessed the extinction of many large ape species, a reduction in occurrences of ape species sympatry, and a decrease in abundance of apes in regions where they remained. This occurred because of the decline in the distribution of continuous tracts of tropical forests and a concomitant increase in the distribution of more highly seasonal forests and woodlands. Apes are not well suited to strongly seasonal environments because their long life spans, long gestation times, long interbirth intervals, delayed age of first reproduction in females, and high degrees of encephalization cannot be sustained in environments with sparser and less predictable distributions of high-quality foods. By the terminal Miocene, species of small apes (body mass <10 kg) had become more common throughout Eurasia. Some were probably phyletic dwarfs. Most were characterized by adaptations for suspensory locomotion and levels of encephalization comparable to those of monkeys. This morphological combination permitted exploitation of widely dispersed, high-quality plant foods in more seasonal environments. Modern gibbons are the only living examples of late Miocene small apes, but their considerable diversity -- including species able to survive at relatively high altitude and one adapted to an exclusively folivorous diet -- illustrates the versatility of the small ape adaptation and the importance of the small ape niche in understanding the evolution of modern primate faunas.

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