

Home range and ranging behaviour of bornean elephant (*elephas maximus borneensis*) females

Abstract

Background: Home range is defined as the extent and location of the area covered annually by a wild animal in its natural habitat. Studies of African and Indian elephants in landscapes of largely open habitats have indicated that the sizes of the home range are determined not only by the food supplies and seasonal changes, but also by numerous other factors including availability of water sources, habitat loss and the existence of man-made barriers. The home range size for the Bornean elephant had never been investigated before. Methodology/Principal Findings: The first satellite tracking program to investigate the movement of wild Bornean elephants in Sabah was initiated in 2005. Five adult female elephants were immobilized and neck collars were fitted with tracking devices. The sizes of their home range and movement patterns were determined using location data gathered from a satellite tracking system and analyzed by using the Minimum Convex Polygon and Harmonic Mean methods. Home range size was estimated to be 250 to 400 km² in a non-fragmented forest and 600 km² in a fragmented forest. The ranging behavior was influenced by the size of the natural forest habitat and the availability of permanent water sources. The movement pattern was influenced by human disturbance and the need to move from one feeding site to another. Conclusions/Significance: Home range and movement rate were influenced by the degree of habitat fragmentation. Once habitat was cleared or converted, the availability of food plants and water sources were reduced, forcing the elephants to travel to adjacent forest areas. Therefore movement rate in fragmented forest was higher than in the non-fragmented forest. Finally, in fragmented habitat human and elephant conflict occurrences were likely to be higher, due to increased movement bringing elephants into contact more often with humans.