Understanding the spatial distribution and hot spots of collared Bornean elephants in a multi-use landscape

ABSTRACT

In the Kinabatangan floodplain, Sabah, Malaysian Borneo, oil palm and settlements have reduced and fragmented lowland tropical forests, home to around 200 endangered Bornean elephants (Elephas maximus borneensis). In this region, elephants' range within forests, oil palm and community areas. The degree to which elephants are using these areas remains unclear. We used GPS telemetry data from 2010 to 2020 for 14 collared elephants to map their entire known ranges and highly used areas (hot spots) across four land use categories and estimate time spent within these. The use of land use types across elephants varied significantly. Typically, females had strong fidelity to forests, yet many of these forests are threatened with conversion. For the three males, and several females, they heavily used oil palm estates, and this may be due to decreased landscape permeability or foraging opportunities. At the pooled level, the entire range and hot spot extents, constituted 37% and 34% for protected areas, respectively, 8% and 11% for unprotected forests, 53% and 51% for oil palm estates, and 2% for community areas. Protecting all forested habitats and effectively managing areas outside of protected areas is necessary for the long-term survival of this population.