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### Ecology and Conservation of Sumatran Elephants (*Elephas maximus sumatranus*) in Sumatra, Indonesia

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Abstract  
Sumatran elephant (*Elephas maximus sumatranus*) populations continue to decline due to habitat loss, poaching and conflict with humans. In Sumatra, elephant populations are fragmented into small isolated populations and increasingly cause conflict with humans. Yet, habitat loss due to the rapid land conversion for development is continuing an alarming situation. Developing effective land conservation strategies for elephants is difficult because there is little information available on foraging ecology, habitat use, movements and home range behaviors. I conducted a study on these topics in Seblat, Bengkulu Province, Sumatra during 2007-2008. The five important families of plants in the elephant diet in Sumatra are: Moraceae, Arecaceae, Fabaceae, Poaceae, and Euphorbiaceae. Elephants in Seblat tend to browse more than graze and elephants tend to browse more during the wet season. The nutritional quality (Crude Protein, Calcium, Phosphorus and Gross Energy) of elephant diet in Seblat is suitable to support population reproduction and growth. Home range size of one telemetered 97.4 km<sup>2</sup> for the MCP and 95.0 km<sup>2</sup> for the 95% fixed kernel. There was no relation between average monthly elephant

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home range sizes and rainfall, nor any correlation between monthly elephant movement distances and rainfall. Vegetation productivity, as measured by the Enhanced Vegetation Index (EVI), was probably the factor most affecting elephant movements compared to the distances to rivers and ex-logging roads on the SECC. Resource selection analyzes indicate that elephants in Seblat seem to select medium canopy and open canopy areas more than expected. Similarly, habitat ranking using compositional analysis shows that in 2<sup>nd</sup> order and 3<sup>rd</sup> order selection, medium canopy and open canopy were the two habitat types with a greater level of used. Habitat use based on diurnal and nocturnal elephant activities indicates that elephants preferred closed canopy habitat compare to the open canopy habitat during the day. The results of this study suggest wide conservation implications for elephants on Sumatra, helping to guide effective land use conservation programs and provide scientific guideline to restore disturbed habitat and select priority areas for Sumatran elephants.

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