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Biodiversity of Beetles (Coleoptera) in Areas under Participatory Forest Management in Kafa Biosphere Reserve, Ethiopia

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Abstract

The UNESCO Kafa biosphere reserve is located in western Ethiopia in the Southern Nations Nationalities and People's Region. Kafa is one of the last mountain cloud forest regions in Ethiopia. The Kafa biosphere reserve is around 760,000 hectares and is largely covered by mountain cloud forests where wild coffee *Coffea arabica* grows. However, creeping deforestation and the spreading of agriculture are threatening the reserve. Areas under participatory forest management (PFM) are mostly used to grow coffee as understorey tree in the montane rainforest. Other ecosystems include bamboo forest, the bamboo is used for construction, and wetlands partly used for grazing cattle. Projects are underway for protecting, reforesting and sustainably using the wild coffee forests and their biological diversity. Intense field work was conducted in December 2014 in order to conduct for the first time a comprehensive assessment of the biodiversity of beetles (Coleoptera) in the Biosphere reserve. A wide range of habitats and altitudinal gradients were covered. Various sampling and trapping methods used proved to be effective, including sifter, sweeping net, aerial insect car net, Barber pitfall traps, light trap and flight intercept trap. 400 beetle species belonging to 79 $^{\text{families}}/_{\text{subfamilies}}$ were recorded, almost all major beetle families occurred in the sampled sites. Within 10 sampling days and despite collecting during unfavourable season, 164 Staphylinidae species were recorded, out of ca. 530 known for Ethiopia (30 %). In the bamboo forests, phytotelmata were discovered, hidden freshwater habitats yet unknown for Ethiopia. Species diversity in PFM forest sites was found to benefit when moisture in the ground layer is kept by the presence of large trees, or microstructures like climbing plants, tree holes, or diversity in shrubs and herbs.

Keywords: Biodiversity, *Coffea arabica*, Coleoptera, mountain cloud forest

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