ASSESSMENT OF HUMAN-ELEPHANT CONFLICT IN COASTAL VILLAGES OF EPE, LAGOS STATE, NIGERIA

BY

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ABSTRACT

Human-Elephant conflict (HEC) presents a critical conservation and socio-economic challenge across many regions of Africa. This study assessed Human-Elephant Conflict in coastal villages of Epe in Lagos State, Nigeria. A multi-stage sampling technique was used to select three out of eight villages in the study area. A structured questionnaire was used to collect information from affected farmers through a snowball sampling approach. Fifty-three respondents gave valuable answers to the questions. Camera traps were placed along elephant trails to confirm their presence while GIS and remote sensing devices were used to identify conflict hotspots and analyzed land-use changes. Crop damages were assessed using five quadrats (10 m^2) per farmland. Economic losses were estimated by multiplying the quantified damaged crops by their market price. Fecal analysis was conducted to determine the dietary composition of elephants. Heavy metal contamination in elephant fecal samples, soil, water and plants were analyzed using standard procedures to assess ecological health and potential wildlife threats in the study area. Data were analyzed using descriptive and inferential statistics. Results confirmed widespread elephant presence. Annual financial losses per farmer varied with cassava losses ranging from ₦61,800.00 – ₦107,450.00, maize from ₦286,800.00 – ₦440,400.00 and plantain from ₦16,800 – ₦26,400.00. Land Use and Land Cover Analysis from 2011–2023 showed significant agricultural expansion, leading to increased HEC incidents. Normalized Difference Vegetation Index analysis confirmed declining vegetation cover due to deforestation and reducing forage availability for elephants within the study period. Microhistological fecal analysis revealed that forest elephants foraged on a total of eleven plant species from nine different families during the wet season but only five species from five families in the dry season. Heavy metal contamination analysis showed significant seasonal variations in metal concentrations across fecal, soil, water and plant samples. Plant analysis revealed Cd, Pb, and Cr levels

exceeding WHO permissible limits. Hog plum had Cd concentration (4.90 ± 1.70 mg/kg) far above the WHO limit (0.2 mg/kg). During the wet season, lead (Pb) concentrations in sandpaper (4.09 ± 2.62 mg/kg) and plantain (4.80 ± 1.71 mg/kg) exceeded the permissible threshold of 2.0 mg/kg. Soil analysis revealed that Cd level (1.02 ± 0.91 mg/kg) surpassing Sweden's limit of 0.4 mg/kg with high Fe concentrations (259.79 ± 83.17 mg/kg) in the wet season. Fecal analysis showed significant heavy metal concentration with Cd measuring at 7.43 ± 1.88 mg/kg and Pb at 4.53 ± 1.56 mg/kg during the wet season. Water samples contained Cd (0.10 ± 0.02 mg/L) exceeding the WHO limit of 0.003 mg/L, while Pb (0.05 ± 0.03 mg/L) and Cr (0.16 ± 0.10 mg/L) levels also surpassed safe thresholds. Farmers' attitudes toward elephant conservation indicated predominantly negative perceptions, with most farmers (60.4%) viewing elephants as destructive pests due to frequent crop damages and financial losses. The study concluded that HEC persists as a major challenge in Epe coastal villages, driven by agricultural expansion and habitat degradation, causing financial losses for farmers and significant heavy metal contamination in the area, highlighting the need for urgent conservation efforts and effective conflict mitigating strategies.