

Abstract

Developing countries are witnessing rapid expansion of electrical infrastructure to meet increasing energy demands, prompting a critical need to assess the potential impact on avian biodiversity. Leveraging open access data, our study conducted a comprehensive assessment to detect electrocution and collision risk hotspots in Kenya while identifying raptor species highly susceptible to these risks. Through an integrated approach that considers morphological and behavioral traits of the species, environmental factors at the site, and technical parameters of the power lines, we developed risk maps and categorized raptors' susceptibility into high, medium, and low-risk levels. Applying this framework, we identified three raptor species at high risk of electrocution; the long-crested eagle, the augur buzzard, and the steppe eagle. Meru and Kiambu counties emerged as high-risk areas due to substantial overlap between high-risk buffer zones and areas with high raptor species distribution. It is worth noting that this framework only accounts for thirteen raptor species, and there is scope to expand it in the future to include other avian species, such as storks, bustards, pelicans and flamingos, which are also susceptible to electrocution and collision incidents and measures to mitigate electrocution of raptors may not be sufficient for these other group of birds.