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A power line risk assessment for selected South African birds of conservation concern

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2012-01-18
http://hdl.handle.net/10539/11067

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ABSTRACT

A selection of southern African bird species were modelled in terms of the probability of these species colliding with or being electrocuted on overhead power lines in South Africa, based on morphological and behavioral factors. Species were included in the model on the basis of internationally recognized vulnerability to these interactions at the family level. The collision model performed poorly when tested against the actual reported mortalities for species contained in the Eskom-EWT Strategic Partnership Central Incident Register CIR)(chi-square of goodness of fit) at the individual species, family and within family levels. The electrocution model performed slightly better at the family, and within family level. Both collision and electrocution models performed better for the physically larger species (and families) and for those species with higher modelled probability of collision or electrocution. As the product of random carcass detection and reporting, the CIR data are biased in various ways. Testing the models against the CIR is therefore equally important for highlighting inadequacies in the CIR, as in the model. A number of new species have emerged as being of high collision (including most importantly African Pygmy Goose, Southern Ground Hornbill, Black-bellied Bustard, Yellow-throated Sandgrouse, Caspian Tern, Hooded Vulture, Bateleur, African Marsh Harrier, Black Harrier, Pink-backed Pelican and Yellow-billed Stork) or electrocution (Southern Bald Ibis) probability in theoretical terms, and will require further investigation to determine their actual probability of interaction. By mapping the combined distributions of those species with high probabilities of collision and/or electrocution mortality, a number of priority high risk geographic areas emerge around the country.