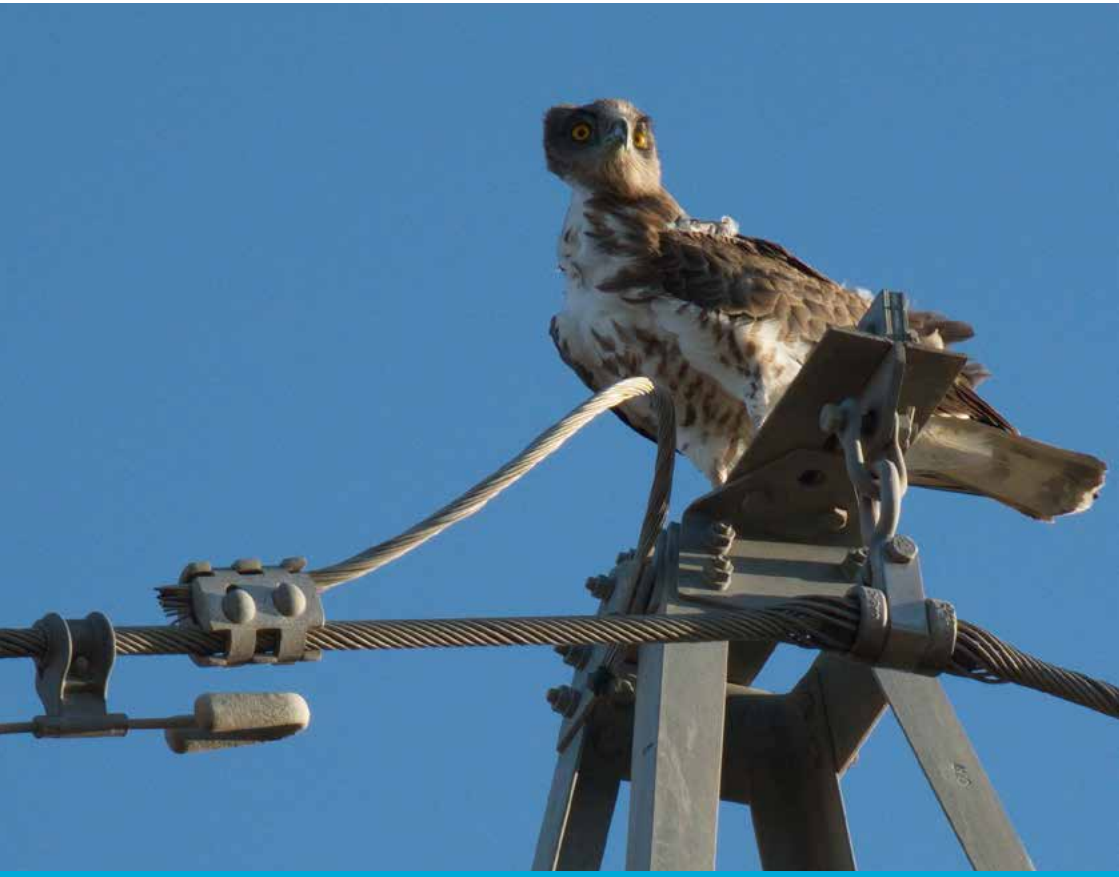
Wildlife and power lines

Guidelines for preventing and mitigating wildlife mortality associated with electricity distribution networks

Editors: Justo Martín Martín, José Rafael Garrido López, Helena Clavero Sousa and Violeta Barrios



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9.2. Americas

CASE STUDY 3

Power lines and wildlife in South America

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Power line impacts on wildlife are a global conservation issue. In Europe and North America, wildlife collisions and electrocutions on power lines have been extensively addressed and are recognised as a growing threat to biodiversity. However, this problem has been largely overlooked in other parts of the world, such as South America. As a result, and with few exceptions, there is a lack of systematic assessments of the impact of this source of mortality on wildlife populations in these areas (Lehman et al., 2007; Bernardino et al., 2018).

One of the groups of animals most frequently affected by electrocution on power lines is raptors, due to their behaviour and size. South America harbours almost a third of the globally recognised raptor species (Sarasola et al., 2018), but recorded electrocution incidents are anecdotal, with few events in Chile, Brazil and Argentina (Valenzuela, 2009; Alvarado-Orellana & Roa-Cornejo, 2010; Ibarra & De Lucca, 2015; Sarasola & Zanón-Martínez, 2017; Galmes et al., 2018; Gusmão et al., 2020; Sarasola et al., 2020). In these countries, electrocutions mainly occur on three-phase medium-voltage (12–13.2 kV) distribution lines. Additionally, in central Argentina incidents have also been reported on single-phase low-voltage (7.2 kV) lines, even though these are less common (Figure 188 C). Electrocution incidents are also linked to poles and crossarms made of conducting materials (e.g. steel-reinforced concrete or metal), and with jumpers above the crossarms. On these lines, birds perch directly on the top of the grounded pole with little clearance between themselves and a jumper wire attached to the top of the pole (Galmes et al., 2018; Sarasola et al., 2020; Figure 189 E).

In Argentina, species affected by electrocution on power lines include at least two parrots, one owl and five diurnal raptor species: black-chested buzzard eagle

(*Geranoetus melanolecus*), variable hawk (*Buteo polyosoma*), turkey vulture (*Cathartes aura*), black vulture (*Coragyps atratus*) and Chaco eagle (*Buteogallus coronatus*) (Sarasola & Zanón-Martínez, 2017; Galmes et al., 2018). The Chaco eagle (Figure 188 A and D) is the only species of conservation concern in South America for which electrocution is considered a major threat to its populations, due to the high number of incidents in comparison with local abundances (Galmes et al., 2018) but also with regard to its global population size (Sarasola et al., 2020).

In Chile, apart from a single mention of an owl species, avian electrocution events are restricted to the black-chested buzzard eagle (Valenzuela, 2009; Alvarado-Orellana & Roa-Cornejo, 2010), which is also the species most affected by electrocution in Argentina (Ibarra & De Lucca, 2015; Sarasola & Zanón-Martínez, 2017). Notably, in both countries, juveniles comprised the bulk of the electrocution incidents involving this eagle species, which are probably related to the large aggregations of juveniles that form during dispersal in areas with high-risk poles (Figure 188 B).

In both Argentina and Chile, increased social awareness of avian electrocution resulted in the implementation of mitigation measures, which included retrofitting of power line pylons (Figure 189 F). However, such measures were implemented at a local scale (on particular poles) and not as part of conservation strategies at regional or country levels, with the exception of La Pampa province in central Argentina, where a power line of over 40 km was constructed to avian-friendly designs (Figure 189 G and H).

Electrocution has been reported for harpy eagles (*Harpia harpija*) in Brazil (Gusmão et al., 2020). Two juveniles and one adult died on rural overhead distribution lines operating at a standard low voltage of 13.8 kV.

Reports of wildlife collisions with power lines in South America are even more scarce than those for avian electrocution. Avian collision is mentioned for a swan species in Chile (Valenzuela, 2009), harpy eagles (Aguiar-Silva et al., 2014) and two species of terns (see below) in Brazil, Andean condors (*Vultur gryphus*) in Argentina, Chile and Peru (Plaza & Lambertucci, 2020) and turkey vultures on high-voltage transmission lines in central Argentina (Sarasola, unpub. data).

Besides birds, other vertebrate taxa may be involved in power line incidents. For instance, primates and bats are potential victims of electrocutions (Al-Razi et al., 2019; Tella et al., 2020). However, in spite of their high diversity and abundance in tropical forests of South America, there are only a few published records of these vertebrates being electrocuted in Brazil and Colombia (Lokschin et al., 2007; Pereira et al., 2019; Montilla et al., 2020).

Although power lines may not pose a risk to all types of wildlife, the lack of incidents registered for potentially affected species, and more importantly for those categorised as threatened with extinction, is likely a consequence of inadequate survey efforts at a regional scale. Future research in this region should focus on effectively assessing the impact of power line electrocutions and collisions on biodiversity.

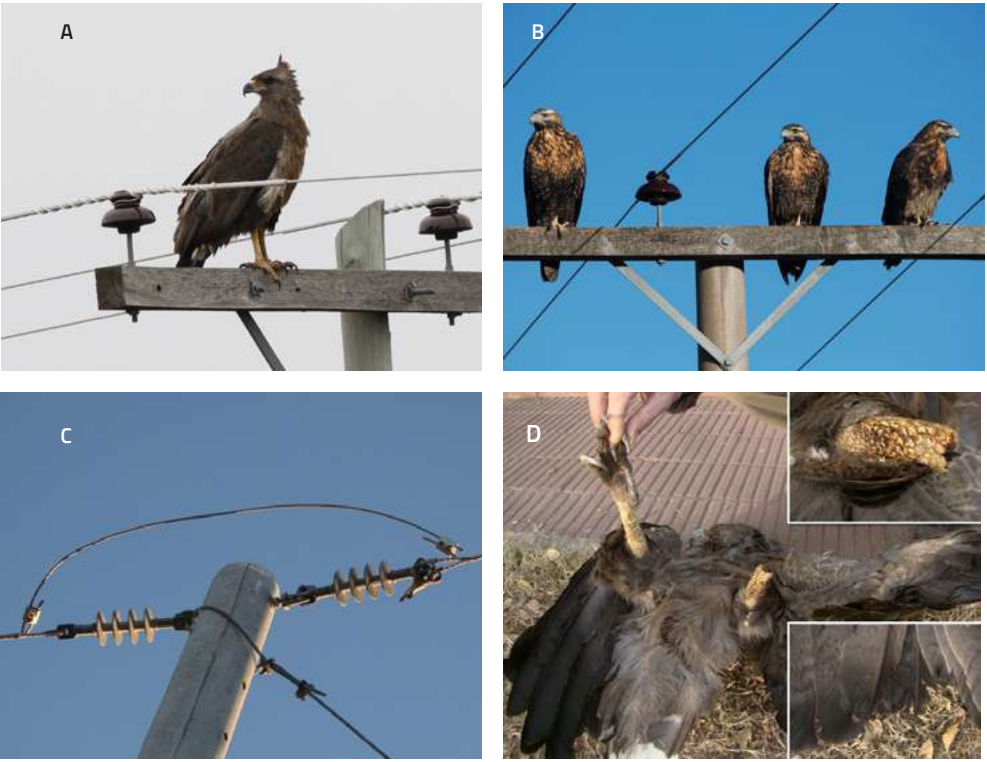

Figure 188. A: A juvenile Chaco eagle perched on a power line pole in western La Pampa province, Argentina. B: Juvenile black-chested buzzard eagles are among the raptor species most affected by electrocution mortality in southern South America, probably due to individual aggregations related to juvenile dispersal movements. C: Raptor electrocution is often reported on single-phase low-voltage lines in Argentina, particularly on steel-reinforced concrete poles with jumper wires, which are more dangerous for raptors. D: Note talons and part of tarsus of an electrocuted Chaco eagle that remained on the energised cable. © J.O. Gjershaug, José Hernán Sarasola and Maximiliano Galmes/CECARA

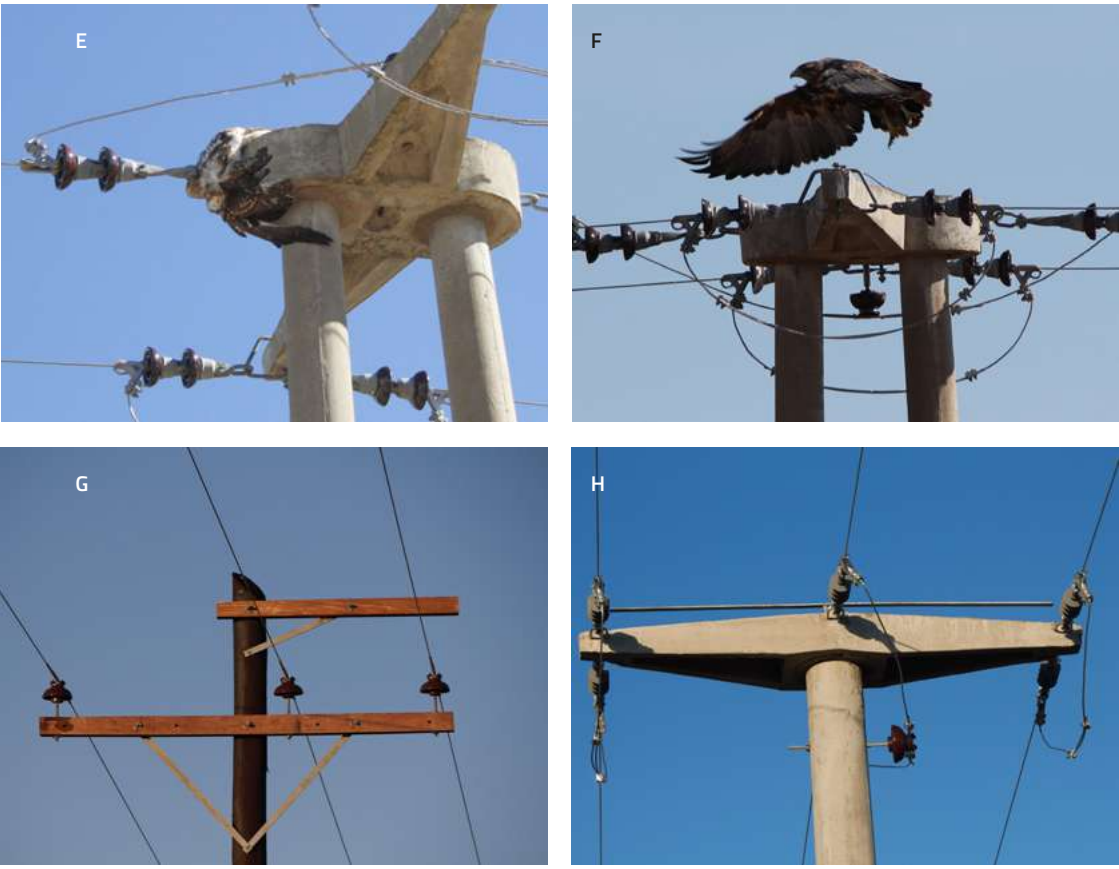

Figure 189. E: An electrocuted variable hawk in central Argentina on a pole combining wire jumpers above the crossarm with a dangerous construction material (steel-reinforced concrete). F: Black-chested buzzard eagle flying from a retrofitted pole where jumper wires were moved below the crossarm to reduce electrocution risk. G and H: Bird-friendly pole designs over 40 km of a newly built power line in Argentina. © José Hernán Sarasola and Maximiliano Galmes/CECARA