



Refuge for Wildlife

Protecting Costa Rica's Wildlife

An International Animal Rescue Partner

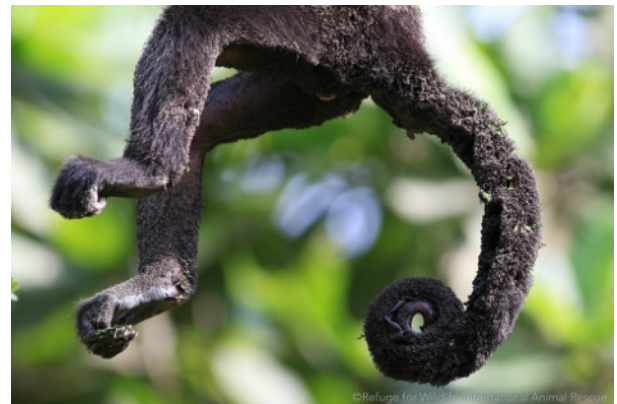
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WILDLIFE ELECTROCUTIONS

Refuge for Wildlife has been established for 20 years and was granted non-profit foundation status in 2015 (Fundación Albergue de Animales de Nosara). It was formed to help protect wildlife in the Nosara area of Guanacaste. As residential and commercial development has grown in the area, electrocutions are the main factor driving wildlife rescue activity. The main victims of electrocutions in the Nosara area and the coastal towns to the north and south, are howler monkeys. Over two thirds of howler monkey related incidents in the area are as a direct result of electrocution; other factors include; dog attacks, traffic accidents and alpha male attacks.



As urban development has expanded, the trees have been cut down and overhead electrical cables have been installed to provide power to the new homes and businesses. This development seems to have progressed with little regard to the environment, habitat or the wildlife residing in these areas.



Monkeys and other arboreal wildlife often resort to using the overhead power cables as aerial runways to make their way between fragmented areas of habitat. The cables provide an efficient, but lethal, way for the monkeys to travel through the urbanized forest. All too often, the monkeys suffer from horrific injuries and violent deaths when climbing or traveling on uninsulated power cables and transformers. To be electrocuted, all they have to do is touch two uninsulated cables, a live cable and something grounded to earth (like the pole apparatus, earth wires, guy lines or even trees) or any uninsulated components on a transformer.

In addition to the treacherous electric cables, tree loss due to development means that animals may have to travel on the ground. This is extremely dangerous for howler monkeys



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as they cannot move quickly on the ground and would rarely naturally leave the safety of the tree canopy. This puts them at risk from traffic accidents and dog attacks.

Many wildlife deaths/injuries go unreported or unseen in heavily forested areas; therefore, it is difficult to know the exact number of electrocutions each year. According to SINAC ⁽¹⁾ (Sistema Nacional de Areas de Conservacion - The government department under the Environment Ministry that is responsible for Wildlife and Conservation Areas), over the last five years in the Tempisque Conservation Area it has received reports of 624 electrocuted adult monkeys and 165 orphans.



In 2018 and 2017, Refuge for Wildlife responded to more than 200 electrocuted howler monkeys. Almost half of these were either killed outright at the scene or, following a comprehensive veterinary assessment, had to be euthanized due to the severity of their injuries. Charged with adrenaline, some injured electrocuted monkeys managed to flee into the forest; it is unknown how many of these animals would have

survived. In some cases, the Refuge for Wildlife had to respond again to these sick or dead animals a few days later. Monkeys that cannot be caught to receive medical treatment often self amputate limbs and/or die from severe infection or internal damage in the wild.

Of the electrocutions that Refuge for Wildlife responded to, approximately one third of the monkeys were brought to the Rescue Center for emergency treatment in the specialist clinic. The most common injuries are severe electrical burns, loss of limbs and critical internal organ damage. The severity of injuries depends on the voltage, the type of current (AC/DC), environmental conditions, the path the electrical current took through the body and whether or not the monkey is thrown from the cables/ transformer or if their muscles contracted due to electricity such that they gripped the live electrical equipment.

The prognosis for electrocuted monkeys is not good. External wounds may be treated; however, the internal damage can be very serious and slower to manifest. Electrocution injuries have a deleterious biochemical affect on the bodies of mammals, which can lead to irreversible organ damage. Of the monkeys brought





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to the clinic, approximately two-thirds succumb to their terrible injuries.

The Ministerio de Ambiente y Energía (MINAЕ - Environment Ministry) has listed the mantled howler monkey as an endangered species ⁽¹⁾ because of their susceptibility to electrocution.

With a 24 hour wildlife emergency hotline, the Refuge for Wildlife has a rescue team that is trained to use specialist equipment to rescue animals that are trapped on electrical equipment that would otherwise die without assistance.

A common scenario is for the electrocution victims to be a mother and baby howler monkey. Very often, because the mother touches the live cables or transformer, she is killed by the electrocution; however, the infant riding on her usually survives. The injuries on the infant seem to be less severe than on mother because the mother absorbs most of the electrical current. Usually the infants only sustain visual injuries to the parts of their body that were touching their mother; hands, feet, tail and stomach. Sometimes, if the mother catches fire from the electrocution, the infants have extensive burns to their bodies. The possibility of internal tissue damage is increased depending on the severity of the injuries and loss of limbs is not uncommon.



The rescue team are often faced with more than one injury/death as members of the howler monkey troop will try to assist the electrocuted monkey and become electrocuted themselves.

Where the electrocution victims do survive, they enter into the Refuge for Wildlife rehabilitation process. For an infant, this means hand rearing until the monkey is weaned and can be more independent. They then have to learn to climb, socialize and become 'wild'. Eventually, after 2-3 years, if the animals demonstrate the skills needed to survive in the wild, they can be released together as a troop into a safe area of forest. It is always Refuge for Wildlife's goal to release all wildlife back to the wild. Where this is not possible, it will provide sanctuary facilities or find a more suitable specialist facility, depending on the species.



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The economic cost of wildlife electrocutions to the various rescue centers around Costa Rica is significant. The cost of veterinary care, rehabilitation, release and sanctuary facilities is hundreds of thousands of dollars.

In May 2018, the Ministry of Environment and Energy (Ministerio de Ambiente y Energia - MINAE) and the National System of Conservation Areas (Sistema Nacional de Areas de Conservacion - SINAC) hosted a seminar in San Jose to present their 'Guide for the prevention and mitigation of electrocution of wildlife by electric power lines in Costa Rica' (Guía para la prevención y mitigación de la electrocución de la fauna silvestre por tendidos eléctricos en Costa Rica) (1).



It is excellent that the government recognize that wildlife electrocution is a serious issue and understand that action must be taken to address this situation.

In the report, MINAE and SINAC have provided guidelines for electrical companies to follow including; collecting fieldwork data on the impact of electrocutions, training local residents to spot and report potential problems and stopping electrocutions through preventative measures.

Preventative measures include assessing the risk to wildlife when considering locations for new lines and transformers, pruning trees to prevent wildlife access near cables, providing rope bridges for safe crossings, installing wildlife protection equipment on transformers and using insulated power cables. Refuge for Wildlife hopes that these guidelines will be funded and implemented in a systematic way as soon as possible.

The report lists several national laws in Costa Rica that should serve to protect wildlife and biodiversity against dangers and threats:

- Law of Conservation of Wildlife (Ley de Conservación de la Vida Silvestre) No. 7317
- Biodiversity Law (Ley de Biodiversidad) No. 7788
- Organic Law on the Environment (Ley Orgánica del Ambiente) No. 7554



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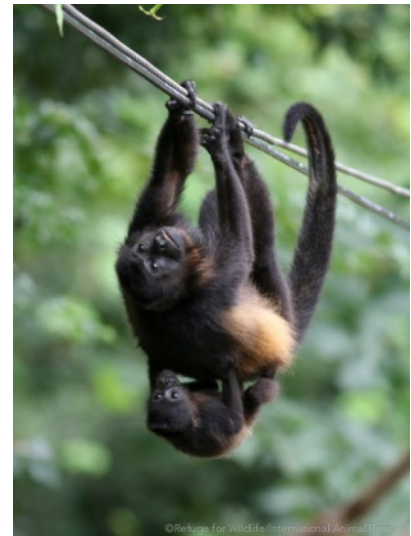
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- As power disruptions can be caused by electrocutions, regulatory law No. 7593 and decree No. 29732 from the Autoridad Reguladora de los Servicios Públicos (ARESEP) which requires electricity companies to provide continuous power.

Article 11 of the Law of Biodiversity No. 7788 states that preventive criteria that must be applied to prevent the loss of biodiversity, indicating that it is recognized that it is vital to anticipate, prevent and mitigate the causes to the loss of biodiversity or its threats. In addition, the precautionary criterion of the same article indicate that; when there is danger or threat of serious or imminent damage to the elements of biodiversity, the absence of scientific certainty should not be used as a reason to postpone the adoption of effective protection measures (1).

Article 17 of the Organic Environmental Law No 7554 states that any project, work or service must meet the requirement of an environmental impact assessment. According to decree 31849, new development projects that involve electrical distribution lines must carry out an evaluation of the potential impact of electrocution on biodiversity. Decree 32079, states that projects must take actions to avoid harming the environment from dangers that might upset the ecosystem (1).



It would seem that the approval and enforcement for environmental impact assessments resulting from development sits under the National Environmental Technical Secretariat. (Secretaría Técnica Nacional Ambiental - SETENA (1)).



Although the above laws exist and should serve to protect the environment, biodiversity, habitat and wildlife from the adverse affects of development, they are either ineffective or not properly enforced. It is still common to see new electrical installations without mandatory protection.

As a result, Refuge for Wildlife has been forced to employ local wildlife protection strategies, which are dedicated to preventing electrocutions. The 'Stop the Shocks' program prevents deadly electrocutions by combining; tree trimming (to prevent wildlife accessing the power lines), installing rope bridges to provide safe



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aerial pathways and fundraising to purchase insulation equipment to cover live transformers. So far in 2018, Refuge for Wildlife has spent over US\$14k on wildlife protection equipment.

The local ICE office (the electric company) has donated many hours to help install the wildlife protection equipment that Refuge for Wildlife has purchased. Their trained electrical engineers and special equipment are required to work on the power lines. In addition, ICE has replaced a lot of the power cables in Playa Guiones with semi-

insulated cables, drastically lowering the number of electrocutions from power cables themselves. This activity is localized in Nosara/Guiones; Refuge for Wildlife do not know whether it replicated in other regions.

There seems to have been more support from ICE since the MINAE report was presented in May 2018; however, the work is still predominantly reactive with sites where electrocutions take place taking priority. There needs to be a holistic prevention strategy that proactively protects the equipment and ensures that any new installations are safe.

The cost to make electrical distribution safe for wildlife is high and a consideration when discussing a change in policy - it would need to be costed and properly funded. The current cost of insulating a small residential transformer is currently too high and can range from \$250 to \$500 (high voltage transformers can cost more than \$1500).

In Playa Guiones, the development has been largely unplanned, unregulated and fast. As a result, the electrical distribution system seems quite haphazard; there are many single residential and commercial properties with their own pole-mounted transformers, rather than a more centralized final distribution sub-station design. This significantly increases the amount of electrical apparatus to protect. In addition, to meet the growing demand from rapid development in the town, the supply voltage has been increased in





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some areas, which has been problematic for previously insulated equipment. Following the voltage increase, there seems to have been more cable fires (seen when trees branches brush the semi-insulated cables) resulting in stretches of uninsulated cable.

Retrospectively replacing thousands of kilometers of insulated power lines and protecting countless transformers would be a big and expensive project. However, there are certainly locations that could be prioritized and any new installations should be subject to the correct environmental assessments and, where there is a risk to wildlife, installed in a safe manner. Maintenance of the installed protection equipment should be routine.

In addition to the negative impact on wildlife, electrocutions also cause damage to the electrical apparatus that must be repaired and disruption to power supply, which results in economic losses for many local businesses. There is also a risk that the graphic nature of wildlife electrocutions will affect Costa Rica's global image as a location for biodiversity and ecotourism. Visitors coming to Costa Rica to experience the ecological paradise are shocked to see the precious wildlife being affected in such a horrific manner due to unregulated development. With social media so prolific, these stories regularly circulate. As a result, the press is certainly taking an ever increasing interest in this subject as it is clearly at odds with 'Brand' Costa Rica.



Reference:

- (1) Ministry of Environment and Energy (Ministerio de Ambiente y Energia - MINAE) and the National System of Conservation Areas (Sistema Nacional de Areas de Conservacion - SINAC): 'Guide for the prevention and mitigation of electrocution of wildlife by electric power lines in Costa Rica' (Guía para la prevención y mitigación de la electrocución de la fauna silvestre por tendidos eléctricos en Costa Rica) - Presented May 2018.



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Wildlife Electrocutions Summary

- Unregulated Human development is impacting wildlife through habitat fragmentation and the installation of unsafe electrical distribution equipment
- Arboreal wildlife use electrical cables as aerial runways to link up fragmented forest
- Electrocutation causes extreme burns, life-threatening injuries and death
- Electrocutation is the main contributor to howler monkey rescues at Refuge for Wildlife
- The prognosis for electrocuted howler monkeys is very poor
- There are laws in Costa Rica that require electrical distribution to be safe for wildlife; however these are either ineffective or unenforced
- In May 2018, MINAE/SINAC has acknowledged the problem and issued guidelines, it remains to be seen whether these are funded and mandated.
- Refuge for Wildlife has 20 years experience rescuing and rehabilitating electrocuted howler monkeys
- Refuge for Wildlife has implemented local prevention strategies under the 'Stop the Shocks' Program

Refuge for Wildlife Statistics for 2017 & 2018

- 64% of howler emergencies were due to electrocution
- 45% of electrocuted howler monkeys were either dead on site or immediately euthanized due to the severity of their injuries
- 30% of the rescued electrocuted howlers that received treatment in the clinic survived
- 57% of infants rescued were orphaned/injured due to electrocution

Notes to the Editor

- For further information please contact gavin@internationalanimalresuce.org or laura@refugeforwildlife.org
- Based in Nosara, Costa Rica, Refuge for Wildlife was founded in 1999 by Brenda Bombard.
- Refuge for Wildlife was granted non-profit status in Costa Rica in 2015 under the foundation name Fundación Albergue de Animales de Nosara.
- In 2017 Refuge for Wildlife became an International Animal Rescue Partner Project
- US tax deductible donations can be made online via PayPal: www.refugeforwildlife.org/donate
- Refuge for Wildlife has a 24 hour wildlife emergency hotline and is experienced at rescuing monkeys and other wildlife from high voltage transformers and cables. In the Nosara area call: 8824 3323



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Links:

Website: www.refugeforwildlife.org

Facebook: www.facebook.com/refugeforwildlife

Instagram: @refugeforwildlife, #stoptheshocks

Stop the Shocks Information: <http://refugeforwildlife.org/stop-the-shocks>

ADDITIONAL IMAGES





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