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**PROPOSAL FOR INCLUSION OF THE HOARY BAT (*Lasiurus cinereus*), EASTERN RED
BAT (*Lasiurus borealis*), SOUTHERN RED BAT (*Lasiurus blossevillii*), and SOUTHERN
YELLOW BAT (*Lasiurus ega*) IN APPENDIX II OF THE CONVENTION ON MIGRATORY
SPECIES**

Summary:

The Government of Peru has submitted the attached proposal* for inclusion of the Hoary Bat (*Lasiurus cinereus*), Eastern Red Bat (*Lasiurus borealis*), Southern Red Bat (*Lasiurus blossevillii*) and Southern Yellow Bat (*Lasiurus ega*) on Appendix II of the Convention on Migratory Species.

*The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CMS Secretariat (or the United Nations Environment Programme) concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author

**PROPOSAL FOR INCLUSION OF THE HOARY BAT (*Lasiurus cinereus*),
EASTERN RED BAT (*Lasiurus borealis*), SOUTHERN RED BAT (*Lasiurus blossevillii*),
AND SOUTHERN YELLOW BAT (*Lasiurus ega*) ON APPENDIX II OF THE CONVENTION
ON MIGRATORY SPECIES OF WILD ANIMALS**

A. PROPOSAL

This is a proposal to include four species of bat in the *Lasiurus* genus on Appendix II of the CMS.

B. PROPONENT: This proposal is submitted by Peru.

According to Pacheco et al (2009), three species of the *Lasiurus* genus have been reported in Peru:

Lasiurus blossevillii (Southern Red Bat)

Lasiurus cinereus (Hoary Bat)

Lasiurus ega (Southern Yellow Bat)

C. SUPPORTING STATEMENT

These bats have wide distribution ranges across the Americas. The Hoary Bat has the second largest range of any mammal on the continent after the puma (*Puma concolor*), which can be found from Canada to Argentina and Chile. The Eastern Red Bat is found between eastern Canada and the far northeast of Mexico, and the Southern Red Bat reaches from the western United States south down to Argentina. The Southern Yellow bat is distributed from North America (USA) down to South America (Argentina). The main threat facing migratory bats is the development of wind energy. It is estimated that hundreds of thousands of individual bats from the first two species die every year in the USA alone, causing a severe reduction in their populations. It is highly likely that *Lasiurus blossevillii* is similarly affected by wind energy, but there is still no robust data on that. In view of the serious threat to these species, the CMS COP is urged to adopt this proposal and include these four species on Appendix II of the Convention. That will enable conservation and mitigation measures to be introduced with a minimum impact on the development of wind energy.

Wind farms in Peru are located in the coastal desert, in Ica, La Libertad and Piura, with activity increasing every year.

1. Taxonomy

1.1 Class: MAMMALIA

1.2 Order: Chiroptera

1.3 Family: Vespertilionidae

1.4 Genus or species:

Lasiurus cinereus (Palisot de Beauvois, 1796)

Lasiurus borealis (Müller, 1776)

Lasiurus blossevillii (Lesson and Garnot, 1826)

Lasiurus ega (Gervais, 1855)

1.5 Scientific synonyms:

1.6 Common names (s), as applicable:

Hoary Bat

Eastern Red Bat

Southern Red Bat

Southern Yellow Bat

2 Biological data

2.1 Distribution (current and historical)

States in the distribution area:

Argentina, Bolivia, Brazil, Canada, Chile, Colombia, Ecuador, Guatemala, Mexico, Panama,

Paraguay, Peru, USA, Uruguay, Venezuela.

Distribution:

The Hoary Bat has the second largest distribution range of any wild mammal in the Americas after the puma (Shump and Shump, 1982), and can be found from northern Canada to northern Argentina and Chile, with a visible gap in Central America, where none are recorded from Honduras to Nicaragua and Panama. They are mainly linked to subtropical and temperate forests but are also recorded in tropical forests. The Hoary Bat is the only mammal native to Hawaii. Its altitudinal range varies from sea level to 4,000 metres above sea level (masl). The Eastern Red Bat can be found between eastern Canada and the eastern half of the USA, down to the far northeast of Mexico (Vonhof and Russell, 2015). The Southern Red Bat is a sister species of the Eastern Red Bat and was thought to be the same species until 1988 (Baker et al., 1988). It is found in a variety of ecosystems in tropical and temperate forests, and from sea level up to 2,500 masl.

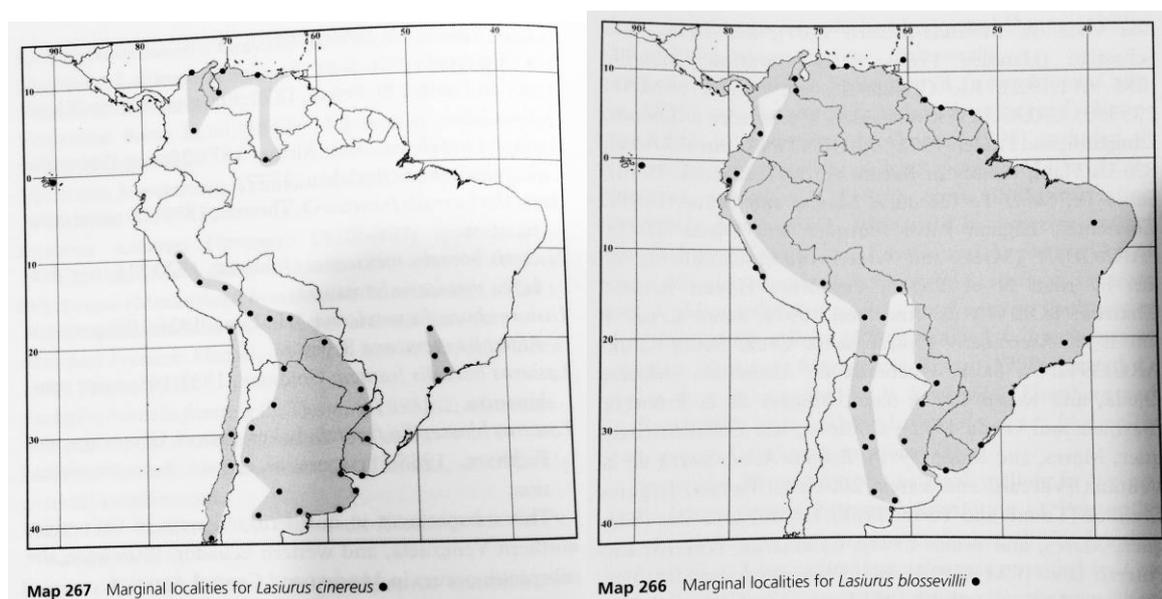


Fig.1: Distribution of the *L. cinereus* and *L. blossevillii* species in South America according to Gardner (2007)

During winter, most recordings of *Lasiurus cinereus* are concentrated in California and Mexico. In summer, the majority of male *L. cinereus* are found in the west, while the majority of females are found in the east. *Lasiurus borealis* is found in the southeast of the USA in winter, and moves to more northern regions in summer. Unlike other regions inhabited by the *Lasiurus blossevillii*, data sets in California suggest that the species is permanently resident in the state. *Lasionycteris noctivagans* also moves on a continental scale, although this species can be differentiated into two groups (western and eastern). The distribution of each species suggests that they do not travel long distances between North and South America.¹

According to Pacheco et al (2009), in Peru, *L. blossevillii* is distributed in the following ecoregions: Pacific Rainforest, Equatorial Dry Forest, Coastal Desert, Yungas and Selva Baja; *L. cinereus* is distributed across Puna, Yungas, Selva Baja and Sabana de Palmeras; and *L. ega* is distributed across the Pacific Rainforest and Sabana de Palmeras.

2.2 Population (estimates and trends)

Unlike other bats, these four species live alone or in small family groups of females and their young. They take shelter in vegetation such as tree foliage and Spanish moss (*Tillandsia usneoides*) hanging from trees. These ecological characteristics make the species particularly

¹ Text taken from the summary: *Seasonal Distribution of Migratory Tree Bats (Lasiurus and Lasionycteris) in North America*, 2003.

difficult to record.

Although the International Union for Conservation of Nature classifies the four species as “Least Concern” with unknown population trends, except for the Eastern Red Bat, which is considered stable, recent studies show drastic reductions in the populations of this species as the result of deaths in wind-energy facilities. These represent 38% of all deaths (Frick et al., 2017). Although estimates vary widely, the most likely estimation of the size of the bat population in North America is 2.5 million (Frick et al., 2017). Based on that initial population size, a moderate growth rate of 1% a year, and the current per capita death-rates related to wind energy, demographic models predict that the population will decrease by 90% within 50 years (Frick et al., 2017).

2.3 Habitat (short description and trends)

The four species are associated with forests, where they rest in tree foliage and Spanish moss hanging from trees. They seem to be quite flexible in their choice of shelter, using a wide variety of tree species and other vegetation (Menzel et al., 1998; Mager and Nelson, 2001; Klug et al., 2012).

3. Migrations

The four species are seasonally migratory, but potentially to varying degrees. The Hoary Bat is known to migrate long distances of over 1,500 km every year (Cryan et al., 2004). Their migratory nature led to multiple colonizations in Hawaii, almost 4,000 km from the continental part of North America (Bonaccorso and McGuire, 2013; Russell et al., 2015). The proportion of the Hoary Bat population that migrates is unknown, but it appears that females are more likely to migrate than males, and are more likely to migrate over long distances (Cryan, 2003). Less is known about the migratory behaviour of the other species, but their morphology and ecology suggest similar patterns to the Hoary Bat (Shump and Shump, 1982).

According to reports from maritime areas in the southern Atlantic towards the end of the summer (Kurta and Lehr, 1995; Esberard and Moreira, 2006), it would seem that *Lasiurus ega*, which also has a wide distribution, does show migratory behaviour.

4. Threat data

4.1 Direct threats to the population (factors, intensity)

Habitat destruction (quality of the changes, quantity lost): As the four species are dependent on forests, they could be affected by deforestation, but the degree to which this has an impact on their populations is currently unknown. Their flexible sheltering habits and presence in urban environments could mitigate the effects of deforestation (Everette et al., 2001; Mager and Nelson, 2001). However, the quality of habitats in urban environments is lower than that of forest habitats and the bats could therefore be less abundant overall, and less reproductively successful (Kurta and Teramino, 1992; Walters et al., 2007).

3.2 Indirect threats

Little is known about indirect threats to *Lasiurus bats* specifically but, in general, insectivorous bats are negatively affected by the use of pesticides (Geluso et al., 1976; Kunz et al., 1977). The use of pesticides not only reduces the diversity and abundance of insectivorous bats' prey (Sánchez-Bayo, 2012), but can also affect their reproduction and survival (Colborn et al., 1993; Eidels et al., 2007).

3.3 Threats connected especially with migrations

More than 75% of the 500,000+ bat deaths in North America each year that are related to wind energy are of migratory bats during their autumn migration (Arnett and Baerwald, 2013). Similar patterns showing the highest mortality rates during the autumn migration are observed in a variety of species around the world (Arnett et al., 2016; Barclay et al., in press). Although the reasons are not clear, what is clear is that migratory bats, and particularly *Lasiurus bats* (the

four species included in this proposal, and several others), run a higher risk of dying in wind-energy facilities during their autumn migration. This is a very severe threat that is emerging and growing rapidly, affecting these bats across their distribution area from North America to southern South America.

According to the Peru wind-potential atlas, nine regions, mainly on the coast and in highland areas, have wind potential.² Peru currently has wind farms in Ica, La Libertad and Piura.³

Although wind generation potential reaches 77 GW, the figure is lower if areas that are situated at more than 3,000 metres above sea level, have a gradient of over 20%, are in populated areas, protected zones or around rivers, canyons or lakes are excluded. Of the country's 25 regions, nine were identified as having wind potential: Ica (9.14 GW), Piura (7.55 GW), Cajamarca (3.45 GW), Arequipa (1.16 GW), Lambayeque (564 MW), La Libertad (282 MW), Lima (156 MW), Ancash (138 MW) and Amazonas (6 MW).

Very few wind farms have been developed in Colombia, Venezuela, Ecuador, Peru and even Chile. Argentina is not included on the list. The USA, Mexico and Brazil have developed much more wind infrastructure.⁴ According to the statistics cited in the evaluation, there is an upward trend in all countries.

3.4 National and international utilization

These four species of bats are not utilized anywhere in their distribution area.

5. Protection status and needs

Although none of the species are currently in danger of extinction in any distribution state, the CMS is in a unique position to intervene and help to stop the reduction in the populations of these species before it is too late and they are at risk of extinction. Given that these are migratory species, the fact that they move between countries makes it very important for states in the distribution area to join forces to stop their decline.

These are solitary, insectivorous species that migrate through North America and most probably throughout the rest of their range. Their movements take them to all kinds of habitats and they usually come into contact with wind turbines. At least 50% of bats that are killed in wind turbines in the USA and Canada are red bats or eastern bats. The drop in the size of the population shows that urgent measures need to be introduced to avoid catastrophic falls. An extremely viable and cheap mitigation measure that entails a very limited reduction in the amount of energy generated, as well as being quick to introduce, is curtailment. This simply involves altering the wind speed at which aerogenerators start to operate from a minimum wind speed of 3 m/s (when there are a lot of insects in flight and, therefore, a lot of bats in flight as well, but when very small amounts of energy are generated) to 6 m/s (when very few insects and bats are in flight). That would reduce mortality by 50-60% (Baerwald and Barclay, 2009; Arnett et al., 2016).

5.1 National protection status

Given the very recent emergence of the growing threat from wind energy, none of the species covered in this proposal are yet included as an endangered species on any national lists.

5.2 International protection status

Given the very recent emergence of the growing threat from wind energy, none of the species covered in this proposal are yet included as an endangered species on any international lists.

² <http://dger.minem.gob.pe/AtlasEolico/AtlasEolicoLibro.asp>

³ http://www.thewindpower.net/country_maps_es_62_peru.php

⁴ http://www.thewindpower.net/country_list_es.php

5. Additional protection needs:

The CMS is in a unique position to offer these species the necessary protection by including them on Appendix II. That will enable and encourage states in the distribution area to take steps to determine and introduce mitigation measures for wind-energy developments with the aim of minimizing the mortality rates of these bats.

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