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Establishing baseline data on bats for REDD+ verification

Written by: [Burton Lim](#) in [Issue 10](#) 🕒 December 2013 🗨️ [0 Comments](#)



Bats are ideal species for monitoring the environment but they are also ecologically beneficial organisms

Vital baseline information on bats is being collated at Iwokrama Forest in Guyana. The data will provide indications of wider species diversity and abundance.

Jaguars and howler monkeys come to mind when thinking of the jungles of South America. But bats account for about half of the biodiversity of mammals found in this tropical paradise and they play an important role in maintaining the global environment.

Bats are primary seed dispersers and flower pollinators that provide essential ecosystem services for natural forest regeneration. In addition, insectivorous bats consume up to half their weight in food each night so are major contributors to controlling insect populations that may do damage to trees.

Some of the world's largest tracts of continuously intact rainforest are found on the ancient billion-year-old Guiana Shield found north of the Amazon River and east of the Andes. At the centre of the 'green heart' of Guyana, one of three small countries lying completely within this region, is found Iwokrama Forest – boldly offered by the Guyanese government in 1989 to the Commonwealth Secretariat for sustainable utilization and conservation of biological diversity.

REDD+

In a bilateral agreement of 2009, Norway is in the process of providing up to \$250 million of economic support to Guyana for preserving their rainforest as a global carbon sink by implementing management and conservation initiatives associated with the Reducing Emissions from Deforestation and Forest Degradation (REDD+) project of the United Nations.

But it's not just about making sure that the forest is still standing, which can be easily confirmed by satellite imagery. It is also necessary to know that the forest is healthy and functional with wildlife because if the animals have all been hunted or the rivers have been poisoned by toxic by-products of mining activities then the forest will not survive for too long.

Operation Wallacea established a biodiversity monitoring programme at Iwokrama Forest in 2011. An objective is the tracking of species diversity and relative abundance that will be useful for the independent verification of rainforest preservation under the REDD+ framework.

Mist nets

Bats were chosen as one of several target groups because of their ease of capture using nets set in the forest understory. I was asked to implement the bat project because of my past fieldwork and research on mammals in Guyana since 1990.

The key to this monitoring study is the implementation of a standardized sampling methodology to enable long-term comparisons. Five study sites were chosen in the forests of Iwokrama and the neighbouring Amerindian community of Surama.



Bats were chosen as one of several target groups because of their ease of capture

A 100 square-metre grid was set-up at the sites with two mesh mist nets positioned perpendicular to each other at the nine 50 metre intersection points on the grid. The 18 nets were opened from 6:00 pm to midnight with approximately one hour between checks for bats. The species was identified and other pertinent information was recorded before a small wing punch was given to mark the bats for release. The monitoring was done during four weeks in the summer.

The commonest species caught in the nets were fruit-eating bats. Although the study has only been three years in duration, the most surprising result so far is the wide range of variation in both the numbers of species and individuals caught. The second year had a decrease from 2011 in species diversity and relative abundance at all sites but the numbers rebounded this field season at all but one site.

Closer examination of the data suggests that fluctuations in bat populations are probably closely associated with food availability, such as when trees are fruiting. The Turtle Mountain site, for example, documented none of the most abundant species of fruit-eating bats, which are fig specialists, in 2012. However, these species were common in the other two years at this site indicating that longer-term data will be needed to differentiate background variation from actual climate-related changes.

Baseline information

This is crucial baseline information to know so that real trends can be better identified and interpreted, because it will also be important to distinguish between patterns associated with natural climate change associated with El Niño and La Niña weather oscillations or human-induced climate change associated with an excess of carbon in the atmosphere that contributes to global warming.

Not only are bats ideal species for monitoring the environment but they are also ecologically beneficial organisms. Likewise, the preservation of tropical forest requires the conservation of biodiversity.

Guyana is fortunate in still having much of its original habitat intact and healthy populations of species that are endangered in other countries. The Operation Wallacea monitoring programme at Iwokrama Forest is a good opportunity to demonstrate the applicability of biodiversity research in basing public policy on scientific data suitable for global climate change initiatives such as REDD+.

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