

Passive acoustic monitoring of Neotropical birds

Oliver Metcalf

There cannot be a *Neotropical Birding* reader who has not made or used sound recordings of birds. But how many are aware that making automated recordings of bird vocalisations is proving an increasingly valuable and efficient way of surveying the Neotropics' increasingly imperilled landscapes?

The Neotropics are home to more species of bird than any other region on the planet. This is recognised by ecologists, ornithologists and conservation organisations alike – so the region also hosts more Endemic Bird Areas and Important Bird and Biodiversity Areas than any other. This, has not, however, prevented rapid, alarming habitat loss with all the loss of biodiversity that entails – and nowhere is this more starkly exemplified than in Amazonian Brazil currently, where deforestation has reached its highest level in 15 years (INPE 2021). Against this backdrop of ecological crisis, it is increasingly important for conservationists to be able to monitor and quantify avian diversity, to demonstrate the benefits of protected areas, to highlight the impacts of deforestation and forest disturbance, and to justify conservation funding and donations.

Yet detecting, counting and monitoring birds in tropical forests is notoriously challenging (Robinson *et al.* 2018). The vast area involved, much with limited infrastructure and accessibility, can make even commencing surveys difficult. The nature of the forests – often with a high canopy and dark understory, sometimes extremely dense, almost always with biting insects – can make it challenging to detect any birds, let alone the many cryptic species that have evolved there, as any keen Neotropical birder can attest. But it is not just the challenges involved in spotting birds that make accurately inventorying bird species in tropical forests challenging, but also the structure of diversity. In what is known as 'the paradox of the tropics', whilst there is a huge diversity of species present in Neotropical forests, a high proportion of those are naturally rare. This means that many bird surveys regularly find the commoner species and a small selection of rarer species – but systematically under-record rarer species. And

those under-recorded and under-studied rarer species are also more likely to be forest specialists, most sensitive to forest loss or disturbance, and most in need of conservation action.

Fortunately, new technology is helping us monitor wildlife in the Neotropics more effectively. As part of the Rede Amazônia Sustentável (Sustainable Amazon Network; rasnetwork.org), I use ecoacoustic techniques in the eastern Amazon to help monitor changes in bird, frog and insect diversity when forests are impacted by disturbance, such as forest fire and

Unless otherwise stated, all photographs were taken in Floresta Nacional dos Tapajós, Pará, Brazil, and by Oliver Metcalf ([@ecoacou_ollie](https://twitter.com/ecoacou_ollie)).

1 Deployment of a Frontier Labs Autonomous Recording Unit.

