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Introduction — Update 2014

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In the last three decades, Monteverde, Costa Rica has emerged as a critical venue for research in tropical montane biology. Over 350 scientific articles and 10 scholarly books have been generated. In terms of conservation and training young biologists, Monteverde is considered one of the premier tropical cloud forest sites in the world.

This rich research, conservation, and education legacy exists even though the research infrastructure has been extremely limited, relative to many other major tropical field stations. Research has mostly been conducted by single investigators, often with little or no extramural support, and there have been few large-scale, long-term, multi-institutional projects.

Synergistic interactions between several distinctive features of Monteverde appear to explain the high research productivity in the face of limited research support: a long-time emphasis on watershed protection and conservation; a commitment to education, from bilingual local grade schools to graduate field courses offered by the Organization for Tropical Studies and other groups; outstanding natural

attractions to attract ecotourism as an economic driver, and good infrastructure to support it; and a rare degree of civic awareness and community engagement (Nadkarni *et al.* 2013).

For example, the presence of a strong scientific understanding of the negative effects of deforestation on soil erosion, water quality, and biodiversity prompted the early conservation movement. This helped raise awareness about the presence of remarkable species such as the Resplendent Quetzal and Golden Toad and the threats they faced from fragmented landscapes, introduced species, and changing climates. The presence of such charismatic species, living in such charismatic habitats, attracted student groups and tourists to the area. This led to an income flow that could support continued preservation and additions to cloud forest preserve areas, which expanded opportunities for scientific research. The sense of civic awareness and spirituality of this Quaker-originated community fostered a sense of personal responsibility to carry out actions to benefit people, wildlife, and plants.

Because montane forests comprise a much smaller land area and have a lower economic value than lowland forests, they have tended to attract fewer scientists and less funding and research infrastructure. Monteverde provides an example – and potentially a model – for scientists in other montane cloud forests and other tropical ecosystem types that do not attract large funding and yet still can produce excellent science (Nadkarni *et al.* 2013).

It has been 14 years since *Monteverde: Ecology and Conservation of a Tropical Cloud Forest* was first published (Nadkarni and Wheelwright 2000). Given the many new research projects that have appeared in the interim, we felt it was time to update the book. More importantly, the book's cost and the fact that it was published only in English effectively put the book out of reach for many readers in Latin America. Clearly, it is time to translate the book into Spanish, particularly in light of accelerating rates of biodiversity loss — "defaunation" — and the paucity of conservation monitoring studies in the neotropics (Fig. 1; Dirzo *et al.* 2014). In addition to translating the original book, we requested representatives of the Monteverde research, conservation, and education communities to write an *actualización* for each chapter. The *actualizaciones* are not meant to describe in detail everything that has transpired in each field since the original book was published, but rather to inform the reader of significant advances and relevant literature on that topic.

In the spirit of Monteverde research, education, and education, we drew upon grass-roots support — rather than applying to traditional funding sources — to fund the

translation of this translation. We had two main objectives. The first objective was to educate, inspire and engage as many people as possible in the effort to protect tropical cloud forests. When we were in graduate school, the standard model of conservation was this: acquire a lot of land, put a big fence around it, and keep people out. That approach has been discredited over the years, and now everyone realizes the importance of having people "buy in" on conservation projects. Our second objective was to attempt to shift the culture of scientists who conduct research in developing countries, then return home to publish their work in English in scholarly journals. "Education" literally means "leading outward" — in this case, taking information about tropical biology and conservation that is currently sequestered in expensive books in privileged libraries and making it freely available on the web to anyone who speaks Spanish.

Within six weeks of initiating a Kickstarter campaign (www.kickstarter.com/projects/768016193/rainforest-conservation-making-science-available-i) in December, 2014, we received contributions from 185 individuals from all walks of life and from all over the world—Costa Rica, of course, but also New Zealand, France, Canada, the Netherlands, Spain, Switzerland, Mexico and other countries, which has made the translation, updating and publication of this book possible. We hope that readers will find it a useful resource for understanding and protecting tropical cloud forests not just in Monteverde but throughout Latin America.

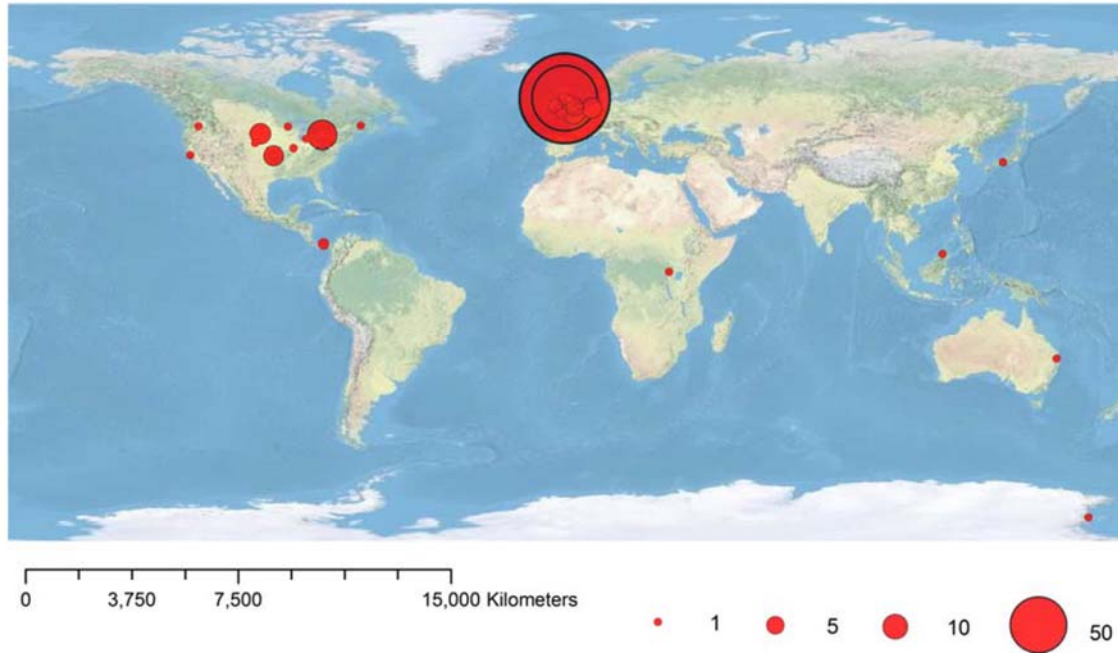


Fig. 1. Locations of all sources of invertebrate abundance time series data. The size of the circle is relative to the number of species studied in a given location. Note the paucity of studies in Latin America and the tropics in general (figure from Supplementary Material in Dirzo et al. 2014).

Literature Cited

Dirzo, R., H.S. Young, M. Galetti, G. Ceballos, N.J.B. Isaac, and B. Collen. 2014. Defaunation in the Anthropocene. *Science* 345: 401-6.

Nadkarni, N., K. Sheldon and S. Gotsch. 2013. The perfect storm: educational, conservation, and community synergisms for tropical ecology research in Monteverde, Costa Rica. Symposium: Association for Tropical Biology and Conservation, San José, Costa Rica.

Nadkarni, N.M., and N.T. Wheelwright (eds.). 2000. *Monteverde: Ecology and Conservation of a Tropical Cloud Forest*. Oxford University Press. 573 pp. (also available online at digitalcommons.bowdoin.edu).