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Comprehensive inventory of true flies (Diptera) at a tropical site

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Estimations of tropical insect diversity generally suffer from lack of known groups or faunas against which extrapolations can be made, and have seriously underestimated the diversity of some taxa. Here we report the intensive inventory of a four-hectare tropical cloud forest in Costa Rica for one year, which yielded 4332 species of Diptera, providing the first verifiable basis for diversity of a major group of insects at a single site in the tropics. In total 73 families were present, all of which were studied to the species level, providing potentially complete coverage of all families of the order likely to be present at the site. Even so, extrapolations based on our data indicate that with further sampling, the actual total for the site could be closer to 8000 species. Efforts to completely sample a site, although resource-intensive and time-consuming, are needed to better ground estimations of world biodiversity based on limited sampling.

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