undergoing accumulation of species richness to a new and higher equilibrium density. Many tropical forest fragments are combinations of these two situations.

Both animals and wind disperse seeds into growing patches of dry forest succession. Patches generated by wind differ dramatically in species richness and life form richness from patches generated by animals, with the latter having a species-poor canopy of large trees. Decaying forest fragments also lose their animal-dispersed species more rapidly than they do their wind-dispersed species. The overall outcome of these two processes is that dry forest that is pushed through a cycle of fragmentation and regeneration becomes less species rich and less interactive with vertebrates. It also becomes drier, since wind-dispersed trees are almost invariably deciduous in the dry season.

The study of the decay and accretion of forest fragments highlights processes that are important for the conservation of these areas. The most detrimentally deceptive are the living dead. These are organisms, and especially trees, that are living out their physiological life spans but have no chance of recruiting new members to the population. They give the illusion of persistent populations to species that are in fact ecologically extinct. Equally deceptive is habitat sharpening - the phenomenon of converting one kind of habitat to agricultural or pasture land, thereby trimming off the interdigitation that originally occurred between the obliterated habitat and the remaining habitat. This leads to the surviving species of organisms being labeled as characteristic of the habitat that remains, and their absence from fragments of the forest that once occupied the agriculturalized habitat being viewed as natural. Finally, there is the reduction of species richness in a habitat (fragment) through destruction of the source areas of migrants and strays, species that can make up a substantial percent of a species list for a given habitat.

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Species Diversity in Insects.

The canopy of closed or semi-closed tropical forests receives the major portion of energy from the sun, consequently it contains the highest proportion of biological diversity in these forests dominated by herbivores, pollinators, and parasites, and the number of organisms is highest in the canopy. Invertebrates living beneath the canopy in the trunk zone are predominantly borers and gleaners, while those near or on the forest floor are predominantly scavengers, fungivores, and saprophages. Forests of the Amazon Basin, especially those along the western periphery, apparently contain the greatest numbers of species on Earth. These forests grow on various soil types with different types of drainage, and each type has different tree species composition, as well as different insect faunules living in the canopy. In southeastern Peru, there are nine types of forest along a five kilometer stretch of the Río Tambopata; five of these were sampled for canopy arthropods four times between October, 1983, and September, 1984; more than 1 million specimens were collected. The present report presents observations and preliminary results for only the beetles from one (of three) series of plots in the five forest types, all within three kilometers of each other. These five plots each represent less than 5% of the tree species in one hectare of their respective forest type, yet more than 3000 species of beetles were collected and have been processed; these represent slightly less than 1/3 of the material available for study and most represent undescribed species. Data from four forest types in the central Amazon Basin near Manaus indicate 83% of canopy beetle species are restricted to one forest type, and these data are substantiated by preliminary observations of the Peruvian samples. Even adjacent plots within a forest type at Tambopata differ in their canopy beetle faunules as much as 92%. Species accumulation curves indicate that even with 3000 species the asymptote is not in sight for this small area. An analysis of size of species in the two faunas indicates that western Amazonian canopy beetles are larger than those in the central part. This may be due to the greater number of larger trees available there.

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Patterns of Species Diversity in Neotropical Anurans.

The Neotropical Region has a greater species richness of anuran amphibians than any other region in the world. Approximately 44% of the total number of species of anurans in the world (3533) occur in the American tropics, and many new species are discovered every year.

Patterns of species diversity were determined by analyzing data from 46 specific sites---30 in the lowland tropics (11 Middle American, 19 South American), nine in montane cloud forests (4 Middle American, 5 South American), and seven in supra-treeline regions of the Andes. Taxa also were noted as to their reproductive mode (site of egg deposition, site of larval development, and associated parental care, if any).

As expected, for the entire anuran fauna, there are gradients from lower diversity in dry regions to higher diversity in wet regions, and from lower diversity at high elevations to higher diversity at low elevations. The greatest species diversity is in the equatorial region of the upper Amazon Basin. However, different patterns emerge when taxonomic groups (families, subfamilies, and large genera) are examined independently. Two major factors contribute to the different patterns observed: (1) the historical biogeography of different taxa, especially in relation to the separation of Central America and South America during most of the Cenozoic, and (2) reproductive modes of the taxa.