The Significance of Diversity: New Challenges for the Entomologist

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TO TRULY APPRECIATE the species richness of this planet, one must sit at a microscope and sort through all the arthropods that can be collected from the crown of just one architecturally complex tropical tree. The average vine-ladened tree canopy in Amazonian Peru yields 5 pints of mixed arthropods, about 0.5 kg live wt. One such canopy (now under study), a rather small one only 25 m in height with a 100 sq m footprint and 1,100 cu m of foliage, is estimated to have more than 1,500 species of arthropods at any moment in time during the dry season (Erwin, in prep). The September, 1988, sample from this tree (now only about two/thirds sorted, but with more than 100,000 individuals) has more than 60 species of ants (Tobin, per comm) which represent 70% of the total arthropod individuals (Erwin, 1989); 514+ species of beetles representing 9% of the total individuals; 51+ species of true bugs representing 0.9% of the total individuals (Henry and Froeshner, per comm); 73+ species of lepidopteran caterpillars representing 0.7% of the total individuals (Solis, per comm); 36+ species of book lice (Psocoptera) representing 4% of the total individuals, 14+ species of mites representing 1.6% of the total individuals, and so on through 24 Orders and Classes of arthropods; 1,500+ species in a single small canopy! Additional collections made in 1989 show