

Impact of Amazonian termite populations on the carbon cycle of natural and managed forest systems: respiration rates in different termite food guilds

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Termites of tropical forests are a dominant group amongst primary destruents. Divided into mainly four food guilds, e.g. wood-feeders, humus-feeders, leaf-harvesters and generalists, termites are believed to have an high impact on nutrition-cycles of tropical forests. Eight representative species in Central Amazonia representing the different food guilds were studied in order to determine their respiration-quotients as an important feature of their metabolic potential. For a period of ten months we took monthly samples in three different forest-systems: a wood plantation, a secondary forest and a primary forest. Following species have been investigated: *Anoplotermes banksii*, *Constrictotermes sp.*, *Heterotermes sp.*, *Labiotermes labralis*, *Nasutitermes sp.*, *Neocapritermes sp.*, *Syntermes molestus* and *Termes fatalis*. The mound-building termites were captured by taking direct samples from mounds. The subterranean species were investigated with monitoring stations which contained different baits. With an Infra-Red-Gas-Absorption-Spectrograph the respiration-quotient (l CO₂/ min/ g biomass) for each species was determined, with the termites separated by castes. We could prove a strong dependence of respiration-quotient on food guild membership for the investigated species. Preliminary data indicate that representatives of all food guilds were encountered on the primary forest plots, but not in the secondary forest and in the plantation plots. The total absence of some food guilds on the polyculture-study sites may indicate that important carbon sources will not be adequately decomposed in these plots.