Species-Packing of Grazers in the Mole National Park, Ghana

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Abstract

Hutchinson's body weight ratio (WR) theory was used to determine the degree of species-packing of 22 species of grazers in Mole National Park (MNP). The hypotheses, which suggest that facilitation is more likely to occur at a WR greater than 2.0, competition at WR less than 2.0, and coexistence at WR equals 2.0 were tested by regressing the natural logarithm of the body mass of a grazer against its rank number in the grazer assemblage. The results indicated competition in the grazer assemblage at MNP as its WR is 1.40 and therefore grazers are tightly packed. However, as several species with similar body weight coexisted at MNP, the Hutchinson's Rule could not be supported. Habitat heterogeneity rather than the size of conservation area related to species-packing and MNP with its low habitat heterogeneity showed a low degree of species-packing. Possible explanations have been advanced for existing ecological holes within the assemblage. Species-packing could still be a reasonable measure of the characteristics, dynamics, interactions and the patterns of assemble in animal communities. It could also be used to predict the effect of animal species loss or arrival on the stability of a natural ecosystem and provide useful guidelines in planning herbivore conservation measures in protected areas.