Animal-plant interactions in Neotropical forests are complex processes. Within these processes, mid- to large-sized mammals consume fruits and seeds from several species; however, because of their size these mammals are overhunted, resulting in defaunated forests. Our objective was to evaluate and compare seed removal and survivorship in a forest with no hunting, a forest with moderate or reduced hunting, and a forest with higher hunting pressure. We examined the interaction between Astrocaryum gratum and white lipped peccary (Tayassu pecari) to tease apart the defaunation process. To isolate and evaluate mammal seed removal rates and to identify the causes of mortality on A. gratum, under the three different hunting pressures forests, we used exclosures in each one. In four different forest-patches for each forest, we positioned a block-treatment consisting of three exclosures (total exclusion, peccary exclusion, and control), randomly distributed 5m apart and the block-treatments spaced 50-75m apart from one another. We established 15 treatments in total for each patch (5 blocks per patch). There were 20 blocks within each forest type. For total exclusion, all vertebrates were excluded using galvanized wire mesh exclosures. The second, the peccary exclusion, was designed to stop peccaries from entering treatment units, providing access only to small vertebrates; larger mammals were able to access the treatment unit by reaching over the sides and the open top; finally, the Control allowed full access for all mammals. Fresh A. gratum fruits were collected from the forest floor under different adult trees throughout the study area. In each exclosure treatment, twenty A. gratum seeds were placed, and their removal was recorded. In total, 3 600 seeds were analyzed. Seed survival was lower in unhunted forest compared to areas with moderate hunting and forest with a higher hunting pressure, supporting the hypothesis of the importance of mammals in seed removal. From the initial 400 seeds left for each control exclosure in each type of forest, there was a significant difference between the seed removal; 1.75% seeds in the unhunted forest remained; 43.5% in the moderately hunted forest, and 48.5% in hunted forest. The main cause of seed mortality was white lipped peccaries; while in the forests without them, the main removal was caused by rodents and a higher insect infection was observed in the heavily hunted forest. Our results indicated that defaunation affects seed survivorship.

Resumen

Animal-plant interactions in Neotropical forests are complex processes. Within these processes, mid- to large-sized mammals consume fruits and seeds from several species; however, because of their size these mammals are overhunted, resulting in defaunated forests. Our objective was to evaluate and compare seed removal and survivorship in a forest with no hunting, a forest with moderate or reduced hunting, and a forest with higher hunting pressure. We examined the interaction between Astrocaryum gratum and white lipped peccary (Tayassu pecari) to tease apart the defaunation process. To isolate and evaluate mammal seed removal rates and to identify the causes of mortality on A. gratum, under the three different hunting pressures forests, we used exclosures in each one. In four different forest-patches for each forest, we positioned a block-treatment consisting of three exclosures (total exclusion, peccary exclusion, and control), randomly distributed 5m apart and the block-treatments spaced 50-75m apart from one another. We established 15 treatments in total for each patch (5 blocks per patch). There were 20 blocks within each forest type. For total exclusion, all vertebrates were excluded using galvanized wire mesh exclosures. The second, the peccary exclusion, was designed to stop peccaries from entering treatment units, providing access only to small vertebrates; larger mammals were able to access the treatment unit by reaching over the sides and the open top; finally, the Control allowed full access for all mammals. Fresh A. gratum fruits were collected from the forest floor under different adult trees throughout the study area. In each exclosure treatment, twenty A. gratum seeds were placed, and their removal was recorded. In total, 3 600 seeds were analyzed. Seed survival was lower in unhunted forest compared to areas with moderate hunting and forest with a higher hunting pressure, supporting the hypothesis of the importance of mammals in seed removal. From the initial 400 seeds left for each control exclosure in each type of forest, there was a significant difference between the seed removal; 1.75% seeds in the unhunted forest remained; 43.5% in the moderately hunted forest, and 48.5% in hunted forest. The main cause of seed mortality was white lipped peccaries; while in the forests without them, the main removal was caused by rodents and a higher insect infection was observed in the heavily hunted forest. Our results indicated that defaunation affects seed survivorship.

Palabras clave
Defaunation, empty forest, half-empty forest, Bolivia, chonta palm.