

Lack of trophic release with large mammal predators and prey in Borneo

Abstract

When humans reduce top carnivore abundance in insular systems, herbivore populations may increase, with cascading impacts on the community. But the prevalence of such “trophic release” effects in non-insular ecosystems remains little known, particularly in tropical ecosystems. We assessed whether areas with low top carnivore abundance were associated with greater abundance of herbivores across seven rainforest study areas in Malaysian Borneo. We deployed 134 camera-trap stations and analyzed the resulting photographic detections from 16,608 trap-days using multi-species occupancy models that estimate abundance while accounting for imperfect detectability. Estimated local abundance of Sunda clouded leopards (*Neofelis diardi*), the apex mammalian predator, varied from 0.0 to 3.5 individuals per camera location. Clouded leopard abundance was not negatively correlated with the abundance of any of the four prey species that we analyzed. Rather, sites with few or no clouded leopards also had the lowest estimated abundance of pig-tailed macaques (*Macaca nemestrina*). Estimated abundance of muntjac (*Muntiacus* spp.) and mousedeer (*Tragulus* spp.) was statistically unrelated to estimated clouded leopard abundance. Bearded pig (*Sus barbatus*) abundance was likewise unaffected by predator abundance, but pigs appear to live in larger groups when clouded leopards are common, possibly to better defend their young. We found no evidence of trophic release, an important conservation threat in other areas, in this ecosystem, particularly relative to the massive impacts of agricultural conversion, habitat degradation, and unsustainable wildlife exploitation.