

The ecological effects of bushmeat hunting in the rainforests of the Udzungwa Mountains, Tanzania

Carla Hegerl

Bushmeat hunting, the hunting of small- to medium-sized mammals for own consumption or local markets, is one of the biggest threats to the biodiversity and stability of rainforests around the globe. In Africa in particular, many rainforests with intact vegetation are deprived of a large part of their fauna, leading to the disruption of important ecosystem processes. Due to dynamic interactions between hunted and non-hunted species as well as differing vulnerabilities, it is difficult to predict how mammal communities will be altered in response to hunting activities. Therefore, it is important to study the mammal communities of hunted forests in order to implement efficient conservation measures.

The Udzungwa Mountains of Tanzania are part of one of 25 global biodiversity hotspots and contain many endangered plant and animal species. A large part of the mountains is covered by closed-canopy rainforests, while the adjacent flat land is used for sugar cane plantations and village farms. The population around the Udzungwa is increasing steadily during the last decades due to the prospect of employment and therefore, hunting pressure in many parts of its rainforests is extremely high, even though it is illegal. This is the case in the Uzungwa Scarp Forest Reserve (USFR), one of the most important forests of the Udzungwa. In this forest, hunters place snares and pitfalls along a dense network of trails, most commonly catching small ungulates.

In order to understand how this intensive hunting has altered the mammal community in USFR, I conducted camera trapping at two different sites in this forest and compared the results to data from a ecologically similar forest within the Udzungwa Mountains National Park, where hunting does not occur. I compared the mammal communities of the two forests from different perspectives: the overall species richness, the species-specific responses to hunting pressure and the functional community composition, i.e. the relative abundances of five functional guilds (rodents, herbivores, omnivores, insectivores and carnivores).

I found that species richness was 40 % lower in USFR than in the National Park, which highlights the immense negative effect of bushmeat hunting on biodiversity. The effects varied strongly between species and depended on the species' ecology and behaviour. While most target species were less common under intense hunting, other species such as the giant pouched rat were much more common, even though they are hunted as well. This indicates that interactions between species and with their environment cause complex dynamics within the community. Also the functional community composition was strongly altered through hunting, with long-term effects on the vegetation. These results highlight that bushmeat hunting in USFR at the present level is unsustainable and that efficient management strategies are needed to create solutions which consolidate the interests of hunters and conservationists.

Degree project in biology, 45 ECTS, Master of Science (2 years), 2014

Examensarbete i biologi, 45 hp till masterexamen, 2014

Biology Education Centre and Department of Ecology and Genetics, University of Copenhagen

Supervisors: Prof. Neil Burgess and Prof. Mats Björklund