

REPLY TO KREULEN'S NOTE

I suggested a hypothesis (Janzen 1976). Kreulen (1979) does not test this hypothesis or describe a fault in its logic. Likewise, Kreulen does not destroy my impression that reptile biomass is considerably less in African habitats than in neotropical comparable habitats. He is welcome to his impressions: they are no more a test than mine were.

There is only one possible direct test of the hypothesis that a large biomass of large wild herbivores should severely depress the biomass of reptiles in a habitat by providing supplementary food for small carnivores and supporting large carnivores that take reptiles as incidental prey: Change the density of the herbivores and closely observe the kind and cause of responses by carnivores and reptiles. If reptile density increases because the predators decrease in density, the hypothesis can be accepted. If reptile density does not increase, the hypothesis remains a hypothesis. It will then require even more detailed natural history manipulation for testing. This is because the hypothesis deals with evolutionary as well as ecological time. When you water the desert, you do not immediately get a forest; yet dryness is the reason why there is no forest on a desert.

The relative densities of African and neotropical reptiles will remain unknown until a single person or team applies the same census methods to many comparable habitats in both places. The fact remains that someone who has worked on one or the other continent can have no subjective impression of relative density between the two, and many people that I have talked to who have worked on both continents have a subjective impression that reptiles are less abundant in Africa.

If Kreulen wishes to hypothesize that "competition" in Africa is the cause of the relatively lower reptile biomass, then let him derive some clear hypotheses and suggest tests. Personally, I do not think that it is reasonable natural history to hypothesize that the absence of lizards from insect-rich second-growth, semi-forested habitats in Uganda, for example, is due to competition with other insect-eaters. Neither is it reasonable to suppose that the absence of large leaf-eating lizards from the African continent is due to competition with large herbivores, but I would be delighted to see a test of such hypotheses. I think a more directly productive approach would be the introduction of mongooses or baboons into a lizard-rich neotropical forest-grassland complex, or the introduction of large iguanids into an African park that still contains its original herbivore and predator guilds.

ACKNOWLEDGMENTS

This note was supported by NSF DEB77-04889 and the arrogant manuscript was constructively criticized by D. Gladstone and W. Hallwachs.

LITERATURE CITED

- Janzen, D. H. 1976. The depression of reptile biomass by large herbivores. *Am. Nat.* 110: 371-400.
 Kreulen, D. A. 1979. Factors affecting reptile biomass in African grasslands. *Am. Nat.* 114: 157-160.

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Submitted and Accepted November 30, 1978