NOTE ON A CONFUSION BETWEEN ECOLOGY AND ZOOGEOGRAPHY

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n two papers recently published in this journal, van Dijk (1971a & b) has criticised a "zoocartographic approach to anuran ecology" which he attributes to me. He then proceeds to a supposedly "fresh approach to anuran ecology in southern Africa. An approach based on the major activities of the animals is suggested" (1971b, p. 119). It might be helpful to comment briefly on van Dijk's critique, because it appears to contain a confusion between the fields of ecology and zoogeography which, if perpetuated, would be detrimental to future work.

An enquiry first has to be made into the origin of van Dijk's idea of a "zoocartographic approach to ecology". Examination of Part 2 of my *Amphibia of Southern Africa* (1964), which is headed "Ecology", reveals no "cartographic" approach of any kind to ecology. The approach is plainly through the study of – to use van Dijk's phrase – "the major activities of the animals". Van Dijk evidently chose to pass over this whole ecological section when he wrote his critique, and instead found evidence of a "zoocartographic approach to ecology" elsewhere in my work.

According to van Dijk, in this "zoocartographic" approach, "the data on the distribution of species (or subspecies) are plotted on maps and correlations with variables are then sought . . ." (1971a, p. 85). This definition does not make it clear that the procedures described should necessarily be regarded as an "approach to ecology". Such procedures could be considered as attempts to discover factors that account for the observed pattern of distribution, and so it is perhaps not too misleading to describe this type of investigation as an "ecological approach to zoogeography". But however it is characterized, the proper field of reference seems to be zoogeography rather than ecology. Therefore it must be concluded that it is actually in the field of zoogeography that van Dijk believes he has discovered a "zoocartographic approach to ecology".

At this point it becomes necessary to distinguish between some essential features of ecology and zoogeography. A feature of ecological research is the study of ecological equivalence: the processes of community metabolism are found to be similarly structured in different areas of the world, despite the fact that different species may be involved in the different areas. Taxonomy is thus used primarily as a labelling system, and a misidentification usually has no more significance than that of applying the wrong label; it is not likely to lead to the invalidation of ecological conclusions themselves.

In zoogeography the situation is practically the reverse. A primary study in zoogeography is the occurrence of different taxa of animals in similar habitats in different parts of the world. For example, the "treefrogs" of South America and subsaharan Africa show marked ecological equivalence, yet they belong to different suborders of the Anura. The "toads" of the south-western Cape are specifically distinct from the "toads" of north-eastern Zululand, even though they are ecologically equivalent. Now a taxonomic misidentification could invalidate

either of these two examples: thus the second example would be invalidated if a taxonomist found that different names had been given to toads from Cape Town and Kwambonambi that in fact belonged to the same species. It follows that in zoogeography, questions of taxonomy and phylogeny are fundamentally important: a misidentification is very likely to lead to the invalidation of zoogeographical conclusions.

Returning now to van Dijk's idea of a "zoocartographic approach to ecology", he states that this approach is "fraught with danger", as it "presumes meticulous attention to synonymy and affinities" (1971a, p. 107). If the above distinction between the scope of ecology and zoogeography is accepted, then it is clear that the "danger" that van Dijk sees has to do with zoogeographical, not ecological, research. Therefore his application of the term "zoocartographic approach" to *ecology* is quite inappropriate, and potentially misleading because it confuses the two fields.

Van Dijk states that the "ultimate aim" of his paper, The Zoocartographic Approach to Anuran Ecology (1971a), is to "assess the limitations of the whole approach" (p. 85). It is hardly surprising that he concludes: "the zoocartographic approach can therefore . . . rarely be legitimately applied as an autonomous procedure" (p. 107). I would prefer to go further, and conclude that as his idea of a "zoocartographic approach to ecology" is itself illegitimate, it should not be applied at all.

REFERENCES

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