

THE DISTRIBUTION OF *BUFO VERTEBRALIS HOESCHI* IN THE NAMIB DESERT PARK, SOUTH WEST AFRICA

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Hoesch's toad occurs throughout South West Africa, and is one of only four anurans known from the Namib Desert Park (Channing, in press). The adults are dorso-ventrally flattened and seldom reach a snout-vent length in excess of 4 cm. Poynton (1964) recognises four subspecies of *B. vertebralis* in South West Africa. We refer to 'lump' these as *B. v. hoeschi*, as insufficient specimens are presently available and no geographical evidence exists to warrant retaining a number of poorly known subspecies.

Hoesch's toad reaches its westernmost limit in the central Namib, where the rainfall may average less than 25 mm per year. Precipitation is concentrated in the period January to March (Schulze, 1969) with a less important winter season. We have examined the distribution of this anuran to emphasise the role played by topography in the lives of the Namib populations.

The distribution of breeding populations (sites where adults in amplexus, eggs or tadpoles were recorded) and the sites where isolated individuals were collected is presented in Fig. 1.

During dry weather this toad retreats under stones or in cracks under exfoliating granite. Breeding at Bluttkoppie, Tumasberg and Tumasberg South occurs after rains, in pools formed by runoff from large sheets of granite. The granite sheets thus effectively concentrate the minimal precipitation. The toad breeds in shallow sandy-bottomed pools which reach temperatures of 36°C. Development is relatively rapid; only 3 weeks elapse between oviposition and the emergence of young frogs. Although no breeding has yet been observed at Groot Tinkas, further collecting immediately after rains may show that toads do breed there, as the habitat and rainfall are similar to sites at Bluttkoppie where breeding was observed.

Toads in the dry Kuiseb river bed may breed either after floods caused by rains on the highlands, or after local rain. River flow is variable; in 1974 the river flowed for 102 days from 19 January, although in 1975 the river flowed for 6 days from 13 March. At Bluttkoppie, Tumasberg and Tinkas, pools are present for a short period compared to the site at the Kuiseb Bridge.

We expect populations to be found breeding to the west of the kuiseb bridge throughout the canyon bed as far as Homeb. Beyond Homeb the character of the river changes: the rocky canyon walls are replaced by sandy banks with occasional isolated granite outcrops. Less flood water reaches the lower stretches of the river from Gobabeb to the Kuiseb River delta. The record for Gobabeb is best explained either in terms of excessive river floods which are known to transport chelonians (*Pelomedusa*) and fish (*Barbus annoplus*) as well as *Xenopus* tadpoles and adults, or in terms of an escaped animal which was brought to the research station, possibly for photographic purposes, by one of the many visitors. Only one specimen has been collected there, even though one of us lives at Gobabeb.

B. v. hoeschi in the Namib desert is confined to topographic features which provide breeding pools: the bed of the Kuiseb river which drains the wetter highlands, or granite outcrops which effectively concentrate precipitation into small pools.

Isolated collecting records, unsubstantiated by evidence that the animal can and does breed at the site in question, may confuse our understanding of animals living at the extreme limits of their ranges. The use of the quarter-degree grid system, rather

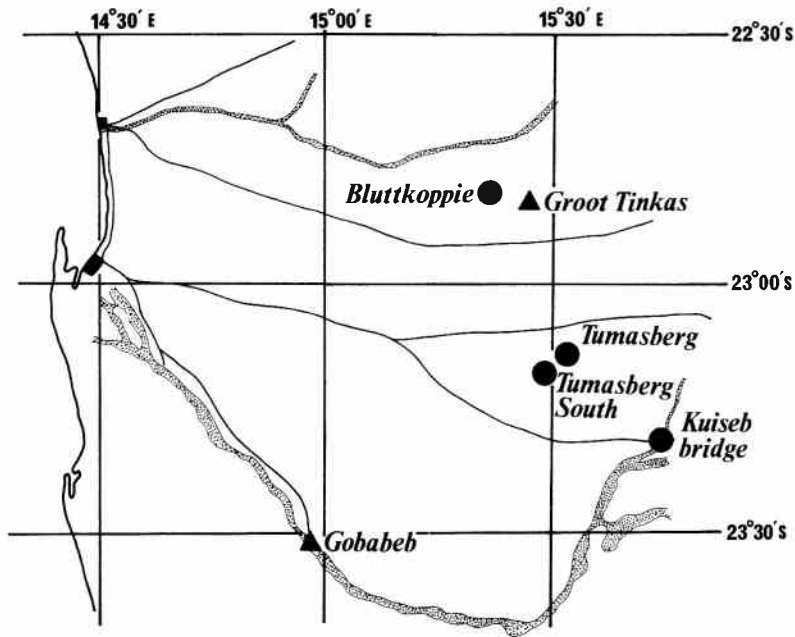


FIG. 1. Distribution of *Bufo vertebralis hoeschi* in the Namib Desert Park. Circles—breeding records; triangles—isolated individuals.

than pinpointing exact localities, further misleads further investigations. We recommend that more emphasis be placed on the location of known breeding populations, rather than on merely extending the ranges of animals by collecting isolated individuals, especially when such individuals might have been unnaturally carried into an area where they do not occur under normal circumstances and where they cannot survive for prolonged periods.

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