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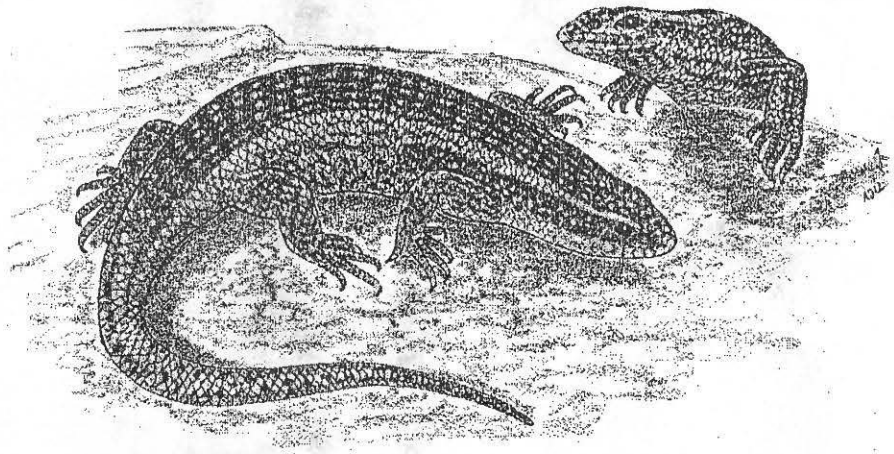

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# THE LEOPARD TORTOISE, *GEOCHELONE PARDALIS*: ONE TAXON OR TWO?

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The taxonomy of the Leopard Tortoise *Geochelone pardalis* has been the subject of disagreement for several decades, and the matter seems still to be unresolved. At present the general trend is to recognise only a single form. To the average tortoise-keeper the matter may seem academic, since morphological differences between the two subspecies are (at least as far as subadults and adults are concerned) very slight indeed.

However, the issue goes far beyond mere technicalities and has important implications for conservation and for animal husbandry. I have frequently had Leopard Tortoises referred to me for treatment where the problem clearly stems from biological differences rather than medical causes.

*Geochelone pardalis pardalis* was first described by Bell (as *Testudo Pardalis*) in 1828 on the basis of material from the Cape of Good Hope. The vernacular name Bell's Leopard Tortoise is here proposed for those who recognise two subspecies. *Geochelone pardalis babcocki* was described by Loveridge in 1935, on material from Mount Debasien, Uganda. The vernacular name Babcock's Leopard Tortoise is here proposed for this subspecies.

Branch (1998: 30) states that *G. p. pardalis* is distinguished "only by a larger plastral concavity in males, and in larger size", but shows the distribution for only a single taxon on his map. Loveridge & Williams (1957: 229 ff.) give more detailed differences, which may be summarised as follows:

*Geochelone pardalis pardalis*: Carapace distinctly convex. Carapace height contained in straight carapace length 1.61 - 2.11 times. Vertebral shields of young with a single areolar black spot.

*Geochelone pardalis babcocki*: Carapace flattened dorsally. Carapace height contained in straight carapace length 2.02 - 2.62 times. Vertebral shields of young with paired black areolar spots.

Many individuals do not conform to these differences, but there has been so much translocation by man that a good deal of hybridisation seems to have been inevitable. Loveridge & Williams' criteria should not be rejected on these grounds alone.

Greig & Burdett (1976: 261) give a distribution map showing the range of *G. p. pardalis* as extending in a rather narrow band along the south-western coast of the subcontinent, from about mid-Namibia down to Cape Town. *G. p. babcocki* is shown as covering the rest of the subcontinent. (There is a considerable overlap in the localities of the two taxa recorded by Greig & Burdett in Namibia, about which they expressed serious reservations, but the data do not show sympatry and there may well be a mosaic distribution pattern.)



If tortoise distribution is considered in a bioclimatic context, a definite pattern emerges. *Geochelone p. pardalis* occurs characteristically in more xeric vegetation than *G. p. babcocki*, being more or less confined to Succulent Karroo, Namaqualand Bush Veld, Coastal Renosterveld, Coastal Fynbos and Fynbos veld types (Acocks 1988). There also seem to be correlations with temperature, though these are more difficult to summarise briefly. In essence, the natural distribution boundary of *G. p. pardalis* seems to correlate quite closely with the 10°C annual range of mean temperature isotherm. Other climatic characterisitcs that seem to show a general, but apparently significant, correlation are summarised below (data from Schulze, 1965):

| | ***G. p. pardalis*** | ***G. p. babcocki*** |
|---|---|---|
| First frost | 1 July | 15 June |
| Last frost | 1 August | 15 August |
| Mean annual saturation deficit at 14h00 | <15 mb | >15 mb |
| Diurnal range of saturation deficit | <15 mb | >15 mb |
| Seasonal rainfall, October - March | <50% | >50% |
| Mean monthly rainfall as % annual normal | | |
| in July | 10-15% | >10% |
| in December | <5% | 5-20% |

Taking these points into account, some sense can be made of the frequently observed phenomenon in KwaZulu Natal that some Leopard Tortoises thrive in captivity while others do poorly - the latter do not feed as readily and are inclined to refuse many of the local plant species; they are also much more prone to non-specific respiratory tract problems and to respiratory tract infections. Such discrepancies are particularly noticeable in collections when owners have obtained tortoises from a variety of sources. Much more work needs to be done in elucidating the problem, but these observations seem to indicate that there may well be sound biological grounds for recognising two subspecies.

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