HERPETOLOGICAL INVESTIGATIONS IN THE SAND SEA OF THE SOUTHERN NAMIB

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by

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The Namib consists of an irregular mosaic of rugged mountains, gravel plains, sparsely vegetated hummocks and shifting sanddunes. The greatest concentration of more or less continuous masses of windblown sand are situated in the area from about Lüderitz to Walvis Bay, covering about 34 000 Km². The recent establishment of the Desert Research Station at Gobabeb provides an ideal situation to investigate, in the words of Prof. R.F. Logan, "one of the emptiest, bleakest and most useless areas of the world". Being situated on the northern edge of the sand sea it provides opportunity to find out more about life in that exceptionally inhospitable part of the Namib. It is well-known that a great number of invertebrates and even vertebrates have adapted to life in the sand and amongst the reptiles the web-footed gecko Palmatogecko rangei, the shovel-snouted sand lizard Aporosaura anchietae and the Namib Adder Bitis peringueyi are classic examples of Namib endemicsassociated with sand. Although the basic species composition of this desert is reasonably well-known, the details of distribution are still not clear especially in the sand sea. In general it appeared that the reptile population of the sands was homogeneous and relatively poor in species. However, when viewing the known distributions, some interesting questions arose. For example the known distribution of the legless lizard Typhlocontias brevipes extended from Mossamedes in Angola to the southern bank of the Kuiseb and appeared to stop there, while the legless lizard Typhlosaurus braini was only known from the dunes at Gobabeb. From the southern limits of the sand sea at Lüderitz a new Lacertid Meroles micropholidotus was described in 1938 but no further information became available for thirty years and the legless lizard Typhlosaurus meyeri apparently did not extend north of Lüderitz. The distribution limits of several species of reptiles thus remained obscure for a long time.

In recent years more attempts have been made to enter this area and since joining the Transvaal Museum I have been fortunate to make three extensive trips to the southern Namib which, in connection with several visits to the central Namib, especially Gobabeb, have provided some interesting information. The first journey was to the southern Namib from Oranjemund to Bogenfels within Diamond area No. 1. Although this did not touch the actual sand sea it helped to familiarize myself with southern sand-dwellers which do not occur sympatrically with ecological equivalents of the central and northern Namib.

A very informative trip was undertaken in 1970. Starting from Gobabeb the Tsondab plains and the Vley were the first objective. Here the legless lizard <u>Typhlosaurus braini</u>, hitherto known only from the type locality Gobabeb, was found. Although this find was not of great significance, it gave the indication that this species might be confined to the

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inner Namib. The next site was Sossus Vley and here, apart from the common sand reptiles, tracks of legless lizards were seen. Since no captures were made, the question whether this might be northern or southern forms remained unanswered. A visit to Koichab Pan produced Typhlosaurus meyeri, a species expected from there. A traversion of the sand sea from the Awasib mountains to the Uri-Hauchab mountains and to Sylvia Hill gave no further information regarding the distribution of the legless lizards but provided a completely new herpetological problem of a different nature. The Uri-Hauchab mountain forms a rocky island surrounded by the sand sea and is inhabited by rock-living animals. A new rupicolous scorpion (Hadogenes lawrenci) was collected there and specimens of Bibron's gecko (Pachydactylus bibronii) were found to be much smaller and very slender in comparison to the very robust large gecko in its normal form. This indicates the presence of island populations separate from the main population of the inland for long enough to show strong morphological changes.

In January 1974 an invitation by Dr M. Seely, directrix of the Desert Research Station, provided a further opportunity to study the above mentioned phenomenon as well as general distribution patterns. An expedition was organised to vist the coast line north of Lüderitz as far as motorised transport is usable. The furthest point which can be reached is Nordhuk at the northern end of the Spencer Bay enclave, about 120 Km north of Lüderitz. Along this stretch of coastline are three areas which are free of sand, partly rocky and are surrounded by the Atlantic ocean and the sand sea, thereby forming islands. During a period of ten days some time was spent at each of the Spencer Bay, Saddle Hill and Hottentot Bay enclaves and the initial results which have not been thoroughly evaluated yet indicate that further island populations of Pachydactylus bibronii as well as of the terrestrial lacertid Meroles suborbitalis exist. A single specimen of the common barking gecko Ptenopus garrulus was also found at Nordhuk but although the colour pattern is unusual no conclusions can be drawn on such inadequate material. Of sand living forms three specimens of Meroles micropholidotus at Spencer Bay Water and Great Amichab were a very useful addition to our collection. Previously we had only one specimen which came from near Sylvia Hill collected on the trip mentioned above. Apart from these only four other specimens are known which are from the Lüderitz area (2 types) and Great Amichab. This is another species of lizard with a poorly understood distribution which appears to be restricted to the southern coastal sand sea. The fact that it does not inhabit the entire sand sea - it has not yet been found along the northern limits s.a. Sandwich Harbour or on the Kuiseb River - poses some interesting questions. Its appearance and morphological adaptations are very similar to the widely distributed wedge-nosed sand lizard Meroles cuneirostris and its ecological requirements appear to be identical in areas of sympatry. Is it thus a younger form expanding into the sand or an old form being pushed back by its ecological equivalent? During this visit some valuable finds

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were made regarding the distribution of legless lizards. A specimen of <u>Typhlosaurus meyeri</u> was found at Spencer Bay Water and several individuals of <u>Typhlosaurus braini</u> as well as <u>Typhlacontias brevipes</u> were collected at Great Amichab. This proves the southward penetration of the sand sea by the two latter forms and an overlap of the two species of <u>Typhlosaurus</u> thereby eliminating the theoretical possibility that they were clinal forms of a single species on the northern and southern limit of the sand sea. Of interest was the fact that most of the <u>Palmatogecko</u> females were gravid during this period and an examination of more than 25 adult specimens, which were released again, showed the presence of bite marks on all individuals, indicating rather violent action either during mating or casual encounters.

The abovementioned trips provided some interesting results, proving to some extent that the apparently peculiar distribution patterns were only an indication of the limits of the activity of herpetologists, largely due to the inaccessibility of the area. Apart from solving some of the nagging questions regarding the ranges of several and living forms such as the legless lizards, an involved and interesting new problem was touched, namely the existence of island populations in the sand sea. Important "islands" such as the Meob-Conception Bay area and the "White Mountain" south of Sossus Vley as well as a few minor outcrops have not been sampled yet but will no doubt provide additional material showing local variation. A detailed comparative study of these island populations correlated with the most recent geomorphologic findings might shed some interesting light on the evolutionary tempo of morphological changes in these isolated survivors in the sand sea.

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