

An annotated list of amphibian and reptile observations from the Etosha National Park

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ABSTRACT

Reptiles and amphibians from the Etosha National Park were recorded in 1983, 1984 and in June 1985. Three species of frogs and 30 reptile taxa were documented, representing 11 snakes (1 booid, 6 colubrids, 3 elapids and 1 viper), 17 lizards (5 geckos, 3 agamas, 4 skinks, 2 cordylids, 2 lacertids and 1 leguaan) and 2 chelonians (1 tortoise and 1 terrapin). Preliminary results suggest that the rocky outcrops in the extreme southwest are inhabited by rupicolous reptiles thus far not recorded from other regions of the Park.

INTRODUCTION

One of the priorities in any nature reserve or game park is to conserve biotic diversity. To begin to achieve this, it is necessary to compile inventories of the flora and fauna of the conservation areas. Apart from an unpublished checklist with notes on the distribution of the reptiles by Kyle (Progress Report 1976/77) and a paper on the anurans by Jurgens (1979), little is known about the herpetofauna of the Etosha National Park. This situation is largely due to the importance attached to research and management of the Park's large mammalian fauna, and a shortage of research personnel.

The fieldwork for this paper was carried out from April to June 1983 and January to September 1984 while employed as a nature conservator in the Park and stationed at Okaukuejo, Namutoni and Otjovasandu respectively. An additional record was made during a tour of the Park in June 1985.

This paper reports on the occurrence, habits and distribution of some of Etosha's amphibians and reptiles. It is not intended as a checklist.

STUDY AREA

The Etosha National Park covers an area of 22 270 km² between approximately 18°35' to 19°33' latitude and 14°24' to 17°08' longitude in northwestern South West Africa/Namibia (Figure 1). The average height above sea level is 1000 m. The Park is generally flat, although in the extreme southwest spectacular outcrops of granite and dolomite occur. Smaller ridges of dolomite also occur along the southeastern and southern boundaries as well as at Halali where two isolated hills rise above the plain. The average rainfall varies from 300 mm in the west to 500 mm in the east with approximately 60% of the precipitation occurring in the first three months of the year (Jensen &

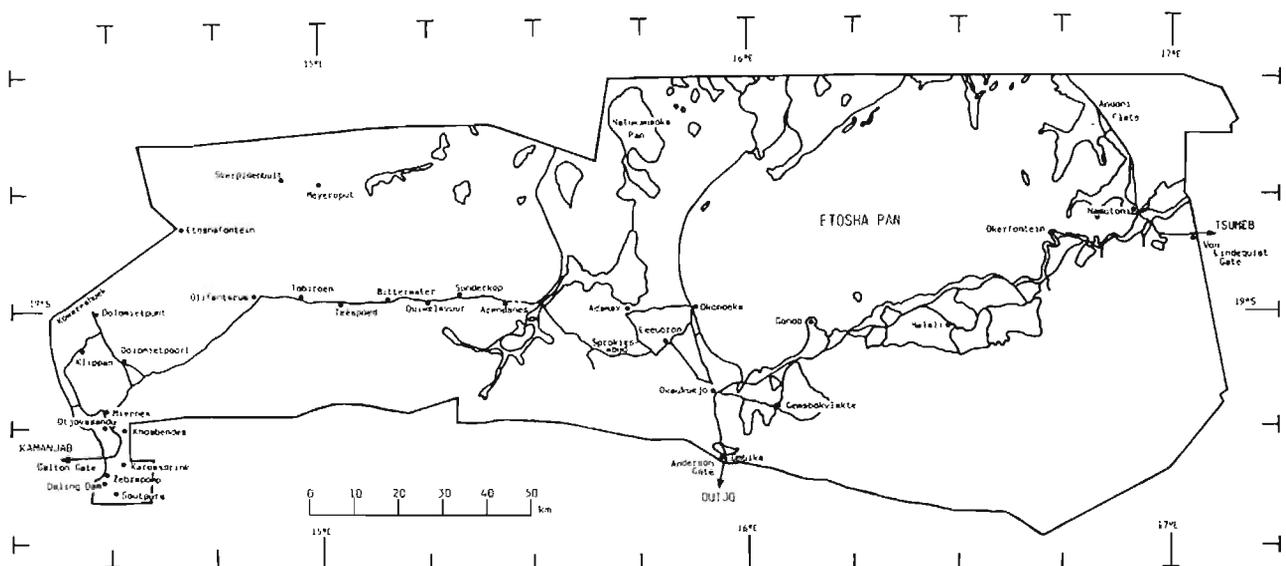


FIGURE 1: Map of Etosha National Park, showing major arterial routes and place names mentioned in the text.

Clinning 1976). Temperatures occasionally exceed 40°C during the hottest months (November and December) and may fall to below 0°C during July and August.

The substrate of the Park is dominated by calcareous soils, gravel and red-tinted Kalahari-type sands. The vegetation types can be briefly described as follows: grass plains with low shrubs; dense mixed woodlands dominated by *Spirostachys africana*, *Colophospermum mopane*, *Acacia* spp. and shrubs; mopane woodland; mixed thickets of thorn trees, including *Catophractes alexandrii* and *Terminalia prunioides* (Berry undated and pers. obs.).

There are over 100 perennial watering points in the Park, including artesian springs, contact seeps and 55 boreholes. In years of good rain the Etosha Pan, which covers an area of 4590 km² (Du Preez undated), is inundated from the north. Additionally, natural depressions and pits excavated to provide gravel for roads often remain filled with water for months after the rainy season.

MATERIALS AND METHODS

Permission to collect material was refused, and no voucher specimens are available. All amphibians and reptiles sighted and positively identified, including road victims and other mortalities, were documented. Whenever practicable, photographs were taken using a 35 mm SLR camera, close-focus zoom lens and colour slide film (transparencies). Photographic records of taxa are mentioned in the text. A selection of these photographs are lodged with the Windhoek State Museum.

Due to the difficulties in getting sufficiently close to the more nervous species of lizards to photograph or handle them for positive identification, a length of inner car tube was used to momentarily knock them senseless. Except where fresh dead material was available, only approximate lengths for specimens are given. Standard measurements were taken against a ruler, using the following abbreviations: T.L. = total length, S.V.L. = snout-vent length and S.L.S. = shell length straight.

The speed of lizards was calculated using a digital stop watch. Only speeds over distances of two metres or more were recorded, the shorter distances proving too short for reliable recording. Only the fastest speeds for the animals are given.

Localities were calculated on quarter degree maps. Identifications and nomenclature are based on four major texts: Passmore & Carruthers (1979) for frogs, FitzSimons (1943) for lizards, and FitzSimons (1970) and Broadley (1983) for snakes.

RESULTS

Amphibia

- ✓ *Breviceps adspersus adspersus* Peters 1882. Bushveld rain frog.

Only one specimen, an adult with a S.V.L. of about 3 cm, was found at von Lindequist Gate (1817 CC) in February 1984, following soaking convectional rains.

- ✓ *Pyxicephalus adspersus* Tschudi 1838. Bullfrog.

Large numbers of small adults, with S.V.L.'s. of 8-12 cm, were encountered during the day in and around temporary rain pools in the western portion of the Park (1814 DC, 1814 DD, 1914 AB, 1914 BA and 1914 BB) between March and May 1984 (photographic record). The subspecies is probably *P. a. adspersus* (J.C. Poynton in litt.).

- Tomopterna* sp. Duméril and Bibron 1841. Sand frog.

An adult male, with a S.V.L. of no longer than 3.5 cm, was heard calling from Otjovasandu garden pond (1914 BA) in June 1984. Later that evening it succeeded in attracting a female, with a S.V.L. of about 4 cm, and both were photographed in amplexus. A third specimen, with a S.V.L. of less than 4 cm, was found during the day in grassveld habitat at Zebrapomp in Kaross (1914 BC) in July 1984 (photographic record). Although the size, colour pattern of mottled greyish-brown without any white markings and scanty webbing of these frogs are similar to *natalensis* (Smith) 1849, their specific identity remains obscure.

Reptilia

- ✓ *Pachydactylus bibronii* A. Smith 1846. Bibron's thick-toed gecko.

This large, nocturnal gecko, with adults averaging a T.L. of between 14-16 cm, was commonly found in and around buildings in the Namutoni (1916 DD), Halali (1916 AB), Okaukuejo (1915 BB) and Otjovasandu (1914 BA) camps, and at the hut at Karossdrink (1914 BC) (photographic record). Males are highly territorial and attacked intruding conspecifics. Tails were occasionally broken off and consumed during these encounters. When handled, this gecko will attempt to bite and occasionally also emits a sharp squeak. Gravid females, each with two developing ova, were observed in late September. This gecko was observed feeding on a variety of arthropods, including spiders, beetles, bugs, moths, flies and flying termites.

- ✓ *Pachydactylus laevigatus laevigatus* Fischer 1888. Button-scaled gecko.

This large, nocturnal gecko, similar in appearance and size to *P. bibronii*, was observed at Otjovasandu (1914 BA) and at Karossdrink (1914 BC) where it occurs sympatrically with *P. bibronii* (photographic record). This gecko was seen emerging from exfoliating rock on the hills surrounding Otjovasandu at twilight. It is not as common as *P. bibronii* at these recorded localities.

- ✓ *Rhoptropus boultoni boultoni* Schmidt 1933. Boulton's slender-toed gecko.

This rupicolous diurnal gecko, with average adult T.L.'s. of 8-10 cm, was frequently encountered on granite outcrops throughout Kaross (1914 BC) (photo-

graphic record). It is partial to flying termites when these are available, scurrying over rocks at up to 2 m/s in pursuit of them. It was also observed feeding on small beetles and flies. When disturbed, it would disappear into the nearest crag or crevice.

Rhoptropus barnardi Hewitt 1926. Barnard's slender-toed gecko.

This rupicolous diurnal gecko, with average adult T.L.'s. of 6-8 cm, was found sympatrically with *R. boultoni* in rocky situations throughout Kaross (1914 BC) (photographic record). Its cryptic coloration makes this species difficult to detect, particularly against granite. It is similar to *R. b. boultoni* in both habits and food preferences.

✓ *Ptenopus garrulus garrulus* (A. Smith) 1849. Common barking gecko.

Orange-throated males were observed calling from burrows on shrub- and grassveld plains at Otjovasandu (1914 BA) on evenings in August and September.

Note: Many of the *P. bibronii*, *P. l. laevigatus*, *R. b. boultoni* and *R. barnardi* specimens examined were infested with red mites (family Acarinae).

✓ *Agama anchietae anchietae* Bocage 1896. Anchieta's agama.

Only one specimen, with a T.L. of 14 cm, was caught while it was foraging in a dry river bed at Karossdrink (6194 BC) (photographic record). It was clocked covering 3 m/s with head, body and tail carried clear off the ground in typical agamid running fashion.

✓ *Agama aculeata aculeata* Merrem 1820. Kalahari spiny agama.

Only one specimen, with a T.L. of 18 cm, was caught in an open patch of terminalia veld in the northeast portion of Kaross (1914 BC) (photographic record). It had a similar running gait and speed to *A. a. anchietae*.

✓ *Agama planiceps* Peters 1862. Damaraland rock agama.

This large, inquisitive and exclusively rupicolous agama was frequently encountered in rocky situations throughout Kaross (1914 BC) and at Otjovasandu (1914 BA) (photographic record). Adult males of this sexually dimorphic species averaged a T.L. 20-26 cm; adult females averaged a T.L. 16-20 cm. More females than males were observed in a ratio of approximately 2:1. A wide choice of foods were recorded for this agama, including beetles, bugs, flies, butterflies and moths, but it was particularly partial to flying termites when these were available. It is a quick-moving and agile species, scurrying over bare rock at speeds in excess of 2 m/s, and occasionally jumping distances of up to 1 m from rock to rock. It also often leapt into the air to catch insects. Males are territorial, quickly advancing on any intruding conspecifics. Sudden movements caused this agama to seek shelter in the

nearest crack or crevice. Individuals will occasionally scale the walls of buildings to bask or hunt. Gravid females were observed in August and September.

✓ *Mabuya acutilabris* (Peters) 1862. Sharp-snouted skink.

This relatively small skink, with adults averaging a T.L. of 11-13 cm, was frequently encountered in and around grass tussocks and shrubs at Karossdrink (1914 BC) (photographic record). This skink's burrows are situated in firm soil under tufts of vegetation, particularly shrubs. It will forage even during the hottest hours of the day, dashing from one patch of vegetation to the next, feeding on beetles, ants, and termites and their larvae, but will retreat to the safety of its burrow when threatened.

✓ *Mabuya spilogaster* (Peters) 1882. Speckle-bellied skink.

Many specimens, with adults averaging a T.L. of 14-17 cm, were encountered in a variety of situations, including broken rock, trees and buildings at Otjovasandu (1914 BA) and at Karossdrink in Kaross (1914 BC) (photographic record). In and around human dwellings they are particularly fond of wood structures, especially poles. This skink was observed feeding on flies and termites, including termite larvae.

✓ *Mabuya sulcata* (Peters) 1867. Koppie skink.

This relatively large, sexually dimorphic skink, with average adult T.L.'s. of 17-20 cm, was occasionally encountered on rock outcrops at Otjovasandu (1914 BA) (photographic record). It was observed feeding on beetles and flying termites after the summer rains. A heavily gravid female was observed in September.

✓ *Mabuya binotata* (Bocage) 1867. Owambo tree skink.

Only one specimen, an adult with a T.L. of 20 cm, was caught on a mopane tree at Otjovasandu (1914 BA) in September 1984 (photographic record).

✓ *Cordylosaurus subtessellatus* (A. Smith) 1844. Blue-tailed lizard.

This distinctive lizard, with its two dorsolateral white streaks running from tip of snout, over the eyes and across the length of the back where it continues in sky-blue onto the tail, was sighted only once at Otjovasandu (1914 BA) in April 1984 before disappearing under a rock.

✓ *Gerrhosaurus validus maltzahni* de Grys 1938. Giant plated rock lizard.

This large rupicolous lizard appears to be confined to the southwestern portion of the Park where it was often sighted on boulder-strewn, granitic koppies in Kaross (1914 BC) and west of Otjovasandu (1914 AB). A nervous and solitary species, it will disappear under boulders and into cracks and crevices at the slightest movement, situations from which it is almost impossible to dislodge due to its habit of compressing its body and wedging itself in.

Heliobolus lugubris (A. Smith) 1838. Black and yellow sand lizard.

This alert and quick-moving lizard was frequently encountered in the Kaross (1914 BC) and Otjovasandu (1914 BA) areas wherever sandveld or bushveld exists (photographic record). It was often observed darting from grass patches and shrubs in search of insects, which included termites and their larvae.

Adults display the peculiar habit of oscillating their forelegs in a circular motion when stationary. Juveniles differ noticeably from adults having black bodies speckled with yellowish-white dots and orange tails, whereas the latter have orange to brown bodies with three pale longitudinal stripes and fawn tails. Juveniles often hunched their backs when foraging.

Ichnotropis squamulosa Peters 1854. Rough-scaled sand lizard.

Only one specimen, with a T.L. of about 18 cm, was found in Kalahari-type sandveld approximately 5 km east of Kowareshoek (1814 DC) in July 1984 (photographic record).

Varanus exanthematicus albigularis (Daudin) 1802. White-throated monitor or rock leguaan.

Two specimens were encountered. The first, a young adult with a T.L. of about 110 cm, was observed crossing dry mopane veld midway between Otjovasandu and Galton Gate (1914 BC) (photographic record); the second, an adult with a T.L. of approximately 140 cm, was sighted drinking at Klippan overflow pond (1914 BA). When pursued, the young adult fled for the shelter of a mopane tree where it adopted a defensive posture.

Python sebae natalensis A. Smith 1840. African rock python.

A dead adult was seen on the side of the road between Okaukuejo and Halali (1916 AA) in February 1984. The carcass was in an advanced stage of decomposition and the cause of death could not be established.

A robust sub-adult, with a T.L. of about 120 cm, was encountered in a dense bed of *Phragmites* reeds overhanging a pond at Otjovasandu (1914 BA) in April 1984 (photographic record). This snake appears to have been attracted to the watering point by the large number of small birds, particularly red-billed queleas *Quelea quelea*, which come to drink there.

An adult specimen, with a T.L. of about 300 cm, was encountered basking in the sun in mopane veld at the base of a granite outcrop in Kaross (1914 BC) in June 1984.

An adult specimen, with a T.L. of about 350 cm, was discovered in the water trough at Khoabendes (1914 BA) in September 1984 (photographic record). Apparently a smaller python, with a T.L. of approximately 100 cm, was sighted nearby by labourers on the same occasion before it disappearing under broken calcrete. The adult python remained totally submerged for 28

min before being hauled from the trough. It was emaciated and weak, putting up little resistance on being handled. It recovered later and disappeared into the surrounding bush, but returned to the trough the following day.

✓ *Pseudaspis cana* (Linnaeus) 1754. Mole snake.

A juvenile, with a T.L. of about 36 cm and showing distinctive juvenile coloration, was sighted at Galton Gate (1914 AB) in May 1984.

✓ *Psammophylax rhombeatus rhombeatus* (Linnaeus) 1754. Rhombic skaapsteker or spotted grass-snake.

Two specimens, with T.L.'s. of approximately 40 cm and 50 cm respectively, were observed basking on a granite outcrop immediately north of Soutputs watering point in Kaross (1914 BC) in June 1984.

✓ *Psammophis subtaeniatus subtaeniatus* Peters 1882. Western stripe-bellied sand-snake.

An adult, with a T.L. of about 100 cm, was observed in patchy grass outside the nature conservation offices at Namutoni (1916 DD) in February 1984.

A sub-adult, with a T.L. of about 75 cm, was sighted on an outcrop of calcrete at Kowares (1814 DC) in June 1984.

An adult, a road victim with a T.L. of 92 cm, was found on the Otjovasandu-Miernes gravel road (1914 BA) in June 1984.

✓ *Philothamnus semivariiegatus semivariiegatus* (A. Smith) 1840. Variegated or spotted bush-snake.

A juvenile, with a T.L. of about 20 cm, was caught on a granite outcrop near Soutputs, Kaross (1914 BC) in June 1984 (photographic record). This snake differs in coloration from typical *P. s. semivariiegatus* as described by Broadley (1983) and from specimens observed in Natal and Zululand (pers. obs.) in that the black variegations extend along the entire dorsum from the nape of the neck to the tip of the tail.

A sub-adult, with a T.L. of about 70 cm, was observed on patchy grass - broken rock near Daling Dam, Kaross (1914 BC) in June 1984.

✓ *Dispholidus typus typus* (A. Smith) 1829. Boomslang or tree-snake.

A brown phase adult (probably female), with a T.L. of approximately 140 cm, was shot by a Park's official while it was feeding on masked weaver bird's (*Ploceus* spp.) eggs and fledglings near von Lindequist Gate, Namutoni (1817 CC) in February 1984.

✓ *Thelotornis capensis oatesii* (Günther) 1881. Oates' vine- or twig-snake.

A juvenile, with a T.L. of about 28 cm, was caught while lying motionless on the branches of a leafless mopane tree approximately 3 km south of Otjovasandu (1914 BC) in August 1984 (photographic record).

✓ *Naja haje anchietae* Bocage 1879. Anchieta's cobra.

A juvenile, with a T.L. of 47 cm and with a distinctive jet black bar across the throat, was killed in Okaukuejo Restaurant (1915 BB) in April 1983.

An adult, with a T.L. of approximately 100 cm, was encountered in dry grass habitat at twilight at Karossfontein (1914 BC) in June 1984. Broadley (1983) has noted that *N. h. annulifera*, which is similar in habits and closely related to *N. h. anchietae*, prefers to hunt at night.

Naja nigricollis nigricincta Bogert 1940. Western barred or zebra spitting-cobra.

A sub-adult, with a T.L. of about 80 cm, was observed basking on cement steps at a house at Otjovasandu (1914 BA) in July 1984. It did not spread a hood or attempt to spit when approached, but slid away. This spitting cobra intergrades with *N. n. woodi* (south-western black spitting-cobra) in western and central Namibia between the latitudes 22°S and 25°S (Boycott & Haacke 1979).

Dendroaspis polylepis (Günther) 1864. Black or black-mouthed mamba.

A small adult of slate grey colour, with a T.L. of approximately 220 cm, was sighted crossing a sandy track 1 km east of Soutpans, Kaross (1914 BC) in June 1984. It was pursued through grassveld where it adopted a defensive posture, spreading a thin hood and gaping its mouth.

Bitis caudalis (A. Smith) 1839. Single-horned adder.

A sub-adult, with a T.L. of about 18 cm, was observed basking on an outcrop of dolomite near the waterhole at Dolomietpunt (1914 BA) in April 1984.

An adult with an orange-tipped tail, and T.L. of about 26 cm, was found basking on a calcareous road 2 km east of Sprokieswoud (1915 BA) in June 1985 (photographic record).

Geochelone pardalis Bell 1828. Leopard tortoise.

Only one specimen, with a S.L. of 26 cm, was found in sparse grassveld along the southern boundary of Kaross (1914 BC) in July 1984 (photographic record).

Pelomedusa subrufa (Lacépède) 1789. Cape or hingeless terrapin.

Large numbers were sighted at Chudop (1816 DD), Ombika (1915 BB) and Klippan (1914 BA). A dead juvenile with a S.L. of 9 cm was found wedged in concrete near the overflow pond at Klippan.

DISCUSSION

Thirty one taxa of amphibians are known or expected to occur in SWA/Namibia (Channing & van Dijk 1976). According to Griffin's unpublished checklist of the Etosha's small vertebrates, as many as 16 taxa are expected from within the Park's boundaries. The survey by Jurgens (1979) resulted in only ten anuran taxa being recorded from the Park. The species diversity is low when compared to the Kruger National Park

(22 270 km² vs 19 485 km²) where some 33 taxa have been documented (Pienaar, Passmore & Carruthers 1976). Water quality may be a limiting factor; many of the contact seeps are saline, while high pH values and high concentration of dissolved chemicals have been recorded from a number of fountains (Jurgens 1979; Hofmeyr pers. comm.).

The occurrence of *Tomopterna cryptotis* at fountains in Kaross and at Otjovasandu, localities from which Jurgens (1979) recorded this species, could not be confirmed by the present author. The specific identity of the *Tomopterna* specimens photographed at Zebrapomp and Otjovasandu remains uncertain, and collections will be required to resolve the identity of this taxon.

There are still large gaps in our knowledge of the Etosha's reptiles and this can only be rectified through a more intensive survey. Kyle (unpublished) recorded not less than 49 reptile taxa from the park (24 snakes, 22 lizards and three chelonians), while Griffin (unpublished) suggests that as many as 110 reptile taxa (50 snakes, 51 lizards, five amphisbaenians and four chelonians) may occur. By comparison, a total of 108 reptile taxa have been recorded from the Kruger National Park, comprising 50 snakes, 46 lizards, six amphisbaenians, five chelonians and one crocodile, though as many as 114 may occur (Pienaar, Haacke & Jacobsen 1983).

Preliminary results suggest that the southwestern portion of Etosha, with its rocky outcrops, ravines, alluvial washes and plains, contains a far richer reptile fauna than any other region in the Park. One habitat which may prove particularly interesting to survey for reptiles is the isolated dolomite hills. Jensen and Clinning (1976), for instance, have noted that the isolated sharp-rocked grey dolomite koppies or ridges near Halali and along the southeastern and southern boundary harbour a spectacularly different vegetation. Tweekoppies, the two dolomite hillocks near Halali which rise steeply out of the surrounding mopane veld, is an ideal site for such a survey.

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