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MAMMALS OF ITALA NATURE RESERVE, NATAL

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INTRODUCTION

Itala Nature Reserve is situated in rolling hills south of the Pongola river. Historically the area was in the Vryheid Republic, and bordered on South Africa's first game reserve, the Pongola Game Reserve. Proclaimed in 1973 with an area of 8 094 ha, Itala was subsequently enlarged through the acquisition of additional farmland to its present size of 26 305 ha. While parts of the present reserve are in a fairly pristine state, others have been farmed or were the sites of kraals. These are still, and will remain so for many years to come, in a state of floristic and presumably also faunal succession. As the process of recovery from farming practices continues the species surviving at the time of proclamation, as well as those reintroduced, will in all probability resettle those areas occupied historically.

The geographical position and variation in topography, altitude, climate and vegetation types of Itala Nature Reserve present an area of great ecological and zoogeographical interest with which to compare the mammal fauna of other parts of southern Africa. The present paper documents the current state of the mammal fauna, and also lists those species known to occur in the past, but now absent.

MATERIAL AND METHODS

Geologically Itala consists of a mixture of ironstone shale and quartsite, dolomite, granite, and sandstone. The area is cleaved by drainage lines and deep valleys, extending predominantly N–S and opening mostly into the Pongola River basin. This results in an extremely varied topography and rugged terrain. The altitude varies between 350 m a.s.l. at the Pongola River to 1 550 m on the plateau to the west of Louwsburg. In conjunction with differences in topography and altitude rainfall also differs in various parts of the reserve, from *ca* 680 mm per year in the eastern valleys to 800—900 mm in the west, and up to *ca* 1 200 mm on top of the plateau. As a result of different substrates, altitudes and rainfall regimes, variation in the vegetation is evident.

Three broad vegetation types are recognised: a lowveld type (from *ca* 350 to 900 m a.s.l.), being an *Acacia-Combretum* community, with *Ficus* sp., *Spirostaccus africana, Acacia nigrescens* and *Albizia* sp. occurring, and with the grasses *Panicum maximum, Themeda triandra, Paspalum* spp. and pioneers such as *Aristida* spp. predominating, and also containing aloes, e.g. *Aloe rupestris, A. marlothii, A. umfoloziensis* and *A. muderiensis.*

The middleveld (*ca* 900—1 250 m) also contains *Acacia* spp. and *Combretum* spp. (but not *A. nigrescens*) as well as *Foria* sp. and *Cussonia* sp. with *Hyparrhenia* spp., *Themeda triandra* and *Eragrostis* spp. predominating, and containing *Aloe marlothii* and *A. sapenaria.*

The highveld region is that part of the reserve above 1 250 m altitude and, especially on the plateau, presenting an open grassland aspect. *Themeda triandra* and *Hyparrhenia* spp. predominate, bulbous plants are common and a different assemblage of aloes is found: *A. vryheidensis, A. suprafoliata* and *A. arborescens.*

The small mammal fauna was censussed from 2—15 February 1980 in three main localities: the Craigadam valley, down to the Pongola river; the escarpment and plateau to the west of Louwsburg, and the Doornkraal valley and

surrounding hills. Three trap types (Museum Special snap, Victor rat snap, and collapsible aluminium Sherman live) were used singly, or in combination in trap lines, spaced 10 or 20 m apart. The traps were baited with a mixture of peanut butter, rolled oats, golden syrup and sunflower oil and checked and rebaited late in the afternoon and early in the morning. As all traplines did not contain the same number of traps, captures were calculated as to no. captures/100 trapnights; a "trapnight" being one trap set for a 12 h-period. Large wiremesh live traps (National Trap Co.) were set in likely-looking areas, especially near tracks or along watercourses to capture small carnivores, and Macabee gopher traps were set for rodent moles in the vicinity of visible mole heaps. Bats were collected in mist nets placed over ponds or across streams. Lagomorphs and carnivores were collected with a 12-bore shotgun. Census data were combined with sight records made during the census period, as well as data accumulated over the years by G. Root who has been park warden since proclamation of the reserve.

All specimens trapped were weighed, meaured and where feasible reproductive condition noted and in a few cases stomach contents analyzed. Scrotal, enlarged testes in males, and perforated vaginae or enlarged, turged nipples in females were taken as animals being in breeding condition. Stomach contents were stirred into water in a petri dish and contents categorized as percentage green plant material (– leaves), white plant material (seeds and stems) and insects, using a stereoscopic microscope with graticule eyepiece and basing results on the composition as seen in several squares. Voucher specimens were prepared of all species captured, the majority of which are deposited in the Transvaal Museum whereas some are utilized in the teaching collection of the Zoology Department, University of Pretoria.

In total 28 traplines were set out in a variety of habitats, at different altitudes and on slopes with differing aspects.

Species diversity (D) was calculated using Simpson's index, where

$$D = 1/\sum_{n=1} p_i^2$$

(where $p_i \ldots p_n$ – proportion of species in the captures of a particular habitat, and was standardized by dividing the value by n – number of species, to give values of 0–1; the higher the value, the higher the diversity, or the distribution (evenness) of numbers caught between the different species. Only where more than two species were caught at a particular location was D calculated.

SPECIES ACCOUNTS

Order INSECTIVORA

Family SORICIDAE

Crocidura cyanea (Duvernoy, 1838) Reddish-grey musk skrew

Meester (1963) recognises two subspecies, one from the western arid regions, as well as *C.c. infumata* from the higher rainfall areas towards the east. The only specimen collected at Itala answers to the description of *C. c. infumata*, and was trapped in tall grass amongst scattered rocks on the escarpment.

Crocidura flavescens (I. Geoffroy, 1827) Giant musk shrew

In southern Africa the giant musk shrew is encountered in the eastern regions of relatively higher rainfall such as the Eastern Province, Eastern Transvaal, Zimbabwe and Mocambique. All five specimens from Itala were collected in dense mountain sour grassveld upon the plateau, i.e. within the mist belt.

Crocidura gracilipes Peters, 1870 Peters' musk shrew

Whereas Meester (1963) considered *C. silacea* as a valid species, and N.J. Dippenaar (pers. comm.) maintains that critical analysis based on adequate samples is likely to confirm the validity of this taxon, we are in the interim following Heim de Balsac and Meester (1977) in assigning the single specimen accrued at Itala to the subspecies *C. gracilipes silacea*. This animal was trapped in grass along the edge of a marsh on the escarpment.

Myosorex varius (Smuts, 1832) Forest shrew

The material from the Itala Nature Reserve is provisionally assigned to *M. varius*, pending the results of a revision of the genus by D.A. Wolhuter. Two of the three specimens reported here were taken amongst dense reeds on the banks of a perennial stream upon the escarpment at the eastern boundary of the reserve. The third specimen was also found in marshy conditions at higher altitudes, but towards the centre of the reserve.

Suncus varilla (Thomas, 1895) Lesser dwarf shrew

The lesser dwarf shrew predominantly utilizes termitaria as refuges. An intensive search for this species at Itala has yielded four animals (of which one escaped). All four were found within disused termitaria on a grassy knoll in the valley near the Park's entrance.

Order CHIROPTERA
Family PTEROPODIDAE

Epomophorus wahlbergi (Sundevall, 1846) Wahlberg's epauletted fruit bat

A single specimen was netted over a permanent stream within an hour after sunset.

Family NYCTERIDAE

Nycteris thebaica E. Geoffroy, 1818 Common split-faced bat

Although several old mines and a sandstone cave (the preferred roosts of this species) on Itala Nature Reserve were searched, no split-faced bats were encountered. However, this species is in the habit of visiting regular nighttime roosts about an hour after sunset, presumably after an initial bout of feeding. One of six animals which regularly roosted under a thatched roof near our camp from 21h00 onwards, was collected.

Family RHINOLOPHIDAE

Rhinolophus blasii Peters, 1867 Peak-saddle horseshoe bat

This species appears to be an inhabitant of open woodland areas. Thus far it has been collected in the Republic from scattered localities within the Transvaal only. Two of the specimens reported here were taken deep within a sandstone cave at Itala, and as such not only represent a considerable southwards extension of the known range of this species, but also a new record of occurrence for Natal (albeit marginally). The occurrence of this species in Natal is, however, convincingly substantiated by four hitherto unreported specimens housed in the Transvaal Museum collection, accrued by D.A. Wolhuter on 14 April 1979 at Ngubevu (28°44'S; 30°38'E). The latter is currently the southernmost known occurrence of this species.

Rhinolophus clivosus Cretzschmar, 1826 Geoffroy's horseshoe bat

At Itala, 19 specimens of Geoffroy's horseshoe bat have been found in old gold mines as well as in the twilight zone and the dark interior of a deep sandstone cave. The horseshoe bat has a predilection for damp caves, where it also hibernates during winter. No gravid females were collected during our visit, supporting findings in the Transvaal that females give birth to a single off-

spring during a short period in the first half of summer.

Family VESPERTILIONIDAE

Miniopterus fraterculus Thomas and Schwann, 1906 Lesser long-fingered bat

In agreement with Hayman and Hill (1971) *M. fraterculus* is here treated as a distinct species. Apart from the distinguishing characters listed by Hayman and Hill *(op. cit.)*, it was pointed out by D.A. Wolhuter (pers. comm.) that the wings of *M. fraterculus* are distinctly black as opposed to the slate-grey wings of *M. schreibersii*. These two species regularly occur in the same caves in Natal. The four specimens taken from the Itala Nature Reserve were found in the same damp sandstone cave with *R. clivosus*, *R. blasii* and *M. tricolor*.

Eptesicus capensis (A. Smith, 1829) Cape serotine bat

Preferred daytime roosting sites are narrow crevices as found for instance in buildings, amongst rocks, under the loose bark of trees, etc., which small groups of *ca* 2—12 occupy throughout the year. However, two of the six specimens collected from the Itala Nature Reserve were found suspended openly from the thatched roof inside a rondavel. The remainder of the specimens were netted over a stretch of open water.

Eptesicus hottentotus (A. Smith, 1833) Long-tailed serotine bat

Judging from available information this species prefers the more arid environments in the western regions of southern Africa. It was therefore a surprise when a single specimen was netted over a river with well-wooded banks in Itala Nature Reserve. Although Ellerman *et al.* (1953) and subsequently Hayman and Hill (1971) reported the occurrence of this species in Natal, the specimen reported here is the first from Natal to be deposited in a southern African museum collection.

Myotis tricolor (Temminck, 1832) Temminck's hairy bat

Although Temminck's hairy bat occurs from the Cape to Ethiopia in areas with a higher rainfall, it is nowhere common. A colony of several hundred individuals was encountered deep within a damp sandstone cave at Itala, of which 12 were collected. However, this species was not encountered in any of the disused mine adits, but may on occasion utilize these since it is known to display nonseasonal local migrations.

Pipistrellus nanus (Peters, 1852) Banana bat

The banana bat is restricted to wooded regions receiving a relatively high annual precipitation. It is commonly found roosting in small groups within the rolled-up terminal leaves of banana or *Strelitzia* plants. However, it is also known to take refuge in confined spaces found in various other structures. Of the 37 collected from the rolled-up leaves of banana plants in Itala, two colour phases are evident. Those in the buffy colour phase were all fully mature animals, whereas those in the dark slate-grey phase were immature animals with no wear evident on the cheeckteeth. The banana bat appears to be ecologically restricted to the vicinity of permanent surfaces of open water, such as found in the Itala Nature Reserve.

Scotophilus dinganii (A. Smith, 1833) Yellow house bat

Formerly known as *S. nigrita*, until Robbins (1978) stated that this name has been applied to the wrong taxon since the late 1800's. *S. nigrita* is in fact the senior synonym of *S. gigas*, whereas the next available name of the taxon previously incorrectly called *S. nigrita*, should be *S. dinganii* (see also Swanepoel *et. al.*, 1980).

The single specimen from Itala was netted over a stream about an hour af-

ter sunset.

Family MOLOSSIDAE

Tadarida aegyptiaca (E. Geoffroy, 1818) Egyptian free-tailed bat

This is a widespread species occurring in a wide range of environmental conditions, ranging from deserts to coastal forests. The single specimen from Itala was found in a narrow crack in a sandstone boulder on a mountainside at the Craigadam section of the reserve.

Order PRIMATES
Family GALAGIDAE

Galago crassicaudatus E. Geoffroy, 1812 Bushbaby

In the Itala Nature Reserve the bushbaby is widespread and common in the riverine forests up to the base of the escarpment. One specimen was collected.

Family CERCOPITHECIDAE

Cercopithecus pygerythrus (F. Cuvier, 1821) Vervet Monkey

Although small groups of vervet monkeys are encountered throughout the lowveld region of the reserve, it is nowhere common. A small resident population existed when the reserve was proclaimed. During our visit a solitary male was encountered on the plateau in typical grassland of the highveld, which is unusual for this species.

Papio ursinus (Kerr, 1792) Chacma baboon

As far as could be established only five individuals occurred in the reserve at the time of proclamation. During August and September 85 animals were reintroduced from the Umfolozi and Mkuzi Game Reserves. The newly established population has increased, and is now distributed throughout the reserve.

Order PHOLIDOTA
Family MANIDAE

Manis temminckii Smuts, 1832 Pangolin

One of us (G.A.R.) saw an active individual at *ca* 09h00 during 1973. No further sightings of pangolins have since been reported by any of the 23 game guards.

Order LAGOMORPHA
Family LEPORIDAE

Lepus saxatilis F. Cuvier, 1823 Scrub hare

A widespread and common hare throughout southern Africa. Although it is entirely sympatric with *L. capensis*, the latter species was not encountered at Itala. T.J. Robinson (pers. comm.) points out that on the basis of his cytotaxonomic and morphometric revision of southern African Lagomorpha, *L. crawshayi* may justifiably be taken out of synonymy under *L. saxatilis*. Such a taxonomic re-arrangement, however, is unlikely to affect the status of Itala material. The scrub hare has a predilection for denuded areas, and all five specimens reported here were collected at night in such areas amongst *Acacia* shrub.

Pronolagus crassicaudatus (I. Geoffroy, 1832) Greater red rock hare

Red rock hares are not uncommon in their preferred habitat of rocky situations within mountainous conditions. All three species of *Pronolagus* are underrepresented in museum collections, which is an artefact of lack of access roads rendering effective night collecting by vehicle impossible in most in-

stances. Such a road on the plateau within the Itala Nature Reserve was patrolled on two nights, and *P. crassicaudatus* was found to be as abundant within that particular habitat as *L. saxatilis* was within its preferred environment on the valley plains below. It seems that at Itala the red rock hare is more common on north facing slopes.

Order RODENTIA
Family MURIDAE

Saccostomus campestris Peters, 1846 Pouched mouse

The pouched mouse is granivorous, depending to a large extent on the seeds of woody plants as a source of food. The range of this species thus correlates largely with wooded areas. Substrates with sparse grass cover seem to be preferred. At Itala Nature Reserve, five specimens of *S. campestris* were collected from fairly level, well wooded areas with moderate grass cover.

Steatomys krebsii Peters, 1852 Krebs' fat mouse

The taxonomy of this genus is as yet unsatisfactorily resolved, and in the interim we are following Coetzee (1977) in recognizing the specimens acquired from Itala as *S. krebsii* on the basis of both their large size and their distributional attributes. All four specimens reported here were collected in old lands with red loam soil.

One pregnant female was found, with five embryos.

Aethomys chrysophilus (de Winton, 1897) Red veld rat

Whereas *A. namaquensis* is restricted to rocky inclines, this species is found only on level ground of woodland savannas. Its close association with this habitat type is as yet not fully examined, since local population density seems to be favoured by the quality of grass cover rather than that of the woody component of an ecosystem. Because of the mountainous terrain of Itala Nature Reserve *A. chrysophilus* does not feature prominently as a uniformly abundant animal, although it is found in fair numbers in those few areas offering suitable habitat.

Aethomys namaquensis (A. Smith, 1834) Namaqua rock mouse

One of the most common and widespread rodents in southern Africa. It occurs almost without exception on rocky mountain slopes with at least moderate grass cover. Because of the predominantly mountainous terrain of the Itala Nature Reserve, the Namaqua rock mouse is by far the most frequently encountered rodent within the reserve. Some individuals are in the habit of building large untidy nests from grass and other plant materials within rock crevices. Judging from the appearances of some nests, these are permanently occupied by succeeding generations. Stomach contents analysis indicates a diet of grass stems and leaves, with insects taken occasionally.

Eight stomach contents were analysed; these had 53,1 per cent white and 42,5 per cent green plant material, as well as 4,4 per cent insects. Only one pregnant female with two embryos was found.

Dasymys incomtus (Sundevall, 1847) Water rat

As implied by its vernacular name, the water rat is restricted to areas of permanent water, preferably of a marshy nature. Although its range is as wide as that of *O. irroratus*, it is nowhere as abundant. The three specimens reported here were trapped along with two vlei rats in a marshland on the plateau on what used to be the farm Breda.

Lemniscomys griselda (Thomas, 1904) Single-striped mouse

The distribution of *L. griselda* correlates well with the Southern Savanna Woodland biotic zone, where its preferred habitat is good grass cover on level

plains at lower altitudes. In spite of its wide range, it is nowhere common. Grass stems seem to form the main food item. At Itala 13 single-striped mice were recorded from the lowveld areas only.

A female gave birth to four young in a trap.

Mus minutoides A. Smith, 1834 Pygmy mouse

The pygmy mouse occurs throughout Africa south of the Sahara. The taxonomy of the genus, and of this species especially, is still subject to controversy. *M. minutoides* as presently understood (Petter, 1975), exhibits marked variation in the chromosomal diploid number (2N = 18 – 34). It is likely that, as more material becomes available and is critically analysed in the light of the abovementioned karyotypical variation, this taxon may be found to consist of two or more sibling species. The pygmy mouse was trapped at Itala in most of the prevalent habitats, including marshland, grassland and woodland.

Praomys natalensis (A. Smith, 1834) Multimammate mouse

The most widespread and abundant rodent in this subcontinent. It has a wide habitat tolerance. Its remarkable adaptability to ecologically disturbed environments resulting in increased population densities (Meester *et al.*, 1979), renders this creature of major economic importance. Lyons *et al.* (1977), and Green *et al.* (1980) have shown that what has formerly been believed to be *P. natalensis*, is in fact two morphologically very similar species. The one is characterized by a 2N chromosome complement of 32 *(P. natalensis)*, whereas the other has a diploid number of 36 *(P. coucha)*. Unfortunately we did not have the opportunity to karyotype any animals during our visit, but have reason to believe that both species are represented in Itala.

Stomach contents of seven animals were noted. These consisted of (mean figures) 68,6 per cent white plant material, 13,4 per cent green plant material and 18,1 per cent insects.

Rhabdomys pumilio (Sparrmann, 1784) Striped mouse

Although it is regarded as a common rodent, it generally is not comparable in relative population densities with *P. natalensis, A. chrysophilus* or *A. namaquensis*. The striped mouse seems to be very partial to dense grass or shrub cover. Deterioration in the quality of the cover adversely affects population densities of this species. Contrary to the majority of southern African rodents, it is diurnal. At Itala it was collected only at higher altitudes.

Thamnomys dolichurus (Smuts, 1832) Woodland mouse

An arboreal rodent mostly encountered in the evergreen forests of the eastern higher rainfall areas of southern Africa. The only specimen from the Itala Nature Reserve, was collected from a dense patch of forest at the base of a rocky outcrop on the Craigadam section.

Otomys irroratus (Brants, 1827) Vlei rat

The vlei rat is widespread and common in suitable habitat of the eastern higher rainfall areas of southern Africa. It is restricted to moist environments, viz near water sources or dense montane grasslands within the mistbelt. Only two specimens were procured from Itala Nature Reserve, both in a marshy area on a plateau.

Graphiurus murinus (Desmarest, 1822) Woodland dormouse

The woodland dormouse is more commonly found in association with the taller trees of woodland savannas. The rock dormouse on the other hand, is mostly restricted to rocky environments of mountain slopes. The single specimen of woodland dormouse from Itala was snaptrapped in an environment intermediary to the preferred habitats of the two species mentioned above,

i.e. a slight incline with scattered shrub and grass with a substrate of red loam and scattered small rock rubble.

Hystrix africaeaustralis Peters, 1852 Porcupine

Porcupines are common at Itala. Individuals are mostly seen in the lowveld areas, although some are occasionally encountered as high as 1 500 m a.s.l., such as on the Ngedle plateau. These animals appear to inhabit, or at least travel to the middleveld areas regularly, as they create well-used footpaths between the middleveld and lowveld. These footpaths are peculiar in that they form the shortest, but often precarious, connections between points instead of following contours.

Thryonomys swinderianus (Temminck, 1827) Greater canerat

Although not common, this rodent occurs along the vegetated streambanks at lower altitudes. The presence of canerats is easily established by their distinctive runways strewn with reed cuttings and the characteristic faecal pellets. The single specimen collected from the Craigadam section of the reserve, was trapped in a wire mesh livetrap set for small carnivores.

Cryptomys hottentotus (Lesson, 1826) Common molerat

The common molerat is a widespread and hardy rodent, occurring in a wide variety of habitats. In Itala Nature Reserve rodent mole signs were encountered only on the Ngedle plateau in pockets of black granular soil amongst rock where two specimens were collected. No signs of mole activity were observed at areas of lower altitudes and if this animal is indeed absent elsewhere in the reserve, no explanation can be offered.

Order CARNIVORA
Family CANIDAE

Vulpes chama (A. Smith, 1833) Cape fox

The Cape fox is rare at Itala. Rare sightings reported by the game guards confirm its continued existence.

Canis mesomelas Schreber, 1778 Black-backed jackal

Jackal occur throughout the reserve and a single sub-adult was collected.

Family MUSTELIDAE

Aonyx capensis (Schinz, 1821) Clawless otter

No clawless otters have been seen in the Pongola river, probably as it does not offer adequate shelter along its banks, but they are regularly observed along the densely vegetated rivers and streams in deep valleys. These streams all have rocky beds with deep pools.

Mellivora capensis (Schreber, 1776) Honey badger

Although uncommon, solitary individuals are regularly seen at night on the entrance road to the reserve.

Family VIVERRIDAE

Atilax paludinosus (G. Cuvier, 1829) Water mongoose

Thus far not recorded along the Pongola river, probably due to the absence of adequate cover. However, these animals or their tracks and faeces are to be encountered along most of the small streams with calmer water and denser aquatic vegetation offering suitable cover.

Herpestes ichneumon (Linnaeus, 1758) Large grey mongoose

When encountered it is always near the waters of upper reaches of permanent streams. It has a strong predilection for good cover, especially sedges and tall grass growing on streambanks.

Herpestes sanguineus Rüppel, 1836 Slender mongoose

These diurnal and mostly solitary little carnivores are common in the lowveld and middleveld areas of the reserve. The slender mongoose exhibits a marked dependence on adequate cover, mostly in the form of wooded vegetation.

Ichneumia albicauda (G. Cuvier, 1829) White-tailed mongoose

In distribution this small carnivore also displays a marked attachment to the Southern Woodland Savanna biotic zone, apparently to satisfy a demand for substantial cover. Usually solitary individuals are seen hunting at night. Most sightings have been on the entrance road.

Mungos mungo (Gmelin, 1788) Banded mongoose

The banded mongoose is rare in Itala Nature Reserve. Only one group of seven individuals is known to frequent the area of the eastern boundary along the Pongola river at an altitude of *ca.* 400 m a.s.l.

Genetta tigrina (Schreber, 1778) Large-spotted genet

This genet occurs naturally and fairly abundantly in the thickets along rivers and streams.

Family HYAENIDAE

Crocuta crocuta (Erxleben, 1777) Spotted hyaena

The spotted hyaena is known to have occurred during historical times, but became locally extinct once farming practices were established and intensified. There are no immediate plans to reintroduce this species.

Hyaena brunnea Thunberg, 1820 Brown hyaena

According to historical records this was a resident of the Itala area during early times, but became extinct once farming practices were intensified. This species has been scheduled for reintroduction, and the first two were brought to the reserve during May, 1980.

Proteles cristatus (Sparrmann, 1738) Aardwolf

Individuals are regularly seen at night in old lands and adjacent overgrazed veld of the lowveld section towards the entrance gate. The stomach of the single specimen collected, as well as scats from several middens, contained *Trinervitermes trinervoides* termites almost exclusively.

Family FELIDAE

Acinonyx jubatus (Schreber, 1778) Cheetah

Since cheetah were resident in the Itala area during earlier times, a programme was initiated during April 1979 to reintroduce them. Initially a group of seven and later another six from Kalkrand was released after five weeks' acclimatization. One female died. Both groups presently reside in the lowveld basin, also known as the amphitheatre. They are regularly observed, and no further mortalities have been reported to date. Two litters (3 and 4) were born during 1980.

Felis caracal Schreber, 1776 Caracal

There were a few naturally occurring individuals when the reserve was proclaimed. However, during the early winter months of 1977 four males from the Cape Province, as well as a male and a female from the Estcourt district, have been re-introduced to supplement the resident population. Individuals are regularly seen, even during the early mornings and late afternoons.

Felis lybica Forster, 1780 Wild cat

This animal is not often seen because of its nocturnal and retiring habits,

but is observed from time to time in Itala Nature Reserve.

Felis serval Schreber, 1776 Serval

Serval have been sighted on several occasions at the base of the escarpment and at Ngulubeni ridge — both within the middleveld.

Panthera pardus (Linnaeus, 1758) Leopard

Tracks indicate that two solitary individuals occur at the Thalu and Mhulumbele streams. It is very likely that others occur elsewhere in the reserve, and that harassed individuals from surrounding farming areas will take up residence in the many remote and undisturbed areas of the reserve. Therefore no introductions of leopard from other reserves are at present considered.

Order HYRACOIDEA
Family PROCAVIIDAE

Procavia capensis (Pallas, 1766) Rock dassie

Several colonies of rock dassie were encountered in areas of suitable habitat, especially along the edge of the plateau where a single specimen was collected.

Order PERISSODACTYLA
Family EQUIDAE

Equus burchellii (Gray, 1842) Burchell's zebra

To date 130 animals have been reintroduced to the reserve, five from Umfolozi and 125 from Swaziland. The population is breeding very well, and is distributed throughout the middle and lowveld areas.

Family RHINOCEROTIDAE

Ceratotherium simum (Burchell, 1817) Square-lipped rhinoceros

At present 34 animals occur within the amphitheatre and the eastern sector of the reserve, both areas comprising lowveld and middleveld vegetation types. Of the 34 animals, 11 were born on the reserve, whereas the original 23 were reintroduced from the Ndumu, Umfolozi and Vernon Crooks nature reserves since October 1974.

Diceros bicornis (Linnaeus, 1758) Hooked-lipped rhinoceros

Twenty animals were reintroduced between 1973 and 1980, of which two died. A calf was born during 1977, and another during 1979.

Order ARTIODACTYLA
Family SUIDAE

Phacochoerus aethiopicus (Pallas, 1766) Warthog

No warthog occurred when the reserve was proclaimed. Since 1975 238 individuals were reintroduced, of which 68 died during cold spells.

Potamochoerus porcus (Linnaeus, 1758) Bushpig

When the reserve was proclaimed bushpig were rare. Six animals have been introduced. Although seldom seen, bushpig rooting activities at Itala are often encountered in the old lands of the middleveld area.

Family GIRAFFIDAE

Giraffa camelopardalis (Linnaeus, 1758) Giraffe

To date 20 individuals have been reintroduced, of which seven died. Presently the majority of these animals occur in the amphitheatre, with some living in the eastern section.

Family BOVIDAE

Aepyceros melampus (Lichtenstein, 1812) Impala

A few impala persisted in scattered localities when the reserve was proclaimed. By 1975 700 females and 100 males were released. Currently the population is estimated at 4 000 animals, with the highest concentration within the amphitheatre. Approximately 500 impala have recently been translocated from the amphitheatre to other areas of the reserve, particularly the deep valley towards the northeast.

Connochaetes taurinus (Burchell, 1823) Blue wildebeest

During May and June, 1979 150 individuals were released on the reserve. This herd has increased to *ca* 170—180 by January 1980. Small herds have scattered throughout the reserve, although the biggest concentration is in the west, mostly in the grassy areas of the middleveld.

Damaliscus lunatus (Burchell, 1823) Tsessebe

During August, 1978 nine females and three males were reintroduced. Shortly afterwards a male died, whereas eight calves were born. One calf was taken by a cheetah. During 1979 a further four calves were born and five during 1980. Tsessebe prefer the middleveld vegetation of the reserve.

Oreotragus oreotragus (Zimmermann, 1783) Klipspringer

This is one of the few larger mammals that persisted in the area, and needed no re-establishment. Klipspringer can be seen throughout the reserve where rocky environments exist.

Ourebia ourebi (Zimmermann, 1783) Oribi

At present only two males are known to occur on the reserve, encountered mainly on the grasslands of middleveld areas. Reintroduction of more individuals is envisaged, pending availability of animals.

Raphicerus campestris (Thunberg, 1811) Steenbok

Steenbok occur singly or in pairs throughout the reserve, and have increased in numbers since proclamation.

Taurotragus oryx (Pallas, 1766) Eland

Since the reintoduction of 21 individuals, six animals died whereas 19 calves were born. No eland occur in the eastern areas of the reserve, but are dispersed throughout the remainder of Itala.

Tragelaphus angasii Gray, 1849 Nyala

Since August 1978 33 nyala were translocated from the central complex of the Hluhluwe and Umfolozi Reserves. Three animals died subsequently. Since nyala keep to riverine vegetation and are thus seldom seen, no data on the breeding success of the Itala population are available.

Tragelaphus scriptus (Pallas, 1766) Bushbuck

By virtue of their elusive and secretive habits as well as the impenetrable nature of their preferred habitat, bushbuck persisted in Itala Nature Reserve. It occurs naturally in fair numbers along the Pongola River, decreasing in density from east towards the west. Inexplicably bushbuck are not found along any of the other streams of this sanctuary.

Tragelaphus strepsiceros (Pallas, 1766) Kudu

Seven kudu were present at the time Itala was proclaimed as a reserve. Since June 1976 57 cows and 8 bulls from the central complex of the Hluhluwe-Umfolozi Reserves, were released.

The kudu of Itala are now dispersed throughout the reserve, and are breeding well.

Sylvicapra grimmia (Linnaeus, 1758) Common duiker

The common duiker occurs naturally and in high numbers throughout the reserve, including the Ngedle plateau.

Hippotragus equinus (Desmarest, 1804) Roan

Roan disappeared from the area during historical times. During May 1979 two males were reintroduced from Percy Fyfe Provincial Nature Reserve in the Transvaal, one of which remains. Pending the availability of animals, more will be reintroduced.

Kobus ellipsiprymnus (Ogilby, 1833) Waterbuck

During October 1975 two males and 14 females from Umfolozi Reserve were released at Ngubhu. During the first two years, 16 calves were born. Because of the nature of waterbuck habitat, accurate censusing is impossible. However, during December 1979 the population was estimated to number 86.

Redunca arundinum (Boddaert, 1785) Reedbuck

Since September 1976 114 reedbuck have been reintroduced. The population is well established in Itala, and is increasing. Reedbuck are seen mainly in suitable habitat in the middleveld area.

Redunca fulvorufula (Afzelius, 1815) Mountain reedbuck

This species occurs naturally and in adequate numbers throughout the middleveld and highveld areas of the reserve. Since numbers have not increased appreciably under active conservation, it is assumed that the population has reached optimum density levels.

RESULTS AND DISCUSSION

Trapping success

From the three trap types utilized in the 28 traplines deployed, 300 specimens of 14 species were obtained in a total of 14 817 trapnights, i.e. an average success of 2,0 specimens/100 trapnights. In addition, *Myosorex varius* was trapped in a vlei, and *Cryptomys hottentotus* on top of the Ngedle plateau. Trapping success in various localities and habitats was, however, extremely uneven (Table 1), varying from zero to 11,2 captures/100 trapnights. Overall, trapping success and thus indirectly density of small mammals was appreciably higher in the Craigadam valley, where some traplines bisected old fields and where regular burning has not been practised for long. Here 5 467 trapnights yielded 193 specimens, or a 3 53 per cent trap success. On the plateau during 2 500 trapnights 40 specimens were caught, i.e. a 1,6 per cent success; whereas in the Doornkraal valley and hilltops 6 850 trapnights yielded only 67 specimens for a 0,98 per cent trapping success.

Similarly, the occurrence of a particular species in different localities or habitats also differed greatly (Table 1) and in many cases one species tended to dominate a particular community, as exemplified by the usually medium diversity indices. The most ubiquitous species were *Aethomys chrysophilus* and *A. namaquensis*, in grassland and rocky areas respectively; in one instance, in an old field situation 2,5 years into a successional stage (next to the Pongola River gallery forest) *Praomys natalensis* was dominant. This high density of *P. natalensis* in disturbed areas in a successional stage is well-known (Meester *et al.*, 1979) so that lower numbers in other areas or old fields could indicate that succession, both of plant and small mammal species, has been fairly rapid.

Although rainfall is high, and topography and habitat are complex, density and species richness of small mammals are low. Paucity in not only species but also numbers of rodents is also reflected in the near absence of small carni-

vores; the wiremesh live-traps were singularly unsuccessful, and night hunting also yielded very few specimens (see Species Accounts).

Zoogeography

This faunal survey forms part of a larger long-term endeavour geared towards a better understanding of the past and present forces regulating the distribution of mammals in southern Africa. Several such regional surveys have thus far been conducted countrywide towards this goal, viz Rautenbach (1971, 1978), Rautenbach and Nel (1978, 1980), Rautenbach *et al.* (1979), Nel *et al.* (1980). Experience thus gained suggests that a single intensive survey such as conducted on Itala, reveals 80% of the species that may occur in the survey area. For that reason, we have scanned historical records as well as the distributional attributes of individual species in an attempt to construct a profile of the total mammal diversity of Itala Nature Reserve.

We have good reason to believe (by scrutinizing *inter alia* the Transvaal Museum's copies of the files of historical records of big game occurrences accumulated by C.J. Skead; and du Plessis (1969) that the following game species became extinct in the Itala district subsequent to European exploration and settlement: *Panthera leo, Loxodonta africana, Hippopotamus amphibius, Alcelaphus buselaphus, Syncerus caffer, Hippotragus niger* and *Pelea capreolus*. Reintroduction of these species is being considered in the light of practical considerations such as management and curtailment (viz elephant, hippo and lion), as well as availability of animals to re-establish viable breeding populations (viz sable).

It stands to reason that many of the larger mammal species mentioned above, as well as in the species accounts, were visitors rather than permanent residents during historical times to the area that today encompasses the Itala Nature Reserve. Today any migration is inhibited by fences. In its pristine state this restricted area most probably seldom saw the diversity of larger mammals simultaneously such as is today kept side by side, albeit at lower population levels for individual species. This situation warrants special consideration in the application of management considerations.

By careful consideration of the availability of preferred habitats, and by critical examination of unpublished distribution maps of southern African mammals kept at the Transvaal Museum, it is very likely that the following 13 species may also occur on the Itala Nature Reserve: *Crocidura hirta, Epomophorus crypturus, Hipposideros caffer, Pipistrellus rusticus, Tadarida pumila, Pronolagus randensis, Dendromus mystacalis, Mystromys albicaudatus, Thallomys paedulcus, Otomys angoniensis, Tatera leucogaster, Ictonys striatus, Poecilogale albinucha.*

Together with the 75 species discussed in the species accounts and the seven species mentioned above as likely to have occurred in the area during historical times, the total potential species richness of the Itala Nature Reserve is 95. This figure appears to be inordinately high for such a relatively small area. Compare this figure for instance with the species richness of 101 for Maputaland and 132 for the Kruger National Park (see Rautenbach *et al.*, 1979; Rautenbach *et al.*, 1981). The most likely explanation appears to be the greater variety of habitats present in the Itala Nature Reserve.

TABLE 1. Small mammals collected in different habitats in Itala Nature Reserve. Figures in brackets denote the number of localities sampled; species marked with an asterisk were not taken into account when calculating percentage trapping success (no. captures/100 trapnights), or D. D — species diversity (see Methods). Habitats are listed in order of increasing altitudes.

Vegetation	Location and aspect	Species	% Success	D
Lowveld, 350—900 m				
Riverine forest (1)	Level, sandy riverbank	*Crocidura sp.* *Aethomys chrysophilus* *Praomys natalensis*	3,0	0,64
Tall grassland (2)	Level, old fields	*P. natalensis* *Lemniscomys griselda*	1,0—11,2	—
Medium-tall grassland (2)	Level, stream banks	*A. chrysophilus* *P. natalensis*	0,75	—
Ecotone forest/tall grassland (1)	Level, next to cliffs	*A. chrysophilus* *P. natalensis*	1,2	—
Ecotone gallery forest/old field (1)	Level, next to river	*A. chrysophilus* *P. natalensis* *L. griselda* *Mus minutoides*	1,7	0,60
Medium grassland/shrubs (2)	Level to S slope near river	*A. chrysophilus* *P. natalensis* *L. griselda* *M. minutoides* *Steatomys krebsii* *Saccostomus campestris*	1,3— 1,7	0,60—0,63
Acacia-veld (4)	Level -25° slope, sandy	*A. chrysophilus* *Aethomys namaquensis* *P. natalensis* *L. griselda* *S. campestris*	0,2— 3,5	0—0,64
Short grassland (1)	20° slope; many termite heaps	*Suncus varilla** *P. natalensis*	0,4	—

Tall grassland, shrubs, thickets (5)	Level — 15° slope	*A. chrysophilus* *A. namaquensis* *P. natalensis* *L. griselda* *M. minutoides* *S. krebsii*	2,5— 5,4	0,45—0,65
Shrub thicket (1)	Kopje	*A. namaquensis* *P. natalensis* *Thamnomys dolichurus*	2,4	0,44
Shrubs/trees (1)	30° valley side, rocks and boulders	*A. namaquensis* *Graphiurus murinus*	5,8	—
Middleveld 900—1 250 m Vlei (1)	Level	*Myosorex varius* *M. minutoides* *Dasymys incomtus* *Otomys irroratus*	0,8	0,74
Tall grassland (1)	Slight slope, old fields	*P. natalensis* *M. minutoides*		
Short grass	S W slope	*P. natalensis*	0,4	—
Highveld 1 250—1 550 m Forest	Escarpment krantzes	*A. namaquensis* *P. natalensis*	1,6	—
Mountain, Short grassveld, vlei	Plateau, gently W-sloping	*Crocidura gracilipes* *M. varius** *A. chrysophilus* *Rhabdomys pumilio* *Cryptomys hottentotus**	0,7	0,94
Tall mountain grassland	Level, to SW slope	*Crocidura flavescens* *Crocidura cyanea** *A. chrysophilus* *A. namaquensis* *P. natalensis* *R. pumilio* *M. minutoides*	2,5	0,81

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