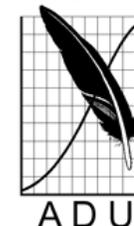


Ornithological Observations



An electronic journal published by BirdLife South Africa and the Animal Demography Unit at the University of Cape Town



Ornithological Observations accepts papers containing faunistic information about birds. This includes descriptions of distribution, behaviour, breeding, foraging, food, movement, measurements, habitat and plumage. It will also consider for publication a variety of other interesting or relevant ornithological material: reports of projects and conferences, annotated checklists for a site or region, specialist bibliographies, and any other interesting or relevant material.

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BIRDS OF THE OZABENI SECTION OF THE ISIMANGALISO WETLAND PARK

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BIRDS OF THE OZABENI SECTION OF THE ISIMANGALISO WETLAND PARK

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SUMMARY

A study of the birds of Ozabeni, a section of the Isimangaliso Wetland Park, was made during the period 1985-95. No previous ornithological study had been made of this section of the Park, which is situated in the northern coastal region of KwaZulu-Natal, South Africa. Ozabeni contains thirteen distinct habitat types ranging from coastal dune forest in the east to floodplain pans and swamps in the west and includes the finest remaining example of coastal grassland in South Africa. The ornithological importance of Ozabeni is reflected in the large number of bird species recorded, some 366 excluding 15 pelagic birds, and including nearly half the number of species listed as rare or endangered in the South African Red Data Book - Birds (1984).

The status and habitat preferences are given for all species recorded and several aspects of ornithological significance are discussed. Recommendations are made regarding issues needing further study, the utilisation of resources within the area and development affecting the reserve.

This study was originally presented to the Natal Parks Board now Ezemvelo Wildlife under the title "The birds of the Ozabeni Section of the Greater St Lucia Wetland park".

INTRODUCTION

Almost half of the rare and endangered (Red Data) birds listed for South Africa (Brooke 1984) are found at Ozabeni, a section of the Isimangaliso Wetland Park. This area of 55 300 ha is an integral part of the third largest conservation area in South Africa, which includes the Lake St Lucia system and Phinda and Mkuze Game Reserves, and totals 162 000 ha. It is here that many bird species are at the southern limit of their ranges in the extension of the tropical Moçambique Coastal Plain.

Ozabeni probably contains more diverse habitats than any comparably-sized area in southern Africa. Bordering the Indian Ocean Coastal zone (marine reserve) it has five distinct land forms: dune, hygrophilous moist grassland (coastal plain), swamp, sandveld and floodplain (PS Goodman pers. comm).

Historically the study area was Crown land which became State land administered by the Department of Forestry and was known as the Sodwana State Forest. In 1977 the coastal plain portion was declared a restricted area for military use and remained so until 1987. From that time, Natal Parks Board had been responsible for managing the whole area for conservation as the Ozabeni section of the Greater St Lucia Wetland Park. The area is now under the management of the Isimangaliso Wetland Park Authority.

During the period of restricted access, Ozabeni was identified as the only part of KwaZulu-Natal not to have received ornithological study. In 1985 the authors undertook to assist Natal Parks Board with a project to determine the ornithological importance of the area in terms of species occurrence, status, population fluctuations and habitat preferences.

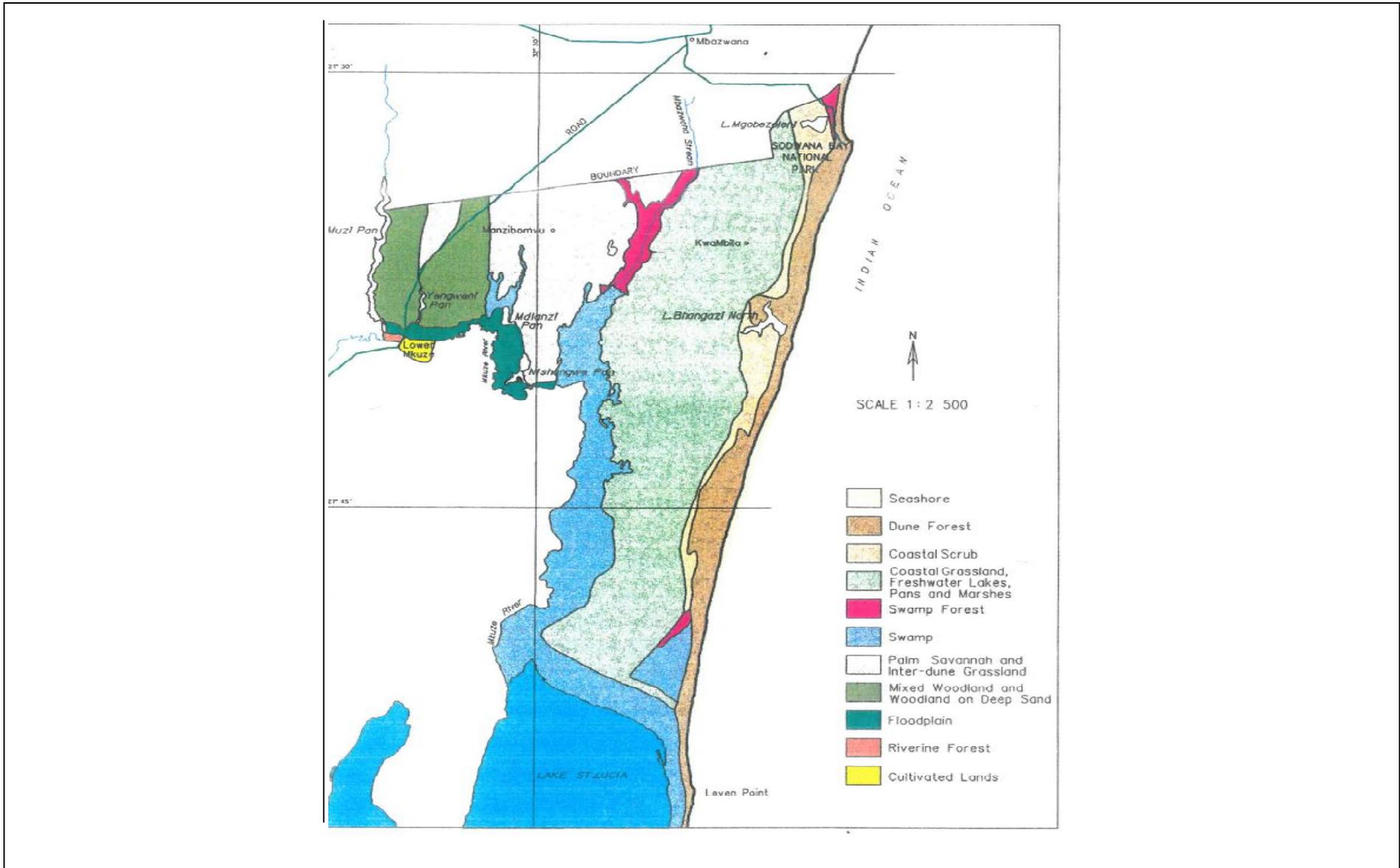


Fig 1 – Map of the Ozabeni Section of the Isimangaliso Wetland park - avifaunal habitats shown diagrammatically.
 (Prepared by Planning, Survey and Establishment, KwaZulu-Natal Administration)



MATERIALS AND METHODS

The Project

The period of study was ten years, between 1985 and 1995. It was initially intended to be four years, but the impact of Cyclone Domoina (January 1984) on the coastal plain showed its effect beyond that period, and a longer time was needed to monitor the changes during the gradual return to pre-Domoina conditions. Dr JM Mendelsohn was a co-researcher during the first two years of the study but was unable to continue thereafter. An interim report was published (Mendelsohn et al. 1988).

The area was visited in all months of the year by undertaking 24 field trips of five days average duration. Access to the different habitats was by four-wheel-drive vehicle or on foot. All bird species were recorded by sight or call, and a small sample of cisticolas and white-eyes was collected and nightjars caught for identification.

Birds were listed on fieldcards, separated into calendar months. The monthly occurrence of each species was extracted from these data. Records were determined solely on a presence or absence basis as it was not practical to quantify numbers because of the size of the area and the large variety of species. However, over the ten-year period, a qualitative judgement of the status of each species was made by assessing their frequency of occurrence on fieldcards and taking account of their distribution. Some additional records considered by the authors to be valid were accepted from other observers for inclusion in the analysis.

The Study Area

Ozabeni, formerly known as the Sodwana State Forest, is part of the Isimangaliso Wetland Park, which is situated in the north east of KwaZulu-Natal in South Africa.

It is an area of some 55 300 ha, extending 48 km northwards along the coast from the northern shores of Lake St Lucia to Sodwana Bay, and up to 25 km inland to the Mkuze River and Muzi Pan (Fig 1).

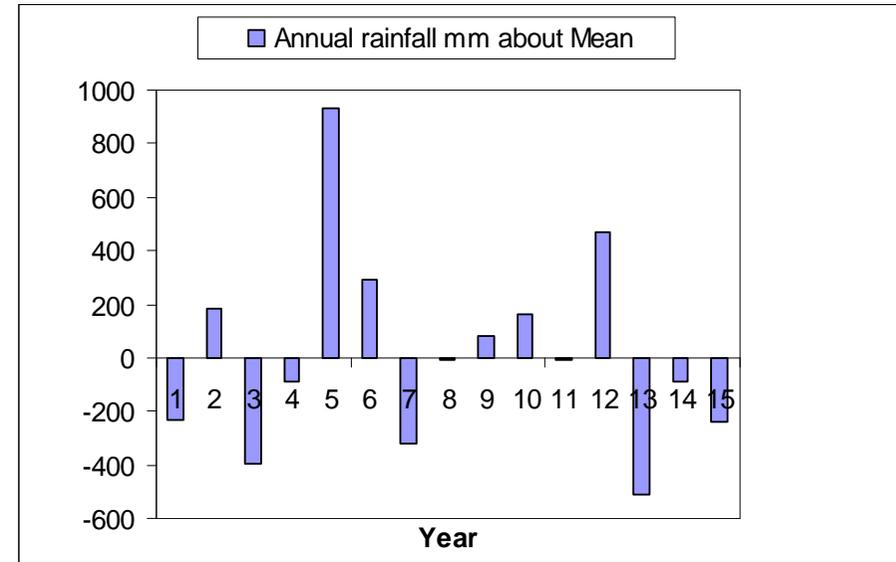


Fig 2 – Annual rainfall 1980-1994 at Mbazwana.

(Mbazwana weather station mean 1030.5 mm. Year 1=1980 Year 5=1984 (Cyclone Domoina January 1984) Year 15=1994. Information supplied by the Computing Centre for Water Research, University of KwaZulu-Natal, Pietermaritzburg.

The climate is moist subtropical. The nearest South African Weather Bureau Station is at Mbazwana, close to the northern boundary of the study area. Rainfall figures were obtained for this station from the Computing Centre for Water Research, Pietermaritzburg, covering the period 1970-1994 (Fig 2). Annual rainfall decreases from about 1200 mm in the east to 600 mm in the west, and the area is subject to occasional cyclonic conditions. The mean maximum temperature is 30.7°C in January, and the mean minimum is 11.6°C in July.

The topography is generally flat, ranging from sea level to 57 m a.s.l., apart from the coastal dunes which rise to a maximum of 138 m a.s.l.

Geologically, the area is underlain by Mesozoic and Cainozoic rocks deposited during a series of marine transgressions and regressions



(Watkeys *et al.* 1993: G.A. Botha pers. comm.). The oldest rocks in the West are the St Lucia Formation of late Cretaceous age. These rocks are weathered to produce Berea-type red sand. The late Pleistocene in the east is represented by the Port Durnford Formation comprising mudstone, lignite and sand. Dune sand covering much of the interior represents re-working of older coastal and dune sediments. The present coastal dunes were superimposed on older dune cordon remnants during the Holocene. The most recent geological events of floodplain activity, pan formation and localized dune activity resulted in a mosaic of shallow pans and moist grassland in the east and a more undulating topography in the west giving rise to shallow dunes running in a north/south direction and inter-dune wetland drainages and pans. The floodplain is underlain by clay-rich alluvial deposits originating from the Mkuze River.

Ozabeni is unfenced, and is bordered on the north and west by local communities who practise subsistence farming. Much of the area is grazed by cattle belonging to these communities. In the past there existed a mosaic of small croplands along the coastal dunes resulting from "slash and burn" agriculture and sand mounds constructed in the moist grassland for growing crops above the water table. The effect of explosions made during military exercises can still be seen on the coastal plain.

One public road crosses the north-west corner, leading from Lower Mkuze to Mbazwana. Relatively obscure vehicle tracks criss-cross the land, with only two crossings of the Mbazwana Stream, linking the coastal and inland dune systems.

Within the five major land forms outlined in the Introduction, we have recognised 13 avifaunal habitats. These are as follows, generally from east to west.

Seashore (Fig 3)

Sandy shore with occasional rocky outcrops in the tidal zone.



Fig 3 – Seashore near Lake Bangazi North.

Dune Forest (Fig 4 and 5)

Dense evergreen forest, often on steep slopes, of canopy height up to 15 m forming a continuous narrow belt averaging 300 m wide along the coast. Trees include *Mimusops caffra*, *Euclea natalensis*, *Diospyros rotundifolia*, *Apodytes dimidiata*, and *Acacia karroo*. Similar forest occurs in isolated pockets on raised dunes within the coastal grassland.

Coastal Scrub (Fig 4)

A transitional zone of varying width, averaging 1.5 km, between dune forest and coastal grassland, with groups of trees and shrubs interspersed with tussocked grassland on undulating ground.



Fig 4 - Dune Forest, Coastal Scrub and Coastal Freshwater Lake at Lake Bangazi North.



Fig 6 - Coastal Grassland near KwaMbila.



Fig 5 - Dune Forest remnant within Coastal Grassland.

Trees include *Syzygium cordatum*, *Acacia karroo*, *Dichrostachys cinerea*, *Strychnos spinosa*, and *Strelitzia nicolai*. The woody forb *Helichrysum kraussii* is prominent, and grasses are dominated by *Imperata cylindrica* and *Cymbopogon validus*.

Coastal Grassland (Fig 6)

Relatively flat, open moist grassland which includes the genera *Themeda*, *Tristachya*, *Trachypogon* and *Aristida*, and a large proportion of dwarf woody plants such as *Parinari curatellifolia* and *Eugenia capensis*. It averages six kilometres wide.

Coastal Freshwater Lakes, Pans and Marshes (Fig 4 and 7)

The two lakes, Bhangazi North and Mgobezeleni, are permanent open waters. They are fringed by reeds *Phragmites australis* (Mgobezeleni), and pockets of *Typha latifolia* and sedge *Scirpus littoralis* (Bhangazi). Floating vegetation consisting of *Nymphaea caerulea* and *Nymphoides indica* is confined to margins. The water level of



Fig 7 - Coastal Pan near KwaMabila.

coastal pans and marshes is subject to cyclonic influence and summer rainfall. Cyclone Domoina caused widespread flooding of the coastal grassland, forming numerous pans which were fringed with *T. latifolia* and *S. littoralis* and many covered with *N. caerulea* and *N. indica*. Towards the end of the ten-year study, all of these pans had dried up leaving remnant marshes containing mainly *S. littoralis*.

Swamp Forest (Fig 8)

This habitat forms a strip 100 m wide on average along the Mbazwana Stream which flows from north to south. It separates the coastal plain from the inland dune system in the northern area. Permanently wet underfoot, it has a dense undergrowth of ferns and a closed canopy up to 20 m high. Trees include *Ficus trichopoda*, *Syzygium cordatum*, *Rauvolfia caffra* and *Macaranga capensis*. There is a resident population of Samango Monkeys *Cercopithecus mitis*.



Fig 8 - Swamp Forest at the Mbazwana Stream.

Swamp (Fig 9)

Known as the Mkuze Swamp, it is 15 km long and up to 5 km wide and is located at the southern reach of the Mkuze River and the Mbazwana Stream, terminating at Lake St Lucia. It consists of a mosaic of *Cyperus papyrus* 3 m tall, and *Phragmites australis*.

Palm Savanna (Fig 10, 11 and 12)

Gently undulating terrain characterized by scattered Ilala palms *Hyphaene natalensis* in a tussocked grassland matrix including the genera *Themeda*, *Eragrostis* and *Aristida*. Associated trees include *Phoenix reclinata*, *Dichrostachys cinerea*, *Strychnos madagascariensis* and *Syzygium cordatum* and the woody forb *Helichrysum kraussii*.



Fig 9 - Swamp at Mdlanzi Pan.



Fig 11 - Palm Savanna (Umdoni trees and Ilala Palms).



Fig 10 - Palm Savanna (Ilala Palms).



Fig 12 - Palm Savanna and Inter-dune Grassland.
In the distance Swamp forest, Coastal Grassland and dune forest.



Fig 13 - Inter-dune Grassland bordered by Palm Savanna.



Fig 14 - Mixed Woodland near Yengweni Pan.

Inter-dune Grassland (Fig 13)

Moist grasslands associated with underground water following the north/south drainage lines within the palm savanna and leading to the Mkuze River system. They are subject to inundation during the wetter summers. Grasses include the genus *Themeda* and *Cynodon dactylon*. Stands of sedge *Scirpus littoralis* occur in the depressions.

Mixed Woodland (Fig 14)

Dry sandveld woodland rich in diversity bounded by palm savanna in the east, Muzi Pan in the west, and cultivated lands and thornveld at Lower Mkuze. Typical trees are *Schotia brachypetala*, *Kigelia africana*, *Albizia versicolor*, *Sclerocarya caffra*, *Combretum molle*, *Acacia robusta*, *A. burkei*, *Strychnos* spp, and *Terminalia sericea*. Grasses in open areas include the genera *Aristida*, *Themeda*, *Digitaria* and *Cynodon*.

Woodland on Deep Sand (Fig 15)

This community varies from a short woodland to a dense bushland and thicket found at the northern boundary close to Muzi Pan and to the north east of Yengweni Pan. The most important trees in the woodland comprise *Acacia burkei*, *Terminalia sericea*, *Sclerocarya birrea* and *Combretum molle* while the bushland is dominated by large emergent specimens of *Schotia brachypetala*, *Balanites maughamii*, *Manilkara discolor*, *Dialium schlechteri*, *Sideroxylon inerme*, *Acacia robusta* and *Strychnos decussata*. The shrub layer varies from relatively open to very dense and is dominated by *Strychnos spinosa*, *S. madagascariensis*, *Catunaregam spinosa*, *Dalbergia obovata*, *Mundulea sericea*, *Dichrostachys cinerea* and *Rhus gueinzii*.

Floodplain Pans (Fig 16, 17 and 18)

Pans associated with old river meanders, excepting Muzi and Yengweni Pans which are cut-off lakes. Their levels fluctuate seasonally, flooding peripheral vegetation when full and exposing mud when low. They are rich in nutrients and characterized by



Fig 15 - Woodland on deep sand near Yengweni Pan.



Fig 17 - Floodplain: eastern side of Muzi Pan.



Fig 16 - Floodplain: northern end of Muzi Pan (inlet).



Fig 18 - Floodplain southern end of Muzi Pan (outlet).



prolific floating vegetation, mainly *Nymphaea caerulea*, *Nymphoides indica*, *Potamogeton* spp. and *Trapa natans*. Fringing vegetation includes the grass genera *Cynodon* and *Digitaria*, the sedge *Scirpus littoralis* and the reeds *Phragmites mauritianus* and *Typha latifolia*. Most of the pans are characterized by groups of *Acacia xanthophloea* around their edges, whereas Mdlanzi Pan has a wide perimeter of *Cyperus papyrus*. Freshwater molluscs include the bivalves *Aspatharia* spp. and fishes *Tilapia* and *Clarias* spp. The Hippopotamus *Hippopotamus amphibius* and the Nile Crocodile *Crocodylus niloticus* are resident.

Riverine Forest (Fig 19)

A small strip confined to the banks of the Mkuze River on the western boundary at Lower Mkuze. The closed canopy is up to 18 m high, and trees include *Ficus sycomorus*, *Rauvolfia caffra* and *Trichilia emetica*. The understorey is dominated by *Acacia schweinfurthii*.

Cultivated Lands (Fig 20)

A small area south of the Mkuze River at Lower Mkuze that formed part of the study area at the outset of the project. It was used for intensive crop production, but was subsequently abandoned, allowing encroachment of thorn bush mainly *Acacia nilotica*. This area was later transferred to Mkuze Game Reserve, but continued to be included in this study.



Fig 19 - Riverine Forest: Mkuze River at Lower Mkuze.



Fig 20 - Cultivated lands at Lower uMkuze.



RESULTS

The species accounts follow the names and systematic list order of Maclean (1993), together with the new "National Numbers"¹, and are based on the personal observations of the authors. Where notable records have been obtained from other observers, their names are given in parenthesis.

Records from the study area of species which are rare or out-of-range in KwaZulu-Natal, as listed by the South African Ornithological Society's National or Regional Rare Bird Panels, have been submitted and accepted by those bodies. Records included and marked † have still to be submitted.

The status, distribution within the area and habitats occupied, are given for each species. A qualitative judgement was made of status because quantitative information was not available. The following terms provide a qualitative hierarchy of abundance: abundant, common, frequent, infrequent, uncommon, scarce, rare and vagrant. A species described as resident is presumed to breed in or close to the area.

Pelagic species are associated only with the marine reserve, and those recorded are listed in Appendix 1. Additional species reported without sufficient detail for inclusion in the species accounts are listed as unconfirmed reports in Appendix 2.

Species Accounts

008 **Little Grebe** *Tachybaptus ruficollis*

Common resident on floodplain pans; less common on coastal plain.

049 **Great White Pelican** *Pelecanus onocrotalus*

Common visitor, often in large numbers, mainly March to November which coincides with breeding on Lake St Lucia. Feeding parties attracted to the larger floodplain pans.

050 **Pinkbacked Pelican** *Pelecanus rufescens*

Frequent visitor, except in high summer, to floodplain pans, singly or in small groups. Breeding colony nearby in Mkuze Game Reserve.

055 **Whitebreasted Cormorant** *Phalacrocorax carbo*

Frequent resident on floodplain pans and coastal lakes.

056 **Cape Cormorant** *Phalacrocorax capensis*

Occasional visitor, mainly in winter, to rocky outcrops on the seashore. Influxes occur in some years (1989, 1990, 1994).

058 **Reed Cormorant** *Phalacrocorax africanus*

Common resident on floodplain pans and coastal lakes.

060 **African Darter** *Anhinga melanogaster*

Common resident in small numbers on pans throughout.

062 **Grey Heron** *Ardea cinerea*

Common resident around floodplain pans, coastal lakes and marshes.

063 **Blackheaded Heron** *Ardea melanocephala*

Frequent resident in small numbers in open grassland and cultivated fields.

064 **Goliath Heron** *Ardea goliath*

Frequent resident usually found singly around larger floodplain pans and coastal lakes.

¹ **Editor's note:** The latest edition of Roberts Birds of Southern Africa (VIth Ed) has done away with the numbering of bird species. As this paper was prepared 16 years ago for the SAOS and the system of reference to species dates back to VIth edition of Roberts, it was decided to keep the reference of the original paper intact.



065 **Purple Heron** *Ardea purpurea*

Infrequent resident, usually solitary. Concealed in reeds or tall vegetation in marshes or along margins of pans.

066 **Great Egret** *Egretta alba*

Common resident, either singly or in loose association at pans and marshes.

067 **Little Egret** *Egretta garzetta*

Common resident in small numbers on floodplain pans. Irregular invader to coastal pans in large groups following high rainfall.

068 **Yellowbilled Egret** *Egretta intermedia*

Common resident in small numbers on floodplain pans. For three years following Cyclone Domoina in 1984, hundreds inhabited shallow pans and marshes on the coastal plain.

069 **Black Heron** *Egretta ardesiaca*

Infrequent visitor mainly in winter and spring, usually in small numbers at floodplain pans.

071 **Cattle Egret** *Bubulcus ibis*

Common resident often in some numbers associated with cattle in grassland and palm savanna. Also at floodplain pans.

072 **Squacco Heron** *Ardeola ralloides*

Common resident usually in small numbers inhabiting fringing vegetation at pans and freshwater lakes. Numbers fluctuate, and during the years following Cyclone Domoina in 1984, several hundred occurred at pans and marshes on the coastal plain.

074 **Greenbacked Heron** *Butorides striatus*

Scarce, probably resident, along well-vegetated stream and river banks (as at Lower Mkuze) and in swamp forest.

075 **Rufousbellied Heron** *Butorides rufiventris*

Up to six resident in the four years after Cyclone Domoina in 1984, inhabiting flooded marshes on the coastal plain. Subsequently only a single bird found in rank vegetation in floodplain grassland.

077 †**Whitebacked Night Heron** *Gorsachius leuconotus*

Rare visitor. One seen in October 1992 at Yengweni Pan (MB Bowker).

078 **Little Bittern** *Ixobrychus minutus*

Rare visitor. One seen in reeds at Lake Bhangazi North in January 1987.

081 **Hamerkop** *Scopus umbretta*

Common resident found singly or in pairs in the proximity of pans, rivers and streams.

083 **White Stork** *Ciconia ciconia*

Uncommon Palearctic migrant found in small groups in grassland and palm savanna.

086 **Woollynecked Stork** *Ciconia episcopus*

Frequent resident in small numbers throughout.

087 **Openbilled Stork** *Anastomus lamelligerus*

Infrequent winter visitor to floodplain pans, at times in some numbers related to the availability of freshwater snails and mussels.

088 **Saddlebilled Stork** *Ephippiorhynchus senegalensis*

Infrequent resident, recorded April to November singly, in pairs or as a family group at coastal marshes and occasionally floodplain pans.

089 **Marabou Stork** *Leptoptilos crumeniferus*

Uncommon winter visitor, singly or in small groups at large, partially dry, floodplain pans.

**090 Yellowbilled Stork** *Mycteria ibis*

Frequent visitor, except in high summer, to floodplain pans. Occasionally at coastal marshes.

091 African Sacred Ibis *Threskiornis aethiopicus*

Common resident in varying numbers on both coastal and flood plains.

093 Glossy Ibis *Plegadis falcinellus*

Frequent resident on floodplain pans. Like Little Egret, flocks invade flooded marshes.

094 Hadedda Ibis *Bostrychia hagedash*

Common resident in pairs or groups throughout.

095 African Spoonbill *Platalea alba*

Frequent resident at pans.

096 Greater Flamingo *Phoenicopterus ruber*

Infrequent visitor in spring in small numbers to floodplain pans. Breeds in a large colony on Lake St Lucia from time to time.

097 Lesser Flamingo *Phoenicopterus minor*

Infrequent visitor in winter and spring in small numbers to floodplain pans.

099 Whitefaced Duck *Dendrocygna viduata*

Abundant resident at floodplain pans, often in concentrations. Invades flooded marshes on the coastal plain.

100 Fulvous Duck *Dendrocygna bicolor*

Infrequent visitor to floodplain pans throughout the year. Usually in small numbers, with White-faced Duck.

101 Whitebacked Duck *Thalassornis leuconotus*

Uncommon resident on floodplain pans with floating vegetation. Typically in association with Pygmy Goose and Lesser Jacana. Following Cyclone Domoina in 1984, frequent on coastal plain pans.

102 Egyptian Goose *Alopochen aegyptiacus*

Common resident on floodplain pans, less so in high summer.

104 Yellowbilled Duck *Anas undulata*

Common resident in small numbers on floodplain pans; also on the coastal plain when flooded.

107 Hottentot Teal *Anas hottentota*

Common resident in small groups on floodplain pans, preferring undisturbed backwaters.

108 Redbilled Teal *Anas erythrorhyncha*

Common resident on floodplain pans extending onto the coastal plain when flooded.

112 Cape Shoveller *Anas smithii*

Scarce visitor to floodplain pans, mainly winter.

113 Southern Pochard *Netta erythrophthalma*

Rare visitor, noted on a coastal pan in February 1988.

114 Pygmy Goose *Nettapus auritus*

Common resident in parties on floodplain pans, always with floating vegetation. Common on coastal plain pans for three years following Cyclone Domoina in 1984.

115 Knobilled Duck *Sarkidiornis melanotos*

Resident, common on floodplain pans except in high summer. Numbers subject to fluctuation. Rare on coastal plain.

**116 Spurwinged Goose** *Plectropterus gambensis*

Common resident on coastal and flood plains.

118 Secretarybird *Sagittarius serpentarius*

Frequent resident found singly or in pairs in coastal and floodplain grasslands, ranging into palm savanna.

123 Whitebacked Vulture *Gyps africanus*

Infrequent visitor at all times of the year. In Mkuze Game Reserve, this is the commonest of four species of vulture, all of which may occasionally range over the floodplain.

125 Whiteheaded Vulture *Trigonoceps occipitalis*

Rare visitor. Noted over Manzibomvu in July 1991 (MB Bowker).

126 Yellowbilled Kite *Milvus migrans*

Common intra-African migrant August to March, found in all habitats.

127 Blackshouldered Kite *Elanus caeruleus*

Frequent resident, widely distributed singly or in pairs in grasslands, palm savanna and open woodland.

128 Cuckoo Hawk *Aviceda cuculoides*

Frequent resident in woodland and dune forest, ranging into adjacent habitats.

132 Tawny Eagle *Aquila rapax*

Infrequent visitor in winter and early summer, with single birds ranging over the floodplain.

135 Wahlberg's Eagle *Aquila wahlbergi*

Frequent intra-African migrant August to March inhabiting mature woodland on the floodplain and ranging throughout.

138 Ayres' Eagle *Hieraaetus ayresii*

Rare intra-African migrant. One over the coastal plain on 28 December 1988.

139 Longcrested Eagle *Lophaetus occipitalis*

Infrequent visitor, usually singly. Found in woodland, swamp forest and patches of dune forest. Presence influenced by proximity of exotic plantations between Mbazwana and Sodwana Bay.

140 Martial Eagle *Polemaetus bellicosus*

Infrequent visitor, seen singly in open woodland and coastal scrub.

141 Crowned Eagle *Stephanoaetus coronatus*

Infrequent resident, usually found in dune and swamp forest.

142 Brown Snake Eagle *Circaetus cinereus*

Frequent resident ranging over open grassland and palm savanna.

143 Blackbreasted Snake Eagle *Circaetus pectoralis*

Common resident. Birds seen regularly over open grassland and palm savanna.

144 Southern Banded Snake Eagle *Circaetus fasciolatus*

Resident but scarce, especially since 1990. Seen singly or in pairs, usually in coastal scrub adjacent to dune forest or in woodland or riverine forest.

146 Bateleur *Terathopius ecaudatus*

Infrequent resident ranging throughout.

147 Palmnut Vulture *Gypohierax angolensis*

Scarce visitor, occasionally seen over Sodwana Bay (W.W. Howells).

148 African Fish Eagle *Haliaeetus vocifer*

Common and conspicuous resident usually in the vicinity of freshwater lakes and floodplain pans.



149 **Steppe Buzzard** *Buteo buteo*

Common Palearctic migrant. Often the most numerous raptor, particularly in palm savanna.

154 **Lizard Buzzard** *Kaupifalco monogrammicus*

Infrequent resident in woodland.

157 **Little Sparrowhawk** *Accipiter minullus*

Scarce; recorded October 1986 and July 1987 in coastal scrub with patches of dune forest.

158 **Black Sparrowhawk** *Accipiter melanoleucus*

Infrequent resident, ranging widely in coastal scrub, swamp forest and woodland.

159 **Shikra** *Accipiter badius*

Scarce visitor, recorded August 1988 and November 1989 in woodland.

160 **African Goshawk** *Accipiter tachiro*

Frequent resident in all wooded habitats particularly on the floodplain.

161 **Gabar Goshawk** *Micronisus gabar*

Uncommon resident of woodland on the floodplain.

164 †**Eurasian Marsh Harrier** *Circus aeruginosus*

Rare Palearctic migrant. One at a coastal pan north of Lake Bhangazi North on 19 March 1992 (J van Jaarsveld).

165 **African Marsh Harrier** *Circus ranivorus*

Common resident usually seen quartering marshes and grassland on the coastal and flood plains.

166 **Montagu's Harrier** *Circus pygargus*

Rare Palearctic migrant. One at a marsh on the coastal plain in November 1988, and another on 11 January 1995 (DN Johnson).

169 **African Harrier Hawk** *Polyboroides typus*

Common resident of all forested and wooded areas.

170 **Osprey** *Pandion haliaetus*

Rare Palearctic migrant. One at Lake Mgobezeleni November 1988.

172 **Lanner Falcon** *Falco biarmicus*

Rare visitor, recorded from the coastal plain April 1987.

173 **Northern Hobby Falcon** *Falco subbuteo*

Rare Palearctic migrant. One over the coastal plain on 11 January 1995 (DN Johnson).

180 **Eastern Redfooted Kestrel** *Falco amurensis*

Common Palearctic migrant. Arrives in mid-summer to feed in parties over the grasslands and palm savanna. Becomes numerous prior to departing in late March.

181 **Rock Kestrel** *Falco tinnunculus*

Rare visitor. One over the coastal plain on 14 July 1992 (DN Johnson).

182 **Greater Kestrel** *Falco rupicoloides*

Vagrant. One over the coastal plain in early July 1992 (WW Howells) and, presumably the same bird, on 14 July 1992 (DN Johnson).

188 **Coqui Francolin** *Francolinus coqui*

Common resident of lightly-wooded grassland, typically palm savanna. Nest with eggs found in rank grass bordering Yengweni Pan in mid-November.

**189 Crested Francolin** *Francolinus sephaena*

The commonest francolin on the floodplain. Resident in woodland, and also in patches of dune forest on the coastal plain.

191 Shelley's Francolin *Francolinus shelleyi*

Common resident in rank grass in coastal scrub and palm savanna.

196 Natal Francolin *Francolinus natalensis*

Scarce winter visitor to wooded areas on the floodplain.

200 Common Quail *Coturnix coturnix*

Common visitor to the coastal plain in the years following Cyclone Domoina in 1984, less so on the floodplain. Only recorded July to November, which corresponds with the regeneration of grasslands after winter burns.

203 Helmeted Guineafowl *Numida meleagris*

Common resident, always in parties, in lightly-wooded grassland, coastal scrub, palm savanna, and edges of cultivated fields.

204 Crested Guineafowl *Guttera pucherani*

Common resident, in family groups, in dune forest and dense woodland on the floodplain.

205 Kurrichane Buttonquail *Turnix sylvatica*

Frequent winter visitor to the coastal plain, particularly in long grass in coastal scrub; also in floodplain grassland. (Possibly an altitudinal migrant.)

206 Black-rumped Buttonquail *Turnix hottentotta*

Scarce visitor in winter and early summer, inhabiting moist grass around coastal marshes. For three years following Cyclone Domoina in 1984, it was frequent.

209 Grey Crowned Crane *Balearica regulorum*

Rare visitor: one at the floodplain pans in October 1992 was still present in April 1993.

210 African Rail *Rallus caerulescens*

Uncommon winter visitor to reedbeds. (Possibly an altitudinal migrant.)

211 Corn Crane *Crex crex*

Rare Palearctic migrant. One flushed from coastal grassland on 30 January 1992 (WW Howells, RP Nash).

213 Black Crane *Amauornis flavirostris*

Common and widespread resident of marshes, reedbeds, and margins of pans and coastal lakes.

217 Redchested Flufftail *Sarothrura rufa*

Frequent but localized resident of marshes with rank vegetation.

218 Buffspotted Flufftail *Sarothrura elegans*

Frequent but very localized resident. Noted only in dune vegetation around Sodwana Bay campsite.

223 Purple Gallinule *Porphyrio porphyrio*

Frequent but localized resident of the floodplain swamps.

226 Common Moorhen *Gallinula chloropus*

Common visitor to reedbeds, rank margins of pans and backwaters on the floodplain, and occasionally the coastal plain. Not recorded November to February.

228 Redknobbed Coot *Fulica cristata*

Infrequent resident usually in small numbers on floodplain pans.



229 **African Finfoot** *Podica senegalensis*

Scarce localized resident at Sodwana Bay (WW Howells). A pair seen below Lower Mkuze Bridge in October 1992 (MB Bowker).

231 **Stanley's Bustard** *Neotis denhami*

Common resident in small numbers, confined to coastal grassland, extending into palm savanna. Breeding first confirmed in November 1991 (RP Nash, WW Howells).

238 **Blackbellied Korhaan** *Eupodotis melanogaster*

Common resident of open coastal scrub and palm savanna.

240 **African Jacana** *Actophilornis africanus*

Abundant resident favouring lakes and pans with extensive or marginal floating vegetation.

241 **Lesser Jacana** *Microparra capensis*

Uncommon visitor, singly or in pairs, to shallow floodplain pans with extensive floating vegetation. For three years after Cyclone Domoina in 1984, resident and frequent at coastal pans, often in association with Pygmy Goose.

242 **Old World Painted Snipe** *Rostratula benghalensis*

Rare visitor to grass-fringed pans, noted only in June 1990 at Ntshangwe Pan.

243 †**Eurasian Oystercatcher** *Haematopus ostralegus*

Rare Palearctic migrant. Two on the seashore near Lake Bhangazi North on 18 December 1989 (WW Howells).

244 †**African Black Oystercatcher** *Haematopus moquini*

Rare visitor. Five together on the sea shore at Leven Point on 29 June 1992 (WW Howells).

245 **Ringed Plover** *Charadrius hiaticula*

Palearctic migrant occurring frequently on passage in early and late summer on margins of floodplain pans.

246 **Whitefronted Plover** *Charadrius marginatus*

Common resident confined to the seashore.

248 **Kittlitz's Plover** *Charadrius pecuarius*

Frequent but localized resident, found on bare ground at pans on the floodplain. Occasionally on the coastal plain.

249 **Threebanded Plover** *Charadrius tricollaris*

Frequent resident found singly or in pairs on the margin of pans on the coastal and flood plains.

255 **Crowned Plover** *Vanellus coronatus*

Common resident, widespread in grassland on the coastal plain and in palm savanna, extending on to the floodplain. Usually in groups.

256 **Lesser Blackwinged Plover** *Vanellus lugubris*

Infrequent winter visitor recorded April to October. Found in open woodland on the floodplain (where breeding suspected), palm savanna and coastal grassland.

257 **Blackwinged Plover** *Vanellus melanopterus*

Rare visitor to coastal grassland, where small party was seen in October 1986.

258 **Blacksmith Plover** *Vanellus armatus*

Common resident on shores of floodplain pans, ranging in winter to lakes and marshes on the coastal plain.

260 **Wattled Plover** *Vanellus senegallus*

Common resident, in pairs, in grassland bordering coastal lakes and marshes, and floodplain pans.

**261 Longtoed Plover** *Vanellus crassirostris*

Scarce resident on floodplain pans with special conditions: floating vegetation merging with short flooded grass. On 28 March 1993, two of three pairs seen had two chicks each (A Sutherland, P Outhwaite).

262 Ruddy Turnstone *Arenaria interpres*

Infrequent Palearctic migrant found on the rocky seashore at Sodwana Bay (WW Howells).

264 Common Sandpiper *Actitis hypoleucos*

Frequent Palearctic migrant, singly or in loose association on causeways or bare shores of lakes, pans and rivers.

266 Wood Sandpiper *Tringa glareola*

Widespread and common Palearctic migrant; occasionally individuals over-winter. Found on margins of lakes, pans and marshes, usually in loose association.

269 Marsh Sandpiper *Tringa stagnatilis*

Frequent Palearctic migrant to shallow floodplain pans, coastal lakes and flooded marshes.

270 Greenshank *Tringa nebularia*

Common Palearctic migrant in small numbers at lakes, pans and marshes. A few over-winter.

272 Curlew Sandpiper *Calidris ferruginea*

Common Palearctic migrant found in flocks. Favours exposed mud at floodplain pans and, if conditions suitable, the coastal plain.

274 Little Stint *Calidris minuta*

Widespread and common Palearctic migrant, often in flocks on passage, on exposed mud banks and margins of pans and lakes.

281 Sanderling *Calidris alba*

Frequent Palearctic migrant confined to the seashore, where small groups feed at the tidal edge.

284 Ruff *Philomachus pugnax*

Common Palearctic migrant, with some over-wintering. Found in groups or flocks at margins of pans and marshes, especially in inundated grass.

286 Ethiopian Snipe *Gallinago nigripennis*

Infrequent but probably resident (not recorded in autumn). Found in inundated grass at pans and marshes, particularly on the coastal plain.

287 Blacktailed Godwit *Limosa limosa*

Rare Palearctic migrant. One present between 15 and 17 February 1987 at a flooded pan at Lower Mkuze (DP Cyrus *et al.*)

290 Whimbrel *Numenius phaeopus*

Uncommon Palearctic passage migrant on the seashore.

294 Old World Avocet *Recurvirostra avosetta*

Uncommon visitor to floodplain pans, usually in small parties. Recorded April and October.

295 Blackwinged Stilt *Himantopus himantopus*

Common resident of shallow pans particularly on the floodplain. Usually in pairs or small groups.

297 Spotted Dikkop *Burhinus capensis*

Frequent localized resident of open grassland with scattered trees.

298 Water Dikkop *Burhinus vermiculatus*

Infrequent resident on shores of coastal lakes and larger floodplain pans.

**300 Temminck's Courser** *Cursorius temminckii*

Infrequent resident found in pairs or small parties in coastal grassland and palm savanna.

304 Redwinged Pratincole *Glareola pratincola*

Frequent, at times common, resident. Particularly when breeding, favours bare ground at dry pans, ranging over grassland during aerial feeding.

312 Kelp Gull *Larus dominicanus*

Uncommon visitor, mostly juveniles, to the seashore at Sodwana Bay (WW Howells).

315 Greyheaded Gull *Larus cirrocephalus*

Frequent resident of larger pans and lakes, and common along the seashore. Usually only small numbers. Breeds colonially at Lake St Lucia.

322 Caspian Tern *Hydroprogne caspia*

Common resident in small numbers at coastal lakes and large floodplain pans. Breeds colonially at Lake St Lucia.

324 Swift Tern *Sterna bergii*

Uncommon visitor to the seashore.

326 Sandwich Tern *Sterna sandvicensis*

Uncommon Palearctic migrant at the seashore. An overwintering individual noted in July 1987.

327 Common Tern *Sterna hirundo*

Uncommon Palearctic migrant, normally only passing at sea. One at Lake Bhangazi North February 1986.

335 Little Tern *Sterna albifrons*

Rare Palearctic migrant, normally only passing at sea. One at Lake Bhangazi North amongst Whiskered and Whitewinged Terns March 1995.

338 Whiskered Tern *Chlidonias hybridus*

The common "marsh tern" resident at coastal lakes and floodplain pans. In November 1985, a breeding colony of about 80 pairs was located at a large coastal pan six kilometres northwest of Lake Bhangazi North. At the time, the coastal plain was flooded from the effects of Cyclone Domoina in 1984 but was slowly drying up. No subsequent breeding has occurred.

339 Whitewinged Tern *Chlidonias leucopterus*

Common Palearctic migrant, visiting coastal lakes and floodplain pans from August to May. Usually in small groups, often associating with Whiskered Terns, favouring areas of floating vegetation and inundated shorelines.

343 African Skimmer *Rhynchops flavirostris*

Vagrant. One at Muzi Pan on 4 October 1986 resting on a sandbank amongst gulls and terns. It was in non-breeding plumage.

348 Feral Pigeon *Columba livia*

Rare visitor, a single bird seen flying over the coastal plain in July 1987.

350 Rameron Pigeon *Columba arquatrix*

Uncommon visitor, recorded April to November in dune and riverine forest.

352 Redeyed Dove *Streptopelia semitorquata*

Abundant resident in all wooded areas.

**354 Cape Turtle Dove** *Streptopelia capicola*

Common localized resident of coastal scrub, palm savanna and open woodland.

355 Laughing Dove *Streptopelia senegalensis*

Absent from the coastal plain, and a rare visitor to the floodplain, recorded only January 1989 in woodland.

356 Namaqua Dove *Oena capensis*

Rare visitor, noted in November 1989 at a floodplain pan.

358 Greenspotted Dove *Turtur chalcospilos*

Abundant resident in all wooded habitats.

359 Tambourine Dove *Turtur tympanistria*

Common resident in dune, swamp and riverine forest, ranging into woodland.

360 Cinnamon Dove *Aplopelia larvata*

Scarce resident, noted only from Sodwana Bay campsite (WW Howells).

361 African Green Pigeon *Treron calva*

Frequent resident, usually seen in feeding parties in dune and riverine forest, palm savanna, and woodland.

363 Brown-headed Parrot *Poicephalus cryptoxanthus*

Scarce visitor to woodland and riverine forest. Noted near Lower Mkuze on 20 March 1995.

370 Knysna Lourie (Livingstone's Lourie)² *Tauraco livingstonii*

Common resident confined to dune forest, extending into swamp forest.

371 Purplecrested Lourie *Tauraco porphyreolophus*

Common resident in mature woodland extending westwards from swamp forest at Mbazwana Stream.

374 Eurasian Cuckoo *Cuculus canorus*

Scarce Palearctic migrant recorded on passage in open savanna October 1986 and (a late bird) April 1992.

377 Redchested Cuckoo *Cuculus solitarius*

Common intra-African migrant recorded September to March. Favours dune and riverine forest and woodland.

378 Black Cuckoo *Cuculus clamosus*

Infrequent intra-African migrant recorded November and December in dune forest and woodland.

382 Jacobin Cuckoo *Clamator jacobinus*

Rare intra-African migrant. One noted in woodland in April 1990.

384 African Emerald Cuckoo *Chrysococcyx cupreus*

Rare intra-African migrant. Recorded in swamp forest September 1989 (EJK Irvine). A stunned female was picked up and later released on 5 May 1992 at Sodwana Bay campsite (WW Howells).

385 Klaas's Cuckoo *Chrysococcyx klaas*

Common intra-African migrant in all wooded habitats. Not recorded May to July, (though may be present).

386 Diederik Cuckoo *Chrysococcyx caprius*

Common intra-African migrant recorded October to January in open woodland, rank vegetation and reedbeds.

387 Green Coucal *Ceuthmochares aereus*

Frequent but inconspicuous resident of dune forest, extending into swamp and riverine forest, and woodland on deep sand.

² **Editor's Note:** This species was split from 370 Knysna Lourie *Tauraco corythaix* after the compilation of the list in this paper. In Roberts VI it was still treated as one species.



388 **Black Coucal** *Centropus bengalensis*

Rare, subject to influxes in wet summers. Confined to extensive areas of inundated long grass on the floodplain. In early November 1988, a bird was seen in nuptial plumage. By late December at least six pairs were holding territory, and copulation was observed. In May 1989 an individual in winter plumage was noted in rank vegetation at Ntshangwe Pan.

391 **Burchell's Coucal** *Centropus burchelli*

Common resident of the coastal and flood plains in rank vegetation in marshes and open woodland.

392 **Barn Owl** *Tyto alba*

Rare visitor. Recorded at night in coastal scrub at Lake Bhangazi North July 1986, and in palm savanna at Manzibomvu July 1991.

394 **African Wood Owl** *Strix woodfordii*

Infrequently recorded but resident throughout the floodplain in woodland.

395 **Marsh Owl** *Asio capensis*

Rare visitor. A small group found roosting in long grass beside a coastal pan in September 1989.

399 **Barred Owl** *Glaucidium capense*

Rare visitor. Recorded at night near Lake Bhangazi North in coastal scrub on 11 July 1986, and at Manzibomvu in palm savanna on 7 October 1990.

401 **Spotted Eagle Owl** *Bubo africanus*

Infrequent resident of woodland and coastal scrub.

403 **Pel's Fishing Owl** *Scotopelia peli*

Scarce localized resident of swamp forest (Mbazwana Stream) and riverine forest (Mkuze River).

404 **Eurasian Nightjar** *Caprimulgus europaeus*

Frequent Palearctic migrant in coastal scrub, palm savanna and open areas in woodland.

405 **Fierynecked Nightjar** *Caprimulgus pectoralis*

Common resident widespread in scrub and woodland.

407 **Natal Nightjar** *Caprimulgus natalensis*

Common resident, localized to moist sections of the coastal plain in the transitional zone between coastal scrub and open grassland, and in palm savanna bordering streams and marshes.

409 **Mozambique Nightjar** *Caprimulgus fossii*

Frequent resident in coastal scrub and palm savanna.

411 **Eurasian Swift** *Apus apus*

Rare Palearctic migrant recorded on 2 November 1988 over the coastal plain (a single bird).

412 **Black Swift** *Apus barbatus*

Rare altitudinal migrant recorded July 1987 over the coastal plain.

415 **Whiterumped Swift** *Apus caffer*

Rare intra-African migrant recorded October 1992 over the floodplain.

417 **Little Swift** *Apus affinis*

Uncommon visitor noted only in April, July and November.

418 **Alpine Swift** *Thachymarptis melba*

Rare altitudinal migrant recorded August 1988 over the coastal plain.

421 **Palm Swift** *Cypsiurus parvus*

Infrequent visitor recorded June to October over woodland on the floodplain.



424 **Speckled Mousebird** *Colius striatus*
Common resident in all woodland.

426 **Redfaced Mousebird** *Urocolius indicus*
Frequent resident of open woodland and scrub, particularly in winter.

427 **Narina Trogon** *Apaloderma narina*
Frequent resident of dense forest and woodland.

428 **Pied Kingfisher** *Ceryle rudis*
Common widespread resident of lakes and pans, often in small groups.

429 **Giant Kingfisher** *Megaceryle maxima*
Frequent visitor noted from March to October at lakes, pans and rivers, singly or in pairs.

430 **Halfcollared Kingfisher** *Alcedo semitorquata*
Scarce resident, a pair frequenting Mbazwana Stream within swamp forest.

431 **Malachite Kingfisher** *Alcedo cristata*
Common widespread resident found at lakes, pans, marshes, rivers and streams, particularly in reeds and rank vegetation.

432 **Pygmy Kingfisher** *Ispidina picta*
Infrequent intra-African migrant in dune forest and coastal scrub.

433 **Woodland Kingfisher** *Halcyon senegalensis*
Scarce intra-African migrant on the floodplain in open woodland with mature trees near water. Recorded November 1989.

434 **Mangrove Kingfisher** *Halcyon senegaloides*
Rare winter visitor. One in dune forest near Lake Bhangazi North in July 1991 (IGM Emmott, EJK Irvine).

435 **Brownhooded Kingfisher** *Halcyon albiventris*
Common and widespread resident of all woodland.

437 **Striped Kingfisher** *Halcyon chelicuti*
Frequent resident of open woodland, also noted regularly in a group of exotic trees (*Eucalyptus* sp.).

438 **Eurasian Bee-eater** *Merops apiaster*
Frequent Palearctic migrant recorded October to February. Numbers fluctuate annually.

439 †**Olive Bee-eater** *Merops superciliosus*
Rare nonbreeding migrant from Madagascar. One in palm savanna on 29 December 1988.

440 **Bluecheeked Bee-eater** *Merops persicus*
Common Palearctic migrant from November to April, sometimes abundant in late summer. Widespread, but favours coastal scrub and palm savanna where feeding parties congregate.

444 **Little Bee-eater** *Merops pusillus*
Common localized resident of coastal scrub, palm savanna and open woodland, usually in small groups.

446 **Eurasian Roller** *Coracias garrulus*
Uncommon Palearctic migrant in open woodland. Numbers vary annually.

447 **Lilacbreasted Roller** *Coracias caudata*
Infrequent visitor to the floodplain where individuals usually seen perched on isolated trees or wires. Noted from March to October.

450 **Broadbilled Roller** *Eurystomus glaucurus*
Frequent but localized intra-African migrant in swamp and riverine forest, and woodland. Favours dead trees.



451 African Hoopoe *Upupa africana*

Frequent resident found singly or in pairs in open woodland.

452 Redbilled Woodhoopoe *Phoeniculus purpureus*

Infrequent resident found in parties in woodland.

454 Scimitar-billed Woodhoopoe *Rhinopomastus cyanomelas*

Frequent resident of woodland.

455 Trumpeter Hornbill *Bycanistes bucinator*

Common wide-ranging resident, favouring dune, swamp and riverine forest.

460 Crowned Hornbill *Tockus alboterminatus*

Common resident in all woodland and forest.

464 Blackcollared Barbet *Lybius torquatus*

Common and widespread resident particularly in scrub and open woodland.

466 White-eared Barbet *Stactolaema leucotis*

Frequent but localized resident of swamp forest in particular, and also dune and riverine forest.

469 Redfronted Tinker Barbet *Pogoniulus pusillus*

Common widespread resident of all woodland on the floodplain extending to the coastal plain.

471 Goldenrumped Tinker Barbet *Pogoniulus bilineatus*

Common resident of dune and swamp forest, extending into woodland and riverine forest on the floodplain.

473 Crested Barbet *Trachyphonus vaillantii*

Infrequent resident of mature woodland on the floodplain.

474 Greater Honeyguide *Indicator indicator*

Infrequent visitor, recorded July to November in open woodland.

475 Scalythroated Honeyguide *Indicator variegatus*

Infrequent and very localized resident in dune and swamp forest and mature woodland on the floodplain.

476 Lesser Honeyguide *Indicator minor*

Frequent resident in all woodland.

478 Sharpbilled Honeybird *Prodotiscus regulus*

Rare visitor. One seen in woodland near Mdlanzi Pan in July 1994 (HN Chittenden).

483 Goldentailed Woodpecker *Campethera abingoni*

Common resident in all woodland and forest.

486 Cardinal Woodpecker *Dendropicus fuscescens*

Common resident in woodland extending into scrub and thickets.

487 Bearded Woodpecker *Thripias namaquus*

Rare visitor. One in riverine forest at Lower Mkuze on 26 August 1989 (P Outhwaite).

490 African Broadbill *Smithornis capensis*

Infrequent localized resident in woodland on deep sand.

494 Rufous-naped Lark *Mirafra africana*

Abundant resident in coastal and floodplain grassland extending into palm savanna and cultivated lands.

496 Flappet Lark *Mirafra rufocinnamomea*

Frequent resident in small numbers in coastal scrub and palm savanna extending into open woodland on the floodplain.



518 **Eurasian Swallow** *Hirundo rustica*
Abundant Palearctic migrant throughout.

522 **Wiretailed Swallow** *Hirundo smithii*
Frequent but localized resident. Found on waterways around Lower Mkuze.

527 **Lesser Striped Swallow** *Hirundo abyssinica*
Common localized resident of the floodplain (Lower Mkuze Bridge) but less common on the coastal plain.

530 **House Martin** *Delichon urbica*
Frequent Palearctic migrant throughout.

531 **Greyrumped Swallow** *Pseudhirundo griseopyga*
Common resident of coastal and floodplain grassland, marshes and cultivated lands.

532 **Sand Martin** *Riparia riparia*
Infrequent Palearctic migrant, common at times. Found over the coastal plain.

533 **Brownthroated Martin** *Riparia paludicola*
Uncommon visitor recorded April, October and November near pans on the western edge of the floodplain.

534 **Banded Martin** *Riparia cincta*
Common resident of coastal grassland, marshes and floodplain grassland. Recorded in all months except August, September and December.

536 **Black Sawwing Swallow** *Psalidoprocne holomelas*
Common resident of forest and woodland edges, and ranging over open grassland.

537 †**Eastern Sawwing Swallow** *Psalidoprocne orientalis*
Vagrant. One seen in flight with Black Sawwing Swallows near the causeway at Muzi Pan on 7 August 1993 (CJ Hopcroft).

538 **Black Cuckooshrike** *Campephaga flava*
Frequent resident of forest and woodland.

540 **Grey Cuckooshrike** *Coracina caesia*
Rare. Recorded July 1987 and July 1991 in dune forest.

541 **Forktailed Drongo** *Dicrurus adsimilis*
Common resident in woodland throughout.

542 **Squaretailed Drongo** *Dicrurus ludwigii*
Abundant resident of forest and well-wooded areas.

545 **Blackheaded Oriole** *Oriolus larvatus*
Frequent resident of forest and wooded areas with large trees.

548 **Pied Crow** *Corvus albus*
Frequent resident of cultivated lands, palm savanna and human settlements.

554 **Southern Black Tit** *Parus niger*
Frequent resident in woodland throughout.

558 **Grey Penduline Tit** *Anthoscopus caroli*
Common localized resident of palm savanna and woodland.

568 **Blackeyed Bulbul** *Pycnonotus barbatus*
Abundant resident widespread throughout the area except open grassland and papyrus swamps.

569 **Terrestrial Bulbul** *Phyllastrephus terrestris*
Common resident of dune forest, woodland on deep sand and dense thickets.



572 **Sombre Bulbul** *Andropadus importunus*
Abundant resident of forest and woodland.

574 **Yellowbellied Bulbul** *Chlorocichla flaviventris*
Abundant resident of forest and woodland.

575 **Yellowspotted Nicator** *Nicator gularis*
Common resident of dune forest, woodland on deep sand and other well-wooded areas.

576 **Kurrichane Thrush** *Turdus libonyana*
Rare visitor recorded only November 1989 and March 1995.

596 **Stonechat** *Saxicola torquata*
Common altitudinal migrant arriving April and departing September. Found in coastal and floodplain grassland and cultivated lands.

599 **Heuglin's Robin** *Cossypha heuglini*
Infrequent and localized resident confined to dense riverine vegetation, as at Lower Mkuze Bridge.

600 **Natal Robin** *Cossypha natalensis*
Abundant resident of forest, woodland and scrub, where undergrowth is dense.

601 **Cape Robin** *Cossypha caffra*
Uncommon altitudinal migrant occurring in winter in coastal scrub and thickets in open woodland.

602 **Whitethroated Robin** *Cossypha humeralis*
Common resident in coastal scrub, palm savanna and woodland.

606 **Starred Robin** *Pogonocichla stellata*
Scarce altitudinal migrant occurring in winter. Only noted at Sodwana Bay campsite and only juveniles (WW Howells).

613 **Whitebrowed Robin** *Erythropygia leucophrys*
Common resident of coastal scrub, palm savanna and woodland.

616 **Brown Robin** *Erythropygia signata*
Common but localized resident confined to edges of dune forest.

617 **Bearded Robin** *Erythropygia quadrivirgata*
Scarce visitor, recorded in winter in woodland on deep sand.

619 **Garden Warbler** *Sylvia borin*
Uncommon Palearctic migrant noted in March in thickets on the floodplain.

626 †**Olivetree Warbler** *Hippolais olivetorum*
Rare Palearctic migrant. One heard singing, but not seen, in woodland near Mdlanzi Pan on 11 March 1994 (P Outhwaite).

628 **Great Reed Warbler** *Acrocephalus arundinaceus*
Uncommon Palearctic migrant noted in late summer in rank vegetation beside open pans on the floodplain.

631 **African Marsh Warbler** *Acrocephalus baeticatus*
Scarce intra-African migrant noted in March 1995 in rank vegetation at Ntshangwe Pan.

633 **Eurasian Marsh Warbler** *Acrocephalus palustris*
Infrequent Palearctic migrant recorded in late summer. Found in thickets and rank vegetation in coastal scrub, palm savanna and woodland.

635 **Cape Reed Warbler** *Acrocephalus gracilirostris*
Common resident of reedbeds, swamp and reeded edges of pans and marshes.

637 **African Yellow Warbler** *Chloropeta natalensis*
Uncommon resident of moist rank vegetation.

**638 African Sedge Warbler** *Bradypterus baboecala*

Common resident of reedbeds and swamp.

639 Barratt's Warbler *Bradypterus barratti*

Rare altitudinal migrant. A stunned bird was picked up and later released in July 1993 at Sodwana Bay campsite (WW Howells).

642 Broad-tailed Warbler *Schoenicola brevirostris*

Rare altitudinal migrant on the coastal plain. Recorded July 1987 in rank vegetation at Lake Bhangazi North.

643 Willow Warbler *Phylloscopus trochilus*

Common Palearctic migrant recorded November to April. Found in woodland throughout.

648 Yellowbreasted Apalis *Apalis flavida*

Abundant resident of forests, woodland and coastal scrub.

649 Rudd's Apalis *Apalis ruddi*

Abundant resident of dune forest and all woodland.

651 Longbilled Crombec *Sylvietta rufescens*

Common resident of woodland, palm savanna, lightly-wooded grassland and coastal scrub.

653 Yellowbellied Eremomela *Eremomela icteropygialis*

Uncommon resident of palm savanna.

657 Bleating Warbler *Cameroptera brachyura*

Abundant resident of forest, woodland, scrub and thickets.

664 Fantailed Cisticola *Cisticola juncidis*

Abundant resident of coastal and floodplain grassland and cultivated lands.

665 Desert Cisticola *Cisticola aridula*

Uncommon in summer; winter status unknown. Found in areas of short coastal grassland and drier areas of floodplain grassland. Frequent on the coastal plain for the three years following Cyclone Domoina in 1984.

666 Cloud Cisticola *Cisticola textrix*

Abundant resident of coastal grassland extending into short floodplain grassland.

668 Palecrowned Cisticola *Cisticola brunnescens*

Infrequent resident but common winter visitor to grassland on the coastal plain.

672 Rattling Cisticola *Cisticola chiniana*

Abundant resident of coastal scrub, lightly-wooded grassland, palm savanna and woodland.

674 Redfaced Cisticola *Cisticola erythrops*

Frequent localized resident of rank vegetation along rivers and drainage channels.

675 Blackbacked Cisticola *Cisticola galactotes*

Common resident of reedbeds and rank vegetation of coastal lakes, marshes and floodplain pans.

678 Croaking Cisticola *Cisticola natalensis*

Common resident of coastal scrub, marshes and lightly-wooded grassland.

681 Neddicky *Cisticola fulvicapilla*

Abundant resident of coastal scrub and grassland, palm savanna, edges of woodland and cultivated lands.



683 **Tawnyflanked Prinia** *Prinia subflava*

Abundant resident throughout except in dense woodland and open grassland.

689 **Spotted Flycatcher** *Muscicapa striata*

Frequent Palearctic migrant to all wooded areas.

690 **Dusky Flycatcher** *Muscicapa adusta*

Common altitudinal migrant. Recorded April to October in forested and well-wooded areas.

691 **Bluegrey Flycatcher** *Muscicapa caerulescens*

Frequent resident of forest, palm savanna and well-wooded areas.

693 **Fantailed Flycatcher** *Myioparus plumbeus*

Uncommon resident of palm savanna, woodland and edges of forest.

694 **Black Flycatcher** *Melaenornis pammelaina*

Common resident of woodland and edges of forest.

696 **Pale Flycatcher** *Melaenornis pallidus*

Frequent resident of coastal scrub, palm savanna and woodland.

698 **Fiscal Flycatcher** *Sigelus silens*

Infrequent altitudinal migrant occurring in winter in coastal scrub, lightly-wooded grassland and woodland.

701 **Chinspot Batis** *Batis molitor*

Common resident of coastal scrub, lightly-wooded grassland, palm savanna and woodland.

704 **Woodwards' Batis** *Batis fratrum*

Frequent localized resident of dune forest.

705 **Wattle-eyed Flycatcher** *Platysteira peltata*

Frequent localized resident of dune forest, coastal scrub and swamp forest.

708 **Bluemantled Flycatcher** *Trochocercus cyanomelas*

Locally common resident of dune forest, swamp forest and dense woodland on the floodplain.

710 **Paradise Flycatcher** *Terpsiphone viridis*

Common resident of forested and wooded areas.

711 **African Pied Wagtail** *Motacilla aguimp*

Uncommon localized resident of Mkuze River, Mbazwana Stream and shores of larger pans.

713 **Cape Wagtail** *Motacilla capensis*

Frequent resident of coastal marshes, floodplain pans and watercourses.

714 **Yellow Wagtail** *Motacilla flava*

Rare Palearctic migrant. Recorded February 1988 at Muzi Pan and March 1995 at Yengweni Pan.

716 **Grassveld Pipit** *Anthus cinnamomeus*

Common resident of coastal and floodplain grassland, cultivated lands and well-grazed edges of larger pans.

718 **Plainbacked Pipit** *Anthus leucophrys*

Scarce resident in coastal grassland and palm savanna. Recorded February and April, and November when a pair observed holding territory.

723 **Bushveld Pipit** *Anthus caffer*

Frequent resident of lightly-wooded grassland and palm savanna.



724 **Shorttailed Pipit** *Anthus brachyurus*

Infrequent altitudinal migrant April to November. Occurs, usually singly, in coastal and floodplain grassland, and coastal scrub. Found in longish moist grass.

727 **Orangethroated Longclaw** *Macronyx capensis*

Common resident of coastal and floodplain grassland.

728 **Yellowthroated Longclaw** *Macronyx croceus*

Abundant resident of coastal and floodplain grassland, lightly-wooded grassland, palm savanna and edges of floodplain pans and marshes.

730 **Pinkthroated Longclaw** *Macronyx ameliae*

Frequent resident of coastal grassland and occasionally floodplain grassland. Common for the three years following Cyclone Domoina in 1984. Favours moist grass surrounding marshy areas where nest with eggs was found in early October 1986.

732 **Fiscal Shrike** *Lanius collaris*

Common resident of coastal scrub, lightly-wooded grassland, palm savanna and cultivated lands.

733 **Redbacked Shrike** *Lanius collurio*

Frequent Palearctic migrant arriving in November and departing in April. Found usually singly in palm savanna, coastal scrub and lightly-wooded grassland.

736 **Southern Boubou** *Laniarius ferrugineus*

Common resident throughout, except in open grassland.

740 **Puffback** *Dryoscopus cubla*

Abundant resident of forest and woodland.

741 **Brubru** *Nilaus afer*

Uncommon visitor noted in early summer in palm savanna and woodland.

743 **Threestreaked Tchagra** *Tchagra australis*

Common resident of woodland and palm savanna.

744 **Blackcrowned Tchagra** *Tchagra senegala*

Abundant resident widespread in coastal scrub, open woodland and palm savanna.

747 **Gorgeous Bush Shrike** *Telophorus quadricolor*

Common resident of dune forest, woodland on deep sand and other densely wooded areas.

748 **Orangebreasted Bush Shrike** *Telophorus sulfureopectus*

Common resident of coastal scrub, palm savanna and woodland.

750 **Olive Bush Shrike** *Telophorus olivaceus*

Frequent resident of dune forest and thickly wooded areas.

753 **White Helmetshrike** *Prionops plumatus*

Uncommon visitor to open woodland and palm savanna. Small parties recorded April and June.

760 **Wattled Starling** *Creatophora cinerea*

Uncommon visitor to open woodland, palm savanna and cultivated lands. Recorded April to October.

761 **Plumcoloured Starling** *Cinnyricinclus leucogaster*

Common intra-African migrant recorded November to April. Found in coastal scrub, woodland and palm savanna.

764 **Glossy Starling** *Lamprotornis nitens*

Uncommon visitor to palm savanna and woodland.



768 **Blackbellied Starling** *Lamprotornis corruscus*
Common resident of dune, swamp and riverine forest, ranging into adjacent habitats.

772 **Redbilled Oxpecker** *Buphagus erythrorhynchus*
Rare visitor. Recorded June 1990 in palm savanna.

780 **Purplebanded Sunbird** *Nectarinia bifasciata*
Common resident of woodland on the floodplain, dune forest and coastal scrub.

782 **Neergaard's Sunbird** *Nectarinia neergaardi*
Rare winter visitor to woodland on deep sand, recorded June 1990 and July 1991.

785 **Greater Doublecollared Sunbird** *Nectarinia afra*
Vagrant, a single bird recorded 14 February 1988 in coastal scrub near Lake Bhangazi North.

787 **Whitebellied Sunbird** *Nectarinia talatala*
Common resident of wooded areas, palm savanna and thickets.

789 **Grey Sunbird** *Nectarinia veroxii*
Common resident of dune forest, coastal scrub, woodland and thickets.

790 **Olive Sunbird** *Nectarinia olivacea*
Common resident of dune forest and thickly-wooded areas.

791 **Scarletched Sunbird** *Nectarinia senegalensis*
Common and conspicuous resident widespread throughout the area except in open grassland.

793 **Collared Sunbird** *Anthreptes collaris*
Common resident of dune forest, coastal scrub and woodland.

796 **Cape White-eye** *Zosterops pallidus*

797 **African Yellow White-eye** *Zosterops senegalensis*
Common resident of dune forest, coastal scrub, palm savanna and woodland.

Based on field observation and examination of three collected specimens, it was considered that visual separation of the two species was not reliable. The specimens were assigned to *Z. pallidus* (Durban Museum)

801 **House Sparrow** *Passer domesticus*
Uncommon resident confined to human settlements.

804 **Greyheaded Sparrow** *Passer diffusus*
Uncommon visitor to palm savanna and woodland.

805 **Yellowthroated Petronia** *Petronia superciliaris*
Frequent resident of woodland and palm savanna.

807 **Thickbilled Weaver** *Amblyospiza albifrons*
Common resident. Nests in reedbeds and feeds in dune forest, coastal scrub, woodland and cultivated lands.

808 **Forest Weaver** *Ploceus bicolor*
Common resident of dune forest, also found in other forest and woodland.

810 **Spectacled Weaver** *Ploceus ocularis*
Common resident. Widespread throughout except in open grassland.

811 **Spottedbacked Weaver** *Ploceus cucullatus*
Common resident of forest and woodland and cultivated lands near water.

814 **Masked Weaver** *Ploceus velatus*
Rare visitor recorded 2 November 1988 on the floodplain.

**815 Lesser Masked Weaver** *Ploceus intermedius*

Frequent resident noted from June to December. Nests in reedbeds and disperses into woodland and palm savanna.

817 Yellow Weaver *Ploceus subaureus*

Common resident. Nests in reedbeds at the larger pans in early summer and disperses in small flocks into lightly-wooded areas.

818 Brownthroated Weaver *Ploceus xanthopterus*

Frequent localized resident. Nests in reedbeds with colonies of Yellow Weavers.

820 Cuckoo Finch *Anomalospiza imberbis*

Rare nomadic visitor. Three birds together recorded November 1988 in coastal grassland, and a single bird November 1989 in cultivated lands.

821 Redbilled Quelea *Quelea quelea*

Uncommon summer visitor. Occurs in flocks in open grassland and palm savanna.

822 Redheaded Quelea *Quelea erythrops*

Scarce summer visitor. Small party recorded on the coastal plain in November 1988. Small breeding colony in a reedbed at Yengweni Pan in March 1993 (A Sutherland).

824 Red Bishop *Euplectes orix*

Common localized breeding resident. Associated with reedbeds, marshes and rank vegetation.

828 Redshouldered Widow *Euplectes axillaris*

Common breeding resident widespread in moist grassland, marshes, reedbeds and rank vegetation.

829 Whitewinged Widow *Euplectes albonotatus*

Uncommon resident. Confined to woodland and rank vegetation on the floodplain.

831 Redcollared Widow *Euplectes ardens*

Uncommon visitor confined to rank vegetation and marshes on the floodplain.

834 Melba Finch *Pytilia melba*

Rare, recorded June 1990 where cultivated lands merge with thornveld at Lower Mkuze.

835 Green Twinspot *Mandingoa nitidula*

Frequent localized resident in dune and sand forest.

838 Pinkthroated Twinspot *Hypargos margaritatus*

Common resident confined to woodland on deep sand, thickets and scrub, occasionally in dune forest. Often in mixed parties of finches.

840 Bluebilled Firefinch *Lagonosticta rubricata*

Common resident of thickets and rank vegetation in lightly-wooded areas.

842 Redbilled Firefinch *Lagonosticta senegala*

Uncommon localized resident of the floodplain. Found in rank vegetation on the edge of woodland and along sand roads, especially to the east of Muzi Pan.

844 Blue Waxbill *Uraeginthus angolensis*

Frequent resident of open woodland and palm savanna. Not recorded on the coastal plain.

846 Common Waxbill *Estrilda astrild*

Common resident of rank vegetation, tall moist grass and reeds, typically on the edge of marshes.



848 **Grey Waxbill** *Estrilda perreini*

Infrequent resident of dune forest, coastal scrub and adjacent thickets.

852 **Quail-Finch** *Ortygospiza atricollis*

Common resident of coastal grassland.

854 **Orangebreasted Waxbill** *Sporaeginthus subflavus*

Scarce visitor to tall moist grassland and cultivated lands. Recorded June and October 1990.

857 **Bronze Mannikin** *Spermestes cucullatus*

Common resident of thickets, rank vegetation and open woodland throughout.

858 **Redbacked Mannikin** *Spermestes bicolor*

Infrequent resident localized to moist thickets and dune forest.

860 **Pintailed Whydah** *Vidua macroura*

Common resident of open grassland and palm savanna away from thickly-wooded areas.

869 **Yelloweyed Canary** *Serinus mozambicus*

Common resident of woodland and savanna throughout.

871 **Lemonbreasted Canary** *Serinus citrinpectus*

Frequent resident although numbers fluctuate. Confined to dry woodland and palm savanna but ranges into adjacent habitats. Nest found in Ilala palm frond with eggs laid in December (Robson 1990).

872 **Cape Canary** *Serinus canicollis*

Vagrant. Recorded November 1985 on the coastal plain.

877 **Bully Canary** *Serinus sulphuratus*

Frequent altitudinal migrant in winter in coastal bush and open woodland.

884 **Goldenbreasted Bunting** *Emberiza flaviventris*

Frequent resident of open woodland and palm savanna, uncommon on the coastal plain.

South African Red Data Book Species

The South African Red Data Book - Birds (Brooke 1984) lists 101 species that breed on the South African mainland, according to the following criteria of conservation status:

Extinct: species which have been searched for but not found breeding since 1969.

Endangered: species in danger of extinction and whose survival is unlikely if the causal factors continue operating.

Vulnerable: species believed likely to move into the endangered category in the near future if the causal factors continue operating.

Rare: species with small populations which are not at present endangered or vulnerable but which are at risk.

Indeterminate: species suspected of belonging to the aforementioned categories but for which insufficient information is available.

Excluding White Stork and House Martin, which are Palearctic migrants included only in respect of southern hemisphere breeding populations, the list totals 99 species.

We propose that two more species be added to the list, at this stage under the criterion Indeterminate. These are Longtoed Plover and Livingstone's Turaco. The former was not included by Brooke (1984) because it was not known to breed in South Africa, and the latter has subsequently been given species status (it was formerly a subspecies of Knysna Lourie) and is resident, confined in South Africa to the north coast of KwaZulu-Natal.



With these inclusions, the list of Rare and Endangered species totals 101 species. During the study period, 44 of these (44%) were recorded at Ozabeni. These are listed according to their conservation status (Table 1). Thirty five are non-passerines and nine are passerines (Table 2). Two are represented in South Africa by highly isolated populations and 24 are Afro-tropical with peripheral populations in South Africa (Table 3). The 44 species occupy four broad habitats according to their biome requirements (Table 4). Their feeding requirements are grouped into seven categories (Table 5). Twenty three of the species were showing a downward population trend nationally according to Brooke (1984) (Table 6). Breeding was proved during the study period in the cases of six of the species (Table 7).

Migrant Species

Sixteen species are intra-African migrants (Table 8) and 41 are Palearctic migrants (Table 9). One species, Olive Bee-eater, breeds in Madagascar and migrates to northeastern KwaZulu-Natal.

Species with limited distributions in KwaZulu-Natal

Thirty three species are at or near the southern limit of their ranges (Table 10). Four species have isolated or disjunct populations (Table 11).

Species found normally at higher elevations

Twenty five species whose main populations occur normally at higher elevations were recorded (Table 12). Six of these have resident populations. Eleven are altitudinal migrants occurring in winter and these include Shorttailed Pipit not noted as an altitudinal migrant by Johnson and Maclean (1994). Seven are visitors of indeterminate occurrence.

Rainfall

The mean annual rainfall over the period 1970-1994 was 1 030,5 mm. The highest annual rainfall recorded was 1 930,8 mm in

1984, the year of Cyclone Domoina. The driest year was 1992, with 513,3 mm (Figure 2).

DISCUSSION

The Ozabeni section of the Isimangaliso Wetland Park is of special significance to South African Ornithology. Three hundred and sixty six bird species were recorded there between 1985 and 1995 (excluding 15 pelagic species), of which 44 are rare or endangered (Table 1). Two hundred and thirty species are either resident or intra-African migrants and most of these are presumed to breed; 21 of them are rare or endangered.

Four species provided the first breeding records for KwaZulu-Natal: Longtoed Plover, Whiskered Tern, Black Coucal and Lemonbreasted Canary. The small colony of Redheaded Queleas added to the few breeding records of this species in South Africa. As breeding observations were only incidental to this study, this aspect will require further attention.

Monitoring of bird population variations throughout the year is required to indicate the importance of the area as a seasonal refuge for many species, e.g. influxes in winter.

The area holds concentrations of some species, notably Black-breasted Snake Eagle, Stanley's Bustard, Mozambique Nightjar, Greyrumped Swallow, Woodward's Batis and Pinkthroated Longclaw (all of which breed) and Shorttailed Pipit in winter. In some years, Blackrumped Buttonquails are prominent. Rufousbellied Herons, Southern Banded Snake Eagles, Longtoed Plovers, Black Coucals and Pel's Fishing Owls are also to be found, some dependent upon suitable conditions. Substantial numbers of Bluecheeked Bee-eaters, which migrate from Central Asia, invade the coastal plain in late summer. Peculiar to the region are distinct races of many species, some of the more obvious in terms of field characteristics being Cape Turtle Dove *S. capicola tropica*, Brown Robin *Erythropygia signata*



and Bluemantled Flycatcher *T. c. megalolophus* (Clancey 1964). In the grassland on the coastal plain, the presence of resident populations of six species which are to be found elsewhere at higher altitudes in KwaZulu-Natal (Table 12) poses some questions. Are these populations remnants within the last stronghold of once extensive grasslands along the littoral, or are they simply range-extensions from inland because the habitat structure and food supply are suitable for them regardless of altitude, temperature and vegetation composition? The significance of these populations requires further study.

Blackwinged Plovers have been found on the coastal plain as far north as Cape St Lucia only occasionally. Cyrus (1982) recorded ten pairs breeding at the Hluhluwe River Mouth in August 1982, and single birds the same winter at Cape Vidal and east of KwaMbonambi. The small party at Ozabeni in October 1986 was apparently passing through.

The single sighting of an African Skimmer in October 1986 is believed to be the first in South Africa since 1984, when two adults were recorded at St Lucia estuary on 9 June (Cyrus and Robson 1987). It bred formerly at Lake St Lucia up to 1944 (Berruti 1980).

Certain birds which could be expected to occur in Ozabeni based on their distributions and habitat requirements in KwaZulu-Natal (Cyrus and Robson 1980), were either scarce or not recorded during the study period. Vultures were poorly represented; Whitebacked only occasionally ranged across from Mkuze Game Reserve, but White-headed was rare and neither Cape *Gyps coprotheres* nor Lappet-faced *Torgos tracheliotus* was seen. Perhaps with the introduction of more game, these birds, together with Redbilled Oxpeckers, would be expected to occur. Although habitats appear suitable for Southern Ground Hornbills *Bucorvus leadbeateri*, none was recorded. Laughing and Cinnamon Doves were surprisingly low in numbers, and very few swifts were seen. The absence of Redbreasted Swallows *Hirundo semirufa* cannot be entirely a result of lack of

nesting sites as suitable culverts exist near Lower Mkuze. Stierling's Barred Warbler *Calamonastes stierlingi* is present in Mkuze Game Reserve but was not found in any of the woodland adjoining the reserve. Greyheaded Bush Shrikes *Malaconotus blanchoti* were not evident despite their presence on the western shores of Lake St Lucia, nor was the Black Widowfinch *Vidua funerea*, although its host, the Bluebilled Firefinch, was widespread. Explanations for these anomalies are needed.

If the agricultural land at Lower Mkuze is allowed to revert to its natural vegetation of *Acacia* thornveld, this would be the only example of this habitat in Ozabeni and it would be expected that additional species, such as Southern Yellowbilled Hornbill *Tockus leucomelas*, Sabota Lark *Mirafra sabota* and Burntnecked Eremomela *Eremomela usticollis*, would move in.

Maintenance of habitat diversity within the Section itself is presently at risk. Palm savanna is overgrazed by large herds of cattle which, coupled with regular burning, has caused the gradual replacement of *Themeda triandra* and other palatable grasses with *Helichrysum kraussii* and *Dichrostachys cinerea*, and trampling may eventually lead to wind erosion. The presence of these cattle and their attendants has a disturbing effect on most large raptors and all terrestrial birds. Veld management involving the use of fire should take account of the breeding seasons of terrestrial birds. Potential threats come into play if access by local communities is uncontrolled. The tapping of the Ilala palm *Hyphaene natalensis* at a convenient height to extract Ilala wine would reduce this component of the palm savanna to shrubland, as has happened in adjacent areas. Mixed woodland would also be cleared as has occurred immediately outside the reserve.

To conserve the swamp forest, it is essential to maintain the quality and flow of water in the Mbazwana Stream. Pollution or interference with the flow would have far-reaching repercussions. A decline in the aquatic life would affect the existence of Pel's Fishing Owl and Half-



collared Kingfisher. The drying out of the swamp forest would eventually eliminate this habitat from the Greater St Lucia Wetland Park. The management and any future utilisation of this water resource and catchment area outside the reserve requires careful consideration and monitoring.

Large-scale collection of reeds and sedges for thatching and weaving would disturb the wetlands and prevent many birds from nesting and others, such as migrant or resident hirundines, from roosting. It should be investigated at what times of the year and to what extent cropping would have minimal impact. Overexploitation of the fish resources of Muzi Pan together with an increased human presence would change the ecology of that pan to the detriment of its spectacular birdlife.

It may be assumed that facilities for tourists and specialist naturalists will be provided at Ozabeni as appropriate. However, canoeing on pans and watercourses must not compromise the existence of rare breeding birds such as Longtoed Plover. The seasonal distribution within the area and the biological requirements of this species require study.

Irrigation water taken from the Mkuze River has already affected its flow. Should any damming of the river take place, the flood plain system could be destroyed.

Throughout the study period, Muzi Pan consistently held a large number and variety of aquatic birds. Three areas were especially frequented; the shallow inflow with reedbeds and floating vegetation, the central sandbar (seasonal), and the shallow outflow with meadows. The last two are on the boundary, whereas the first is outside the reserve. Every effort should be made to protect the inlet in order to conserve the pan as a whole and thus enhance its very considerable tourist potential from an ornithological and scenic point of view.

During the summer of 1983-84, ten cyclones developed in the southern Indian Ocean instead of an average of six (Swanevelder *et al.* 1991). Domoina was the fourth of these and caused exceptionally heavy rainfall over southern Moçambique, Swaziland and northeastern KwaZulu-Natal from 27 to 31 January 1984. The extent of flooding was far in excess of anything in recent times. The study period was characterized by a gradual drying-out of the coastal plain, which reached its driest by mid-1995. This was reflected by the large and widespread populations of both grassland and aquatic birds present in the early years gradually declining. Cyclonic flooding is recognised as an occasional phenomenon, and Domoina undoubtedly had a dramatic short-term beneficial effect to birds on the coastal plain by providing an increase in aquatic habitat, an influx of nutrients and an abundance of food.

The wide diversity of habitats within the Greater St Lucia Wetland Park is exceptional not only in South Africa but internationally. Although many of these habitats also occur outside the park, they are under pressure from developments, causing their fragmentation or, in some cases, complete destruction. This emphasizes the need to conserve prime examples. Ozabeni contains large intact areas of coastal grassland with its freshwater lakes and marshes, swamp forest along the Mbazwana Stream, and the pans and swamps of the Mkuze River floodplain system. It is these factors which contribute to such a rich and varied birdlife in this unique area.



Table 1. Red Data Book Species recorded and grouped according to their conservation status. *Species proposed by authors for inclusion.

EXTINCT	ENDANGERED	VULNERABLE	RARE	INTERMEDIATE
African Skimmer	Blackrumped Buttonquail	Martial Eagle Bateleur Stanley's Bustard Mozambique Nightjar African Broadbill Pinkthroated Longclaw	White Pelican Pinkbacked Pelican Rufousbellied Heron Little Bittern Woollynecked Stork Openbilled Stork Saddlebilled Stork Marabou Stork Yellowbilled Stork Pygmy Goose Whiteheaded Vulture Southern Banded Snake Eagle Palmnut Vulture Lesser Jacana Blackwinged Plover Redwinged Pratincole Caspian Tern Barred Owl Pel's Fishing Owl Shorttailed Pipit Neergaard's Sunbird Lemonbreasted Canary	Whitebacked Night Heron Greater Flamingo Lesser Flamingo African Cuckoo Hawk African Finfoot Longtoed Plover* Livingstone's Turaco* Black Coucal Mangrove Kingfisher Greyheaded Kingfisher Broadtailed warbler Vanga Flycatcher Yellow White-eye



Table 2. Red Data Book Species divided into Non-passerines and Passerines.

NON-PASSERINES			PASSERINES
White Pelican	Pygmy Goose	Long-toed Plover*	African Broadbill
Pinkbacked Pelican	Whiteheaded Vulture	Redwinged Pratincole	Broadtailed warbler
Rufousbellied Heron	African Cuckoo Hawk	Caspian Tern	Woodward's Batis
Whitebacked Night Heron	Martial Eagle	African Skimmer	Vanga Flycatcher
Little Bittern	Southern Banded Snake-Eagle	Livingstone's Turaco*	Shorttailed Pipit
Woollynecked Stork	Bateleur	Black Coucal	Pinkthroated Longclaw
Openbilled Stork	Palmnut Vulture	Barred Owl	Neergaard's Sunbird
Saddlebilled Stork	Blackrumped Buttonquail	Pel's Fishing Owl	Yellow White-eye
Marabou Stork	African Finfoot	Mozambique Nightjar	Lemonbreasted Canary
Yellowbilled stork	Stanley's Bustard	Mangrove Kingfisher	
Greater Flamingo	Lesser Jacana	Greyheaded Kingfisher	
Lesser Flamingo	Blackwinged Plover		

Table 3. Red Data Book Species recorded which are either represented by highly isolated populations or are afro-tropical with peripheral populations in south Africa.

HIGHLY ISOLATED	AFRO TROPICAL		
Stanley's Bustard	Pinkbacked Pelican	Southern Banded Snake Eagle	Pel's Fishing Owl
Shorttailed Pipit	Rufousbellied Heron	Palmnut Vulture	Greyheaded Kingfisher
	Woollynecked Stork	Blackwinged Plover	Woodward's Batis
	Openbilled Stork	Longtoed Plover*	Vanga Flycatcher
	Saddlebilled Stork	Redwinged Pratincole	Pinkthroated Longclaw
	Marabou Stork	African Skimmer	Neergaard's Sunbird
	Yellowbilled Stork	Livingstone's Turaco*	Yellow White-eye
	Pygmy Goose	Black Coucal	Lemonbreasted Canary



Table 4. Red Data Book Species recorded and their associated broad habitats.

WETLAND	WOODLAND/PALM SAVANNA	FOREST	GRASSLAND
White Pelican	Marabou Stork	Southern Banded Snake-Eagle	Blackrumped Buttonquail
Pinkbacked Pelican	Whiteheaded Vulture	Palmnut Vulture	Stanley's Bustard
Rufousbellied Heron	African Cuckoo Hawk	Livingstone's Turaco*	Black-winged Plover
Whitebacked Night Heron	Martial Eagle	Pel's Fishing Owl	Shorttailed Pipit
Little Bittern	Bateleur	Mangrove Kingfisher	Pinkthroated Longclaw
Woollynecked Stork	Blackwinged Plover	Woodward's Batis	
Openbilled Stork	Barred Owl	Vanga Flycatcher	
Saddlebilled Stork	Mozambique Nightjar		
Marabou Stork	Greyheaded Kingfisher		
Yellowbilled Stork	African Broadbill		
Greater Flamingo	Neergaard's Sunbird		
Lesser Flamingo	African Yellow White-eye		
Pygmy Goose	Lemonbreasted Canary		
African Finfoot			
Lesser Jacana			
Long-toed Plover*			
Redwinged Pratincole			
African Skimmer			
Black Coucal			
Broadtailed Warbler			



Table 5. Major food requirements of the Red Data Book Species recorded.

SCAVENGERS	AQUATIC INVERTEBRATES	TERRESTRIAL INVERTEBRATES	
Marabou Stork Whiteheaded Vulture Bateleur Palmnut Vulture	Rufousbellied Heron Little Bittern Woollynecked Stork Yellowbilled Stork Openbilled Stork Greater Flamingo Pygmy Goose African Finfoot Lesser Jacana Longtoed Plover*	African Cuckoo Hawk Blackrumped Buttonquail Stanley's Bustard Blackwinged Plover Livingstone's Turaco* Black Coucal Barred Owl Greyheaded Kingfisher African Broadbill Broad-tailed warbler Woodward's Batis	Vanga Flycatcher Shorttailed Pipit Pinkthroated Longclaw Neergaard's Sunbird Yellow White-eye
TERRESTRIAL VERTEBRATES	AQUATIC VERTEBRATES	AERIAL INVERTEBRATES	PLANTS OR PLANT PARTS
Whiteheaded Vulture African Cuckoo Hawk Martial Eagle Southern Banded Snake Eagle Bateleur	Great White Pelican Pinkbacked Pelican Rufousbellied Heron White-backed Night Heron Woollynecked Stork Saddlebilled Stork Yellowbilled Stork African Skimmer Pel's Fishing Owl	Redwinged Pratincole Mozambique Nightjar	Lesser Flamingo Palmnut Vulture Blackrumped Buttonquail Stanley's Bustard Livingstone's Turaco* Neergaard's Sunbird Yellow White-eye Lemonbreasted Canary



Table 6. Red Data Book Species recorded showing a downward population trend nationally, according to Brooke (1984).

Whitebacked Night Heron Marabou Stork Pygmy Goose Whiteheaded Vulture African Cuckoo Hawk Martial Eagle	Southern Banded Snake Eagle Bateleur Black-rumped Button Quail African Finfoot Stanley's Bustard Redwinged Pratincole	Caspian Tern African Skimmer Black Coucal Barred Owl Pel's Fishing Owl Mozambique Nightjar	Mangrove Kingfisher African Broadbill Broad-tailed warbler Vanga Flycatcher Pinkthroated Longclaw
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Table 7. Red Data Book Species proved to have bred during the study period.

Stanley's Bustard Long-toed Plover* Black Coucal	Mozambique Nightjar Pinkthroated Longclaw Lemonbreasted Canary
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Table 8. Intra-African migrants.

Yellow-billed Kite Wahlberg's Eagle Ayres' Eagle Redchested Cuckoo	Black Cuckoo Jacobin Cuckoo Emerald cuckoo Kaas's Cuckoo	Diderik Cuckoo Whiterumped Swift Pygmy Kingfisher Woodland Kingfisher	Greyheaded Kingfisher Broadbilled Roller African Marsh Warbler Plumcoloured Starling
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Table 9. Palearctic migrants.

Little Bittern White Stork Steppe Buzzard Eurasian Marsh Harrier Montagu's Harrier Osprey Northern Hobby Falcon Amur falcon Corn Crane Common Ringed Plover Common Sandpiper	Wood Sandpiper Marsh Sandpiper Common Greenshank Curlew Sandpiper Little Stint Sanderling Ruff Blacktailed Godwit Whimbrel Sandwich Tern Common Tern	Little Tern Whitewinged Tern Common Cuckoo Eurasian Nightjar Common Swift Eurasian Bee-eater Bluecheeked Bee-eater Eurasian Roller Eurasian Swallow House Martin Sand Martin	Garden Warbler Olivetree Warbler Great Reed Warbler Eurasian Marsh Warbler Willow Warbler Spotted Flycatcher Yellow Wagtail Redbacked Shrike
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Table 10. Species at or near the southern limit of their range.

Rufousbellied Heron	Crested Francolin	Broadbilled Roller	Woodward's Batis
Openbilled Stork	Crested Guineafowl	Flappet lark	Pinkthroated Longclaw
Saddlebilled Stork	Black-winged Plover	Greyrumped Swallow	Neergaard's Sunbird
Marabou Stork	Long-toed Plover*	Yellowspotted Nicator	Yellow White-eye
Whitebacked Vulture	Brownheaded Parrot	Heuglin's Robin	Pinkthroated Twinspot
Whiteheaded Vulture	Livingstone's Turaco*	Bearded Robin	Lemonbreasted Canary
Southern Banded Snake	Pel's Fishing Owl	Rudd's Apalis	
Eagle	Woodland Kingfisher	Yellowbellied Eremomela	
Bateleur	Striped Kingfisher	Fantailed Flycatcher	
Palmnut Vulture			

Table 11. Species having isolated or disjunct populations in KwaZulu Natal.

Stanley's Bustard	Mozambique Nightjar
Redwinged Pratincole	Cloud Cisticola

Table 12. Species whose main populations normally occur at higher elevations.

RESIDENT POPULATIONS	ALTITUDINAL MIGRANTS	VISITORS
Stanley's Bustard	Black Swift	Rock Kestrel
Banded Martin	Alpine Swift	Greater Kestrel
Desert Cisticola	Stonechat	Crowned Crane
Cloud Cisticola	Cape Robin	Blackwinged Plover
Plainbacked Pipit	Barratt's Warbler	Greater Doublecollared Sunbird
Quail Finch	Broadtailed Warbler	Cuckoofinch
	Palecrowned Cisticola	Orangebreasted Waxbill
	Dusky Flycatcher	
	Fiscal Flycatcher	
	Shorttailed Pipit	
	Bully Canary	



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**APPENDIX 1**

PELAGIC SPECIES

The following were recorded during the period 1985-1995 by staff of the Natal Parks Board patrolling the marine reserve. Birds were either found dead or dying (D), or noted as caught and released (R), or sight records (S).

003	Jackass Penguin	<i>Spheniscus demersus</i>	S
011	Shy Albatross	<i>Diomedea cauta</i>	R
014	Indian Yellownosed Albatross	<i>Diomedea chlororhynchos</i>	D
017	Southern Giant Petrel	<i>Macronectes giganteus</i>	D/R
021	Pintado Petrel	<i>Daption capense</i>	D
023	Greatwinged Petrel	<i>Pterodroma macroptera</i>	D/R
024	Softplumaged Petrel	<i>Pterodroma mollis</i>	D
029	Broadbilled Prion	<i>Pachyptila vittata</i>	D
032	Whitechinned Petrel	<i>Procellaria aequinoctialis</i>	D
033	Grey Petrel	<i>Procellaria cinere</i>	D
308	Long-tailed Skua	<i>Stercorarius longicaudus</i>	D
310	Subantarctic Skua	<i>Catharacta antarctica</i>	D
329	Antarctic Tern	<i>Sterna vittata</i>	D
332	Sooty Tern	<i>Sterna fuscata</i>	D
340	Brown Noddy	<i>Anous stolidus</i>	S

APPENDIX 2

UNCONFIRMED REPORTS

The following were reportedly observed during the period 1985-1995 but insufficient details were supplied to the authors for inclusion under the species accounts.

076 **Blackcrowned Night-Heron** *Nycticorax nycticorax*

105 **African Black Duck** *Anas sparsa*

224 **Lesser Gallinule** *Porphyryla alleni*¹.

265 **Green Sandpiper** *Tringa ochropus*².

393 **Grass-Owl** *Tyto capensis*

398 **Pearlspotted Owl** *Glaucidium perlatum*

436 **Greyheaded Kingfisher** *Halcyon leucocephala*

505 **Dusky Lark** *Pinarocorys nigricans*

580 **Groundscraper Thrush** *Turdus litsitsirupa*

625 **Icterine Warbler** *Hippolais icterina*

655 **Greencapped Eremomela** *Eremomela scotops*

659 **Stierling's Barred Warbler** *Cameroptera stierlingi*

¹Lesser Gallinule subsequently heard calling but not seen at Ntshangwe Pan on 24 January 1996 (B Taylor pers. comm.)

²Green Sandpiper subsequently seen at the Mbazwana Stream on 24 January 1996 with Baillon's Crake *Porsana pusilla* in nearby coastal marshes (B Taylor pers. comm.)