



BIRDS OF THE DAR ES SALAAM AREA, TANZANIA

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INTRODUCTION

Although the birds of other areas in Tanzania have been studied in detail, those of the coast near Dar es Salaam have received relatively little recent attention. Ruggles-Brise (1927) published a popular account of some species from Dar es Salaam, and Fuggles-Couchman (1939, 1951, 1953, 1954, 1962) included the area in a series of papers of a wider scope. More recently there have been a few other studies dealing with particular localities (Gardiner and Gardiner, 1971), habitats (Stuart and van der Willigen, 1979 ; Howell, 1981), or with individual species or groups (Harvey, 1971-1975 ; Howell, 1973, 1977). Britton (1978, 1981) has documented specimens collected in the area previous to 1967 by Anderson and others.

The purpose of this paper is to draw together data from published reports, unpublished records, museum specimens and our own observations on the frequency, habitat, distribution and breeding of the birds of the Dar es Salaam area, here defined as the portion of the mainland within a 64 km radius of Dar es Salaam, including the small islands just offshore (Fig. 1). It includes Dar es Salaam District and portions of two others, Kisarawe and Bagamoyo. Zanzibar has been omitted because its unusual avifauna has been reviewed (Pakenham, 1979). Most of the mainland areas are readily accessible from Dar es Salaam by road and the small islands may be reached by boat. The geography of the area is described in Sutton (1970).

A total of 1293 bird species are recorded from East Africa, of which 981 are found in Tanzania (Britton, 1980a). In the Dar es Salaam area, 457 species have been recorded. Of these, 74 have been shown to breed and many others probably do so. Species categorised as rare and vagrant number 62 and 44 respectively, while 64 species have not been sighted since 1968. The populations of several taxa, all forest forms, are considered to be endangered. The Sokoke Pipit (*Anthus*

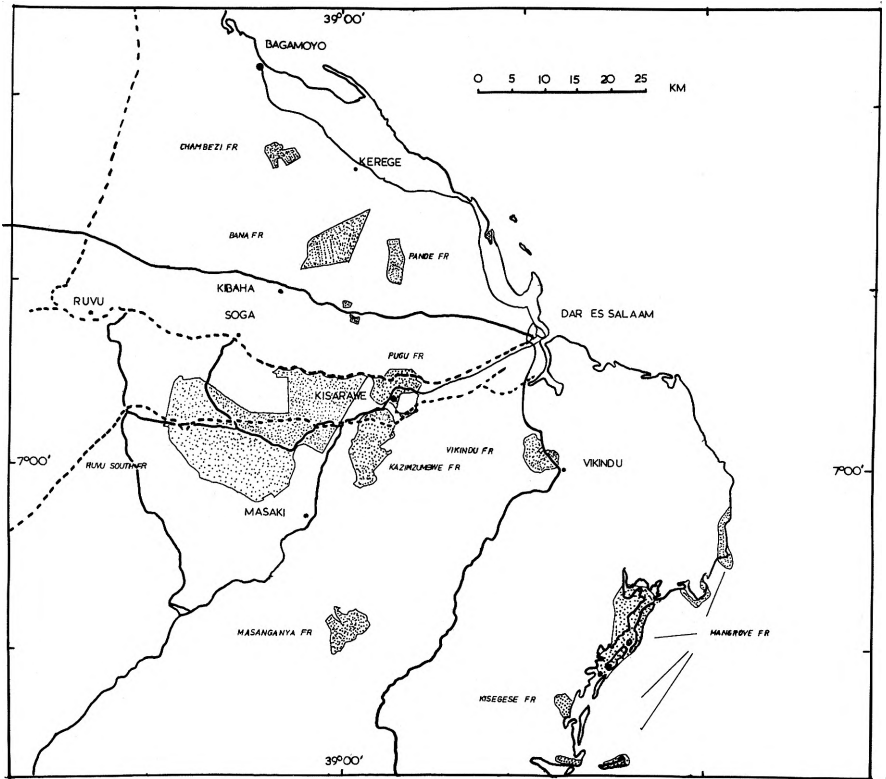


Fig. 1. Map of study area around Dar es Salaam (FR = Forest Reserve).

sokokensis) occurs only rarely in the Pugu forest, and there are no recent records. In the same reserve is found the only known Tanzanian population of the East Coast Akalat (*Sheppardia gunningi*), and the local subspecies of the Pale-breasted Illadopsis is endemic to the Pugu area. These populations are regarded as endangered because of the destruction of their natural habitat (Howell, 1981).

The avifauna of the area is of interest for the following reasons :

- The extension of acacia scrub southwards to Dar es Salaam allows the penetration of several northern dry country species including some palaeartic migrants.
- The coast is on the main migration route for many species, particularly waders.
- Storms may bring in oceanic stragglers, such as frigatebirds.
- There appear to be local dry season movements of inland species, especially water birds, to wetlands on the coast.
- A small patch of lowland coastal forest at Pugu is unique in the composition of its flora. It contains, in addition to a lowland forest avifauna, unusual and

endangered species, perhaps still including an East African endemic, the Sokoke Pipit.

- Several species have been introduced into the area.

- Drastic alterations in the habitats have occurred since the earlier studies of Fuggles-Couchman, and it is important to document and assess these where possible.

We hope that this publication will serve as a useful comparison for future studies and that it will call attention to the rapid destruction of a variety of important habitats in the Dar es Salaam area.

THE STUDY AREA

The climate of Dar es Salaam has been described in detail by Bargman (1970), who summarises it as hot and humid with small seasonal and daily variations in temperature. There are two rainy seasons, a shorter one with peaks in November and December and a longer one with peaks in March and April. Although the mean annual rainfall is approximately 1100 mm, this varies considerably both from year to year and even between the short distances which separate different rainfall recording stations. Maximum relative humidity is high, 100% on almost every night of the year at the seashore, and even inland still is 90 - 100%. Maximum temperature reported for Dar es Salaam is 96°F (35.3°C) in March ; the minimum recorded is 55°F (12.7°C) in August.

Temple (1970) and Wingfield (1977a, b) have studied, respectively, the geomorphology and vegetation of the area, and give much more detail than is possible here. The area is most readily divided into two sections, the coast and the hinterland. The former, consisting of the coastal strip up to a width of 4 km, includes the intertidal zone, the offshore islands, and the open sea. The latter comprises the larger part of our area, rolling country with some hills and which is crossed by rivers, streams and erosion valleys. Although deeply dissected in some parts, it contains few permanent streams and ponds.

HABITATS AND VEGETATION

The Coast

The coastline consists of quartz sand beaches interspersed with low coral cliffs and headlands. The cliffs are made up of fossil coral, coralline algae and cemented calcarious sand. Seaward from the base of the cliffs extends a coral reef platform, beyond which beds of marine angiosperms may extend to border the open

sea. Quartz sand beaches are present in most places where coral cliffs and headlands are absent. Above the tide line on the ridges of these sandy beaches are found halophytic plants. On the seaward slope of the beaches, flotsam is present. Seaward from the beaches are sandy or muddy flats, frequently with a bed of marine angiosperms at the edge of the open sea. At intervals along the coast, tidal creeks are formed, often with deposits of mud at their banks and mouths, and mangroves are present in such situations. Seasonal streams may also occasionally break through the beach, creating temporary estuaries without mangroves.

Small corraline islands are found parallel to the shore, and the shorelines of these are coral cliffs and beaches of corraline sand with surrounding reef platform. No freshwater is found on these islands, which are densely vegetated with low halophytic scrub, trees, and coastal thicket. A sandbank, Fungu Yasin, is exposed only at low water.

A succession of habitats is therefore present, and the intertidal zone, including reef platform, sandy/muddy tidal flats, mangrove creeks and salt flats provides rich feeding areas for many species of birds, especially herons, storks and migrant waders.

The mangroves have been studied by McCusker (1975), who recorded six species at Kunduchi: *Sonneratia alba*, *Rhizophora mucronata*, *Ceriops tagal*, *Bru-guiera gymnorhiza*, *Avicennia marina*, and *Xylocarpus granatum*. Mangroves form limited areas of forest along the tide contours of creeks, but in well-drained areas are reduced to a bush growth-form; Macnae (1968) has discussed the general ecology of mangroves in the Indo-West Pacific region. Typical bird species include the Green-backed Heron (*Butorides striatus*), Mangrove Kingfisher, Brown-headed Parrot, and Black-breasted Glossy Starling, as well as a variety of waders and herons which use the mangroves as both a feeding and roosting site.

The mangrove forests have been much reduced by cutting for building poles and by clearing of land for salt pans constructed for the retention of seawater, subsequent evaporation and production of salt. Such salt pans are usually situated in mangrove basins and are important feeding and roosting sites for waders and other birds. Characteristic species include Little Egret, *Egretta garzetta*, Yellow-billed Stork, *Mycteria ibis*, Black Kite, *Milvus migrans*, Three-banded Plover, *Charadrius tricollaris*, Namaqua Dove, *Oena capensis*, Pied Kingfisher, *Ceryle rudis*, and Richard's Pipit, *Anthus novaeseelandiae*. Most of the local herons and storks favour salt pans, especially during high tides. Concentrations of wetland species can be impressive, with over 1000 birds of more than 30 species in less than 10 hectares.

Open natural salt flats which are only flooded during the highest spring tides may extend over wide areas inland from the mangroves. They consist largely of bare mud and contain sparse grass, halophytes, and are often bordered by acacia scrub. The poor soil, high concentration of salt, and the risk of flooding prevent

agriculture from extending on to them, but livestock may occasionally be grazed on the flats.

The most extensive areas of acacia scrub occur near the Kunduchi and Kerege salt pans. They appear superficially somewhat similar to parts of the acacia thornbush of northern Tanzania, but consist largely of *Acacia zanzibarica* and *A. nilotica* with a cover of several grasses, and have developed on the halosols of the coastal salt flats. In spite of their small size, such patches of acacia scrub provide suitable habitat for a number of characteristic bird species, including Blue-naped Mousebird, *Urocolius macrourus*, Scimitarbill, *Phoeniculus cyanomelas*, Grey-headed Silver-bill, *Lonchura griseicapilla*, Golden Pipit, *Tmetothylacus tenellus*, Pygmy Batis, *Batis perkeo*, Desert Cisticola, *Cisticola aridula*, Red-faced Crombes, *Sylvietta whytii*, and Northern Brownbul, *Phyllastrephus strepitans*. Small thickets with Doum Palm, *Hyphaene* sp., and Baobab, *Adasonia digitata*, are also common, and in these, Black-collared and Brown-breasted Barbets and Black-necked Weavers are characteristic.

Much of the coastline is a sandy shore rising to a higher platform which either supports a vegetation of coastal scrub and thicket or coconut plantations. Ground cover is usually sparse and is made up of coarse grasses. In contrast, coastal thicket contains a high proportion of xerophytic and halophytic plants such as members of the Euphorbiaceae as well as Doum Palms, *Hyphaene* sp. What is now coastal thicket may have originally been coastal forest which has been prevented from maturing by man's continual cutting of the larger trees; characteristic of coastal thicket is a high vascular plant diversity of over 100 species (Wingfield, 1977b). Coastal thicket is most highly developed on the offshore islands but patches also remain on the mainland, especially away from the main centres of human dwelling and agriculture. Where dense patches of coastal thicket occur the following bird species, most of which are also found in coastal forest, may be present: Yellow-rumped Tinkerbird, *Pogoniulus bilineatus*, Green Tinkerbird, *P. simplex*, Black Rough-wing, *Psaldoprocne pristoptera*, Rufous-backed Mannikin, *Lonchura bicolor nigriceps*, Peters' Twinspot, *Hypargos niveoguttatus*, Four-coloured Bush Shrike, *Malaconotus quadricolor*, Eastern Bearded Scrub Robin, *Cercotrichas barbata*, Red-capped Robin Chat, *Cossypha natalensis*, Mouse-coloured Sunbird, *Nectarinia veroxii*, Little Greenbul, *Andropadus virens*, and Nicator, *Nicator chloris*. Less well-developed, degraded patches of thicket, here termed coastal scrub, occur in many places. The trees, shrubs, and climbers in scrub are neither as high nor as dense as in thicket, but they still provide adequate cover for a variety of bird species not found in open areas.

Inland

Much of the hinterland may best be described as coastal scrubland and woodland. *Chlorophora*, *Albizia*, *Pteleopsis*, *Sclerocarya*, *Xeroderria*, and *Lannea* are trees characteristic of this vegetation type, which is also referred to as wooded grassland or combretaceous woodland (Polhill, 1966). *Panicum* spp. and other

grasses make up much of the ground cover. During the dry season, much of this coastal woodland is burned, usually as a result of fires set by agriculturists, whose cultivation encroaches upon and often eventually engulfs it. The following bird species are found in coastal woodland, though not entirely restricted to it: Wahlberg's Eagle, *Aquila wahlbergi*, Crested Francolin, *Francolinus sephaena*, Red-eyed Dove, *Streptopelia semitorquata*, Didric Cuckoo, *Chrysococcyx caprius*, Brown-hooded Kingfisher, *Halcyon albiventris*, Little Bee-eater, *Merops pusillus*, Grey-headed Bush Shrike, *Malaconotus blanchoti*, Black-throated Wattle-eye, *Platysteira peltata*, Arrow-marked Babbler, *Turdoides jardineii*, Yellow-fronted Canary, *Serinus mozambicus*, Brownbul, *Phyllastrephus terrestris*, and several weavers. Palearctic migrants such as Red-backed Shrike, *Lanius collurio*, Olivaceous Warbler, *Hippolais pallida*, and Willow Warbler, *Phylloscopus trochilus*, are often common, while in more open, grassy areas Black-shouldered Kite, *Elanus caeruleus*, Singing Bush Lark, *Mirafraga cantillans*, Richard's Pipit, *Anthus novaeseelandiae*, Yellow-throated Longclaw, *Macronyx croceus* and various cisticolas, whydahs and bishops are typical.

Subsistence food cultivation in the coastal area consists of tilling the soil by hand to grow cassava, maize, rice and vegetables in the form of small garden plots (Kiswahili, *mashamba*, plural). Pineapples are often interspersed with other crops, or sometimes grown on a larger scale. After harvest, the land is usually left fallow until the next suitable period for tilling, and is burned before the next onset of the rains. Hartnoll and Fuggles-Couchman (1937) have described the traditional system of agriculture in detail.

Plantations, in contrast to small gardens, often involve very large areas of land. Crops such as coconuts, cashews and sisal may be grown as monocultures, with only a small border of grassland between areas of the crop and secondary growth bordering the edges of plantation. Cashew trees are often planted as a means of marking boundaries to property and are therefore one of the first trees to be planted once thicket, forest, or woodland has been cleared. Neither plantations nor gardens offer as much cover for birds as the original vegetation, and no birds are restricted to cultivated areas alone. But many species make use of cover and food offered both by crops and at the edge of plantations and gardens.

Built-up areas occupy much of the city proper, and the history of Dar es Salaam has been documented by Sutton (1970). Housing areas in the city and environs are of three types: high, medium, and low density. The high density areas of typical coastal Swahili houses (see Sutton, 1970, plates 2 and 7) leave little room for vegetation, but the less dense traditional housing areas at the edges of the city and in fishing villages do have small patches of vegetation, including scrub, coconut trees, and gardens. In the medium and low density housing areas, gardens with trees and shrubs are frequent. The grounds of State House and the city Botanic Garden have large trees as well as shrubs and these provide both food and cover for a variety of birds species. Buildings themselves provide excellent nest sites for certain groups of birds, notably swifts and swallows and the Barn Owl, *Tyto alba*,

Feral Pigeon, *Colomba livia*, and Grey-headed Sparrow, *Passer griseus*. Species which use buildings as vantage points and perches include the African Hobby, *Falco cuvieri*, Spotted Eagle Owl, *Bubo africanus*, Pied Crow, *Corvus albus*, Indian House Crow, *C. splendens*, and Pied Wagtail, *Motacilla aguimp*. Characteristic suburban species include: Ring-necked Dove, *Streptopelia capicola*, Emerald-spotted Wood Dove, *Turtur chalcospilos*, White-browed Coucal, *Centropus superciliosus*, Speckled Mousebird, *Colius striatus*, Striped Kingfisher, *Halcyon chelicuti*, Cordon-bleu, *Uraeginthus angolensis*, Bronze Mannikin, *Lonchura cucullata*, Black-headed Batis, *Batis minor*, Rufous Chatterer, *Turdoides rubiginosus*, White-browed Robin Chat, *Cossypha heuglini*, Little Purple-banded Sunbird, *Nectarinia bifasciata*, Scarlet-chested Sunbird, *Nectarinia senegalensis*, African Golden Oriole, *Oriolus auratus*, Black-headed Oriole, *Oriolus larvatus*, Black-headed Weaver, *Ploceus cucullatus*, Zanzibar Sombre Greenbul, *Andropadus importunus*, and Common Bulbul, *Pycnonotus barbatus*.

There are few permanent bodies of freshwater within the study area. The largest ponds are those at Soga, on the grounds of a sisal estate. The Soga swamp and ponds are bordered by sedges, *Cyperus* spp., and cat tails, *Typha* spp. Water lilies, *Nymphaea* spp., are common in the water. Small ponds also occur south of Dar es Salaam on the Kilwa road and north of the city near Kijitonyama and small man-made reservoirs are found near some secondary schools. Man-made sewage oxidation ponds are located within the city limits as well as on the campus of the University. No large rivers flow in the study area, but there are a number of small streams. Most of these, however, are seasonal, as are many of the ponds which slowly dry up during the dry season. Rice is often cultivated in low-lying areas associated with a seasonal availability of water. Bird species which frequent freshwater ponds, swamps, and associated vegetation include Little Grebe, *Tachybaptus ruficollis*, Open-billed Stork, *Anastomus lamelligerus*, Pygmy Goose, *Nettapus auritus*, White-backed Duck, *Thalassornis leuconotus*, Painted Snipe, *Rostratula benghalensis*, Jacana, *Actophilornis africanus*, Lesser Moorhen, *Gallinula chloropus*, Black Crake, *Limnocorax flavirostra*, Allen's Gallinule, *Porphyrio alleni*, Malachite Kingfisher, *Alcedo cristata*, Giant Kingfisher, *Ceryle maxima*, and Lesser Swamp Warbler, *Acrocephalus gracilirostris*. A large number of other species including waders, herons, and ducks also visit freshwater ponds, streams, and sewage ponds.

Of the great stretch of lowland forest that once dominated much of coastal Tanzania, only two small patches, Pugu and Pande Forest Reserves, remain with anything resembling their original vegetation. East African lowland coastal forest contains a very high number of vascular plant species; for Pugu forest alone, Wingfield (1976) estimated that there are 800 forest vascular plant species, of which at least 11 are endemic to the area. Though neither Pugu nor Pande Forest Reserves contain entirely natural vegetation because of illegal cutting and cultivation as well as a policy of introducing exotic species for commercial exploitation, their fauna and flora are still representative of forest no longer found elsewhere on the coast of Tanzania. Apart from its endemic plant species, Pugu forest contains a variety of invertebrates unknown from elsewhere (see Howell,

1981 for a summary of information on the fauna and flora of the Pugu area.)

A number of bird species in the study area are known only from Pugu forest (Pande forest has been less frequently visited) and dense coastal thicket (see above section on thicket), and thus may be regarded as very much limited in their distribution.

Of special interest are the following, which are only known to occur in or near forest : Kenya Crested Guinea-fowl, *Guttera pucherani*, Tambourine Dove, *Turtur tympanistria*, Narina's Trogon, *Apaloderma narina*, Livingstone's Turaco, *Tauraco livingstonii*, White-eared Barbet, *Buccanodon leucotis*, Little Spotted Woodpecker, *Campethera cailliautii*, African Broadbill, *Smithornis capensis*, Square-tailed Drongo, *Dicrurus ludwigii*, Lesser Seedcracker, *Pyrenestes minor*, Chestnut-fronted Helmet Shrike, *Prionops scopifrons*, Sokoke Pipt, *Anthus sokokensis*, Little Yellow Flycatcher, *Erythrocerus holochlorus*, Crested Flycatcher, *Trochocercus cyanomelas*, Kretschmer's Longbill, *Macrosphenus kretschmeri*, Pale-breasted Illadopsis, *Trichastoma rufipennis*, Red-tailed Ant Thrush, *Neocossyphus rufus*, East Coast Akalat, *Sheppardia gunningi*, Olive Sunbird, *Nectarinia olivacea*, Dark-backed Weaver, *Ploceus bicolor*, Tiny Greenbul, *Phyllastrephus debilis*, Fischer's Greenbul, *Phyllastrephus fischeri*, and Yellow-streaked Greenbul, *Phyllastrephus flavostriatus*.

The University of Dar es Salaam main campus

The campus, an area of about 500 hectares, is situated 10 km west-northwest of Dar es Salaam city centre, and ranges in altitude from 40 to 100 m above sea level. Wingfield (1977b) has described the ecology of the campus in detail. He notes that although the natural vegetation of the campus was once forest, as was much of the coastal strip, most of this has disappeared due to clearance for agriculture and building. Construction of the first teaching buildings on the campus began in early 1960's, and construction continues as the University expands. Despite the building and clearing, there still remained much natural vegetation in the form of larger trees and dense thicket until 1975. Since that year, however, most of the wooded vegetation, especially thicket and large trees, has been removed, even from steep hillsides. The removal of thicket very rich in numbers of plant species has resulted in replacement with seasonal crops and subsequent soil erosion or, where some secondary growth has been permitted, by almost uniform stands of vegetation of very low species diversity, dominated in many places by *Pluchea disoscorides*.

Thus the campus now consists almost entirely of cultivated areas, buildings, and man-made grassland with relatively few trees. Steep erosion gullies form prominent features of the landscape. The only permanent water is that at the sewage oxidation ponds, though lower lying areas are waterlogged during the rainy



seasons. A small plant nursery borders the oxidation ponds and contains large trees as well as shrubs. The sewage ponds and associated stream outflow provide an important site for waders and other species dependent on freshwater. Lawns and athletic grounds, large, open grassy areas of the campus, provide suitable habitat for seed-eating birds as well as birds of prey. The little natural vegetation remaining and dense secondary growth allow some birds normally found in coastal thicket to occur.

GENERAL

The Dar es Salaam area has a rich avifauna even by East African standards, and it is likely that the present list is incomplete. Systematic mist-netting in the Pugu and Pande forests, along the coast during the Palearctic migrations, and regular observations made at sea would no doubt add many species to the list and add to our knowledge of movements in the area.

There have been changes of status in a number of species even within the last ten years. Not all have been on the debit side, although at least 64 have not been recorded since 1968, including several which were once common. It is not known how many of these changes reflect changes in distribution within East Africa and how many reflect the loss or disturbance of habitat, notably the clearance of forest and thicket, in the study area. However, there are indications that dry country species are becoming more regular (note records of Somali Bee-eater, *Merops revoilii*, Taita Fiscal, *Lanius dorsalis*, Golden Pipit, *Tmetothylacus tenellus*, Pygmy Batis, *Batis perkeo*, and Desert Cisticola, *Cisticola aridula*) and this may be an indication of gradual climatic change.

Three of the most distinctive habitats in the Dar es Salaam area, mangroves, acacia scrub, and lowland forest and thicket are of limited extent and particularly vulnerable to clearance. As a result, some of the less common species in these habitats may have little long-term chance of survival in the area. Mangroves, because of their value as building poles and because they occupy space needed for salt production, are declining in the study area, and remnant patches should be preserved. Acacia scrub is more widespread and is probably increasing in East Africa generally. But the small areas near Dar es Salaam at the edge of the range of this vegetation type are of special interest ecologically and should be conserved. Most vulnerable is lowland forest and thicket since it is a remnant vegetation type in East Africa and contains a unique avifauna (Moreau, 1966). In the Dar es Salaam area this forest avifauna comprises approximately 22 species more or less restricted to forest, 10 species found in both forest and thicket and a further 20 which also occur in other habitats. Of the forest and thicket species at least 12 can be considered rare or local in East Africa and of these, two species and one subspecies are known in Tanzania only from the Pugu forest. It is hoped that the Government of the United Republic of Tanzania, which has shown such courage and foresight in its conservation policy to date, will be able to take the necessary

steps to preserve what remains of the lowland forest around Dar es Salaam, a unique and irreplaceable habitat which remains largely undocumented and unstudied.

There is unlimited scope for further ornithological studies in the Dar es Salaam area. No studies on palaeartic migrants comparable to those in Kenya (Pearson and Backhurst, 1976, 1978 ; Backhurst and Pearson, 1977, 1979) and Uganda (Pearson, 1971, 1972) have been made, and little is known about the composition, scope, and timing of the palaeartic migration in Tanzania. Even less is known about the intra-African migrations, particularly the movements and post-breeding dispersals which appear to take place between the drier inland areas and the coast. These may be sporadic in response to the driest of dry seasons but the evidence suggests that several species of water birds (Flamingoes, African Spoonbill, *Platalea alba*, Egyptian Goose, *Alopochen aegyptiacus*, Hottentot Teal, *Anas hottentota*, Spur-winged Goose, *Plectropterus gambensis*, and White-faced Whistling Duck, *Dendrocygna viduata*) may regularly move coastwards.

The likelihood of escapes from the Coast Region Bird Cooperative makes deductions regarding similar movements by passerines difficult. However, it seems likely that such movements do take place, and of particular interest are the records of the rare, endemic Little Tawny Pipit (*Anthus caffer*).

One of the most striking features of the Dar es Salaam area species list is the number of rare and vagrant species. Although these categories may in some cases reflect limited knowledge on our part and the species may be particularly inconspicuous, its call or song poorly known, or its habitat rarely visited, there is no doubt that a number of species occur only occasionally in the area. Several of these are common elsewhere in Tanzania and their occurrence reflects, in part, Dar es Salaam's position on the coast between the drier, northern thorn bush and the southern woodlands, so that it touches on the extremes of the ranges of many species. Only regular, long-term studies will reveal the occurrence of such species and will eventually provide evidence for a full assessment of their status.

It is hoped that this checklist will provide both a reference point and a stimulus for observers in the Dar es Salaam area and elsewhere in eastern Africa who will undertake these studies.

METHODS

The sequence and names in the list follows Britton (1980a). Subspecies have been indicated only when they are easily recognisable in the field or when specimens were available. Inclusion in the list indicates that either of the authors or other observers listed saw or collected the species. We have included only those sight records for which an adequate description was provided, and in cases of unusual records have, where possible, given dates and the name or initials of the observer. Observations were made more or less regularly from 1968-1978, but not all habitats and localities received equal coverage. Harvey was resident in Dar es

Salaam from 1970 to 1973. Howell has been resident in the city since 1968, and has lived on the University of Dar es Salaam main campus since 1974. Records from the Cambridge Expedition's work in Pugu forest and those of Dr. S. Tyler have also been added, observations made later than 1979 are not included.

Many individuals have kindly allowed us to make use of their unpublished records, and they are acknowledged below. N.R. Fuggles-Couchman provided us with records from the 1930's and 1950's which have in some cases allowed us to make comparisons with species abundances and habitats then and now which would have not otherwise been possible.

In addition to references dealing with the specific area of study, a number of others were examined for records, including Mackworth-Praed and Grant (1960). Hall and Moreau (1970) and Snow (1978). Specimens in the University of Dar es Salaam Vertebrate Collection (UDSM) were examined, as were those in the collection of the National Museum of Tanzania. Those in charge of specimens in the British Museum (National History) (BM) and the United States National Museum of Natural history (USNM) also provided information on specimens in their care, and N. Franzmann most kindly provided information on specimens collected by T. Andersen now in the Zoological Museum, Copenhagen.

Species were rated with regard to frequency of sighting as follows :

Common — recorded at least once on every visit to the habitat ; in the case of migrants, at the time of year when it can be expected to occur.

Regular — recorded on most visits to the habitat.

Scarce — recorded more than once during each season or year in the appropriate habitat but on less than half the visits.

Rare — recorded no more than three times during three seasons or years in the habitat(s). This category includes irregular visitors.

Vagrant — one or two records in total.

No attempt has been made to assess frequency of species not recorded in the period 1968-1978.

Some species are especially difficult to detect and/or identify, and these have been noted with a comment that they may be overlooked and therefore more frequent than indicated. Mist nets were not used extensively in this study and it is probable that many forest and thicket-dwelling species are more common than indicated by our sightings. In some cases not enough information is available to us regarding the status of a species, and this has been indicated by "status uncertain".

The month or months when a species was recorded are indicated. Brief notes on the habitat in which a species is found are given, based on the descriptions presented in "habitat and vegetation". Where a species is known from only a particular locality this is mentioned. "Recorded on the campus" indicates that the species occurs on the University of Dar es Salaam main campus.

Breeding records are included, and where such data is available, some indication is given as to the type of evidence on which the breeding record was based, i.e.

breeding behaviour, eggs, young, fledgling, adult carrying nesting material, adult sitting on nest, specimen with enlarged gonads, brood patch, etc. The absence of evidence does not necessarily mean that the species does not breed and most of the regularly recorded Afrotropical species probably do breed in the area.

Palearctic migrants are indicated by "migrants", and Madagascar and intra-African migrants are also noted.

Several species have been "introduced" and are more or less naturalised in the Dar es Salaam area.

The presence of the holding ground of a commercial bird exporting firm, the Coast Region Bird Cooperative Society, north of the city near Kunduchi and the resulting likelihood of escapes complicated the evaluation of unusual sightings and distribution records. Harvey (1972g) has listed the species in stock in December 1972, but no further records of birds captured have been published. Despite the geographic limits implied by the name of the cooperative, birds are in practice captured from as far away as Dodoma Region. We have indicated the species we believe to be escapees. Most are estrildines or starlings, popular cagebirds, and caught in large numbers by the cooperative.

SPECIES LIST

Little Grebe, *Tachybaptus ruficollis*. - Scarce, recorded June-December on freshwater and sewage ponds. Breeding June (behaviour). Recorded on the campus.

Pink-backed Pelican, *Pelecanus rufescens*. - Rare, recorded only in June 1973 (WGH) at Kerege salt pans and at Bagamoyo salt pans December 1978 (P.B. Taylor, *in litt.*).

Masked Booby, *Sula dactylatra*. - Fuggles-Couchman (*in litt.*) reports infrequent sightings at Mjimwema Beach, 10 km south of Dar es Salaam. For details on identification of this species and on its breeding on Latham Island, see Gerhart and Turner (1978).

Long-tailed Cormorant, *Phalacrocorax africanus*. - Common, recorded throughout the year from sand and mud flats, mangroves, and freshwater ponds. Recorded on the campus.

Greater Cormorant, *Phalacrocorax carbo*. - Fuggles-Couchman (*in litt.*) reports a single observation at Soga ponds in 1954. Not recorded in recent years.

Darter, *Anhinga rufa*. - Regular, recorded throughout the year in mangroves and at freshwater ponds. Recorded on the campus.

Lesser Frigatebird, *Fregata ariel*. - Rare, recorded June 1973 (Harvey, 1973e) and 31 December 1974 - 1 January 1975 (Gardiner, 1975a) soaring over the coast. A

specimen collected October 1974 identified as *F. a. ariel* (Uilenberg, 1977). Forbes-Watson (1972a) has commented on the difficulties of identifying *Fregata* spp. in the field ; there are records of birds not identified to species in December 1974 and January 1975 (Uilenberg, 1977).

Greater Frigatebird, *Fregata minor*. - Vagrant, recorded October 1951 (Morrison, 1952) and June 1972 (Harvey, 1972d) soaring over the coast.

Little Bittern, *Ixobrychus minutus*. - Scarce, recorded January, May and November from freshwater ponds, streams and sewage ponds. Recorded on the campus.

Dwarf Bittern, *Ixobrychus sturmii*. - Scarce, recorded January, February, April and June from mangroves and freshwater swamps.

Grey Heron, *Ardea cinerea*. - Regular, recorded throughout the year in the intertidal zone, mangroves, salt pans, and at freshwater and sewage ponds. Recorded on the campus.

Goliath Heron, *Ardea goliath*. - Vagrant, recorded May 1973 (WGH) on sand flats.

Black-headed Heron, *Ardea melanocephala*. - Scarce, recorded throughout the year in mangroves, salt pans, rice fields, freshwater swamps and ponds, sewage ponds and built up areas. Recorded on the campus.

Purple Heron, *Ardea purpurea*. - Scarce, recorded all months except May and August in mangroves, freshwater swamps and sewage ponds. Recorded on the campus.

Madagascar Squacco Heron, *Ardeola idae*. - Migrant from Madagascar. Scarce, recorded May-August in mangroves, freshwater swamps and at sewage ponds. Recorded on the campus.

Squacco Heron, *Ardeola ralloides*. - Scarce, recorded throughout the year in mangroves, salt pans, and in freshwater swamps, ponds, and sewage ponds. Recorded on the campus.

Rufous-bellied Heron, *Ardeola rufiventris*. - Rare, recorded only in May 1973 at Kaole swamp near Bagamoyo (WGH). Britton (1981) notes a specimen from Soga. There are very few records of this species for Tanzania (Hancock and Elliot, 1978).

Cattle Egret, *Bubulcus ibis*. - Common, recorded throughout the year in all habitats except open sea and forest ; often associated with livestock. Recorded on the campus.

Green-backed Heron, *Butorides striatus*. - Regular, recorded throughout the year on exposed rocky shores, in the mangroves, salt pans, and freshwater ponds. Recorded on the campus.

Great White Egret, *Egretta alba*. - Regular, recorded throughout the year in the intertidal zone, mangroves, salt pans, and at freshwater and sewage ponds. Recorded on the campus.

Black Heron, *Egretta ardesiaca*. - Scarce, recorded all months except April, May and June on sandflats, in mangroves, and at salt pans.

Little Egret, *Egretta garzetta*. - Common, recorded throughout the year on sand flats, in mangroves, on salt pans, and in freshwater swamps. Both dark and white colour morphs recorded, with former constituting about 30% of the population (Harvey, 1975). Hancock and Elliot (1978) suggest that the dark morphs may be African Reef Herons, *Egretta gularis*. Specimens are needed to confirm identifications.

African Reef Heron, *Egretta gularis*. - The status of this species is uncertain. Several authors most recently Mann (1976), have claimed this species to be present in the Dar es Salaam area, but there is a debate about its status in East Africa in relation to the dark phase of the Little Egret (Hancock and Elliot, 1978). We know of no definite records for the species in the Dar es Salaam area, but see previous species, *E. garzetta*.

Yellow-billed Egret, *Egretta intermedia*. - Regular, recorded throughout the year on sandflats, in the mangroves, on salt flats, and at freshwater swamps and sewage ponds. Recorded on the campus.

Night Heron, *Nycticorax nycticorax*. - Scarce, recorded all months except February, May, and July from mangroves, salt pans, and freshwater ponds. Recorded on the campus.

Hamerkop, *Scopus umbretta*. - Common, recorded throughout the year at salt pans, edges of streams in coastal and acacia scrub, in cultivated areas, and at freshwater swamps and sewage ponds. Breeds, February (fledglings, Loveridge, 1922) and November (young). Recorded on the campus.

Open-billed Stork, *Anastomus lamelligerus*. - Scarce, recorded July - November at edges of freshwater swamps and sewage ponds. Recorded on the campus.

Abdim's Stork, *Ciconia abdimii*. - Rare, recorded only January, March and November, sometimes in flocks, in cultivation and freshwater swamps. Recorded on the campus.

White Stork, *Ciconia ciconia*. - Migrant, rare, recorded only March 1971 in cultivation and freshwater swamps.

Woolly-necked Stork, *Ciconia episcopus*. - Scarce, recorded throughout the year in mangroves, on mudflats, exposed coral reefs, and at salt pans. Probably breeds December (see Harvey, 1972b for details).

Marabou, *Leptoptilos crumeniferus*. - Vagrant, A group of six seen soaring over Dar es Salaam, September 1969 (KMH).

Yellow-billed Stork, *Mycteria ibis*. - Regular, recorded throughout the year from mangroves, salt pans, and freshwater swamps. Breeds June (flying young). Recorded on the campus.

Hadada, *Bostrychia hagedash*. - Rare, recorded August and September in cultivation, gardens and plantations and at freshwater and sewage ponds. Recorded on the campus.

Glossy Ibis, *Plegadis falcinellus*. - Rare, recorded September-November from mangroves, salt pans, and freshwater ponds. Recorded on the campus.

Sacred Ibis, *Threskiornis aethiopica*. - Scarce, recorded January and April-October from mangroves, salt pans, and freshwater swamps and sewage ponds. Recorded on the campus.

African Spoonbill, *Platalea alba*. - Rare, recorded January, February and May from salt pans.

Lesser Flamingo, *Phoeniconaias minor*. - Rare, recorded June, August and December from salt pans at Kerege and Msasani.

Greater Flamingo, *Phoenicopterus ruber*. - Vagrant, recorded October 1972 (WGH) on salt pans; six adults and one immature at Bagamoyo salt pans 27 December 1978 (P.B. Taylor, *in litt.*) and two birds on sand flat north of Dar es Salaam, November 1979 (G. Bernacsek, pers. comm.)

White-face Whistling Duck, *Dendrocygna viduata*. - Scarce, recorded June and July on salt pans.

Egyptian Goose, *Alopochen aegyptica*. - Scarce, recorded May-August on salt pans.

Red-billed Teal, *Anas erythrorhynchos*. - Scarce, recorded May-October on salt pans and sewage ponds. Breeds July (downy young). Recorded on the campus.

Hottentot Teal, *Anas hottentota*. - Scarce, recorded April-September on salt pans.

African Pochard, *Netta erythrophthalma*. - Vagrant, recorded January 1971 on freshwater ponds (WGH).

African Pygmy Goose, *Nettapus auritis*. - Regular, recorded all months except February, April and December in freshwater swamps and on sewage ponds. Recorded on the campus.

Spur-winged Goose, *Plectropterus gambensis*. - Rare, recorded June-August from salt pans.

White-backed Duck, *Thalassornis leuconotus*. - Regular, recorded all months except January-April and October at freshwater swamps.

Palm-nut Vulture, *Gypohierax angolensis*. - Regular, recorded throughout the year from salt pans, mangroves, coastal scrub, plantations, and seen flying over forest. Recorded on the campus.

African White-backed Vulture, *Gyps africanus*. - Scarce, recorded March, July, September and October flying over acacia scrub and cultivation. Recorded on the campus.

Ruppell's Griffon, *Gyps rueppellii*. - Scarce, recorded January, March, April and October in acacia scrub, and coastal woodland. Thought to breed in rocky hills near Pugu forest.

Hooded Vulture, *Neophron monachus*. - Regular, recorded throughout the year over a variety of habitats; roosts in Pugu forest. Recorded on the campus.

Lappet-faced Vulture, *Torgos tracheliotus*. - Vagrant, two birds seen flying over the campus landed at the edge of sewage ponds in September, 1975 (KMH).

Pallid Harrier, *Circus macrourus*. - Migrant. Vagrant, recorded January 1971 (WGH) over sisal plantations. A common winter visitor to inland Tanzania. (Mackworth-Praed and Grant, 1960).

Montagu's Harrier, *Circus pygargus*. - Specimen from Soga (Franzmann, *in litt.*).

African Marsh Harrier, *Circus ranivorus*. - Britton (1981) notes a specimen collected at Soga 20 November 1960.

Harrier Hawk, *Polyboroides radiatus*. - Rare, recorded January, July and September in coastal scrub and coconut plantations.

Brown Snake Eagle, *Circaetus cinereus*. - Rare, recorded July, August and October in coastal woodland and scrub and soaring over plantations. Recorded on the campus.

Southern Banded Snake Eagle, *Circaetus fasciolatus*. - Specimen from Soga (Franzmann, *in litt.*).

Black-chested Snake Eagle, *Circaetus gallicus pectoralis*. - Regular, recorded January, March, June-December over mangroves, salt pans and flats, coastal scrub and thicket, acacia scrub and cultivation. Recorded on the campus.

Bateleur, *Terathopius ecaudatus*. - Scarce, recorded January and May-November, soaring over built-up areas, cultivation, forest, coastal scrub and coastal woodland. Recorded from the campus.

Shikra, *Accipiter badius*. - Scarce, recorded July-September and December in mangroves and coastal scrub.

Great Sparrowhawk, *Accipiter melanoleucus*. - Scarce, recorded January and September in plantations and forest. Breeding September (carrying nesting material). Recorded on the campus.

Little Sparrowhawk, *Accipiter minullus*. - Scarce, recorded March-September from coastal scrub, suburban gardens and built-up areas. Recorded on the campus.

Ovampo Sparrowhawk, *Accipiter ovampensis*. - Vagrant, seen on only two occasions, 1973, in built-up area (D. Cappitt, *in litt.*). Recorded on the campus.

African Goshawk, *Accipiter tachiro*. - Scarce, recorded April-July and October, December from coastal scrub and thicket, coastal woodland, and forest. Breeding October (bird sitting on nest). Recorded on the campus.

Lesser Spotted Eagle, *Aquila pomarina*. - Migrant, Vagrant, one immature recorded July and August 1971 in acacia scrub (WGH).

Wahlberg's Eagle, *Aquila wahlbergi*. - Regular, recorded January-April, July-December soaring above coastal scrub and woodland, and acacia scrub. Breeds August and September (building nest, sitting on nest) in acacia scrub. Recorded on the campus.

Lizard Buzzard, *Kaupifalco monogrammicus*. - Scarce, recorded April, May, August-November from salt pans, coastal scrub, coconut and cashew plantations, built-up areas and suburban gardens. Breeds November (young). Recorded on the campus.

Gabar Goshawk, *Melierax gabar*. - Regular, recorded all months except January and December in coastal scrub, acacia scrub, and in built-up areas.

Dark Chanting Goshawk, *Melierax metabates*. - Specimen from Soga (Franzmann, *in litt.*).

Pale Chanting Goshawk, *Melierax poliopterus*. - Specimen from Soga (Franzmann, *in litt.*).

Martial Eagle, *Polemaetus bellicosus*. - Vagrant. Only very few sightings for this species. W.B. Rudman (pers. comm.) reported a single bird perched on a large baobab at edge of cultivation and thicket in 1972. M. O'Meara and F. Kohler (*in litt.*) saw a single bird near cultivation in October, 1978. Both birds were seen at the edge of the campus. A single bird was seen by Tyler (*in litt.*) near the Dar es Salaam Airport on 1 August 1979.

Crowned Hawk Eagle, *Stephanoaetus coronatus*. - Regular, recorded January, September and October soaring over cultivated fields, coastal woodland and forest; rare outside areas which are far from forest.

Fish Eagle, *Haliaeetus vocifer*. - Regular, recorded throughout the year from the open sea (perched on fish traps), coral reefs, sand flats, mangroves, salt pans, coa-

stal scrub, and sewage ponds. Breeds October (eggs in nest). Recorded on the campus.

Black Kite, *Milvus migrans*. - Common, recorded throughout the year in all habitats except forest. Breeds July (nests). Recorded on the campus.

Cuckoo Hawk, *Aviceda cuculoides*. - Rare, in cashew plantation, on the campus September 1977. One bird found injured, near death, UDSM-B-111, another seen in the National Museum Tanzania collected at Dar es Salaam, September 1920 by C.F.M. Swynnerton, and Britton (1980a, 1981) notes specimens collected at Soga August-November, and considers the species a migrant to eastern Tanzania.

Honey Buzzard, *Pernis apivorus*. - Migrant. Vagrant, a single bird (USDM-B-87) collected in forest by S. Tjomlid, March 1976. Britton (1980a) notes that this species is undoubtedly overlooked in East Africa.

Black-shouldered Kite, *Elanus caeruleus*. - Regular, recorded in all months except December at salt pans, acacia scrub, and coastal woodland. Recorded on the campus.

Bat Hawk, *Macheiramphus alcinus*. - Scarce, recorded all months except February, April, May, and November in open sky, built-up areas, in coastal woodland, and forest. Breeds July (young) and September (fledgling, Thomas, 1962).

Osprey, *Pandion haliaetus*. - Rare, probably a migrant. Recorded January, June, October and December over open sea and in mangroves.

Lanner Falcon, *Falco biarmicus*. - Migrant. Rare, recorded only in March and April in mangroves, coastal scrub and at salt pans.

Sooty Falcon, *Falco concolor*. - Migrant. Rare, recorded only in March 1973 (WGH) over coastal scrub. See Moreau (1969) and Dowsett (1977) for other Tanzanian records of the species.

African Hobby, *Falco cuculoides*. - Regularly recorded throughout the year in coastal scrub and thicket, plantations, and in built-up areas. Breeds October and November (young in nest). Recorded on the campus.

Dickenson's Kestrel, *Falco dickensoni*. - Vagrant, recorded in September 1976 from cultivated areas and built-up areas of the campus. Common in coastal woodland further south of Dar es Salaam area.

Lesser Kestrel, *Falco naumanni*. - Migrant. Rare, recorded only in March 1971 and April 1973 at salt pans.

Peregrine Falcon, *Falco peregrinus*. - Rare, recorded only in October 1970 and 1971 from coral cliffs and at salt pans.

Hobby, *Falco subbuteo*. - Migrant. Vagrant, recorded only in January 1973 from forest.

Kestrel, *Falco tinnunculus*. - Vagrant, two recorded in December 1970 from built-up area of campus.

Harlequin Quail, *Coturnix delegorguei*. - Rare, recorded only in May and June from the edge of cultivation. Recorded on the campus.

Coqui Francolin, *Francolinus coqui*. - Specimen from Soga (Franzmann, *in litt.*).

Crested Francolin, *Francolinus sephaena rovuma*. - Regularly recorded throughout the year in coastal scrub and thicket, acacia scrub and grassland and coastal woodland. Recorded on the campus.

Crested Guineafowl, *Guttera edouardi*. - Status uncertain. Recorded in Mackworth-Praed and Grant (1960) from Dar es Salaam, but the only recent record is that of J. Hitchcock (*in litt.*) on 20 May 1978 of a group of 20-30 birds emerging from secondary scrub in the Pugu Hills.

Kenya Crested Guineafowl, *Guttera pucherani*. - Frequency not certain, possibly rare. Fuggles-Couchman (*in litt.*) notes two sight records from Pugu forest in August and October 1935, 1955. H. Elliott collected an individual in the same area in 1948 and Stuart (1979) found a single feather of this species in the Pugu forest Reserve and notes that the species is declining with forest destruction in East Africa.

Helmeted Guineafowl, *Numida meleagris mitrata*. - Status uncertain. Recorded in Snow (1978), but the only recent record is of two birds near Kunduchi, north of Dar es Salaam, in August 1979 (S. Tyler) which may have been escapees.

Button Quail, *Turnix sylvatica*. - Scarce, recorded September, October, November from coastal scrub and plantations. Recorded on the campus.

Corncrake, *Crex crex*. - Migrant. Rare, recorded only in April from edges of freshwater streams and sewage ponds on the campus. See Howell (1973, 1977) for details of specimens, which are the first records from coastal Tanzania. This species is probably overlooked.

African Crake, *Crex egregia*. - Specimens from Soga 9 May 1961 and 19 January 1962 (Britton, 1981).

Lesser Moorhen, *Gallinula angulata*. - Regularly recorded May-September from freshwater swamps. Breeds June (young in nest); see Harvey (1971b) for details.

Common Moorhen, *Gallinula chloropus*. - Specimen from Soga (Franzmann, *in litt.*).

Black Crane, *Limnocorax flavirostra*. - Common throughout the year at freshwater swamps and ponds. Breeds January (young).

Allen's Gallinule, *Porphyrio alleni*. - Scarce, recorded February, May, June, and November from freshwater swamps. Breeds November (young in nest).

Purple Gallinule, *Porphyrio porphyrio*. - Specimen from Soga (Franzmann, *in litt.*).

Red-knobbed Coot, *Fulica cristata*. - Rare, recorded only in June 1971 and 1972 from freshwater swamps (WGH).

Black-bellied Bustard, *Eupodotis melanogaster*. - Specimen from Soga (Franzmann, *in litt.*).

White-bellied Bustard, *Eupodotis senegalensis*. - Rare, recorded only in June 1973 from coastal scrub at Kerege (WGH).

Jacana, *Actophilornis africana*. - Regularly recorded throughout the year from freshwater swamps, ponds, and sewage ponds. Breeds January (young in nest). Recorded on the campus.

Painted Snipe, *Rostratula benghalensis*. - Rare, recorded September, November, December from salt pans and from freshwater swamps and streams and ponds. Recorded on the campus. This species is especially difficult to see and is certainly overlooked.

Oystercatcher, *Haematopus ostralegus*. - Migrant. Status uncertain. Williams (1972) saw two birds on sand banks in September 1972 and Gardiner (1975b) observed five birds on the intertidal area of Outer Makatumbe Island in March 1972. The status of this species appears to have changed over 50 years; Fuggles-Couchman (*in litt.*) notes that in the late 1930's and the 1950's, he recorded frequent flocks of 30 birds in mixed flocks with Curlew and Whimbrel, and smaller numbers at other times on the mud flats off Dar es Salaam. He considered the species common and recorded it in January, February and May.

Caspian Plover, *Charadrius asiaticus*. - Migrant. Scarce, recorded August through December from salt pans and flats and acacia scrub and grassland. Elliott (1973a, b) gives the first East African coastal records from Dar es Salaam and Harvey (1972f) details more recent records.

Little Ringed Plover, *Charadrius dubius*. - Migrant. Scarce, recorded in January, February, November and December from salt pans and flats and mangrove creeks.

Ringed Plover, *Charadrius hiaticula*. - Migrant. Common, records throughout the year from sand, salt and mud flats and edges of sewage ponds. Recorded on the campus.

Great Sandplover, *Charadrius leschenaultii*. - Migrant. Common, records throughout the year from sand, mud and salt flats and pans.

White-fronted Sandplover, *Charadrius marginatus*. - Common, records throughout the year from sand flats and salt pans and flats. Breeds June (eggs and young).

Mongolian Sandplover, *Charadrius mongolus*. - Migrant. Common, recorded throughout the year from sand and salt pans, and the edges of sewage ponds. Recorded on the campus.

Kittlitz's Sandplover, *Charadrius pecuarius*. - Regularly recorded throughout the year from salt and sand flats, salt pans, and from acacia scrub and grassland. Possibly breeds November and December (adults with feathered young).

Three-banded Plover, *Charadrius tricollaris*. - Common, recorded throughout the year from salt flats, salt pans and from freshwater swamps and sewage ponds. Breeds June and July (eggs).

Eastern Golden Plover, *Pluvialis dominica*. - Migrant. Vagrant, recorded only from salt pans and flats in April 1973 (WGH). Two specimens were collected at Soga on open sandy patches in sisal, 31 December 1961 and 5 January 1962 (Britton, 1978) and two further specimens 14 and 29 November 1961 (Britton, 1981). There are very few Tanzanian records of this species (Britton, 1980a).

Grey Plover, *Pluvialis squatarola*. - Migrant. Commonly recorded throughout the year from sand, mud, and salt flats, salt pans, and from the edges of sewage ponds. Recorded on the campus.

Senegal Plover, *Vanellus lugubris*. - Regularly recorded January, February, June-October from salt and sand flats, salt pans, acacia scrub and grassland, in edges of cashew plantations, and freshwater streams and temporary water.

Black-winged Plover, *Vanellus melanopterus*. - Vagrant, recorded from acacia scrub and grassland in January, 1971 (WGH). This is largely a highland species in East Africa.

Common Sandpiper, *Actitis hypoleucos*. - Migrant. Common, recorded throughout the year from mangroves, sand and mud flats, salt pans and flats, acacia scrub and grassland, freshwater ponds and sewage ponds. Recorded on the campus.

Curlew, *Numenius arquata*. - Migrant. Scarce, recorded throughout the year from sand and mud flats and salt pans and flats.

Whimbrel, *Numenius phaeopus*. - Migrant. Common, recorded throughout the year from mangroves, sand and mud flats, and salt pans.

Spotted Redshank, *Tringa erythropus*. - Migrant. Rare, recorded in March 1975 from sewage ponds on the campus (Gardiner, 1975b) and September, 1977 from sand flats (S. Stuart, *in litt.*).

Wood Sandpiper, *Tringa glareola*. - Migrant. Common, recorded throughout the year from mangroves, sand and mud flats, freshwater streams and sewage ponds. Recorded on the campus.

Greenshank, *Tringa nebularia*. - Migrant. Common, recorded throughout the year from mangroves, sand flats, salt pans and freshwater ponds and sewage ponds. Recorded on the campus.

Green Sandpiper, *Tringa ochropus*. - Migrant. Scarce, recorded in March, April and October-December in mangroves, freshwater ponds and sewage ponds. Recorded on the campus.

Marsh Sandpiper, *Tringa stagnatalis*. - Migrant. Common, recorded throughout the year from sand flats, salt pans, freshwater ponds and sewage ponds. Recorded on the campus.

Redshank, *Tringa totanus*. - Migrant. Rare, recorded in December 1970 and 1971 from salt pans.

Terek Sandpiper, *Xerus cinereus*. - Migrant. Common, recorded throughout the year from mangroves, sand flats and salt pans and flats.

Great Snipe, *Gallinago media*. - Migrant. Vagrant, recorded only in April 1973 (WGH) from freshwater swamp.

Sanderling, *Calidris alba*. - Migrant. Common, recorded, throughout the year from sand flats and salt pans.

Knot, *Calidris canutus*. - Migrant. Vagrant, recorded only in November 1970 from salt pans (Harvey, 1971a). To the best of our knowledge, this is the only record for this species in Tanzania.

Curlew Sandpiper, *Calidris ferruginea*. - Migrant. Common, recorded throughout the year from sand flats, salt pans and flats and from the edge of sewage ponds on the campus.

Little Stint, *Calidris minuta*. - Migrant. Common, recorded throughout the year from sand flats, salt pans and flats, and from the edge of sewage ponds on campus.

Broad-billed Sandpiper, *Limicola falcinellus*. - Migrant. Vagrant, recorded only in August 1971 from salt pans (Harvey, 1971d). This is the second record for this species in Tanzania ; the first is that of Reynolds (1965) on 5 November 1961 from near Tabora.

Bar-tailed Godwit, *Limosa lapponica*. - Migrant. Scarce, recorded in January, February, June and September-December from sand flats and salt pans.

Black-tailed Godwit, *Limosa limosa*. - Migrant. Rare, recorded in October-December from salt pans and sewage ponds. Recorded on the campus (Gardiner, 1975b).

Ruff, *Philomachus pugnax*. - Migrant. Regular, recorded throughout the year from salt pans and flats, and sewage ponds. Recorded on the campus.

Turnstone, *Arenaria interpres*. - Migrant. Common, recorded throughout the year on sand flats and intertidal rocky areas and at salt pans.

Black-winged Stilt, *Himantopus himantopus*. - Regular, recorded throughout the year from sand and mud flats, salt pans and flats, and from freshwater swamps and sewage ponds. Breeds June-July (eggs in nest, Harvey, 1971e). Recorded on the campus.

Crab Plover, *Dromas ardeola*. - Migrant. Common, recorded throughout the year on sand flats.

Spotted Thicknee, *Burhinus capensis*. - Specimen from Soga, 12 February 1962 (Britton, 1981).

Water Thicknee, *Burhinus vermiculatus*. - Regularly recorded throughout the year from mangroves and salt pans.

Temminck's Courser, *Cursorius temminckii*. - Scarce, recorded in February, April-June on salt pans, salt flats, in acacia scrub and grassland, and in plantations.

Violet-tipped Courser, *Rhinoptilus chalcopterus*. - Two specimens listed in the National Museum of Tanzania catalogue were collected at Dar es Salaam on 1 and 2 June 1920 by C.F.M. Swynnerton. N. Gardiner (pers. comm.) notes that the species was found on the campus in the mid-1960's. Britton (1981) notes a specimen from Soga, 14 December 1961. This species is common in coastal woodland south of the Dar es Salaam area, but was not recorded during the present study.

Black-winged Pratincole, *Glareola nordmanni*. - Migrant. Specimen from Soga (Franzmann, *in litt.*). This is the first record of this species from Tanzania.

Madagascar Pratincole, *Glareola ocularis*. - Migrant from Madagascar. Scarce, recorded on salt pans in April, May, August and September. See Harvey (1973d) for details and Britton (1977b) for further information.

Common Pratincole, *Glareola pratincola*. - Vagrant, flying overhead July 1973. Probably breeds south of the study area on the Rufiji river (Harvey, 1973g).

Herring Gull, *Larus argentatus*. - Migrant. Rare, recorded January-March and December over open sea and from sand and salt flats. Tyler reports 6 birds at Kunduchi, October-December 1979 (EANHS Ornithological Subcommittee, 1980). At least two races may occur (Harvey, 1973a, b and Britton and Brown, 1974).

Grey-headed Gull, *Larus cirrocephalus*. - Vagrant, recorded only in March 1971 (WGH) from sand flats. This species is common on the larger inland lakes (Britton and Brown, 1974).

Lesser Black-backed Gull, *Larus fuscus*. - Migrant. Common, recorded throughout the year over open sea and on sandy beaches.

Sooty Gull, *Larus hemprichii*. - Migrant. Common, recorded throughout the year over open sea and on sand flats.

Black-headed Gull, *Larus ridibundus*. - Migrant. Scarce, recorded in all months except April and May over open sea and sand flats. First recorded in early 1972 (Harvey, 1972a) when a flock of 550 + provided the first Tanzanian record for this species. Recorded in subsequent years but status uncertain (Britton and Brown, 1974).

Whiskered Tern, *Chlidonias hybridus*. - Scarce, recorded June-September from salt pans and flats. See also Britton (1977a) for a review of status of East African Terns.

White-winged Black Tern, *Chlidonias leucopterus*. - Migrant. Rare, recorded in July, August and November from salt pans and flats and from sewage ponds of the campus.

Gull-billed Tern, *Gelochelidon nilotica*. - Migrant. Scarce, recorded in January, April, June and October-December on sand flats and salt pans.

Little Tern, *Sterna albifrons*. - Migrant. Rare, recorded in February, April and December over open sea and sand flats.

Lesser Crested Tern, *Sterna bengalensis*. - Migrant. Common, recorded throughout the year over open sea and on sand flats.

Crested Tern, *Sterna bergii*. - Migrant. Regular, recorded throughout the year over open sea and on sand flats.

Caspian Tern, *Sterna caspia*. - Migrant. Scarce, recorded in March and December on sand flats and salt pans.

Roseate Tern, *Sterna dougallii*. - Rare, recorded in January, July, October and November over open sea and on sand flats. Has bred July-September 1960 (Thomas and Elliott, 1973) but no recent records of breeding.

Common Tern, *Sterna hirundo*. - Migrant. Scarce, recorded January-March and October-December over open sea and on sand flats.

White-cheeked Tern, *Sterna repressa*. - Rare, recorded in January, February, May-July and December 1972-1973 over open sea, on salt pans and flats, and on sand flats. All birds were immatures or adults in nonbreeding plumage (Harvey, 1974e). These are possibly the first records for this species in Tanzania.

Sandwich Tern, *Sterna sandvicensis*. - Migrant. Vagrant, recorded in June 1972 and November 1973 from sand flats. These are the first and second records for the species in Tanzania (Harvey, 1972c ; Britton and Brown, 1974).

Skimmer, *Rynchops flavirostris*. - Vagrant, recorded only in February ca. 1974 from sewage ponds on the campus. This species is common further south on the Rufiji River, where it breeds in May (Harvey, 1973g).

Feral Pigeon, *Columba livia*. - Common, recorded throughout the year in built-up areas. Breeds throughout the year. Recorded on the campus.

Namaqua Dove, *Oena capensis*. - Regular, recorded throughout the year from salt flats, coastal scrub, acacia scrub and grassland, and plantations. Breeds May (eggs) and November (eggs). Recorded on the campus.

Ring-necked Dove, *Streptopelia capicola*. - Common, recorded throughout the year in all habitats except open sea, mangroves, and forest. Recorded on the campus.

Red-eyed Dove, *Streptopelia semitorquata*. - Common, recorded throughout the year from mangroves, salt pans, coastal scrub and thicket, built-up areas, coastal woodlands. Breeds July (eggs).

Laughing Dove, *Streptopelia senegalensis*. - Vagrant, recorded in October 1970 in built-up areas. Recorded on the campus. This species is more numerous further inland in Tanzania.

Blue-spotted Wood Dove, *Turtur afer*. - Fuggles-Couchman (1939) recorded this species generally in the Dar es Salaam area and more specifically near the Pugu hills (Fuggles-Couchman, pers. comm.). Gardiner and Gardiner (1971 and pers. comm.) recorded it on the campus. We know of no recent records of this species in our study area ; it would appear that it has become less common since 1939, and even perhaps since the late 1960's.

Emerald-spotted Wood Dove, *Turtur chalcospilos*. - Common, recorded throughout the year in mangroves, salt pans, coastal scrub and thicket, cultivation, plantations, built-up areas and on dirt tracks in forest. Breeds August (eggs). Recorded on the campus.

Tambourine Dove, *Turtur tympanistria*. - Regular, recorded January, February, July and September in forest.

Green Pigeon, *Treron australis*. - Regularly recorded in January and April-December in mangroves, suburban gardens, plantations, built-up areas, coastal woodland, and forest. Recorded on the campus.

Fischer's Lovebird, *Agapornis fischeri*. - Introduced (see Harvey, 1972e). Common, recorded throughout the year in coastal scrub, cultivation, plantations, at edges of streams and swamps and built-up areas. Breeds (undated, Gardiner, 1975c). Morrison (1954) notes a hybrid between this and the following species.

Yellow-collared Lovebird, *Agapornis personata*. - Introduced (see Harvey, 1972e). Regular, recorded throughout the year in coastal scrub, cultivation, plantations and edges of freshwater swamps and ponds. Breeds, (undated, Gardiner, 1975c). Recorded on the campus.

Brown-headed Parrot, *Pocephalus cryptoxanthus*. - Regular, recorded throughout the year in mangroves, coastal scrub and thicket and built-up areas.

Rose-ringed Parakeet, *Psittacula krameri*. - Probably an escapee (see Harvey, 1972e). Rare, recorded only in September 1970 and 1971 in built-up areas.

Livingstone's Turaco, *Tauraco livingstonii*. - Scarce, recorded in January, July and August in forest.

Violet-crested Turaco, *Tauraco porphyreolophus*. - Noted as common in coastal woodland and in scattered thicket and bush (Fuggles-Couchman, pers. comm.), but not recorded 1968-1978.

Barred Long-tailed Cuckoo, *Cercococcyx montanus*. - Not recorded during present study, but Britton (1980b, 1981) notes specimens from Soga and suggests that the species is only a seasonal visitor to the coastal strip.

Didric Cuckoo, *Chrysococcyx caprius*. - Common, recorded throughout the year in coastal scrub and thicket, cultivation, plantations, built-up areas, suburban gardens, and coastal woodland. Breeds December (young fed by *Ploceus cuculatus*, M.O'Meara, pers. comm.). Recorded on the campus.

Emerald Cuckoo, *Chrysococcyx cupreus*. - Rare, recorded only in July and December from suburban gardens. A specimen from Soga is noted by Britton (1978). This species is probably overlooked when not calling.

Klaas' Cuckoo, *Chrysococcyx klaas*. - Rare, recorded only in January and June in coastal scrub and suburban gardens. Probably overlooked when not calling.

Great Spotted Cuckoo, *Clamator glandarius*. - Regular, recorded July-December in mangroves, coastal scrub and thicket, cultivation and suburban gardens. Breeds December (young fed by Pied Crow).

Black and White Cuckoo, *Clamator jacobinus*. - Rare, recorded January, March-June and December in coastal scrub and thicket and coastal woodland. Recorded on the campus.

Levaillant's Cuckoo, *Clamator levaillantii*. - Vagrant, recorded only in April 1973 (WGH) in acacia scrub and grassland.

Eurasian Cuckoo, *Cuculus canorus*. - Specimen from Soga, 3 April 1961 (Britton, 1978).

Black Cuckoo, *Cuculus clamosus*. Scarce, recorded in March, May, August, November and December in coastal scrub and suburban gardens. Recorded on the campus.

African Cuckoo, *Cuculus gularis*. - Specimens from Soga (Franzmann, *in litt.*), and Britton (1981) notes a male collected at Soga on 18 January 1962.

Lesser Cuckoo, *Cuculus poliocephalus*. - Specimen from Soga (Franzmann, *in litt.*), and Britton (1981) notes specimens from same locality, 4 and 5 April 1961.

Red-chested Cuckoo, *Cuculus solitarius*. - Status uncertain. Noted as "very common... on the coast..." (Fuggles-Couchman, 1939), but only 3 records from 1968-1980: January 1969, 1978, and February 1980 (Howell, Msuya, and Stuart, 1980). Britton (1980b) documents specimens from Mikindani, 390 km south of Dar es Salaam, and suggests that this species is only a seasonal visitor to the coastal strip.

Thick-billed Cuckoo, *Pachycoccyx audeberti*. - Recorded by Fuggles-Couchman (*in litt.*) in December 1956 in a suburban garden. Britton (1981) records five specimens from Soga, 5 October - 13 December 1961.

Yellowbill, *Ceuthmochares aereus*. - Regular, recorded January-March, June-November, in coastal scrub, plantations, built-up areas, and forest. Breeds September (eggs). Recorded on the campus.

White-browed Coucal, *Centropus superciliosus*. - Common, recorded throughout the year from all habitats except open sea and intertidal zone; recorded from forest edge, but not from interior of forest. Intergrades between races *loandae* and *burchelli* occur in the study area. Breeds April (young) and July (young). Recorded on the campus.

Barn Owl, *Tyto alba*. - Scarce, recorded February, April, August and October-December from built-up areas. Breeds October (nestlings). Recorded on the campus.

African Marsh Owl, *Asio capensis*. - Vagrant, one found dead on road north of Dar es Salaam, October, 1978 (M. O'Meara, *in litt.*).

Spotted Eagle Owl, *Bubo africanus*. - Scarce, recorded in March, June, July, September and October in coastal scrub, cultivation and built-up areas. Breeds (eggs, undated record by F. Kjaerby, pers. comm.). Recorded on the campus.

African Wood Owl, *Ciccaba woodfordii*. - Status uncertain, possibly regular but overlooked, recorded in September from forest (Stuart, 1979).

Barred Owlet, *Glaucidium capense*. - Recorded in Snow (1978); these may be the two specimens collected in July 1877 mentioned in Nicholson (1878). Britton (1981) records twelve specimens from Soga.

Pearl-spotted Owlet, *Glaucidium perlatum*. - Specimen indicated in Snow (1978).

White-faced Scops Owl, *Otus leucotis*. - Rare, a single record of a young bird, just able to fly, August 1971 from built-up area on the campus (photograph, KMH).

Scops Owl, *Otus scops*. - Noted by Fuggles-Couchman (*in litt.*) as "regular, recorded in May and other times, especially where mango trees are common", but not recorded by the present authors.

Eurasian Nightjar, *Caprimulgus europaeus*. - Migrant. Scarce, recorded April and May in coastal scrub, plantations, built-up areas and coastal woodland; probably overlooked. Specimen UDSM-B-108.

Gabon Nightjar, *Caprimulgus fossii*. - Scarce, recorded January-May, and December in built-up areas, coastal scrub, and edges of forest. Breeds June (enlarged gonads; young). Specimens BM. 1972.2.1-3, det. P. Colston. Recorded on the campus.

Plain Nightjar, *Caprimulgus inornatus*. - Vagrant, a single specimen (USNM 527861) collected dead on road, 9 February 1971, on the campus.

Fiery-necked Nightjar, *Caprimulgus pectoralis*. - Scarce, recorded April, August and October in coastal scrub and coastal woodland. Recorded on the campus.

Pennant-winged Nightjar, *Macrodipteryx vexillarius*. - A single record in March 1937 by Fuggles-Couchman (*in litt.*), his collection NRFC 37/4. No recent records.

Little Swift, *Apus affinis*. - Common, recorded throughout the year in open sky mainly over built-up areas. Breeds August (eggs and young). Recorded on the campus.

Eurasian Swift, *Apus apus*, and/or Nyanza Swift, *Apus niansae*. - Rare. Swifts which were one or both of these species have been recorded in February and October in open sky over built-up areas and forest.

White-rumped Swift, *Apus caffer*. - Scarce, recorded January, February and May from plantations and coastal woodland.

Horus Swift, *Apus horus*. - Scarce, recorded June, July and November over freshwater swamps and built-up areas. Recorded on the campus.

Palm Swift, *Cypsiurus parvus*. - Regular, recorded throughout the year over coastal scrub, cultivation, plantations, freshwater swamps, built-up areas, and forest. Breeds. Recorded on the campus.

Böhm's Spinetail, *Neafrapus boehmi*. - Rare, recorded in January, June and July flying over mangroves, salt pans, and coastal scrub with baobabs.

Mottle-throated Spinetail, *Telacanthura ussheri*. - Vagrant, recorded in March, 1973 over coastal scrub with baobabs (WGH).

Speckled Mousebird, *Colius striatus*. - Common, recorded throughout the year in coastal scrub, cultivation, plantations, freshwater swamps, suburban gardens, and coastal woodland. Breeds March (fledgling), July and August (young in nest). Recorded on the campus.

Blue-naped Mousebird, *Urocolius macrourus*. - Regular, recorded throughout the year in coastal scrub, acacia scrub, cultivation, and suburban gardens. Breeds September (eggs). Recorded on the campus.

Giant Kingfisher, *Ceryle maxima*. - Scarce, recorded May and November from freshwater streams and swamps.

Pied Kingfisher, *Ceryle rudis*. - Common, recorded throughout the year in mangroves, salt pans and at freshwater ponds and sewage ponds. Breeds December-May (excavating tunnels, incubating eggs, and feeding young). Recorded on the campus.

Malachite Kingfisher, *Alcedo cristata*. - Common, recorded throughout the year from mangroves, salt pans, and freshwater swamps, ponds, and sewage ponds. Breeds June (young out of nest hole fed by adults). Recorded on the campus.

Brown-hooded Kingfisher, *Halcyon albiventris*. - Regular, recorded throughout the year in cultivation, plantations, freshwater swamps, streams and sewage ponds, and from forest edge. Recorded on the campus.

Striped Kingfisher, *Halcyon chelicuti*. - Common, recorded throughout the year in coastal scrub, from forest edge, acacia scrub, cultivation, plantation, coastal woodland, and from freshwater swamps and sewage ponds. Breeds February (eggs) and April (fledged young). Recorded on the campus.

Chesnut-bellied Kingfisher, *Halcyon leucocephala*. - Regular, recorded throughout the year in mangroves, coastal scrub, cultivation, and freshwater swamps, streams and sewage ponds. Recorded on the campus.

Mangrove Kingfisher, *Halcyon senegaloides*. - Regular, recorded throughout the year in mangroves, coastal scrub, cultivation, and freshwater swamps, streams, and sewage ponds. Recorded on the campus.

Pygmy Kingfisher, *Ispidina picta*. - Scarce, recorded January, March, June and August from coastal scrub, thicket and suburban gardens. Recorded on the cam-

pus. The race *natalensis*, present in our area, has been shown to migrate within East Africa (Britton and Britton, 1974).

White-throated Bee-eater, *Merops albicollis*. - Regular, recorded January-April, August, September, November and December in coastal scrub and thicket and edges of mangroves, cultivation, plantations and built-up areas. Recorded on the campus.

Eurasian Bee-eater, *Merops apiaster*. - Migrant. Regular, recorded January-April, July, October-December in all habitats except over open sea and mangroves. Recorded on the campus.

Böhm's Bee-eater, *Merops boehmi*. - Status uncertain. Two birds were seen at edge of Pugu forest 20 May 1978 (J. Hitchcock, *in litt.*) and the species was noted as "not uncommon" at edge of Pugu forest in September 1978 (van der Willigen, 1979). These are the only records known to us, but the species is common in woodland south and west of the study area.

White-fronted Bee-eater, *Merops bullockoides*. - Rare. Fuggles-Couchman (1939) observed three individuals north of Dar es Salaam; we have a record in April 1973 from coastal scrub and thicket and Tyler (*in litt.*) observed two near a mangrove creek, Kunduchi area, north of Dar es Salaam, 8 September 1979.

Swallow-tailed Bee-eater, *Merops hirundineus*. - A single specimen collected at Dar es Salaam July 1877 (Nicholson, 1878); Fuggles-Couchman (*in litt.*) saw several birds in open low bush October 1935 and a male, NRFC 35/46, was in breeding condition. No recent records.

Carmine Bee-eater, *Merops nubicus nubicus*. - Scarce, recorded January, March, April, August, September and December from salt pans, coastal scrub and thicket, acacia scrub, cultivation and plantations. Recorded on the campus.

Blue-cheeked Bee-eater, *Merops persicus*. - Migrant. Scarce, recorded January-May and October-December, in mangroves, salt pans, coastal scrub, at edge of freshwater ponds, and at edge of forest.

Somali Bee-eater, *Merops revoilii*. - Vagrant, recorded only in November 1970 from salt pans (Harvey, 1971c). This is the first record of this species in Tanzania. Archer (1979) notes that this species has recently extended its range within Kenya.

Madagascar Bee-eater, *Merops superciliosus*. - Migrant from South-east Africa and possibly Madagascar (see Fry, 1981). Regular, recorded March-August from mangroves, salt pans, coastal scrub, and edge of freshwater swamps and ponds.

Lilac-breasted Roller, *Coracias caudata*. - Common, recorded throughout the year in coastal scrub, acacia scrub, cultivation, plantations, and built-up areas. Recorded on the campus.

Eurasian Roller, *Coracias garrulus*. - Migrant. Regular, recorded January-April in coastal scrub, acacia scrub, cultivation, plantations and built-up areas. Recorded on the campus.

Rufous-crowned Roller, *Coracias naevia*. - Vagrant, recorded March 1973 along roadside at edge of cultivation (KMH).

Broad-billed Roller, *Eurystomus glaucurus*. - Common, recorded throughout the year in mangroves, coastal scrub and thickets and in built-up areas and suburban gardens. Breeds December (fledged young being fed by parents). Recorded on the campus.

African Hoopoe, *Upupa epops africana*. - Scarce, recorded April-June and September-November in coastal scrub and thicket.

Hoopoe, *Upupa epops epops*. - Migrant. Vagrant, recorded only in October 1972 in suburban garden.

Green Wood Hoopoe, *Phoeniculus purpureus*. - Common, recorded throughout the year in cultivation, plantations, at edges of freshwater swamps, built-up areas and suburban gardens, and coastal woodland. Breeds February (eggs), August and September (excavating nest cavity; young). Recorded on the campus.

Silvery-cheeked Hornbill, *Bycanistes brevis*. - Records of single birds July, August and September 1955 in suburban garden (Fuggles-Couchmann, *in litt.*). No recent records.

Trumpeter Hornbill, *Bycanistes bucinator*. - Rare, recorded June-July 1971 in coconut plantations and coastal woodland.

Crowned Hornbill, *Tockus alboterminatus*. - Regular, recorded January, March, April and July-December, in coastal woodland, flying over coastal scrub and in suburban gardens and forest. Recorded on the campus.

Red-billed Hornbill, *Tockus erythrorhynchus*. - Nicholson (1878) reported a single specimen from Dar es Salaam in July, 1877. Noted by Fuggles-Couchman (*in litt.*) as common in coastal woodland near the Pugu hills and elsewhere in the Dar es Salaam area, but not recorded in the present study.

Pale-billed Hornbill, *Tockus pallidirostris*. - Specimen from Soga (Franzmann, *in litt.*).

Ground Hornbill, *Bucorvus caffer*. - Rare, recorded January, May, August and October in plantations and coastal woodland.

White-eared Barbet, *Buccanodon leucotis*. - Vagrant, recorded only January 1973 in forest (WGH and R. Stjernstedt).

Brown-breasted Barbet, *Lybius melanopterus*. - Scarce, recorded January and June-September in acacia scrub and in cultivation and at edge of cashew plantations. Recorded on the campus.

Black-collared Barbet, *Lybius torquatus*. - Scarce, recorded January, March and June-December in acacia scrub, plantations, cultivation, and built-up areas. Breeds January (fledgling). Recorded on the campus.

Yellow-rumped Tinkerbird, *Pogoniulus bilineatus*. - Rare, recorded January, May, June, September in coastal thicket and forest. Van der Willigen (1979) noted this species as "common" at Pugu forest in September.

Red-fronted Tinkerbird, *Pogoniulus pusillus*. - Common, recorded throughout the year in mangroves, coastal scrub, acacia scrub, cultivation and built-up areas and suburban gardens. Recorded on the campus.

Green Tinkerbird, *Pogoniulus simplex*. - Scarce, recorded January, May, July, August, September and November in coastal thicket and forest. Stuart (1979) notes that this species is declining with forest destruction in East Africa.

d'Arnaud's Barbet, *Trachyphonus darnaudi*. - Britton (1980a) notes that this species is found near Dar es Salaam.

Levaillant's Barbet, *Trachyphonus vaillantii*. - Vagrant. A single specimen was collected March 1936 by Fuggles-Couchman, NRFC 36/15. In October 1969 a single bird was observed in scrub at edge of cultivation (KMH).

Black-throated Honeyguide, *Indicator indicator*. - Scarce, recorded January, April, July and September-November from coastal scrub and thicket, plantations, built-up areas and coastal woodland. Breeds January (juvenile) and February (fledgling, see Gardiner, 1975c). Recorded on the campus.

Pallid Honeyguide, *Indicator meliphilus*. - Scarce, recorded January, April, July and September in forest. Possibly breeds in January (seen entering barbet hole).

Scaly-throated Honeyguide, *Indicator variegatus*. - Specimen from Soga (Franzmann, *in litt.*).

Wahlberg's Honeybird, *Prodotiscus regulus*. - Rare, recorded June 1971 in coastal woodland. Britton (1980a) mentions a record from Soga. Forbes-Watson (1977) has described the problems of field identifications of birds in the genera *Indicator* and *Prodotiscus*.

Golden-tailed Woodpecker, *Campethera abingoni*. - Recorded March and April 1958 in built-up area and suburban gardens (Fuggles-Couchman, *in litt.*). No recent records.

Bennett's Woodpecker, *Campethera bennettii*. - Recorded from Soga (Britton, 1980a).

Little Spotted Woodpecker, *Campethera cailliautii*. - Vagrant, recorded March, July and September in forest.

Nubian Woodpecker, *Campethera nubica*. - Specimen from Soga (Franzmann, *in litt.*).

Cardinal Woodpecker, *Dendropicos fuscescens*. - Scarce, recorded January, March, April and June-October, in built-up areas, suburban gardens, coastal woodland and forest. Breeds July (eggs). Recorded on the campus.

Bearded Woodpecker, *Thripias namaquus*. - Specimen from Soga (Franzmann, *in litt.*).

African Broadbill, *Smithornis capensis*. - Status uncertain, but probably scarce and overlooked. Recorded in January (Fuggles-Couchman, *in litt.*) and October 1961 (Ripley and Heinrich, 1969) at Pugu Forest. A male collected in January 1936 (NRFC 36/1) showed breeding behaviour and had enlarged gonads (Fuggles-Couchman, 1939). Not recorded by the Cambridge Expedition (Van der Willigen, 1979), but heard calling in Pugu Forest November, 1979 (KMH).

Fischer's Sparrow Lark, *Eremopterix leucopareia*. - Regular, recorded January-October on salt pans and flats, in acacia scrub and grassland, and cultivation. Breeds March and April (distraction display).

Chestnut-backed Sparrow Lark, *Eremopterix leucotis*. - Scarce, recorded January, March and June in salt pans and cultivation.

Rufous-naped Lark, *Mirafrā africana transvaalensis*. - Britton (1978) notes a specimen collected at Soga.

Singing Bush Lark, *Mirafrā cantillans*. - Scarce, recorded March-May in coastal scrub and acacia scrub and grassland. Recorded on the campus.

Flappet Lark, *Mirafrā rufocinnamomea*. - Scarce, recorded January, March, June, September and October in coastal scrub and cultivation. Thought to breed June and October (display flight observed). Recorded on the campus.

House Martin, *Delichon urbica*. - Migrant. Vagrant, recorded November 1972 in built-up area.

Striped Swallow, *Hirundo abyssinica*. - Common, recorded throughout the year over all habitats except open sea and forest. Breeds April and November (young). Recorded on the campus.

Red-rumped Swallow, *Hirundo daurica*. - Scarce, recorded July and September over forest and over the campus in February.

African Rock Martin, *Hirundo fuligula*. - Scarce, recorded March, June, September and October in coastal scrub and built-up areas.

Swallow, *Hirundo rustica*. - Migrant. Common, recorded January-May and September-December over all habitats except open sea and forest. Recorded on the campus.

Mosque Swallow, *Hirundo senegalensis*. - Regular, recorded throughout the year over coastal scrub, acacia scrub, cultivation, plantations, freshwater swamps and built-up areas. Recorded on the campus.

Wire-tailed Swallow, *Hirundo smithii*. - Common, recorded throughout the year over intertidal flats, salt pans, coastal scrub, acacia scrub, cultivation, plantations, and built-up areas. Breeds September (eggs) and November (young). Recorded on the campus.

Black Rough-wing, *Psalidoprocne pristoptera*. - Regular, recorded January, February and September over coastal woodland and forest.

Sand Martin, *Riparia riparia*. - Migrant. Scarce, recorded January, October and November at salt pans, freshwater swamps and ponds, sewage ponds and coastal woodland. Recorded on the campus.

Drongo, *Dicrurus adsimilis*. - Regular, recorded throughout the year in coastal scrub, cultivated areas, plantations, built-up areas and suburban gardens, coastal woodland and the edges of forest. Recorded on the campus.

Square-tailed Drongo, *Dicrurus ludwigii*. - Regular, recorded January and July-October in forest. Breeds November (fledged young).

African Golden Oriole, *Oriolus auratus*. - Regular, recorded throughout the year in coastal scrub, plantations, suburban gardens and coastal woodland. Recorded on the campus.

Black-headed Oriole, *Oriolus larvatus*. - Common throughout the year in mangroves, coastal scrub, suburban gardens and coastal woodland. Recorded on the campus.

Golden Oriole, *Oriolus oriolus*. - Migrant. Regular, recorded January-April and October-December in coastal scrub, suburban gardens and coastal woodland. Several observations appear to be of family parties.

Pied Crow, *Corvus albus*. - Common, recorded throughout the year in all habitats except open sea and forest. Breeds September, October (building nests) and December and January (fledglings). Recorded on the campus.

Indian House Crow, *Corvus splendens*. - Introduced (Harvey, 1972e). Common, recorded throughout the year in mangroves, at salt pans, in coastal scrub, cultivation, plantations, and built-up areas. Breeds August-October (carrying nesting material), November and January (fledged young being fed). Recorded on the campus. This species has increased gradually since 1968 when it was scarce, and the increase has been especially noticeable since 1973.

Black Tit, *Parus leucomelas*. - Recorded from Soga in Britton (1980a).

Rufous-bellied Tit, *Parus rufiventris*. - Specimen from Soga (Franzmann, *in litt.*).

Pale-breasted Illadopsis, *Trichastoma rufipennis puguensis*. - Scarce, recorded January, April and August in Pugu forest 1970-1973. This subspecies is endemic to the Pugu forest. Stuart (1979) notes that the Cambridge Expedition failed to find this species at Pugu in 1978, and states "so little forest remains here that (the subspecies) cannot be far from extinction".

Arrow-marked Babbler, *Turdoides jardinei*. - Regular, recorded January-May, August, and October-December in coastal scrub and thicket and coastal woodland. Recorded on the campus.

Rufous Chatterer, *Turdoides rubiginosus*. - Regular, recorded throughout the year in mangroves, coastal scrub, and thicket and acacia scrub, built-up areas and suburban gardens. Breeds June (eggs). Recorded on the campus.

Black Cuckoo Shrike, *Campephaga flava*. - Regular, recorded July-October in coastal scrub and thicket, built-up areas, coastal woodland and forest. Recorded on the campus. Britton (1973) has analysed the movements of this species in Africa.

Grey Cuckoo Shrike, *Coracina caesia*. - Rare, recorded in July and October in cashew plantations and forest. Recorded on the campus. These may have been wanderers from higher forested areas, more typical habitat for this species.

White-breasted Cuckoo Shrike, *Coracina pectoralis*. - Specimen from Soga (Franzmann, *in litt.*).

Zanzibar Sombre Greenbul, *Andropadus importunus*. - Common, recorded throughout the year in mangroves, coastal scrub and thicket, acacia scrub, cultivation and plantations, suburban gardens and coastal woodland. Breeds September (young) and October (adults feeding young). Recorded on the campus. See also Turner and Zimmerman (1979) for field identification of Greenbuls.

Little Greenbul, *Andropadus virens*. - Common, recorded throughout the year in coastal thicket and forest. Breeds March (male in breeding condition, Fuggles-Couchman, *in litt.*).

Yellow-bellied Greenbul, *Chlorocichla flaviventris*. - Scarce, recorded January, February and August-December in coastal thicket and forest. This species may be overlooked; Fuggles-Couchman (1939) described it as common in the scrub forests of the coast and Van der Willigen (1979) noted it as fairly common in forest edge at Pugu in September 1978. Recorded on the campus.

Nicator, *Nicator chloris*. - Scarce, recorded January, February, July, September, October and december in coastal thicket, suburban gardens and forest. Noted as common by Van der Willigen (1979) in Pugu forest in September 1978.

Tiny Greenbul, *Phyllastrephus debilis*. - Regular, recorded January, April, August-October in forest. Breeds January (flying young) and October (male in breeding condition, Fuggles-Couchman, *in litt.*). Stuart (1979) lists this as a species declining with forest destruction in East Africa.

Fischer's Greenbul, *Phyllastrephus fischeri*. - Scarce, recorded January and July-September in forest. Noted as "probably fairly common" by Van der Willigen (1979) for Pugu forest in September, 1978.

Yellow-streaked Greenbul, *Phyllastrephus flavostriatus*. - Rare, recorded July and September in forest. Noted as "probably fairly common" by Van der Willigen (1979) for Pugu forest in September, 1978.

Northern Brownbul, *Phyllastrephus strepitans*. - Scarce, recorded March-June and August-December in coastal thicket and acacia scrub and forest. Breeds March (male in breeding condition, Fuggles-Couchman, 1939). Recorded on the campus.

Brownbul, *Phyllastrephus terrestris*. - Rare, recorded March, May, August and September in coastal thicket. Recorded on the campus. Van der Willigen (1979) notes that this species was observed once in the Pugu forest, September, 1978.

Common Bulbul, *Pycnonotus barbatus*. - Common, recorded throughout the year in all habitats except open sea, intertidal salt, sand and mud flats, and the interior of forest. Breeds March and August-October (young) and December (eggs). Recorded on the campus.

Rufous Bush Chat, *Cercotrichas galactotes*. - Migrant. Rare, recorded March, 1973 in acacia scrub (WGH).

White-browed Scrub Robin, *Cercotrichas leucophrys zambesiana*. - Regular, recorded throughout the year in cultivation, plantations, and thicket. Recorded on the campus.

Eastern Bearded Scrub Robin, *Cercotrichas quadrivirgata*. - Scarce, recorded January, February, June, August, September and December in coastal thicket and forest. Van der Willigen (1979) notes that in September, 1978 this species was common in the lower stratum of Pugu forest.

Morning Thrush, *Cichladusa arquata*. - Scarce, recorded May-June and August-October in coastal scrub with doum palms and in coconut plantations. This species appears to have been common in suburban gardens in Dar es Salaam up until the 1950's (H. Elliott, pers. comm.) and we know of no reason for its apparent reduction in numbers. It is still quite common in Southern Tanzania.

Spotted Morning Thrush, *Cichladusa guttata*. - Regular, recorded throughout the year in coastal scrub, acacia scrub, and at edges of cultivation and gardens. Breeds September (nest) and December (eggs and young). Recorded on the campus.

White-browed Robin Chat, *Cossypha heuglini*. - Common, recorded throughout the year in coastal thicket, cultivation, plantations and suburban gardens. Breeds December (flying young). Recorded on the campus.

Red-capped Robin Chat, *Cossypha natalensis*. - Regular, recorded January, February, July and September-December in coastal thicket (including that on offshore islands) and forest. Breeds November (bird with non-adult plumage mist-netted). Recorded on the campus. Britton and Rathbun (1978) have shown this species to be largely absent from the Kenya coast during the dry months of January-April.

Sprosser, *Luscinia luscinia*. - Migrant. Rare, recorded March and April in coastal thicket. Recorded on the campus.

Nightingale, *Luscinia megarhynchos*. - Migrant. Rare, recorded November, 1970 in coastal thicket. Recorded on the campus.

Rock Thrush, *Monticola saxatilis*. - Migrant. Regular, recorded January-March and December in cultivation and built-up areas. Recorded on the campus.

Red-tailed Ant Thrush, *Neocossyphus rufus*. - Rare. Recorded July, 1973 in forest. May be overlooked, but not recorded by the Cambridge Expedition from Pugu forest in September, 1978, and is listed as a species declining with forest destruction in East Africa.

Isabelline Wheatear, *Oenanthe isabellina*. - Migrant. Scarce, recorded January, February, November and December at salt pans, in acacia scrub and cultivation.

Northern Wheatear, *Oenanthe oenanthe*. - Migrant. Regular, recorded January-March and October-December at salt pans, in cultivation and built-up areas. Recorded on the campus.

Capped Wheatear, *Oenanthe pileata*. - Rare, recorded June and July 1971 and 1972 in acacia scrub and cultivation.

White-starred Forest Robin, *Pogonocichla stellata orientalis*. - The only record for this species is a single specimen in the National Museum of Tanzania collection from Pugu forest, collected by Fuggles-Couchman (NRFC 36/52) on 18 June 1936 at "1000 feet, scrub forest". This is presumably the specimen reported by Moreau (1951). Ripley and Heinrich (1966) were unable to find this species in Pugu forest in 1961, nor have subsequent visitors to the area, including Van der Willigen (1979). Britton (1980a) notes that the bird from Pugu may have been a wanderer, as the species is known to undergo altitudinal movements in other parts of its range.

East Coast Akalat, *Sheppardia gunningi sokokensis*. - Scarce, recorded August-October in forest. Stuart (1979), however, netted four individuals within three days

at Pugu forest and felt it might be common there. The Pugu Forest Reserve is the only locality from which this species is known in Tanzania. Stuart notes the species probably is dependent on primary forest and is declining with the destruction of this habitat.

Spotted Ground Thrush, *Turdus fischeri*. - Recorded from Pugu (Britton, 1980a). Stuart (1979) notes that this species is declining with forest destruction in East Africa.

Kurrichane Thrush, *Turdus libonyanus*. - Specimen from Soga (Franzmann, *in litt.*).

Bare-eyed Thrush, *Turdus tephronotus*. - Status uncertain. Britton (1980a) notes records from Dar es Salaam, but not recorded by us in the study area. Seen once near Chalinze, 100 km northwest, February 1971 in coconut plantation grazed by dairy cattle near thicket (WGH), and a specimen was collected 120 km south of Dar es Salaam in the Selous Reserve (Howell and Msuya, 1979).

African Reed Warbler, *Acrocephalus boeticatus*. - Regular, recorded February and May-December at salt pans and in coastal thicket.

Lesser Swamp Warbler, *Acrocephalus gracilirostris*. - Scarce, recorded June and November at freshwater swamps.

Basra Reed Warbler, *Acrocephalus griseldis*. - Migrant. Scarce, recorded March, April, November and December in cultivation and freshwater swamps. Britton (1978) notes a specimen from Soga. Recorded on the campus.

Marsh Warbler, *Acrocephalus palustris*. - Migrant. Scarce, recorded April in coastal thicket and cultivation. Recorded on the campus.

Sedge Warbler, *Acrocephalus schoenobaenus*. - Migrant. Regular, recorded January-May and December, in salt pans and at freshwater swamps. Recorded on the campus.

Yellow-breasted Apalis, *Apalis flava*. - Regular, recorded January and June-December in mangroves, coastal thicket, acacia scrub and forest. Breeds June (feeding young). Recorded on the campus.

Black-headed Apalis, *Apalis melanocephala*. - Van der Willigen (1979) notes that several were seen at Pugu forest in September 1978. This species has not been previously recorded from the area.

Little Rush Warbler, *Bradypterus baboecala*. - Britton (1978) notes a specimen collected at Soga.

Grey-backed Camaroptera, *Camaroptera brachyura*. - Regular, recorded throughout the year in mangroves, coastal thicket, suburban gardens, coastal woodland and scrub and forest. Breeds May (flying young). Recorded on the campus.

Barred Wren Warbler, *Camaroptera stierlingi*. - Recorded from Bagamoyo (Britton, 1980a).

Desert Cisticola, *Cisticola aridula*. - Rare, recorded December 1972 and April 1973 in acacia scrub. Probably overlooked.

Singing Cisticola, *Cisticola cantans*. - Scarce, recorded March, August and September in coastal scrub and cultivation.

Rattling Cisticola, *Cisticola chiniana*. - Common, recorded throughout the year in coastal scrub, acacia scrub, cultivation, plantations, freshwater swamps, built-up areas and coastal woodland. Breeds April (eggs). Recorded on the campus.

Red-faced Cisticola, *Cisticola erythrops*. - Fuggles-Couchman (*in litt.*) described this species as common throughout the year in Dar es Salaam area in the 1930's, but we have no recent records. It is recorded further south at Mikandani (Britton, 1980a).

Tabora Cisticola, *Cisticola fulvicapilla*. - Scarce, recorded March, June and August in coastal woodland.

Winding Cisticola, *Cisticola galactotes*. - Regular, recorded March-December in cultivation, plantations, and built-up and suburban gardens.

Zitting Cisticola, *Cisticola juncidis*. - Regular, recorded January, March-July and September in salt pans and plantations. Breeds April (nest).

Tiny Cisticola, *Cisticola nana*. - Rare, recorded May, 1971 when mist-netted on salt pans (WGH). This species is probably overlooked.

Croaking Cisticola, *Cisticola natalensis*. - Rare, recorded April and December in acacia scrub.

Red-wing Warbler, *Heliolais erythroptera*. - Rare, recorded October, 1970 in coastal woodland.

Upcher's Warbler, *Hippolais languida*. - Migrant. Rare, recorded March 1973 in acacia scrub (WGH). This species had evidently not been recorded from Tanzania since 1944, when a single bird was collected by R.E. Moreau at Amani (Backhurst, Britton and Mann, 1973).

Olivaceous Warbler, *Hippolais pallida*. - Migrant. Common, recorded January-April and November and December in coastal scrub and built-up areas and suburban gardens. Recorded on the campus.

Kretschmer's Longbill, *Macrosphenus kretschmeri*. - Common, recorded January, February, April, June, July and September in forest. Breeds February (specimen in breeding condition, Fuggles-Couchman, *in litt.*). Stuart (1979) lists this as a species declining with forest destruction in East Africa.

Willow Warbler, *Phylloscopus trochilus*. - Migrant. Common, recorded January-March, and October-December in mangroves, salt pans, coastal scrub and suburban gardens. Recorded on the campus.

Tawny-flanked Prinia, *Prinia subflava*. - Regular, recorded March-November in mangroves, coastal scrub, coastal woodland and forest. Recorded on the campus.

Moustached Warbler, *Sphenoeacus mentalis*. - Rare, recorded December 1972 in thick grass bordering cultivation (WGH). Noted as occurring in the Pugu hills (Mackworth-Praed and Grant, 1960), but no recent records from that locality.

Garden Warbler, *Sylvia borin*. - Migrant. Rare, recorded April 1971 from built-up areas and suburban gardens (WGH). Recorded on the campus.

Whitethroat, *Sylvia communis*. - Migrant. Scarce, recorded March, April and November in coastal scrub and built-up areas. Recorded on the campus.

Red-faced Crombec, *Sylvietta whytii*. - Scarce, recorded January, March, June, July and November in coastal thicket and acacia thicket. Breeds July (flying young). Recorded on the campus.

Pale Flycatcher, *Bradornis pallidus*. - Scarce, recorded January, March, August, November and December in acacia scrub and in built-up areas. Recorded on the campus.

Southern Black Flycatcher, *Melaenornis pammelaina*. - Scarce, recorded April, August and September in plantations and coastal woodland.

Spotted Flycatcher, *Muscicapa striata*. - Migrant. Regular, recorded January-April, September, November and December in mangroves, coastal scrub, acacia scrub, plantations, built-up areas and coastal woodland. Recorded on the campus.

Black-headed Batis, *Batis minor*. - Common, recorded throughout the year in coastal scrub, cultivation, built-up area and suburban gardens and coastal woodland. Recorded on the campus.

Forest Batis, *Batis mixta*. - Recorded at Pugu forest September, 1978 (Van der Willigen, 1979).

Pygmy Batis, *Batis perkeo*. - Scarce, recorded April 1973 from acacia scrub. Probably overlooked.

East Coast Batis, *Batis soror*. - Regular, recorded throughout the year in mangroves and coastal scrub.

Black and White Flycatcher, *Bias musicus*. - Recorded October and December, 1955 and March, 1958 in suburban gardens and coastal woodland (Fuggles-

Couchman, *in litt.*). We have no recent records of this species although it has been recorded in woodlands to the south.

Black-throated Wattle-eye, *Platysteira peltata*. - Regular, recorded throughout the year in coastal scrub, built-up areas and suburban gardens, coastal woodland, and forest. Recorded on the campus.

Little Yellow Flycatcher, *Erythrocercus holochlorus*. - Regular, recorded January, April, July, August-October and December in forest. Stuart (1979) notes that this species is declining with forest destruction in East Africa.

Paradise Flycatcher, *Terpsiphone viridis*. - Regular, recorded January, May, July-December in mangroves, coastal scrub, coastal woodland, suburban gardens and forest.

Crested Flycatcher, *Trochocercus cyanomelas*. - Regular, recorded January, July, August-November in forest.

Little Tawny Pipit, *Anthus caffer*. - Vagrant, recorded September 1970 and October 1972 from open degraded sisal plantations with sparse ground cover (WGH). This species has previously been known in East Africa only from southern Kenya to central Tanzania in arid scrub grassland (Mackworth-Praed and Grant, 1960 ; Hall and Moreau, 1970), and these coastal records may indicate local emigrations during dry season in the known breeding area.

Red-throated Pipit, *Anthus cervinus*. - Recorded from Bagamoyo (Britton, 1980a).

Richard's Pipit, *Anthus novaeseelandiae*. - Common, recorded throughout the year in all habitats except open sea, intertidal zone, coastal woodland and forest. Breeds March (nest with eggs), May (young), June (eggs, flying young) and October. Recorded on the campus.

Sokoke Pipit, *Anthus sokokensis*. - Status unknown, but if present, rare. This species is endemic to coastal forest in East Africa. There is a specimen in the British Museum (Natural History) collected from the Pugu forest in 1938 by R. E. Moreau. The only other record known to us from the study area after 1938 is that of Fuggles-Couchman (*in litt.*) on 27 December 1955 of "two birds in scattered shrubs and grass of medium height, among scattered clumps of thicket... beyond the Pugu hills on the old Morogoro road, 56 km from Dar es Salaam". Turner (1977) and Stuart (1979) have reviewed the status of the Sokoke Pipit. The Sokoke forest in coastal Kenya, the only area from which there are recent sightings, may harbour 3000 à 5000 pairs (Britton and Zimmerman, 1979). Many visits to the Pugu area by a variety of observers in the period 1968-1978 (Stjernstedt, Harvey, Howell, Gerhart, Turner and the Cambridge Expedition) have failed to yield a sighting of this species, although mist nets have been used.

Yellow-throated Longclaw, *Macronyx croceus*. - Common, recorded January, February, May, October and December from salt pans, coastal scrub, acacia

scrub, cultivation, plantations and freshwater swamps and the edge of sewage ponds. Breeds January (young in nest), June (eggs). Recorded on the campus.

African Pied Wagtail, *Motacilla aguimp*. - Regular, recorded throughout the year in salt pans, cultivation, and built-up areas, and sewage pond. Recorded on the campus.

White Wagtail, *Motacilla alba*. - Migrant. Vagrant, recorded once, a pair January 1975 from sewage ponds on the campus (Gardiner, 1975b). This is the second record for the species in Tanzania, the first is that of D.A. Turner at Lake Manyara on 23 January 1969 (East Africa Natural History Society, Ornithological Subcommittee, 1977).

Yellow Wagtail, *Motacilla flava* (mostly *M. flava lutea*). - Migrant. Regular, recorded January-April and October-December in salt pans, cultivation, and freshwater ponds. Recorded on the campus.

Golden Pipit, *Tmetothylacus tenellus*. - Rare, recorded December 1972 and January 1973 in acacia scrub (WGH).

Black-backed Puffback, *Dryoscopus cubla*. - Birds of the race *D. c. affinis* common, recorded throughout the year in coastal scrub, cultivation, built-up areas, coastal woodland and forest. Breeds September (young in nest). Recorded on the campus. The status of birds of the race *D. c. hamatus* is uncertain, recorded from coastal woodland at Soga only in January and June (WGH).

Tropical Boubou, *Laniarius ferrugineus*. - Regular, recorded throughout the year in coastal scrub, built-up areas, coastal woodland and forest. Recorded on the campus.

Grey-headed Bush Shrike, *Malaconotus blanchoti*. - Common, recorded throughout the year in coastal scrub and thicket, cultivation, built-up areas and suburban gardens, coastal woodland and the edge of forest. Recorded on the campus.

Four-coloured Bush Shrike, *Malaconotus quadricolor*. - Scarce, recorded August and September in coastal thicket and forest. This species may be overlooked, but as Fuggles-Couchman (1939) describes it as a "very common bird all through the coastal scrub-forest..." it has certainly decreased with the removal of thicket and forest. Breeds October (NRFC 35/34 had enlarged tests). Recorded on the campus.

Sulphur-breasted Bush Shrike, *Malaconotus sulfureopectus*. - Regular, recorded January, March and August-December in coastal thicket and suburban gardens. Recorded on the campus.

Brubru, *Nilaus afer*. - Scarce, recorded August-November in coastal thicket and coastal woodland. Recorded on the campus.

Brown-headed Tchagra, *Tchagra australis*. - Regular, recorded throughout the year in coastal scrub, acacia scrub, cultivation, built-up areas, coastal woodland, and forest. Recorded on the campus.

Marsh Tchagra, *Tchagra minuta*. - Vagrant. Until Van der Willigen (1979) recorded this species in September in Pugu forest, the only record known to us was that of a single specimen in the National Museum of Tanzania catalogue collected at "Dar es Salaam, sea level", June 1920, by C.F.M. Swynnerton, CFMS 400 (323).

Black-headed Tchagra, *Tchagra senegala*. - Common, recorded throughout the year in coastal scrub, cultivation, built-up areas, suburban gardens and coastal woodland. Recorded on the campus.

Magpie Shrike, *Corvinella melanoleuca*. - Britton (1981) notes a single male collected 15 December 1910, at Kurasini, Dar es Salaam.

Long-tailed Fiscal, *Lanius cabanisi*. - Recorded from Dar es Salaam by Mackworth-Praed and Grant (1960).

Fiscal, *Lanius collaris*. - Rare, recorded 15 October 1969 (KMH), January 1974 (D. Cappitt), and January 1978 (Z. Bhatia) in built-up areas. Recorded on the campus.

Red-backed Shrike, *Lanius collurio*. - Migrant. Regular, recorded January-May and October-December in coastal scrub, acacia scrub, cultivation, and built-up areas. Recorded on the campus.

Taita Fiscal, *Lanius dorsalis*. - Vagrant, recorded November 1970 in cultivation (Harvey, 1971c).

Red-tailed Shrike, *Lanius isabellinus*. - Migrant. Vagrant, a single record 26 February 1972 at edge of cultivation (KMH). Recorded on the campus.

Lesser Grey Shrike, *Lanius minor*. - Migrant. Scarce, recorded March and April in coastal scrub, cultivation and plantations. Recorded on the campus.

Helmet Shrike, *Prionops plumata poliocephala*. - Specimen from Soga (Franzmann, *in litt.*).

Retz's Helmet Shrike, *Prionops retzii*. - Rare. Until Van der Willigen (1979) recorded a group of this species in Pugu forest, the only records known to us were a specimen in the National Museum of Tanzania catalogue collected at "Dar es Salaam, sea level" by C.F.M. Swynnerton, 3 November 1920, CFMS 425 and a sighting of a party of five in scattered thicket and bush 48 km west of Dar es Salaam in November by Fuggles-Couchman (*in litt.*).

Chestnut-fronted Helmet Shrike, *Prionops scopifrons*. - Regular, recorded January, April, July, August and December in forest, both at Pugu and Pade Forest

Reserves. Stuart (1979) notes that this species is declining with forest destruction in East Africa.

Violet-backed Starling, *Cinnyricinclus leucogaster*. - Regular, recorded January, July and August-October in cultivation, plantations, suburban gardens and built-up areas and forest. Recorded on the campus.

Wattled Starling, *Creatophora cinerea*. - Vagrant, recorded June, 1971 in acacia scrub (WGH). Possible escapee.

Lesser Blue-eared Glossy Starling, *Lamprotornis chloropterus*. - Specimen from Soga (Franzmann, *in litt.*).

Black-breasted Glossy Starling, *Lamprotornis corruscus*. - Common, recorded throughout the year in mangroves, coastal thicket, plantations, coastal woodland and forest.

Superb Starling, *Spreo superbus*. - Scarce, recorded June and July in coastal scrub and built-up areas. Possibly escapees.

Collared Sunbird, *Anthreptes collaris*. - Regular, recorded throughout the year in coastal scrub, built-up areas and suburban gardens, coastal woodland and forest. Breeds March and June (young).

Violet-backed Sunbird, *Anthreptes longuemarei nyassae*. - A single record on 22 May 1936, a male collected by Fuggles-Couchman in open bush at Vikundu, 24 km south of Dar es Salaam (Fuggles-Couchman, 1939).

Uluguru Violet-backed Sunbird, *Anthreptes neglectus*. - Scarce, recorded January, July, September and October in coastal woodland and forest. Britton (1981) notes a male was collected at Kurasini, Dar es Salaam by A. Fisher in 1909. Breeds January (adult feeding fledged young). Stuart (1979) notes that this species is declining with forest destruction in East Africa.

Amethyst Sunbird, *Nectarinia amethystina kirkii*. - Recorded April 1935 at Mbezi, Dar es Salaam, and October 1936 at Kisarawe (Fuggles-Couchman, *in litt.*, NRFS 35/50 and NRFC 36/20). No recent records.

Little Purple-banded Sunbird, *Nectarinia bifasciata*. - Common, recorded throughout the year in mangroves, coastal scrub, cultivation, plantation, freshwater swamps, built-up areas, and coastal woodland. Breeds November (nest). Recorded on the campus.

Olive Sunbird, *Nectarinia olivacea*. - Regular, recorded January, April, July, September and December in forest and a single record from mangroves (B.P. Taylor, pers. comm.) Breeds December (building nest).

Variable Sunbird, *Nectarinia venusta*. - Scarce, recorded January and November in coastal scrub and suburban gardens. Recorded on the campus.

Mouse-coloured Sunbird, *Nectarinia veroxii*. - Regular, recorded January-March and July-December in mangroves and coastal thicket and forest. Recorded on the campus, see Harvey (1973f) for unusual behaviour.

Yellow White-eye, *Zosterops senegalensis*. - Regular, recorded January, March, April, August, October and December in coastal woodland and forest.

Grosbeak Weaver, *Amblyospiza albifrons*. - Regular, recorded throughout the year near freshwater swamps, streams and ponds. Breeds January, May (eggs) and June (eggs and young). Recorded on the campus.

Red-headed Weaver, *Anaplectes rubriceps*. - Recorded from the Dar es Salaam area by Mackworth-Praed and Grant (1960). Specimen from Soga (Franzmann, *in litt.*).

Parasitic Weaver, *Anomalospiza imberbis*. - Vagrant, recorded March 1971 in cultivation.

Red-naped Widowbird, *Euplectes ardens*. - Undated records from Fuggles-Couchman (*in litt.*) from tall grassland in wetter areas. Recorded from Soga and Dar es Salaam (Britton, 1980a).

Fan-tailed Widow Bird, *Euplectes axillaris*. - Regular, recorded January-June, September and December in acacia scrub, cultivation and freshwater swamps.

Yellow Bishop, *Euplectes capensis*. - Scarce, recorded February-July, September, October and December in coastal scrub, cultivation and sisal plantations. Recorded on the campus.

Black-winged Red Bishop, *Euplectes hordeaceus*. - Regular, recorded throughout the year in coastal scrub, cultivation, plantations, and coastal woodland. Recorded on the campus.

Zanzibar Red Bishop, *Euplectes nigroventris*. - Common, recorded throughout the year in coastal scrub, cultivation and at freshwater swamps. Breeds May and June (eggs) and November (building nest). Recorded on the campus.

Dark-backed Weaver, *Ploceus bicolor*. - Common, recorded January, April and July-December in forest.

Black-headed Weaver, *Ploceus cucullatus*. - Common, recorded throughout the year in coastal scrub, cultivation, plantation, built-up areas and suburban gardens and coastal woodland. Breeds December (nests with eggs). Recorded on the campus.

Masked Weaver, *Ploceus intermedius*. - Common, recorded throughout the year in coastal scrub and acacia scrub. Breeds December and January (eggs). Recorded on the campus.

Black-necked Weaver, *Ploceus nigricollis*. - Scarce, recorded March, April and June in coastal scrub with doum palms. Breeds March (building nests).

Spectacled Weaver, *Ploceus ocularis*. - Common, recorded throughout the year in coastal scrub, cultivation, plantations, built-up areas and suburban gardens and coastal woodland. Breeds August and December (building nests). Recorded on the campus.

Golden Weaver, *Ploceus subaureus*. - Common, recorded throughout the year in coastal scrub, cultivation and freshwater swamps. Breeds January (eggs), April, August and October-December (building nests). Recorded on the campus.

Vitelline Masked Weaver, *Ploceus velatus*. - Recorded from Dar es Salaam and Bagamoyo (Britton, 1980a).

Red-headed Quelea, *Quelea erythrops*. - Regular, recorded January, June and October-December in cultivation. Recorded on the campus.

Red-billed Quelea, *Quelea quelea*. - Regular, recorded February-April, October and November in coastal scrub, cultivation and plantations.

Chestnut Sparrow, *Passer eminby*. - Vagrant, a group of at least ten birds seen January 1971 in coastal scrub (WGH). Suspected escapees.

Grey-headed Sparrow, *Passer griseus*. - Common, recorded throughout the year at salt pans, in coastal scrub, cultivation, plantations, and built-up areas. Breeds June (young in nest and flying young). Recorded on the campus.

Yellow-throated Petronia, *Petronia superciliaris*. - Recorded from Soga (Britton, 1978).

Speckle-fronted Weaver, *Sporopipes frontalis*. - Status uncertain. Sighted August and September, 1979, in Kunduchi area, north of Dar es Salaam (S. Tyler, *in litt.*). Possible escapees.

Red-billed Firefinch Indigobird, *Hypochera chalybeata*. - Recorded from the Dar es Salaam area by Britton (1980a), but not recorded during present study. For identification of *Hypochera* spp., see Forbes-Watson (1972b).

African Firefinch Indigobird, *Hypochera funerea*. - Common, recorded throughout the year in coastal scrub, in cultivation and plantations. Recorded on the campus.

Jameson's Firefinch Indigobird, *Hypochera purpurascens*. - Britton (1980a) records this species, from Bagamoyo.

Straw-tailed Whydah, *Vidua fischeri*. - Scarce, recorded April and December in cultivation.

Pin-tailed Whydah, *Vidua macroura*. - Common, recorded throughout the year in all habitats except the intertidal zone and coastal woodland. Recorded on the campus.

Paradise Whydah, *Vidua paradisaea*. - Regular, recorded January-August in coastal scrub, cultivation and plantations. Recorded on the campus.

Zebra Waxbill, *Amandava subflava*. - Britton (1978) notes a specimen from Soga.

Waxbill, *Estrilda astrild*. - Common, recorded throughout the year in all habitats except sand flats, salt pans, open sea and forest. Breeds. Recorded on the campus.

Peters' Twin-spot, *Hypargos niveoguttatus*. - Common, recorded January-April and July-September in coastal thicket and forest. Recorded on the campus.

African Firefinch, *Lagonosticta rubricata*. - Regular, recorded throughout the year in coastal scrub and thicket and coastal woodland. Breeds August (nest with young). Recorded on the campus.

Red-billed Firefinch, *Lagonosticta senegala*. - Common, recorded throughout the year in all habitats except open sea, sand flats and forest. Recorded on the campus.

Quailfinch, *Ortygospiza atricollis*. - Regular, recorded April-October at salt pans, in cultivation and built-up areas.

Lesser Seed-cracker, *Pyrenestes minor*. - Britton (1981) records a specimen collected at Kurasini, Dar es Salaam in July 1911, and there is a second record from nearby Mtoni in February 1955 (Fuggles-Couchman, *in litt.*). Mackworth-Praed and Grant (1960) and Hall and Moreau (1970) record this species from the Pugu hills. Stuart (1979) lists the species as one which is declining with forest destruction. We know of no recent records from the area.

Orange-winged Pytilia, *Pytilia afra*. - Recorded in June and August 1956 in thick scrub at Kunduchi, north of Dar es Salaam (Fuggles-Couchman, *in litt.*). No recent records.

Green-winged Pytilia, *Pytilia melba*. - Regular, recorded January, March-June and August-December in coastal thicket and scrub and acacia scrub. Breeds December (eggs). Recorded on the campus.

Cordon-bleu, *Uraeginthus angolensis*. - Common, recorded throughout the year in all habitats except the sea, sand flats and forest. Breeds. Recorded on the campus.

Red-cheeked Cordon-bleu, *Uraeginthus bengalus*. - Status uncertain. Mackworth-Praed and Grant (1960) record this species from coastal Tanzania,

and Hall and Moreau (1970) indicate its presence in the study area. Recorded in 1968 in suburban gardens (KMH) and near Kunduchi, north of Dar es Salaam by S. Tyler in 1979, but at least some of these may be escapees from a nearby aviary. This species is not as common as either *U. angolensis* or *U. cyanocephalus* in the area.

Blue-capped Cordon-bleu, *Uraeginthus cyanocephalus*. - Regular, recorded February-July from acacia scrub and grassland.

Purple Grenadier, *Uraeginthus ianthinogaster*. - Scarce, recorded April, June and September in coastal thicket and cultivation.

Cut-throat, *Amadina fasciata*. - Scarce, recorded January, March, July and September in coastal scrub, acacia scrub and grassland and built-up areas. Recorded on the campus. At least some may be escapees.

Rufous-backed Mannikin, *Lonchura bicolor nigriceps*. - Regular, recorded throughout the year in coastal scrub, cultivation and forest. Recorded on the campus.

Bronze Mannikin, *Lonchura cucullata*. - Common, recorded throughout the year in all habitats except sea, sand flats and forest. Breeds February (fledged young). Recorded on the campus.

Grey-headed Silverbill, *Lonchura griseicapilla*. - Scarce, recorded January and March in acacia scrub and grassland.

Cabanis' Bunting, *Emberiza cabanisi*. - Fuggles-Couchman (*in litt.*) recorded this species in January, April (Kunduchi, north of Dar es Salaam), June and December. No recent records exist for this species.

Golden-breasted Bunting, *Emberiza flaviventris*. - Scarce, recorded January, February and December in coconut plantations and coastal woodland.

Yellow-rumped Seed-eater, *Serinus atrogularis*. - Common, recorded throughout the year in all habitats except open sea, the intertidal zone, mangroves and forest. Breeds. Recorded on the campus.

Yellow-fronted Canary, *Serinus mozambicus*. - Regular, recorded January-July at salt pans, in coastal scrub, cultivation and built-up areas.

Brimstone Canary, *Serinus sulphuratus*. - Scarce, recorded March, May, June, August and November in coastal scrub and built-up areas.

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SUMMARY

Using field observations by the authors from 1968-1978 as well as the published and unpublished records of others before and during this period, the frequency, habitat, distribution and breeding of the birds of the Dar es Salaam area in the coastal strip of Tanzania are documented. Little mist netting was done. A variety of habitats, ranging from the littoral to lowland coastal forest are found within the area. 457 species of birds are reported of which 74 are definitely known to breed; 81 species are Palaearctic migrants, and several intra-African migrants are noted.

Even within the short period of the study many habitats have been altered by man's activities. This is especially true of Pugu forest reserve, which contains the only known Tanzanian populations of the East Coast Akalat, *Sheppardia gunningi*, and an endemic subspecies of Pale-breasted Illadopsis, *Trichastoma rufipennis puguensis*. The presence of a number of introduced and escaped species, most notably the Indian House Crow, *Corvus splendens*, is also reported. The need for further study and for conservation of small but important remaining areas of natural vegetation such as lowland coastal forest, acacia scrub, and mangroves is emphasized.

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SAMENVATTING

Gebruik makend van eigen veldwaarnemingen uit de periode 1968-1978, alsook van gepubliceerde en ongepubliceerde gegevens van anderen vóór en tijdens dezelfde periode, worden het voorkomen, het biotoop, de verspreiding en het broeden van de vogels van de streek van Dar es Salaam in de kuststreek van Tanzania besproken. Tevens werden enkele vangsten met mistnetten gedaan. In deze streek treft men een grote verscheidenheid aan inzake biotopen, gaande van de kust tot laaglandwouden. 457 soorten vogels werden er aangetroffen, waarvan er 77 met zekerheid broeden ; 81 soorten zijn palearctische trekkers en verschillende intra-afrikaanse trekkers werden eveneens genoteerd. Zelfs tijdens de korte periode waarover de studie handelt, ondergingen vele biotopen wijzigingen door menselijke activiteiten. Dit geldt in het bijzonder voor het Pugu-bosreservaat die de enige Tanzaniaanse

populaties van *Sheppardia gunningi* en de endemische ondersoort *Trichastoma rufipennis puguensis* herbergt. De aanwezigheid van een aantal ingevoerde en ontsnapte soorten zoals *Corvus splendens* wordt eveneens gemeld. De noodzaak wordt beklemtoond voor verdere studies en voor het behoud van de kleine maar belangrijke overblijvende zones met natuurlijke vegetatie : laagland-kustwoud, acacia- en mangrove-vegetaties.

RESUME

La fréquence, l'habitat, la distribution et la nidification des oiseaux de la région de Dar es Salaam dans la tranche côtière de Tanzanie sont étudiés sur base des observations réalisées par les auteurs entre 1968 et 1978 et d'après les données, publiées ou non, recueillies par d'autres auteurs, avant ou pendant la période considérée. Quelques captures au filet japonais ont été effectuées. Une importante diversité d'habitats, allant de la tranche littorale aux forêts côtières de basse altitude, a été recensée dans la zone considérée. 457 espèces d'oiseaux y sont dénombrées, dont 75 comme nicheurs certains. 81 espèces de migrateurs paléarctiques et quelques migrateurs intra-africains y ont également été observés. Durant la brève période de cette étude, il a été constaté que de nombreux habitats ont subi des altérations dues à l'activité humaine. Ceci est spécialement vrai pour la réserve de la forêt de Pugu qui contient la seule population tanzanienne connue de *Sheppardia gunningi* et la sous-espèce endémique de *Trichastoma rufipennis puguensis*. La présence d'un certain nombre d'espèces introduites ou échappées, notamment de *Corvus splendens*, est également signalée. La nécessité d'une étude supplémentaire et de la conservation de petites mais importantes parcelles relicuelles de végétation naturelle comme les forêts côtières de basse altitude, les forêts d'Acacias et les mangroves sont également soulignées.

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Dar es Salaam, Tanzania. View from the campus of the University toward the Indian Ocean. 31 March 1971.



Mbagala, Tanzania (near Dar es Salaam). View of countryside. 02 April 1971



Mbagala, Tanzania (near Dar es Salaam). View of countryside. 02 April 1971



Dar es Salaam, Tanzania. 03 April 1971.



Dar es Salaam, Tanzania. *Acacia* tree with 2 kites and a Hooded Rook. 03 April 1971.



Dar es Salaam, Tanzania. Beach north of city; sandy shoreline with rock pools. 03 April 1971.



Dar es Salaam, Tanzania. Baobab tree; *Adansonia digitata*. 03 April 1971.



Dar es Salaam, Tanzania. View of Kunduchi Beach near the Fisheries Institute. 13 April 1971.



Mbudya Island, Tanzania. View from Kunduchi Beach. 13 April 1971.



Mbudya Island, Tanzania. Coral margin; Egyptian Goose (*Alopochen aegyptiaca*).



Mbudya Island, Tanzania. View to interior. *Euphorbia* and *Sansevieria bagomoyensis*. 13 April 1971.



Kunduchi Beach, Silver Sands Hotel, Tanzania. Ma Island in background. 16 April 1971.



Dar es Salaam, Tanzania. Street scene. *Bougainvillea*. 18 April 1971.



Dar es Salaam, Tanzania. Grounds at the presidential residence. 18 April 1971.



Pugu Forest, Tanzania. 04 April 1971.