

HONEYGUIDE



Journal of Zimbabwean and Regional Ornithology
June 2019, Vol. 65, Part 1



African Skimmer Rynchops flavirostris

This issue is devoted to the birds of the Rifa Education Centre located along the Zambezi River at Chirundu. The African Skimmer is one of the species to be encountered there and is considered to be a 'keystone' species by the authors of this report. It lives and nests on the sandbanks, which it shares with some other species, such as the one in the background.

Photo © Roger MacDonald



An immature (left) and a relatively rare pre-adult male, +6 to 7+yr (above), Bateleur. Photos © Celesta von Chamier.
At the end of the 1980s – beginning of the 1990s, Peter Mundy had 5 adult and 14 juvenile-immature sightings in one week.



Dwarf Bittern (above). Photo © Ian Riddell



Grey-headed Parrot (right). Photo © Celesta von Chamier

GUEST EDITORIAL

Sustaining Interest in Environmental Work

Leslee Maasdorp

Very young encounters with nature make lasting impressions in most children and I became familiar with bird songs like that of the Piet-my-Vrou (Red-chested Cuckoo) as grew up on a small farm outside King William's Town, in the Eastern Cape. As a young bride in Umtali (Mutare) I heard the same insistent call and felt nostalgic for earlier days.

With three children under five years old I relocated to Salisbury (Harare) and from there went on visits to the Middle Zambezi where my husband, Hugh, spent two years surveying the upper shoreline contour of the future Kariba Dam. The terrain was rugged, the wilderness teeming with game like rhino, which seemed to conduct their lives in an organised way when not interfered with by man. Elephant were scarce, however, probably as a result of hunting, since ivory was historically a major item of trade between Africa and India. These experiences laid the foundation for a life-long interest in wilderness in me, my daughter Dorothy and son Richard. Young Adrian's interests lay with the Mountain Club.

In the city I served for many years on boards to conserve the Mukuvisi Woodlands and Ballantyne Park from housing schemes. A surprise came when the City Council gave a long lease on the former and a title deed on the latter. This showed me that perseverance counts!

My teaching career lasted three decades at one of the top schools in sub-Saharan Africa, Prince Edward Boys School. I inherited a Natural History Club (NHC) well-known for shooting and collecting birds for the natural History Museum in Bulawayo. I invited naturalists to address weekly meetings of the club; the most memorable visitor was Adolf, a huge Lappet-faced Vulture brought in by Peter Mundy. Field trips included collecting live bats for the Queen Victoria Museum's Reay Smithers, carefully planned and reported on expeditions to our National Parks and Mount Kenya. In recent years a spin-off from these trips led to some of its original participants reviving adventure trips by schools culminating in a jamboree in West Africa. Girls are now included in adventure trips and match the boys in any activities. These trips broadened my own outlook on Nature Conservation.

In establishing programmes for wilderness courses at Rifa Camp, Chirundu, for the Zimbabwe Hunters' Association (ZHA), I could rely on including big game animals, huge trees, the Zambezi River, pans teeming with invertebrates and birds to provide students and their tutors with stimulating project ideas and activities. Participants are drawn from urban and rural schools. Pupils are proud of the participation in a weekly Vulture Watch which has been in place for over nearly thirty years. Many pupils enjoy dormitory life and cooperating with their team in producing good reports.

Recording birds began early at Rifa and I was relieved to be assisted by skilled Anne Cotton in the study of birds and compilation of species notes. I still contribute materials for Rifa's mini-projects and stress the value of recording information. Some past pupils of these camps and the Natural History Club are now participating in running Rifa courses or in providing protection of students. Long term projects like those at Rifa have sustained my interests in Nature.

Over the ten years of introducing BirdLife Zimbabwe programmes into rural schools, I discovered people had an intimate and practical relationship with birds – certain species told them when to wake up, others when to clear land, and when to begin planting, while an overhead Bateleur warned of war. However, hawks and eagles stealing poultry and young kids were killed if caught. I learn a lot from them.

The booklets and pamphlets I produced with teachers and BLZ and RSPB experts are still in use today. I learnt this type of work was time consuming for me but rewarding, leaving rural teachers better equipped to incorporate environmental work into their lessons. Pupils and I become inspired by long-term investigations like the ongoing Vulture Watch.

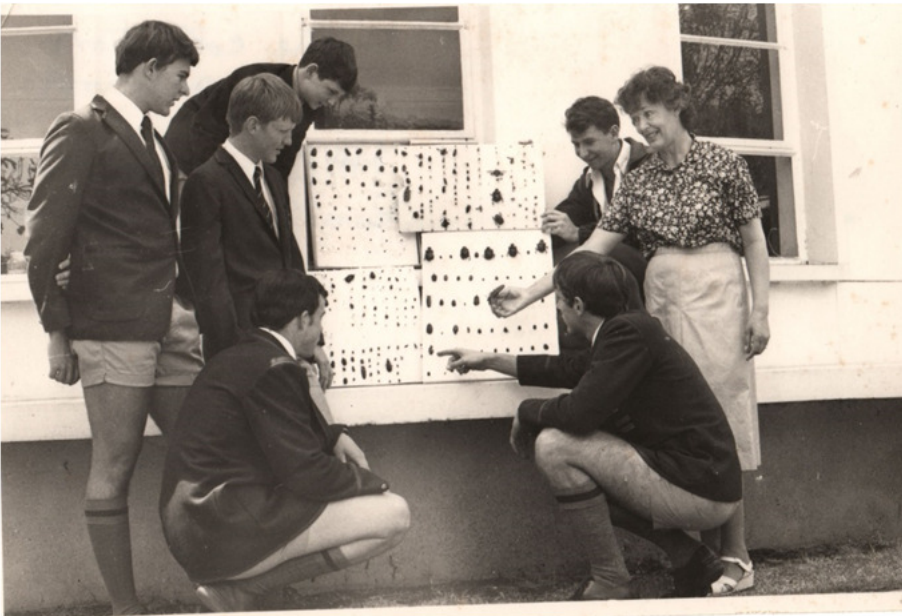
At present many organisations and individuals work tirelessly to curb poaching of wildlife such as elephant, rhino, pangolin and fish in the Zambezi Valley. These fragmented efforts often result in little success. Recently, under the dynamic leadership of the Zambezi Society and National Parks, the smaller anti-poaching facilities have been incorporated under one active umbrella, leading to a big decline in poaching. My small contribution to this initiative has been providing more environmental materials for poor schools bordering on Parks, promoting rehabilitation of degraded environments and protection of surviving animals and trees.

I have found that one is never too young or too old to learn from Nature, something that Sir David Attenborough agrees with! Best at recharging my engines are attending conferences, working with wetlands and Ramsar and watching cricket!

This report on the birds of the Rifa Educational Camp is the result of our work over many years and will, we hope, stimulate others to keep recording them and make new discoveries about the birds of the Zambezi Valley.



Leslee Maasdorp (sitting, left) birding at Rifa.



Leslee Maasdorp and pupils at Prince Edward School. Photos supplied by Dorothy Wakeling

The Birds of Rifa Camp, Chirundu, Zimbabwe, 1987 – 2014

Leslee Maasdorp and Anne Cotton

Foreword

Bird watching is such an enjoyable hobby, stress-free and relaxing. No wonder it is said to be the fastest growing pastime in the world. You must be 'fast on the draw' with your binoculars, steady of hand, clear of eye, and practised at getting the whole image in a split second. Bird watching therefore answers some deep-down hunting and gathering instinct inherited from our ancestors during hundreds of thousands of years and is thoroughly ethical and acceptable in today's world of environmental concern. How could it be otherwise? Birds – with their colours and voices, wonderful flying ability and sometimes frenetic energy – can excite us quite passionately and demand to be admired, loved ... and conserved. This is surely the acme of human endeavour, from an activity of observation and discovery to an activity of caring for the organisms of our interest.

But bird watching is exciting too, with always a chance of seeing something new, unusual, or special. In fact, almost every bird outing is blessed with an incident of that, if you have the eyes to see it and the experience to realise it. Who would not be excited to see the Southern Carmine Bee-eater, Lilian's Lovebird and the Bateleur, not to mention feeding vultures? The African Skimmer is a special bird along the Zambezi River and never fails to thrill anyone who sees them in action.

These days, however, there should be more to bird watching, starting from the biodiversity imperative. Key sites, such as the Important Bird Areas, need to be regularly surveyed and an inventory of species made. We have been doing this rather haphazardly in this country for about fifty years, but in order to be really useful an inventory must also be annotated. When and where is a species seen, how many birds are counted, do they breed at the site, what interactions occur with other species etc.? So many questions can be asked in an effort truly to understand a species. The inventory or atlas now becomes a biological text, and one that will endure forever.

Introduction

This checklist of the birds of the Chirundu area began with the inauguration in 1986 of the Rifa Conservation Education Camp. The programme co-ordinator at Rifa, Leslee Maasdorp, persuaded all birders to hand in bird lists and notes, which she then compiled into species notes, in partnership with Anne Cotton who edited and computerised the notes.

Many birdwatchers and ornithologists in Zimbabwe have contributed to these bird records, most of whom made lists while acting as a resource person to a school group. They were drawn from members of BirdLife Zimbabwe (BLZ) – formerly the Ornithological Association of Zimbabwe (OAZ), from the Parks and Wildlife Authority (PWLA, ZimParks) – formerly Department of National Parks and Wildlife Management, interested hunters who protected groups on walks, and birders from beyond our borders. The vulture feast has been a feature of the schools' camps over the years and this has been well reported on. This consists of parts of impala carcasses, usually a little meat, bone and skin put out in the old flood channel in front of the camp, obtained after an animal has been dissected and butchered. Occasionally elephant ribs or legs are obtained

This checklist from the Rifa Camp is, I think, the first such properly annotated inventory of birds produced in Zimbabwe. I warmly applaud the two authors for hoisting their colours to the mast and showing us the way forward. Any further observations and notes from this area now have a good context in which to be placed: are we seeing something new, is something changing, can we explain the new observation? As living organisms, birds should not just be listed, but understood in their environment.

I first met both authors about thirty-five years ago, one a high school teacher the other a research graduate. Then in the mid-1980s I visited the school camp that Leslee organised, under the auspices of Zimbabwe Hunters' Association, then at the downstream end of the Kariba gorge at Nyamuomba corner. She had already started this bird study, the fruits of which are before you now. Subsequently I visited the Rifa Camp many times, to spot birds, net and ring them, watch vultures at the impala carcasses, look for skimmers, and much more. From time to time we talked about the 'list' and its annotations, so I am very pleased to see it finally in print.

It very pleasing too that the study has been carried out within the programme and initiative of the citizen hunters. They recognised long ago the necessity for hunters to put something back where they took something out. This attitude is also to be applauded, and long may it last (given a stress-free environment!). Hunting in various forms and conservation can go together, and they certainly do in Zimbabwe where safari hunting is something of a *leitmotif*.

I hope, then, that this checklist will be enjoyed and admired, but also emulated. Leslee and Anne have given us a blue-print, and there is no going back!

Peter Mundy,

*Dept. of Forest Resources and Wildlife Management,
National University of Science and Technology,
Bulawayo*

from hunting operations and BLZ members have donated portions of cattle carcasses.

The Rifa education initiative is the brainchild of the Zimbabwe Hunters' Association (ZHA), which has almost entirely funded its operations. However, in 2003 it was no longer in a position to finance this creative facility and it is seeking sponsorship to maintain the programme.

Hunting associations throughout the world are heavily involved in conservation activities – in the United States of America for instance, hunting organisations have given the impetus to the restoration of the wild turkey, pronghorn antelope, rocky mountain elk and other species. Their efforts are not always fully appreciated by the public who have little understanding of the management of natural resources and hunting as a management technique. The ZHA is to be applauded for its unique programme among the youth and adults of Zimbabwe and also for its perseverance in keeping this conservation project running for two decades.

The Rifa Camp is located some 5 km upstream of Chirundu, a border post and small settlement on the Zambezi

River which forms the border between Zimbabwe and Zambia (Figure 1). In the early 1950s the government designated remote and inhospitable tracts of land as wilderness areas. One of these was the Zambezi Valley below the Kariba Gorge and here efforts to control tsetse fly involved clearing strips of land by shooting all 'host' game species, ultimately to no avail. From 1980 poisoned cloth targets effectively eliminated the fly but this programme became too costly to maintain. The fly returned, offering some protection to the wilderness.

The Department of National Parks and Wild Life Management designated the area upstream of Chirundu as the Rifa Hunting Area, a subsection of the large Hurungwe Safari Area. A group of citizen hunters won the concession to hunt in the Rifa Hunting Area and established "A" Camp near the exit of the Kariba Gorge and "B" and "C" Camps further downstream. Early on in their tenure they ran nature and

landscape courses for colleges and schools in the Nyamuomba area, near A Camp.

Access to this area was difficult, however, and the present location of the Rifa Conservation Education Camp was made available to the ZHA for an education facility. The vision was to interest the youth of the country in conservation and management of wilderness through a visit to Rifa and the camp was opened in 1986. It has seen many improvements to the facilities over the years and is still an important learning centre for schools.

In the mid-1990s ZHA found it could no longer afford to compete at auctions for the Rifa Hunting Area concession which had provided money for Rifa Camp. To their credit, the ZHA members, mostly ex-farmers, have been dedicated to keeping this wilderness camp running. It is now ZHA's core activity.

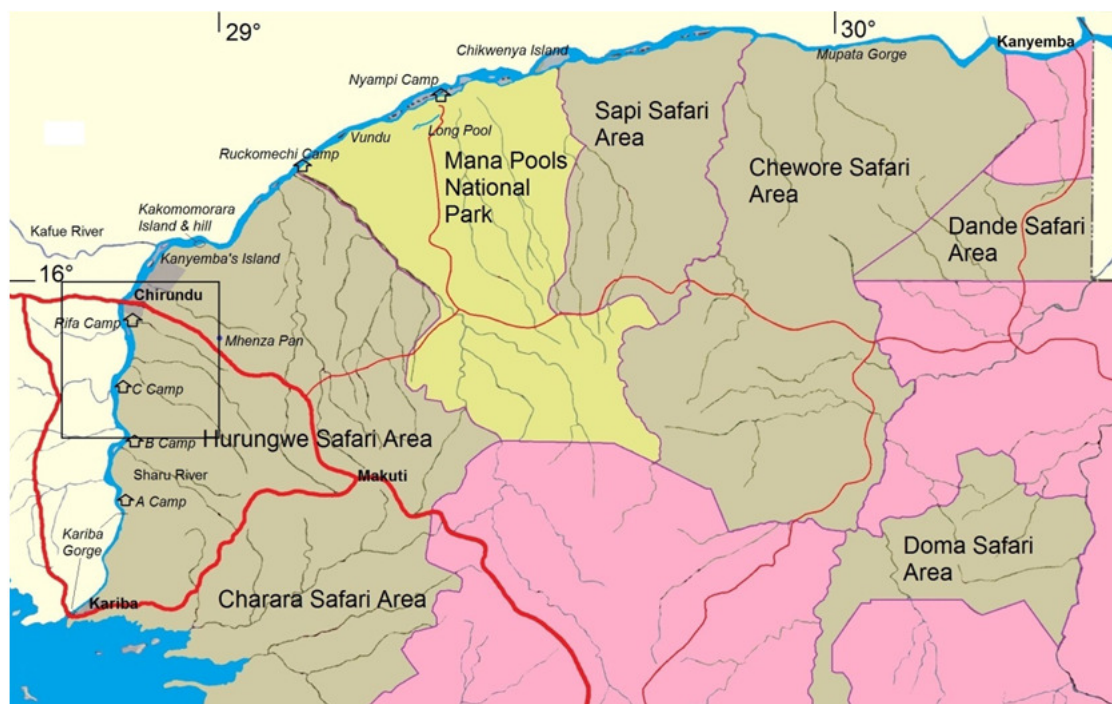


Figure 1. The middle Zambezi Valley in Zimbabwe, showing the location of the Rifa Camp, 5 km south of Chirundu. The square denotes the quarter-degree square (QDS) 1628B2 in which most of the observations were made.

Acknowledgements

The authors wish to express their appreciation to many people and organisations for help and encouragement, among them:

The Zimbabwe Hunters Association (ZHA), Council and members for establishing its education facility at Rifa Camp and for their determination to carry on this wilderness conservation programme even when they lost the Rifa hunting concession and later, for some, their livelihoods on farms. Prominent figures in Rifa's foundation were Ben Norton, Ian Ross, Anton Howland and Owen Connor and in recent years Brian Peters, Alan Banks and Sean Waller. To the many others, managers of the camp, volunteer hunters guarding walking parties on exhausting stop and start trails and education officers, Derrison Katenari and Freedom Hlongwane.

The valuable contributions made by keen and skilled birders from OAZ/BLZ who early on recorded most of the birds on the list – Tony Tree, Jacko Williams, Irralie Howland, Peter Mundy, Dave Rockingham-Gill, Dorothy Wakeling and

Geoff Lowe, and more recently Dave Winhall and Elspeth Baillie, and many others.

The Zimbabwe Parks and Wildlife Management Authority (ZimParks) who provided the site and a full-time ranger for security and liaison work and for impala for studies and the vulture restaurants and at Marongora HQ for assistance and recognition.

The stakeholders in and around Chirundu, the Local Board, the Zimbabwe Republic Police, border control officials, residents and transport industries as well as Chirundu Estates officers.

The bird ringers – Tony Tree, Tracey and Ferdi Couto, Peter Mundy with Jack Amoni and Gift Jonasi and Nancy Langton – who provided valuable data.

The many photographers like Brendon Ryan, Geoff and Kathy Stiles, J. Stacey, G. Lowe, Dave Winhall and Celesta von Chamier for providing photographic material.

The late Michael P.S. Irwin for spurring us on to establish a good reference section and to Ian Riddell for his vast

knowledge of the Middle Zambezi Valley birds and references, and his patience in revising some of the notes.

We greatly appreciate the most generous support by the BLZ Council for publishing these notes – just before more record pages go yellow with age!

The biggest thankyou goes to our long-suffering families and especially to our husbands who have helped out with everything from mending punctures, fixing pumps to moral support and great company. Without them this could not have been attempted.

Observers Initials Used in the Text

DA	Dylan Aspinwall (Zambia)	DK	Derrison Katenaire	DR	Dave Rushforth
LA	L. Agiotis	GML	Gisela Locherer	JS	J. Stacey
BLZ	BirdLife Zimbabwe	GL	Geoff Lowe	AJT	Tony Tree
EB	Elsbeth Baillie	LM	Leslee Maasdorp	DW	Dorothy Wakeling
ACC	Anne Cotton	PJM	Peter Mundy	JW	J. Williams
FC	The late F. Couto	JO	John Osborne	DWI	Dave Winhall
TC	T. Couto	OAZ	Ornithological Association of Zimbabwe (now BLZ)	TW	T. Williamson
KD	Kevin Dunham	DP	Duncan Parkes	AJW	Tony Wood
AH	The late Anton Howland	BP	Brian Peters	KW	Ken Worsley
IH	Irralie Howland	IR	Ian Riddell	SW	Sue Worsley
NH	Nkululeko Hlongwane				
SJ	Steve James	DR-G	David Rockingham-Gill		

Conservation Strategies and Concerns in the Middle Zambezi Valley

The Hurungwe Safari Area, with the Rifa Camp on its northwest edge, is being assailed from all directions. The abundance of wildlife that has anchored the project is now under attack. Rifa Camp's wildlife and wilderness qualities are closely linked to activities at Chirundu. In the past, wildlife was abundant and residents were remarkably tolerant towards roaming lions, elephants and buffalo. Now the big game has been replaced by haulage vehicles taking freight to the countries north of Zimbabwe. Every day two to three hundred trucks now stretch for kilometres outside the village and churn up the local *jesse* bush beside the main road and in the village. [Editor's note: This situation has apparently been improved now that the border post now operates on a 24-hour basis.] Chirundu village is small yet crowded with people, including vagrants, migrants looking for jobs, cross-border traders, poachers, transporters and officials. These people and their activities have severe negative impacts on the surrounding fauna and flora. Only baboons remain common in the village.

At the end of the 1970s controlled safari hunting was introduced to both the Rifa and the Nyakasanga areas of Hurungwe. Management techniques included quota setting and high hunting fees for a small bag. The protection offered under this scheme has been very rewarding but at the end of the 1980s poachers killed our Black Rhinoceros despite all our efforts. At Buffalo Springs the last rhino was shot in 1992. Now a similar battle is being fought to save the elephant from poaching by locals and foreigners. Will we win this war?

Wild Dogs, elephants and Spotted Hyaenas are frequently hit by vehicles on the busy main road, especially at traditional wildlife corridors. Zambian fish poachers net our local waters with impunity, decimating breeding fish and fingerlings. Elsewhere there are success stories of improving Wild Dog populations which Chirundu and its wilderness areas could follow to their advantage, and with a boat, among other resources, fish poaching could be reduced.

To date, Chirundu's woes have had no solutions but NGOs, ZimParks and local board members' efforts are ongoing. ZimParks rangers, though well trained and resourceful, are few in number and often have to work without receiving their wages.

It is suggested that haulage vehicles and fuel companies (many of them foreign) pay higher fees, which should benefit

Chirundu and its long-suffering residents. Wildlife corridors which cross the main road and waterholes close to the village or main road need protection. State intervention is needed to control poaching of wildlife and fish, harvesting of sand and trees, and provide reasonable salaries to rangers either through a "grant-aid" or by ZimParks changing its status to become a government-funded "agency", instead of a self-sustaining authority.

In an attempt to quell the chaos, a body of NGOs and government officials has proposed a re-planning of Chirundu and giving a small game park and some fishing rights to residents for recreation. Several protocols and agreements give the Rifa Area's biodiversity some measure of protection, although this is only evident on paper. In 2010 the Middle Zambezi Valley from Lake Kariba to the Mozambican border was declared a Man and the Biosphere (MAB) reserve by UNESCO (Paris). This agreement includes a concept and tool to achieve a sustainable balance between conservation and biodiversity and human development. The Rifa Camp Committee has a presence on the local MAB committee. Slow progress has been made so far on re-planning Chirundu due to legal and Ministerial constraints.

Using the BirdLife International (BLI) criteria the Middle Zambezi is designated an Important Bird Area (IBA) making it one of Zimbabwe's priority sites for conservation of birds and other biodiversity, including natural ecosystems on which people depend (Childes & Mundy 1997). It is also considered to be an important wetland, and it has been chosen as one of the five sites in Zimbabwe for future designation under the Ramsar Convention, which focuses on wetlands of international importance. The benefits of such a designation would include monetary and management support for conserving this river and surrounding wetlands. Similarly, UNESCO awarded the Middle Zambezi Valley Biosphere Status in 2010 but these initiatives have only resulted in a trickle of funding for the protection of this valley's famous biodiversity.

The Zambezi Society assists by lobbying for support for improvements at Chirundu and giving material support for anti-poaching activities. The Rifa programme, with its armed ZHA hunters and rangers, adds, in a limited way, to the initiatives of ZimParks and improves protection for wildlife. Most

conservation solutions require sourcing more funding for protecting designated parks and safari areas. If concerned wealthy countries wish to see Africa's wildlife conserved, they will have to provide funding for the poor countries such as Zimbabwe. If funding and/or other support is not received the wonderful parks of the Middle Zambezi Valley will succumb to increased poaching and a landscape degraded by the invasion by poor people finding an even poorer living. These

The Main Study Area

This bird list mostly covers the area from B Camp to the Chirundu Estates and inland to Nyachuru and Mhenza pans but reference is made, where appropriate, to other parts of the Zambezi Valley. The core area is represented by the 1: 50,000 map 1628B2 (16°00'–16°15'S to 28°45'–29°00'E) published by the Surveyor-General, Zimbabwe. This quarter-degree square extends into Zambia but only the Zimbabwe section of about 432 km² falls within the study area. It forms part of the Middle Zambezi Valley, here defined as the area from Kariba Gorge to Kanyemba at the Mozambique border. However, it must be noted that Irwin (1981) includes Kariba as part of the Middle Zambezi Valley and this affects statements relating to distributions in this annotated list.

Almost the whole of mid-Zambezi Valley is part of the National Parks estate, and includes the Mana Pools National Park as well as some Safari Areas (Figure 1). This is protected big game country which, together with the scenery, makes it one of the great tourist destinations of Africa. The study area features a variety of fine landscapes and views, and spectacular sunsets over the Zambezi River.

Climate

The Rifa Camp is located at an altitude of about 370 m and the middle Zambezi is the warmest area in Zimbabwe. The hottest month is October with a mean maximum temperature of 37°C and a mean minimum of 25°C, while June is the coolest month with a mean maximum of 27°C and a mean minimum of 13°C. In November 1994, an exceptionally high temperature of 54°C was recorded and the mid-Zambezi Valley was rated as the hottest place on earth over a period of several days. The rains never came at the end of that year and the severe drought was only broken early in January 1995, after which evaporation rates were high and the earth was bare; the last dry mopane leaves had long since been eaten. There was a dearth of birds – Meves's Starlings still roosted locally but set off in the mornings for Zambia to feed where huge forest trees still appeared to be green. Mammals were badly affected; Impala were thin and lost patches of hair to mange, but grazers were most affected. Grotesquely bloated dead hippos floated downriver with 8 or more crocodiles in attendance, warthog carcasses were seen and predators thrived, elephants stripped bark off trees or swam across to Zambia to raid crops. Listless baboon troops gathered under trees; over 80 were seen under an apple-ring acacia tree ('albida'), one female carrying a dead baby.

The rainfall is seasonal and usually confined to the months of December to March, and the average rainfall ranges from 350–600 mm per season. With normal or above average rainfall, the numerous pans and grassy depressions fill and support breeding waterfowl and waterbirds.

islands of biodiversity are under threat despite being priceless areas of real estate.

On a global scale, biodiversity monitoring and management is of paramount importance in maintaining natural systems. It is hoped that the long-term monitoring of birds in these annotated notes will be useful in management strategies in the Zambezi basin.

Soils

The soils are mostly fine- to medium-grained sands, derived from Triassic sandstones and usually contain a fair proportion of unweathered minerals rich in sodium. They are nutrient poor with the result that most plants have poor digestibility, which leads to a low-nutrient ecosystem or a "protein-deficient landscape". The level of animal herbivory is low, even though herbivory by insects is high. Such low-nutrient landscapes favour mega-herbivores such as elephant and buffalo, large-bodied mammals, bulk and coarse feeders.

Natural Ecosystems and Locations visited by School Groups

The Middle Zambezi Valley, a southern section of the Great Rift system, was formed by down-faulting with the main fault line running along the length of the escarpment. The hills in the area are horsts created by uplifting and much of the valley floor belongs to the Karoo system of the Triassic and Permian eras. The Zambezi, the fourth largest of Africa's rivers, is a riveting feature. As it approaches Chirundu it is constricted by a rocky protrusion, uplifted during rifting, and through which the river has cut a passage. This provides the solid features on which the bridges were built, and rocky protrusions form the Chirundu hills. The Chirundu village has steadily grown around the slopes of these hills. Up and downstream of Chirundu the Zambezi River is broad with permanent islands and ever-changing channels, cliffs and sandbars.

The flow of the river is determined by hydroelectric power generation at the Kariba dam, located about 60 km upstream. There is some daily variation since less power is generated at night, but seasonal variation is mostly determined by whether or not, and how many of, the floodgates at the dam are open. The level of Lake Kariba remained fairly low for nearly twenty years and the floodgates were almost never opened during that period. They were opened in 2000 and flooding filled the intricate channel systems surrounding the main river. This flooding was limited, however, and these channels did not erode at the same rate, leaving them higher than the main river. The river carries less silt since the Kariba dam was closed in 1958, thus increasing the erosion rate of both the river bed and its banks (Attwell 1970; Guy 1980/81).

As the channels gradually dried out, large birds such as African Fish-eagles, Goliath Herons and Hamerkops were left with no food and abandoned their nests. Also, cormorants and darters seldom visit due to poor fishing and a lack of perches. Nevertheless, despite these setbacks, the Rifa Area remains a birding mecca where both resident and migrant birds are still plentiful.

The rifting that produced fault lines in the rugged Chirundu hills massif created thermal springs. Kalisho Spring is located on the northeast side of the main road beside the Mongwe Road. On the opposite side of the main road the Buffalo

Springs are located on an inhospitable hillside but are now being degraded by human activities. These springs produce water essential for game and birds to drink in the hot dry months, despite its salty taste. Over the hills on the road to Rifa Camp are the Mendaishwa Springs, popularly known as 'Hot Springs'.

Rifa Camp itself is on an ancient terrace of the Zambezi and overlooks a floodplain channel where wildlife visits an artificial mud wallow. In the sandy flats behind the buildings numerous old termite mounds have been churned up by elephants and buffalo to form pans in the wet season. Visitors looking out from Rifa Camp can no longer see the Zambezi River as the tall trees on Nyangombe Island now hide the view. A small stream in front of camp only flows during heavy rains and carries flood waters from the Chipandaure River to Bream Pools. These pools were once famous for fish, but are now covered in water hyacinth and host large crocodiles. The pools are also fed via underground seepage from the main river.

Near the camp, the Chipandaure River has cut into the old Zambezi sediments to form 10m high cliffs. These provide nesting sites for bee-eaters and swifts, while huge riverine trees on the banks of the river offer shade, shelter and food for wildlife. The river road crosses the deep sands of the Chipandaure near the cliffs and continues all the way to the Kariba Gorge. School activities end after a few kilometres after Long Pan and inland at Arunatius Pan, where big game drink when it holds water. This extensive mopane area, where impala are often hunted, has plenty of game and bird life, including eagles.

The long dry season, culminating in the intense heat of October, November and part of December is the main factor determining the character of the vegetation. Trees exhibit xerophytic features such as the closing of the two leaflets of the mopane around mid-day and the deciduous nature of many other species of trees. Baobab and paper-bark trees and the white syringa are deciduous for over five months of the year. The trunk of some paper-bark trees has a greenish chlorophyll layer, overlain by a transparent papery covering, which enables the leafless tree to carry on photosynthesis.

There is a seasonal migration of large herbivores such as buffalo, zebra, kudu and impala to the alluvial system as it constitutes a dry-season resource where water, browse and grazing are available. When the pans in the mopane and mixed woodlands fill in the rainy season, fresh leaves, forbs and annual grasses become available and this habitat becomes more attractive to ungulates, but waterbuck and vervet monkeys remain on the alluvial plains.

The floodplain in front of Rifa Camp was characterized by having fresh alluvial sand and patches of couch grass. In 1987 to 1989, when the camp was first established, this sandy channel was pitted with holes in which gerbils lived. As the floodplain dried out and gave way to woody elements, this change in the habitat led to the disappearance of the gerbils.

Occasional irruptions of armoured crickets occurred in the very wet seasons between 1988-1999. These animals swarmed everywhere in camp and along the river road and frequently cannibalised road-killed kin. Only a few have been seen since then, during reasonable to dry rainy seasons.

School groups walk through the trees to the water pump on the Zambezi, or drive along the floodplain (the 'Golf Course') to Sunset Point or over drier sections of the channel to New Beach. On the way they may skirt along Barbel Channel with its huge riverine trees and Little Mana with 'albidas', Natal mahogany and sausage trees. These channels hold very little

water these days. The views at sunset from the banks of the massive river are stunning, with the hazy blue hills in Zambia as a backdrop. Hippos, crocodiles and waterbirds make use of the ever-changing sandbanks. Hungry elephants may be seen at the end of the dry season, swimming across to the reedbeds or maize crops in Zambia, a perilous overnight trip.

Downstream of Chirundu the broad river has tall riverine trees, a few fishing lodges and campsites. Schools visit the Chirundu Estates where sugar was grown decades ago and where crocodiles are now farmed. A nearby bream farm, which hosted Osprey and other water birds, was also visited before it closed.

Education is Key

Our education programme is the chief function of the Rifa Camp and programmes have been designed for A-level geography and biology students as well as for primary school groups. Pupils and their teachers, rangers, and parents have become aware of birds and other biodiversity in our wilderness area. Hunters and ZimParks rangers have provided protection from the plentiful wildlife for the thousands of school pupils who have passed through the camp over nearly 30 years. ZimParks has allocated an impala for each course, which is shot by a hunter, dissected by learners and the carcass laid out as food for a vulture-watch. The approval of the Ministry of Education for the Rifa Conservation Education Programme is much appreciated. In the remote rural areas around the Zambezi our efforts are also supported by the Zambezi Society, which has implemented a wilderness programme into schools.

Communities have lived side by side with birds and animals for centuries and the inclusion of local communities and rangers' children in our weekly camps is an important component of the wilderness conservation programmes. For the last few decades an American hunting group, SCI Chapters, has provided funding to enable ZimParks rangers' children to attend the week-long course.

Long-term records of plants and animals are an important output from Rifa Camp. These are shared with ZimParks officials for their planning and also result in research papers on geology, river processes, trees and animal groups. They also record the appearance of rare species, one example being the first sighting of a Brown Hyaena in the valley on 21 August 2013. Others include the Pangolin, Large Grey Mongoose, Cape Vulture and Spur-winged Lapwing.

People naturally find upliftment, healing and wellbeing by visiting wild places of outstanding natural beauty. As these wilderness areas are encroached on by activities of ever-growing human populations, these areas become rarer and more valuable. One category of ecosystem services provided by wilderness areas is termed 'cultural' and includes spiritual enlightenment, cognitive development, reflection, and recreation including ecotourism, scientific discovery and aesthetic experiences.

The Rifa programme has done much to conserve and increase the awareness of the wilderness and its attributes. At Rifa Camp, young children have an enjoyable hands-on experience of the natural environment, enabling them to play a meaningful role as future conservationists. Older students feel a sense of pride that places like Rifa, with a diverse array of wildlife, still exists in the country. We depend on them and their input for mankind's future on our small planet. Similar facilities should be established elsewhere to conserve biodiversity and the ecosystem services they provide.

Notes on localities mentioned in the text

Rifa Camp, built on the upper terrace of the ancient Zambezi, is 5 km upstream of the Chirundu border post. The Zambezi River is one kilometre away, hidden from view by the woodland trees of the former Nyangombe Island. A large Zambezi fig tree, together with other large riverine trees, shades the rustic buildings of the camp. Amenities include electricity, piped water, a small museum and a well-stocked library. Behind the school dormitories is a small grove of wild mango trees which, when in blossom, provide food for a variety of nectarivores. There is a boom gate on the road and near this is a series of well-vegetated gullies and thickets which are suitable habitat for waxbills and Terrestrial Brownbills. The electricity wires and pylons leading into camp provide perches and nest sites for a variety of species.

The Zambezi River near camp has steep banks of sediments which are eroding laterally. Big trees, mostly apple-ring acacias, collapse into the river as the bank erodes. Many islands, bars and sandy banks, mostly impermanent, are found along the river and where habitats are suitable the African Skimmer and the Black-crowned Night-heron can be found. Though the Middle Zambezi is famous for its large numbers of crocodiles, big pods of hippopotamuses, and large tigerfish, the river is not rich in bird life. This reflects its low productivity, a result of the low nutrient concentrations in Lake Kariba (Coche 1974).

Rocky outcrops occur in the Zambezi between C and B Camp (the limit of the study area) and here Rock Pratincoles breed if the rocks are exposed. Records have been compiled from further upstream at A Camp and Nyamuomba Corner (outside the study area) and some are included in these notes. The Sharu, Chirongo and Nyamuomba river deltas have similar assemblages of woody vegetation, birds and mammals.

One of the many sandy islands of the river, Bwarambwa Island, is about 500 m from the bank and 35 apple-ring acacias up to 6 m high have become established on this island within the duration of this study. Elephants wade and swim across to the island in the hot dry months to feed on these trees and the bulrushes, sedges and reeds on the shore line. It is not often visited during school trips and visits here in the future could be well worthwhile.

Nyangombe Island, over the flood channel opposite Rifa Camp, is now connected by the mostly dry former channel. Only during extremely heavy rain, or when the Kariba floodgates have been opened, does this become separated again. It is a frequent venue for bird walks and is well-surveyed. At the southern (upstream) end is Sunset Point which overlooks the old entrance to the flood channel and a large sandbank which is rapidly becoming vegetated. This area is a prime location for waders and Egyptian Geese which utilise the shallow mud banks and channels for roosting and feeding.

The 'golf course' is an open area of the channel covered with couch grass between the channel entrance and the Chipandaure. At present it is mainly free of adrenaline grass and shrubs but is likely to suffer from bush encroachment over time. Just downstream of Sunset Point is the Rifa Camp pump. A notable area on the island is the 'soccer pitch', a seasonally flooded depression that is currently being enlarged by the actions of hippopotami. When flooded, this supports a variety of waterbirds and even when dry forms a cleared area, surrounded by bushes, which is a good place for observing birds. Near the soccer pitch are some very large apple-ring acacias; the nest of an African Fish-eagle was found in one of

them. African Mourning Doves are occasionally found in these trees.

The deltas of the Chipandaure, Rifa, Sharu and Chirondo, small tributaries of the Zambezi, with their channel systems link with the main river to provide rich habitats for birds and wildlife such as antelope and their attendant predators, lion, leopard, spotted hyaena and wild dog. Game concentrates in these channels in the hot dry months.

Bird populations along the channels and river have been well studied. Tiger Point is 3 km upstream on the Zambezi and it is linked to the Rifa Camp by a channel, a shady section of which is the Barbel Channel. It has become quite deep in parts and often holds water throughout the year. It is thickly fringed with vegetation and large trees and is a favourite haunt of the Green-backed Heron. Its large riverine trees provide nesting sites for the Hamerkop, Goliath Heron and African Fish-eagle, and although Saddle-billed Stork frequents the area, its nest has yet to be found.

The seasonal Chipandaure River that has contributed to this channel system is half a kilometre south of the camp and its floodwaters enter this delta through sandy cliffs which reach up to 10 m in height. Southern Carmine and White-fronted Bee-eaters nest in these cliffs. There are about two kilometres of meanders on the Chipandaure where the banks are well clothed in huge riverine trees and thickets. This is a prime birding area where mixed foraging associations are found, often including small parties of Livingstone's Flycatcher, which lately seem to be declining here. Hooded Vulture and Red-billed Oxpecker are among the birds that nest in the riverine trees, while Grey-headed Parrots utilise this area for feeding and roosting. It is also suspected that the Western Banded Snake-eagle may breed here but its nest has not been found.

The dirt road that leads south from Chirundu through the camp and on to A Camp and Nyamuomba Corner follows the Zambezi River. Three kilometres from the camp is a 1.5-km long depression known as Long Pan, a part of the old river, i.e. before the Kariba dam was built. When it fills with rainwater during storms, fringing, floating and rooted aquatic vegetation develops with water lilies being the dominant species. This forms a rich habitat for birds such as plovers, sandpipers and Yellow-billed Storks, which feed in the mud and shallows as the water recedes. When filled to the edges, it provides breeding habitat for many species, notably Allen's Gallinule. By June only narrow troughs of water remain, trapping hundreds of African catfish and fishing for them are Marabou Stork, fish-eagle and occasionally the Bateleur. The dung from herds of buffalo, elephants, waterbuck and impala enriches this ecosystem. Travelling upstream some seven kilometres from the education camp one reaches one of the great floodplains on the Middle Zambezi formed by several rivers but dominated by the Rifa River. This delta stretches five and a half kilometres and ends at C Camp. Vulture Point is situated on the Zambezi on this alluvial plain and is shaded by Natal mahogany trees. A shallow gravel channel nearby where vultures and eagles formerly bathed is now deep and fast flowing and the birds now clean up in a bank pool instead.

During the steamy wet season (December to February) water lies in channels, depressions and grasslands, providing breeding grounds for myriads of flying insects. These are caught by many resident and migratory birds – flycatchers, bee-eaters, and large flocks of swallows and swifts. In two large patches within the QDS, conditions favour the development of dense impenetrable thickets known as *jesse*. It is thought that most of the large trees of this vegetation type

were destroyed by elephant. The *jesse* is the least studied of all the habitats so not much is known of its avifauna. This and the mopane woodlands have innumerable temporary pans, depressions and wet grasslands in the rainy season, and about 450 of these water bodies and marshes are marked on a map. In a good rainy season water lilies and snails flourish in these and birds such as Egyptian Goose, Comb Duck, African Pygmy-goose, African Openbill and White-faced Duck feed and some breed there. Where shrubs and trees overhang the water, as at Mopane Pan, pairs of Dwarf Bittern are suspected to breed at the start of the rains.

On the Rifa Safari section, bird records come from Nyati, Arunatius and Mopane Pans and in the Nyakasanga area from the Nyachuru Pans and also from Mhenza Pan just outside the quarter degree square. The last two pans are found in cathedral mopane stands that provide suitable nesting holes for Lilian's Lovebird and Arnot's Chat. The water from the pans enables trees not usually found in dry mopane woods, such as the African mangosteen, wild mango and stamperwood, to flourish on termite mounds and provide valuable fruits for birds and mammals.

The rough road from the education camp to Chirundu is bounded on the east by the Chirundu Hills and on the west by the Zambezi floodplain. A stream flows from Bream Pools, over the Hot Springs, across the sands and enters the main river at the Marsh where the grassy plains provide a habitat for Yellow Wagtails and African Pipits, and Kittlitz's Plover have been found.

The Bream Pools are filled by underground seepage from the Zambezi and provide good habitat for birds when the pools are not choked by alien weeds. The opening of the floodgates at Kariba Dam in 2000 brought water hyacinth, the most disastrous of alien water plants, into the pools. Since then the Bream Pools have become almost entirely choked with this plant but are still the occasional haunt of African Jacana, Black Crane, breeding Allen's Gallinule and Rufous-bellied Heron. The hyacinth mat is becoming invaded by torpedo grass and is now relatively devoid of birdlife.

The hill complex on which part of the Chirundu village is built (Chirundu Heights) has some thickets and riparian forest remaining on the steep banks facing the river which provide habitat for animals. Pied Crows are found on the new bridge across the Zambezi and on the Heights themselves, and their

numbers are likely to increase as food waste from humans increases. Collared Palm-thrushes and Lizard Buzzards have been found in the huge mopane trees in the grounds of the Chirundu Motel. House Sparrows, an alien but long-established species, occur among the dwellings on the Heights and during this study much attention has been paid to the arrival of the Northern Grey-headed Sparrow. A few kilometres downstream of the bridge are two fishing facilities, both shaded by fine riparian trees including Lowveld *Newtonia* and apple-ring acacias. Narina Trogons and African Mourning Doves occur here and just upstream Sombre Greenbuls habitually favour *Combretum* thickets on the river bank. Just inland from the high river cliffs are thickets with several grassy depressions which hold water where Double-banded Sandgrouse drink.

A fish farm adjoins these river camps and its artificial inlets and ponds provide permanent water and muddy habitat for many water-birds. The neighbouring Chirundu Estates was once a sugar plantation but is now a banana and crocodile farm and wildlife area. Different habitats include short grassland on the airstrip, regenerating old agricultural lands with weeds, scrub, and umbrella thorn with other emergent trees.

A number of mineral springs and pools occur on the main Makuti-Chirundu Road between the 346 and 348 km pegs where bird species have been recorded. Buffalo Springs is located on the east slopes of the Chirundu hills while nearby, but on the opposite side of the road, Kalisho Springs leads into a stream which eventually dries up. These mineral waters are set in dry mopane woodlands.

Inland from the gallery forest along the rivers the countryside is dry and the soil derived from Karoo sands is often bare. Where conditions are very harsh, as on alkaline soils, scrub mopane is the dominant woody vegetation. Elsewhere, this species is found in mixed woodland and sometimes in purer stands termed 'cathedral mopane' where the trees are much larger and with straight trunks. It is the commonest tree in this section of the valley. Dotted about are large specimens of baobab in which the Mosque Swallow is suspected to breed. An area cultivated decades ago, now called the Guti, has produced rich grass and was home to a sizeable eland herd but is now reverting to woodland. This area has produced records of species rarely found elsewhere in the study area such as the Crowned Lapwing.

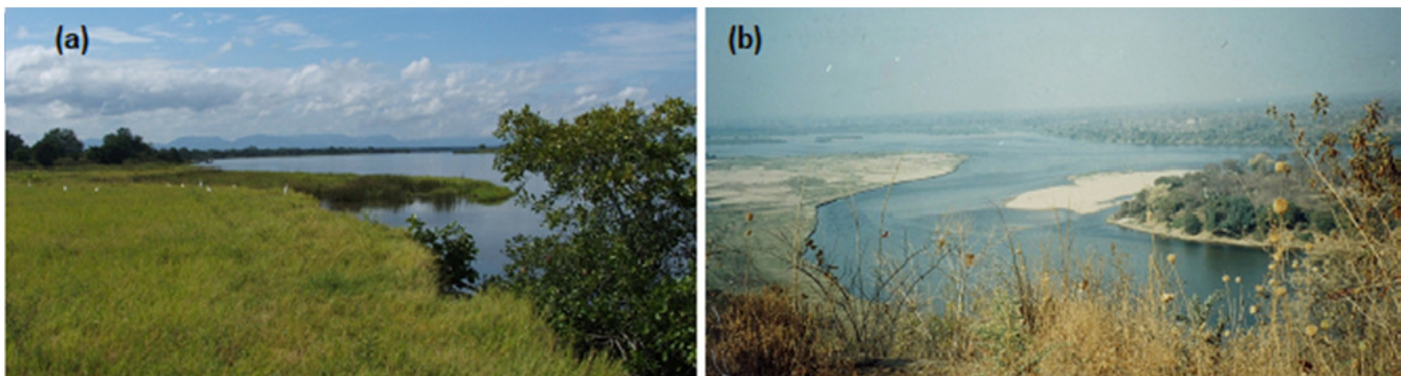


Figure 2. (a) The Zambezi River from the Marsh, looking south towards the Zambezi Escarpment. (b) Chirundu Marsh (left of photo) crisscrossed by channels in 1990. The foreground is part of the Chirundu residential area with mixed woodland and thickets. Photos: © Anne Cotton.

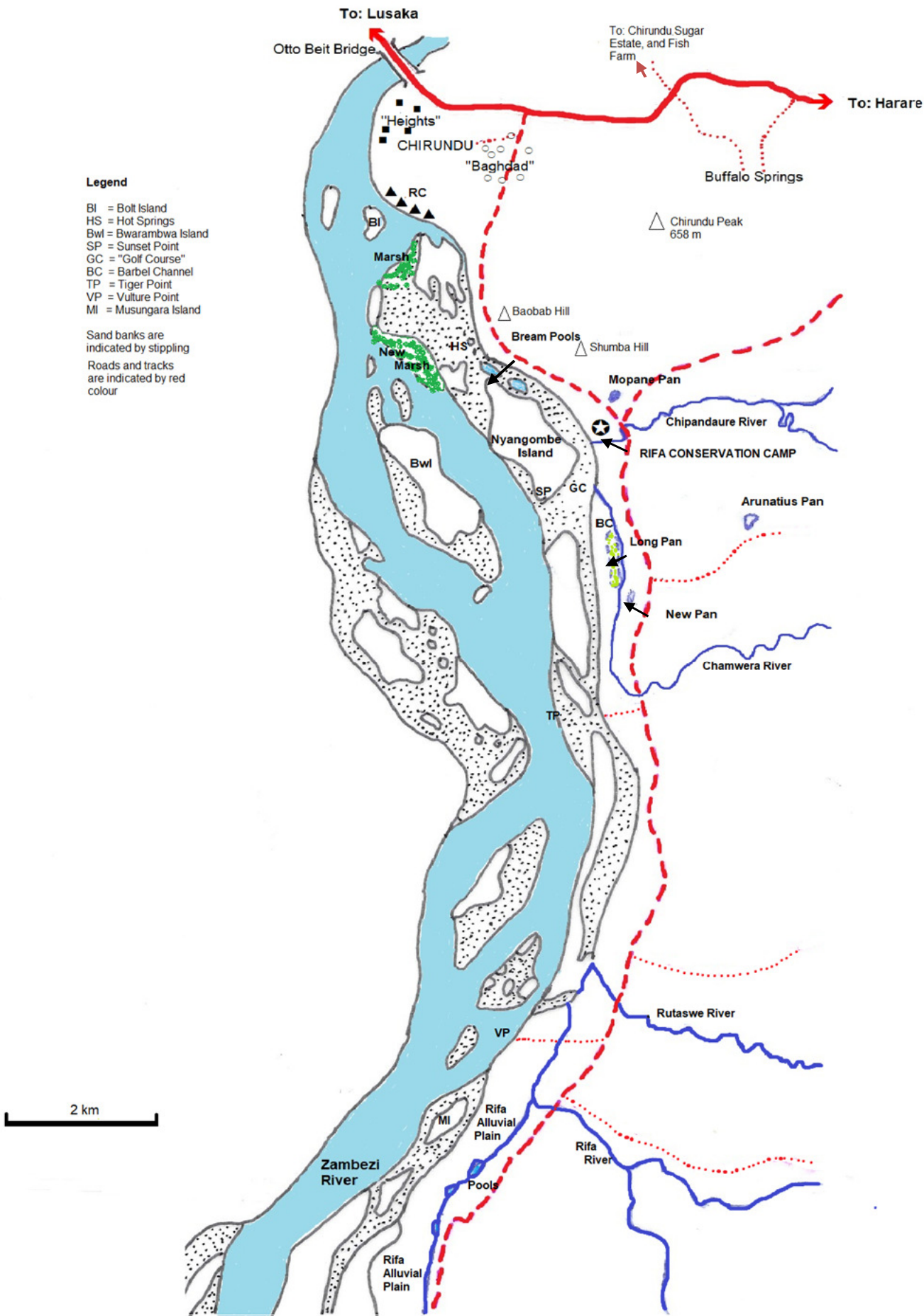


Figure 3. The location of the Rifa camp and some features mentioned in the text

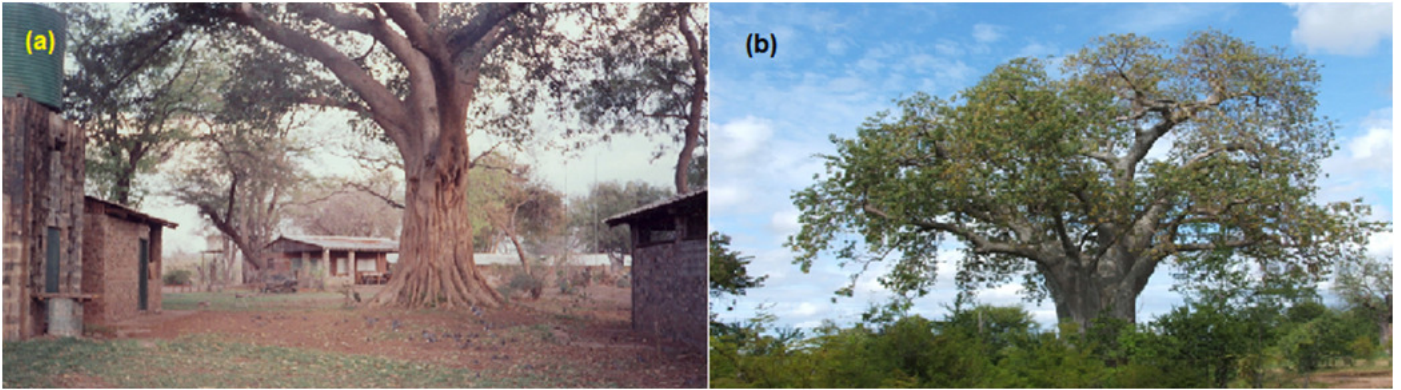


Figure 4. (a) There are many large emergent trees in the study area providing seasonal food or nesting or roosting sites for various species. The large Zambezi Fig *Ficus bussei* in Rifa Camp produces copious quantities of figs at certain times of the year providing abundant food for many species. (b) Baobabs occur throughout the woodland areas. Photos: © Anne Cotton.

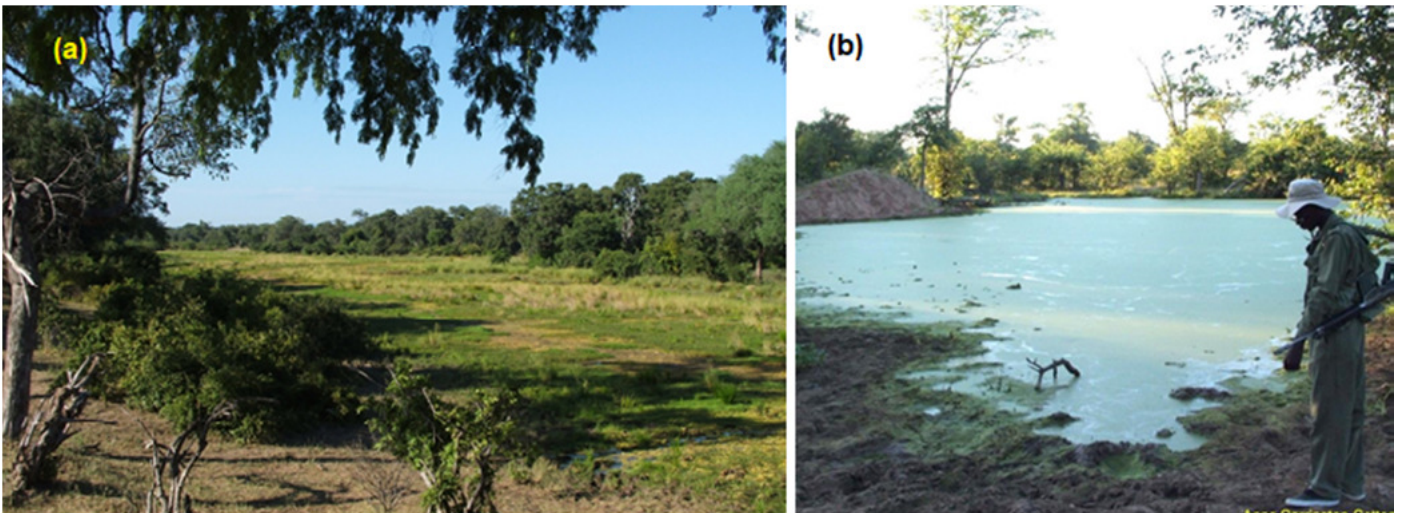


Figure 5. (a) Long Pan in June, still quite green as there is still some water present. (b) Mopane Pan near camp, one of the many ephemeral pans in the area. Because of the potential danger from wildlife we were accompanied by an armed guard at all times. Photos: © Anne Cotton.

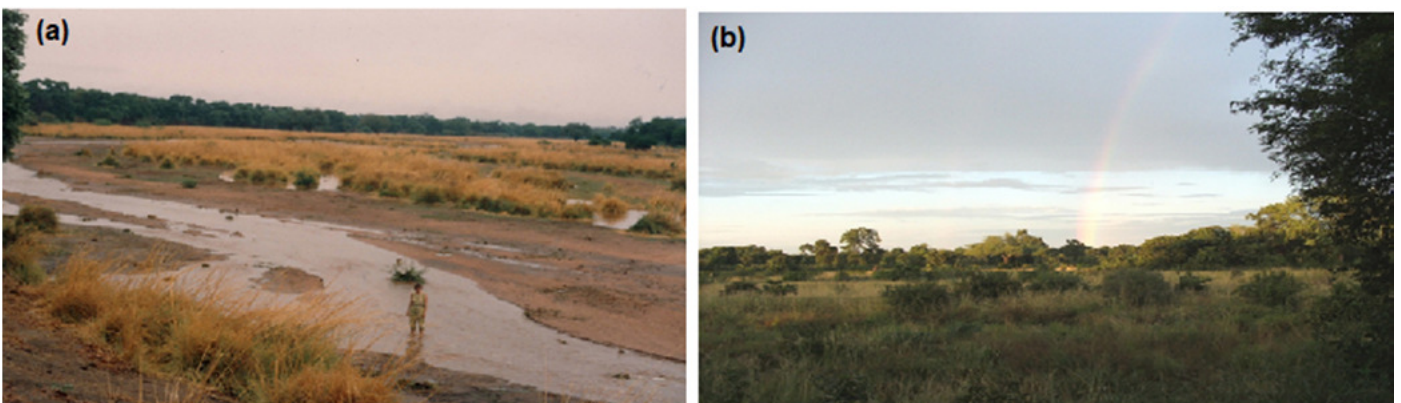


Figure 6. (a) Flooding of the stream in front of camp occurs once or twice a year; adrenalin grass lines the channels. Photo taken in 1989. (b) Several dry years have enabled trees and shrubs to establish on the floodplain. Photo taken in 2005 shows the changed vegetation. Photos: © Anne Cotton.

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but on the opposite side of the road, Kalisho Springs leads into a stream which eventually dries up. These mineral waters are set in dry mopane woodlands.

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commonest tree in this section of the valley. Dotted about are large specimens of baobab in which the Mosque Swallow is suspected to breed. An area cultivated decades ago, now called the Guti, has produced rich grass and was home to a sizeable eland herd but is now reverting to woodland. This area has produced records of species rarely found elsewhere in the study area such as the Crowned Lapwing.



Figure 7. The Chipandaure Cliff face from the road showing how the river has cut through layers of deposited sand (above). The cliffs provide nesting sites for bee-eaters and swifts. The larger hole in the upper left could provide a roost site for a Barn Owl and they have, indeed, been seen in such holes during the study (right). Photos: © Anne Cotton.



Figure 8. Mopane woodland in the dry season (above). This species is the only tree able to grow on the sodic soils seen in the photograph. This contrasts strongly with the lushness of the Chipandaure thickets not long after the rains (left). Photos: © Anne Cotton.

Annotated List of Birds

Family Podicipedidae (Grebes)

Little Grebe *Tachybaptus ruficollis*

Fairly common sporadic breeder and visitor, six were seen at Nyachuru Pan at the end of January 1994 and a pair was in the process of nest construction. Two juveniles at Long Pan at the beginning of April 1994. Five were seen at Nyachuru Pan in March 1995, and in December 1995 a pair was on a pan near the old Tsetse Control camp on the main road south from Chirundu. One was seen at Mhenza Pan (just outside this QDS) in early April 1996. It will breed when conditions are right. A chick was seen at the Nyachuru Pans on 22 March 2008 and there is a December breeding record from the Middle Zambezi (Cooper 1972). Generally regarded as scarce or absent in the Middle Zambezi (Irwin 1981).

Black-necked Grebe *Podiceps nigricollis*

A rare vagrant; two non-breeding birds were seen swimming across open water at Mhenza Pan on 15 March 2014 (AJW & BLZ). This is probably the first record from the Zambezi Valley.

Family Pelecanidae (Pelicans)

Great White Pelican *Pelecanus onocrotalus*

Uncommon or rare but possibly under reported. A flock of c.63 was seen over the Zambezi on 12 July 2015 landing on a sandbar opposite Rifa Camp (D. Pitman, S. Wynn-Pitman). Previously seen flying over in June 1996 but locality and numbers not given; it has also been seen at the Fish Farm but further details are lacking. Periodically occurs in the Zambezi Valley as in the dry season of 1992 (several observers) with numbers building up to 39 at Ruckomechi in July, and 50 by August at Nyamatusi Island, Mana Pools (Tree 1992a). Most Mana Pools records occur between May and August while Cooper (1972) reported a specimen from September and an observation from April.

Family Phalacrocoracidae (Cormorants)

White-breasted Cormorant *Phalacrocorax lucidus*

An uncommon visitor. One was seen perched on a stump in the main river opposite Sunset Point (March 1995). A large flock of c.60 individuals was seen about 6 km upstream of Chirundu, and two smaller flocks of about 30 birds each were recorded below Chirundu; one in the Hurungwe Safari Area and the other in the Mana Pools National Park. There are no breeding records. This species was formerly uncommon in the Zambezi Valley but it has increased on Lake Kariba and can be quite a wanderer and colonizer. The spread of records prior to the rains during the very hot weather may indicate movement from higher altitude areas where normal habitat has dried out. There is no indication of the age of the birds seen which could be significant in indicating post-breeding dispersal. Irwin (1981) considered it common on the Zambezi below Chirundu.

Reed Cormorant *Microcarbo africanus*

A common to scarce resident and visitor, usually seen in small numbers along the Zambezi River itself, on sandy spits, sunken trees or perched on trees along the banks. Occasionally reported on "inland" waters, e.g. Long Pan, Nyachuru Pan. The largest concentration recorded was of 50 at C Camp in April 1990 but numbers vary considerably, suggesting some irregular movements, e.g. in April 1993 it was very scarce but

in October 1994 it was very common. Its numbers probably depend on water levels elsewhere and only one was seen in March 2000 after the opening of Kariba floodgates. In March 2005 it was very common with many seen on the river and a big roost on a reed clump opposite Sunset Point. Probably about 250 were seen during the trip which was the largest number recorded on visits by ACC. Both cormorant species, and the African Darter, should be monitored as they may be threatened by declining fish stocks (excessive fishing on the Zambian side) and possible entanglement in nets. There are no breeding records although Cooper (1972) reported breeding records from June.

Family Anhingidae (Darters)

African Darter *Anhinga rufa*

An uncommon resident or visitor found along the Zambezi River but very rarely inland. Like the previous species its numbers fluctuate, both throughout the year and in relation to water levels. For example, during a period of over a year from April 1993 it was thought to be declining as it was seldom recorded along this stretch of the river but by October 1994 it was more abundant and several small groups were seen, with 10 being seen in March 2004 (LM, JS, DW). Smith (1950) thought it was common in 1940 but many changes have taken place on the Zambezi since then. Fish stocks may have been affected by the upsurge of sport and net fishing which began in 1980, particularly on the Zambian bank, and also by changed river flow patterns have following the construction of the Kariba. As with the next species some regular monitoring of numbers and breeding colonies (if any) is needed, and also the extent of net entanglement. There is no evidence of breeding during this study but Cooper (1972) reported breeding in April and May.

Family Ardeidae (Hérons)

Grey Heron *Ardea cinerea*

Common resident, but may disperse during rains. It feeds in shallow waters off sandbars, and in channels and pans in mopane woodlands close to the main river. Normally seen singly, but in the company of other waterbirds, but three were seen at Long Pan at shrinking channels in June 2002 (JS, DW). Benson *et al.* (1971) doubted that it bred anywhere in the Middle Zambezi prior to the formation of Lake Kariba but dependent fledglings were seen in the Ruckomechi area in April/May 1989 and breeding recorded there in January 1992 (IR).

Black-headed Heron *Ardea melanocephala*

Uncommon visitor, possibly a rainy season migrant to the Luangwa Valley, Zambia (Hancock & Elliott 1978), but records from other parts of the Zambezi downstream are mostly from the dry season and no fixed pattern is discernible as yet (AJT). Records from Rifa suggest a wet season bias, although this may reflect observer coverage. Although mostly associated with grasslands it is sometimes seen at the edges of inland waters and the more degraded habitat on the Zambian side of the river is probably more attractive to this species. Most records are from the C Camp area; one in April 1990, nine loafing on a sandbank near a dense reedbed in January 1995 and another 13 in March 1995. In March 2005 one was seen at Mhenza Pan, just outside this QDS.

Goliath Heron *Ardea goliath*

Fairly common breeding resident; solitary birds are often seen at sandy spits and rocky bars at C Camp, Vulture Point, Hot Springs and the Marsh. It can also be seen at flooded inland localities such as Long Pan and Nyachuru Pan. Breeding records includes a nest in a small tree amongst reeds on Bwarambwa Island in January 1993. Two dependent fledglings were seen with adults at Long Pan (April 1994) and two nests were found in apple-ring acacia trees at Barbel Channel near Long Pan (March/April 1996), each with a chick about 1-2 months old. There were also active nests in the same area in December 1995 and 1996 while an adult and immature (4-5 months) were feeding at Long Pan (May 1996). A nest was being built in November 1997 and an active nest was at Long Pan in June 2001 (BP, AC). Two pairs were breeding at Little Mana/Barbel Channel in large trees in November 2012 and their activity appeared to indicate feeding of chicks (EB, DW).

Purple Heron *Ardea purpurea*

Uncommon breeding resident. Most records are from Chirundu Marsh where most of the suitable habitat (dense reeds and sedges) occurs but one was seen at the New Marsh (December 1995) and on Bream Pools in June 2014 (IR). There are additional records from field cards in January, May and October. A breeding colony of eight nests each, containing 2-3 eggs, was found in a reedbed on Bwarambwa Island in January 1993 (DP). It was reported to be fairly common on reedy islands and sulphur and other pools in 1940 (Smith 1950) and it undoubtedly occurs in the extensive bulrush beds on the Zambian shore and on Nyangombe Island. It is probably under-recorded because of its habitat preference and secretive habits.

Black Heron *Egretta ardesiaca*

A sparse intra-African migrant fairly widespread along this section of the Zambezi in pools and pans. Sightings include nine near B Camp (March 1989; IR), three were seen in the marsh in the narrow channel at C Camp (April 1990) and at the hot springs one was seen "umbrella" fishing at the Hot Springs in May 1990 and in April 1991 a single individual was seen on two consecutive days amongst the aquatic vegetation there. It persisted with its "umbrella" fishing technique even in the poor light of evening. After good rains, three were seen at the New Marsh in December 1993 and one or two generally seen on visits to Vulture Point (December 1993, January 1994).

Other records include one at the Marsh and New Marsh (seen on several occasions) in December 1995 and another fishing along with 4 other egret species about 1 km below C Camp in November 1997. When Kariba floodgates were opened in March 2000 several were seen feeding in the flooded channels in front of Rifa Camp (GL). One was at the Marsh in September 2002 (IR), two were recorded in March 2004 (LM, JS, DW) and it was quite common in March 2005 with several seen at Bream Pools, Sunset Point, the Marsh and Hot Springs (ACC, LM, GLR). A single bird was near the Marsh in March 2008 (IR). Sightings were too few to allow any seasonal pattern to be discerned, apart from the fact that no birds were recorded in June, July or August, which is consistent with the view that in Zimbabwe they are most frequent from December to February with most birds arriving in October and small numbers staying until April (AJT). Zimbabwean birds are likely to come from Zambian breeding colonies from whence there is one ringing recovery (Irwin 1981) but they may come from even further afield (Tree 1997a).

Great Egret *Egretta alba*

A fairly common resident; single birds are often seen along the river's edge at C Camp, Vulture Point and Chirundu Marsh. It is also found along the floodplain in pans and channels and at the Bream Pools and Hot Springs. In Chirundu Marsh several birds may be seen on occasion but feeding separately. Two were seen in Nov/Dec 1997 (OAZ/PJM) and on a BLZ trip in late Sep 2001, 20 were seen at scattered locations throughout the trip. Sightings of this species have been increasing since 1992. In March 2005 several singles were seen during the trip at Sunset Point, the Marsh and Long Pan (ACC, LM, GLR). No breeding has been observed in this area and it is likely that our birds come from Zambia where it is quite a common breeder (Tree 1997a). A black-billed (breeding?) bird was noted at Nyachuru Pan on 19 January 2009 (IR).

Yellow-billed Egret *Egretta intermedia*

An uncommon non-breeding visitor. Two were seen at Chirundu Marsh (August 1990 and September 1991) while in March 1991 one was seen to catch a small African catfish at Long Pan. Two were seen feeding in flooded grassland in the channels at Vulture Point (January 1994) and two were seen feeding similar habitat at the Bream Pools (October 1994 and January 1995; OAZ). It was seen with four other egret species, thus relatively easy to identify, on a grassy ledge near the Zambezi about 1 km below C Camp in November 1997. Single birds were seen in November/December 1997 (BLZ/PJM, no locality) and at Nyachuru Pan (January 2009), while seven were in a backwater upstream of Sunset Point (June 2014; IR). In 1940 it was reported to be very uncommon with only one record from December (Smith 1950). These sporadic records reflect the lack of suitable habitat available, but it may also have been overlooked or confused with the Great Egret; the two species can be very similar in non-breeding plumage.

Little Egret *Egretta garzetta*

Fairly common and present throughout the year, usually singly on sandy bars, banks and shallow waters along the Zambezi, and also at pans, pools and channels along the floodplain when inundated. Sometimes seen flying along the floodplain in front of camp, particularly during the rainy season. There is no evidence of breeding and the birds seen are almost invariably in non-breeding plumage.

Cattle Egret *Bubulcus ibis*

A common to abundant non-breeding resident or visitor, but far more common during and just after the rains. It feeds in grassland and sandy, marshy habitats in small parties often in association with large grazing mammals such as buffalo, hippopotamus and waterbuck, as well as cattle on the Zambian side. It congregates in large numbers along the Zambezi at night to roost; large parties may loaf on sandbanks for a day or so. Very large parties have been seen on several occasions, as follows: February 1997, 1000 on a sandbank near C camp; April 1990, 1000 on the Zambian side opposite C camp and again on rocky bars; April 1993, 2000 birds on exposed rocks and sandbars at C Camp; February 1999, 600 were seen (IH, LM), April 2011, about 1000 roosted in reedbeds upstream of Sunset Point (BLZ/LM).

In mid-November 1993, before the rains and in very hot weather, a herd of 88 Cape buffalo spent 36 hours on Nyangombe Island in front of Rifa Camp and many Cattle Egrets were in attendance, foraging for insects. After good rains they are the most common heron with parties of 30+

being seen throughout, mostly in riverine habitats. In October 1994 it was present in small numbers and any appreciable flocks were attendant on cattle on the Zambian side of the river although small flocks were seen on the Zimbabwe side in association with hippo and waterbuck. Only one was seen (with some waterbuck) on a visit in June 2001. In March 2005 many were seen during the trip in several localities from small parties flying around along the floodplain, loafers on a sandbank at Reed's Cottages and small parties feeding on grassland near Hot Springs and the Marsh. Many were seen sharing the Reed Cormorants roost opposite Sunset Point.

In April 1991 one was seen in breeding plumage at Long Pan in April 1991 but so far there are no breeding records from this QDS. The nearest breeding colonies are probably on the Kafue Flats in Zambia (Benson & White 1957) or on the Zimbabwean central plateau.

Squacco Heron *Ardeola ralloides*

A fairly common non-breeding resident and visitor present throughout the year although more numerous towards the rainy season. Usually seen in small numbers (up to 3 or 4) where suitable habitat exists as at Chirundu Marsh and New Marsh and at Vulture Point in the sedges and grasses lining the channels. It is also seen frequently in the grassland in front of Rifa Camp when it is flooded and several were seen there in January 1994; some of these were in rich buff breeding plumage as was one regularly seen at Tiger Point in December the same year. In March 2005 it was exceptionally common with many seen at Long Pan, Sunset Point, the Marsh and Hot Springs. Lowest numbers normally occur in July though this may vary between years and many of the birds seen during the midsummer months may be non-breeders from further north in Africa. The summer influx is bolstered by Palearctic birds and it is possible that two populations may exist in southern Africa (Tree 1997a; Maclean 1984).

Rufous-bellied Heron *Ardeola rufiventris*

A localised but fairly common resident; usually skulks in thick emergent and waterside vegetation and often only seen in flight when it is flushed or is moving from one patch of suitable habitat to the next. It is found regularly at the Bream Pools, Hot Springs and Chirundu Marsh and also in temporary pools and channels in the floodplain. When disturbed it flies off, often only a short distance, to alight again in dense vegetation or riverside trees where it perches well inside the canopy. In March 2005 it was also recorded at Long Pan and in October 2009 at a spring in mopane woodland north of Kalisho, in addition to its usual haunts. It was reported to breed at Mana Pools (Irwin 1981), and there are breeding records from the Middle Zambezi in February (Cooper 1972)

Green-backed Heron *Butorides striata*

A common resident, found at all suitable riverine sites at Chirundu Marsh and New Marsh and at the base of Chirundu Hill. It occurs in similar habitat as the following species but will also occupy more open ones, such as under overhanging trees along the riverbank and, particularly in the evening, on stranded trees and vegetation clumps in the river. It is often flushed out of large trees on the floodplain and in the riverine forest. During the rainy season it is also seen in inundated grassland and pools in front of camp. In December 1994 singles were seen at the New Marsh and at Tiger Point, the latter with pronounced plume development. There are records from February 1999 when six were seen at scattered localities

(IR) and also singles in June and July of the same year (BP). It has also been recorded from the Bream Pools in June 2001 (BP, ACC). It was very common in March 2005 when it was seen at most of its usual haunts but was also seen at Reed's Cottages, Long Pan and Barbel Channel (ACC, LM, GLR). Cooper (1972) reported breeding records from the Middle Zambezi for August and September.

Black-crowned Night-heron *Nycticorax nycticorax*

A rare visitor, but possibly overlooked owing to its nocturnal habits and the fact that it occurs in areas rarely surveyed. Seven birds, including one dependent fledgling, were flushed from a smallish Natal mahogany on the edge of Bolt Island on 18 December 1995. They flew to a sandbar in the Zambezi River. There is a record from the field card extraction data from October 1994. The presence of a 'dependent' fledgling suggests that it bred in the area but it may have just been a young bird accompanying adults as they only attain adult plumage at 2-3 years (Cramp & Simmons 1977). This species is more often seen from the river itself from a boat, a rare activity at the camp. Its preferred habitat in the Middle Zambezi appears to be leafy Natal mahogany trees overhanging the water; 26 were in such habitat on an island near Vundu Camp in March 1989 and c.11 upstream of Ruckomechi Camp in November 1996, and it uses these trees downstream on Chikwenya Island (IR).

White-backed Night-heron *Gorsachius leuconotos*

Once seen on an island opposite Kockott's Camp in 1995 (DWI) and again at the Marsh in June 1996 (L. Aitken). An inconspicuous species, very difficult to detect, being generally crepuscular, nocturnal and solitary. It probably occurs more widely in this QDS in thick fringing riverine vegetation and might be observed more frequently from boat surveys. Cooper (1972) reported it only below the Kariba Gorge with breeding records from August and December and nests in rocks in the gorge and in thick vegetation overhanging the river at Chikwenya Island (IR).

Little Bittern *Ixobrychus minutus*

An uncommon and localised species found in thick reedbeds along sections of the Zambezi. The amount of habitat available to this species varies greatly from year to year but its stronghold is in Chirundu Marsh. There is a sight record of the African race *pavesii* from there in November 1995 and a record from there in August 1989 must also refer to this race. Two females were flushed from the Marsh in late December 1995 and a pair of the race *pavesii* was also in the Marsh on 4 September 1992 (Tree 1993a). One was recorded (no location) in Nov/Dec 1997 (OAZ/PJM) and in the Marsh in September 2004 (BLZ). Only the African race *pavesii* has been recorded so far in the same locality in which it may be resident although Irwin (1981) thought it mainly a rains migrant, but with records in all months. The Palearctic nominate race, *minutus* should also occur but has not yet been recorded. Cooper (1972) reported it as only a vagrant to the Middle Zambezi.

Dwarf Bittern *Ixobrychus sturmii*

A common but localised intra-African migrant associated with pans that have flooded into peripheral shrubby vegetation, and consequently only present during and just after the rains. Most mopane pans with sufficient water and overhanging vegetation are likely to harbour a pair of these birds. One such suitable pan is Mopane Pan, in the mopane woodland behind

Rifa Camp where this species is regularly seen (records from April 1993, April/May 1994, February and December 1995, Dec 1997 (2, BLZ), April 2000, March 2005 (2)). In 1988 good rains occurred and flooded pools in front of camp where one occurred from 8-28 April, being seen every day and again in early May 1989. In early February 1995 two (a probable pair) were seen in suitable nesting habitat at New Pan. On 14 December 1995 a single bird was seen perched on top of a bush at Mopane Pan which was dry as if waiting for the rains – it rained the following day. In March 2005 it was reported from Barbel Channel – a new locality (ACC, LM, GLR). An adult was seen calling from atop the fringing vegetation of Mopane Pan on 24 March 2008 and two chicks were heard soliciting for food from within a spiny white-leaved bushwillow bush overhanging the water. When the adult landed on the bush a downy chick quickly clambered along the branches and emerged on the outside of the bush where it was fed and then returned into the bush. The nest was not seen but the chicks were sparsely feathered ‘branchers’ (GL).

Family Scopidae (Hamerkop)

Hamerkop *Scopus umbretta*

A common breeding resident usually seen singly along shallows of the Zambezi, at pans and flooded pools and channels in mopane woodland, and alluvial floodplains. A nest (first seen in 1989) has been built in a tree in alluvial woodland between the road and river \pm 500m north of Long Pan. Two nests have been found at Barbel Channel 500m upstream from the main river and one had been occupied by Barn Owls in July 1994. By February 1996 a third nest was being constructed at Barbel Channel; all were in Natal mahogany and rain trees and by November 1997 the newest nest may have been in use. However, by August 2004 all the nests had vanished for unknown reasons (LM, GL). In June 2001 an old nest was seen at Arunatius Pan (BP, AC). By March 2005 there was a new nest at Long Pan but the occupants were not seen at it but two birds were seen flying over Nyangombe Island on the same trip. In March 2008 a fledgling was seen by GL near Barbel Channel/old sugar cane trial block.

Family Ciconiidae (Storks)

Yellow-billed Stork *Mycteria ibis*

An uncommon to common non-breeding visitor with records throughout the year, but in far greater numbers in hot weather and after good rains, as in 1987/88. In April 1988, when channel pools were shrinking and concentrating fish and perhaps frogs, a party of 23 birds was seen regularly. These fished by day and roosted by night in the riverine trees nearby. During the same period another flock fished in the channel pool below Chirundu near the Tree House. Since 1989 it has been seen in small numbers in Chirundu Marsh and at suitable pans and pools in the floodplain. In July 1993 an immature was seen at the Marsh and in March 1994 when a pool adjacent to the Hippo Plot became smaller a group of seven birds including at least two juveniles fed for about 4 days. At Long Pan from March to May 1994 14 birds, both adults and subadults, were found feeding in the fast-receding shallows and on 20 July 2000 *c.*50 were feeding on aquatic invertebrates and fish. On 23 March 2008 *c.*14 were flying behind the pan (IR). Winter records include 12 (six adults and six subadults) at the Fish Farm in May 1994 and in June 1994 eight were in a tree next to the Fish Farm inlet and 17 were seen later in the same month about 1 km downstream from Vulture Point. About 50 were feeding at Long Pan in July 2000 (BP) and the largest

flock seen so far was of *c.*80 at Sunset Point on 12 June 2013 (EB, DWI).

A juvenile was seen at the New Marsh in the middle of December 1994 and 4 immatures were seen in September 2001 (BLZ). Two were at the Marsh in September 2002 (IR). In April 2000 a flock of *c.* 22 was seen at the Marsh feeding in the devastated margins following the March opening of the floodgates at Kariba, which scoured most of the vegetation from the Marsh and deposited a considerable mud layer (ACC, LM). One was seen at Vulture Point and another on Nyangombe Island (possibly the same bird) in June 2001 (BP, ACC). Other sightings include 6 in June 2002 (GL, LM), another 6 in March 2004 (LM, DW, JS) and 13 in August the same year (LM, GL). On 11 September 2004 *c.*8+ were seen to roost at a mopane pan east of the main tar road (IR). The January record is from the field card extraction data. Considerable local movement seems to be involved with the fluctuations in numbers, possibly post-breeding dispersal as it is not a breeding bird in this area. It may have increased in numbers here as Smith (1950) reported only seeing one (late October) between late July and mid-December 1940.

African Openbill *Anastomus lamelligerus*

Fairly common and recorded throughout the year, but numbers fluctuate with the conditions, especially the availability of drying pans, which provide plentiful food. A few birds are often seen at the Hot Springs and other sulphur springs such as Kalisho, similar to their distribution in 1940 (Smith 1950). He also found ‘a pair by a waterhole in the forest’ and they were also found on temporary pans in the mopane woodlands, e.g. Nyachuru Pan and a small pan nearby in April 1993 where at least 50 were found feeding on snails. Some of these birds were immatures with little or no gap between the mandibles and the bill still straight. This species was scarce during the 1994/95 rainy season probably because of the poor rainfall. It is often recorded in singles and small parties at Chirundu Marsh. Nyachuru Pan seems a fairly popular haunt with a further record from there of 5 in March 1996 and 6 there in July 2000 (BP).

Long Pan is also popular with 2 there in June 2001 (BP, ACC) and another 2 in June the following year (LM, GL) and 5 in August 2004 (LM, GL). One was seen at Barbel Channel in April 2000. One was at an inland pan in September 2001 and another single at the Marsh in September 2002 (IR). A total of 13 were seen at several alluvial pans and the Zambezi on a trip in March 2004 (LM, JS, DW). One was at Mhenza Pan (outside this QDS) in August 2004 and at the same location in March 2005 when two were present. It is not often reported from the main river but in June 2005 LM saw several at Sunset Point feeding on mussels, which are the more likely prey in the main river, with snails confined to temporary waters. Above the water pump a group of *c.*120 were seen in 24 March 2008, 20 at Mhenza Pan and 36 at Nyachuru Pan on 19 January 2009 (IR). 30 flew over Rifa in August 2012. 125 (counted) roosted on Bwarambwa Island on the evening of 13 June 2014 (IR). There is a field card record from July 1994.

Black Stork *Ciconia nigra*

An uncommon visitor seen only sporadically; its status is uncertain owing to the paucity of records. One was recorded in a flooded gravel pit at the 342 km peg on the Makuti-Chirundu road on 9 January 1992 (IR) and it was recorded in September 1998 (OAZ) but without further details. Three of them (2 adults, 1 juvenile) were seen flying over the Zambezi near the

pump (edge of Nyangombe Island) in April 2000 and on the following day an adult and a juvenile were seen at Long Pan and a juvenile was flushed from below the Chipandaure cliffs the next day. These records were probably the same individuals. It has also been recorded in December (GL) and individuals have been seen very close to this QDS along the main road south in October 1994 (AC). There is a record of one at Nyamuomba in 1986 (PJM) and two were seen flying in a thermal close to A Camp (Nyamuomba Corner) in April 1990. Although a juvenile was present breeding in April 2000 it is a cliff-nester and there are no suitable sites in the QDS.

Abdim's Stork *Ciconia abdimii*

An uncommon non-breeding intra-African passage migrant, mostly overlooked as they cross the Zambezi Valley high in the sky in thermals. Two were seen in the air near Chirundu (April 1988), about 50 at C Camp on 20 April 1990, 200 on 31 March 1991, 30 on 26 April 1993 and 27 on an exposed sandbar in the river on 29 April 1993. A flock of *c.*100 birds on southward passage was seen above the Hot Springs in November 1995, while *c.*50 flew in from the NW and landed at Tiger Point (2 November 1996) most probably on arrival from the north, and six were seen in Nov/Dec 1997 (OAZ/PJM). There is an August record, which while not impossible, must be highly improbable although the possibility of an injured bird overwintering in this region cannot be discounted, as there is a similar record from Mvurwi on 1 September 1992 (GL) (Tree 1993a). A migrating flock of *c.*300 stopped over at Ruckomechi on 5 May 1995 (TW), this also being the departure date for 1992 (IR). An exceptionally large flock of 4500-5000 birds was seen on a sand bank at Chirundu on 26 March 1998, probably on northward passage (Lister 1998). They had all departed by the next day.

Woolly-necked Stork *Ciconia episcopus*

An uncommon to common non-breeding visitor, recorded in all months except August and September. This would appear to be a genuine absence as there are many visits during these months. Juvenile Saddle-billed Storks can be misidentified as this species, so unsupported records in the dry season should be treated with caution (IR). When the pools and drainage channels had water in them in April 1988 and 1989 these birds were seen almost daily and in 1988, they were together with Yellow-billed and Marabou Storks when a maximum of 33 were counted. One of the largest flocks reported was one of 70 at C Camp in late March 1991 (AJT, IH, AH). After the floodplain below camp dried out completely, solitary birds were seen in March and April 1990 and 1991 and also in March 1994 when they associated in pairs and singles. Pairs were also seen in the same location in late January 1994. Other records include 4 together at a pool on 26 April 1993, 7 in a thermal at C Camp on 29 April 1993 and 5, also in a thermal at old B Camp on the same day. About 70 were seen at C Camp on the fringes of the Zambezi in March 1994 and about 8 flew over Rifa Camp in December 1994.

It was widespread in small numbers in December 1995 (GL) and one was seen between C Camp and Chirundu between 13 and 18 April 1996 (DR), while 13 were seen circling overhead between Vulture Point and C Camp in November 1997 (BLZ/PJM). There was a flock of < 30 feeding on recently flooded grassland near the Rifa pump on Nyangombe Island in April 2000 and they (or a similar sized flock) were also on the grasslands near the Marsh a day or so later. The river had flooded extensively following the opening

of the Kariba floodgates in March that year and large areas had been covered by water, which had receded by April. A group of 10 were seen in March 2004 (LM, JS, DW). In March 2005 singles were mostly seen in flight but a group of three was seen together (ACC, LM, GLR). Four were on the floodplain above the camp on 21 March 2008 and one at Nyachuru Pan on 19 January 2009 (IR). The October records come from field cards.

White Stork *Ciconia ciconia*

A fairly common non-breeding Palaearctic migrant, mostly recorded on northward passage, apart from one October record (1993; field card). Very good numbers passed through the valley in 1989. On 28 March *c.*400 stopped off at Ruckomechi with *c.*1000 at Nyamepi on 2 April, 800-1000 rested on sandbanks near Mcheni on 13 April followed by *c.*236 at Ruckomechi on 5 May and another *c.*300 flying over the next day. What with smaller groups passing through, there were in excess of 3000 birds on northward passage (IR). On 27 April 1989 about 500 birds were seen to alight on trees on an island in the Zambezi above C Camp in the afternoon, and about 200 seen flying north in March 1991 about 4 km downstream from A Camp (Tree 1991a). Eight were seen flying over camp on 16 April 1990, and some 4500-5000 birds were on a sandbank at Chirundu on 26 March 1998 (Lister 1998). Four were seen circling over the floodplain near Long Pan in mid-March 1995 and a large group of about 250 were seen circling above Chirundu Hills on 20 March 2004. In March the following year large concentrations were reported with a huge flock seen in the distance from the top of the Chipandaure Cliffs (probably over the main river near Chirundu). They were circling in a thermal at about 0900 one morning and the flock was estimated to consist of about 250 birds. Its IUCN classification has been raised from 'near endangered' in 1988 to 'least concern' as a result of conservation measures in Europe.

Saddle-billed Stork *Ephippiorhynchus senegalensis*

A fairly common breeding resident, widespread and territorial. It forages singly, in pairs or in family parties but an exceptional record at Mana (17 October 1990) was of 15 of them at a drying pool 20 m long by 7 m wide and *c.*30 cm deep covered in weed. There were also 10-12 Great Egrets at the pool and both species were taking advantage of stranded fish. There appears to be a loose association between these two species and it has been noted that an overflying stork will often land close to a feeding Great Egret (Rockingham-Gill 1991). It breeds in the area although no nests have been found. In May 1991 a 'woolly-necked' juvenile was sighted (OAZ) and in June/July 1993 three juveniles (later only two) were seen at Long Pan and flying over camp with two adults and in August 1989 a party of five (three juveniles) was seen feeding near camp on the floodplain. In April 1988 after good rain a party of four (two juveniles) fed in the flooded drainage channels below camp. The pair in the vicinity of Rifa Camp was seen in December 1994 and September 1997. Only one was seen in the area in November 1997.

Two subadults were working the marshy pool near the Hippo Plot below Rifa Camp in February 1995 (AC). Three (2 juveniles) were at Long Pan in August 2004 (LM, JS, DW). These records probably refer to the same pair and their offspring over successive years as territories in this species are large and the adults long-lived and site-faithful (Elliott 1992).



Figure 9. Saddle-billed and Yellow-billed Storks; two fish-eaters regularly seen at Rifa. Photo: © Brian Marshall.

Two independent juveniles were seen in October 1994 at Vulture Point and 2 adults in September 2004. It has also been recorded singly and in pairs at Bream Pools, Chirundu Marsh, C Camp inlet (one in November 1997), Kalisho Spring (two in February 1997, an adult female in September 2001 and a pair in March 2005), Nyachuru Pan, and at suitable shallows along the Zambezi. For example, a pair is resident at the Sharu River, which is just outside this QDS. They are often seen standing still or walking slowly through the shallows and jabbing the water, occasionally bringing up a fish or frog (ACC, AJT). A female adult was feeding near one of the eyes of Buffalo Springs on 14 Nov 2012 (LM, NH).

Marabou Stork *Leptoptilos crumenifer*

A fairly common non-breeding resident and visitor recorded quite commonly and throughout the year, although whether the same birds are involved is doubtful as this species with its phenomenal powers of flight must wander considerably. Seen most often in this QDS as a scavenger as hunting activities provide carcasses for it, although fishing at “barbel parties” in shrinking pans and channels where it has been seen to take barbel (African catfish) weighing about 1 kg. In early September 1996, 17 (including 3 immatures) were seen fishing in a shrinking pool on the Rifa River floodplain where a few hundred catfish were trapped. In early November 1996 it was seen walking up and down the “wallow” in front of Rifa Camp in slow fashion with bill open, thrashing the water in a sideways action, no doubt after fish. In June 2011 over 100 appeared to feed on stranded fingerlings near Hot Spring after the Kariba floodgates were closed (JO).

It also walks over dry grassland in front of camp during the very hot October/November period picking up insects and possibly reptiles. The largest flocks seen have been about 50 at the Hot Springs in April 1990 and another 50 at Long Pan in July 2000 (BP), and in April 2000 three flocks consisting of 21, 32 and 9 birds respectively flew over Rifa Camp at considerable altitude one morning. [April 1990 also produced 210 at the Sharu confluence, just outside this QDS, the flock comprising immature birds]. On several occasions Marabou Storks have also appeared with the vultures at the carcasses of animals put out in front of camp. They stand at the outskirts of the feast pecking at scraps, sometimes dashing in and grabbing a piece of meat or robbing a vulture of a morsel. This activity can lead to fights and they have often been seen sparring with White-backed Vultures. On 14 August 2012 birds were eating impala intestines and 50 and 64 were counted there in September and October 2012 respectively. An immature bird

was seen at the vulture restaurant in June 2001 (BP, AC) and it has bred just outside this QDS in Zambia on a baobab in riparian forest on the Mutulunganga River (DA).

Family Threskiornithidae (Ibises, Spoonbills)

African Sacred Ibis *Threskiornis aethiopicus*

A usually uncommon but occasionally common visitor, recorded in all months except December and January (possibly because of a lack of observers). The only February record occurred during a year of exceptional drought and there has been only one record from March. The few records prior to 2000 include an immature near Rifa Camp in April 1988 and a few adults seen in April and August 1990 at the Marsh, Long Pan and at C Camp inlet. In April and May 1994, 3-6 birds were seen in the shrinking Long Pan and on temporary sand and gravel spits on the Zambezi. A few were also seen around the Fish Farm inlet during the same period. Three were seen upstream of Vulture Point roosting on a sandbar at the end of February 1995. However, in April 2000 small to large parties were seen at the Marsh after it flooded after the Kariba floodgates were opened in March and also on grassland in company with Woolly-necked Storks near the pump on Nyangombe Island, which had also been covered by the rising water. One was seen in March 2005 in flight near Rifa Camp. Cooper (1972) reported a breeding record from November for the Middle Zambezi Valley.

Hadedda Ibis *Bostrychia hagedash*

An infrequent visitor, which is more common downstream from Chirundu. It can be rather secretive when present in small numbers and often detected only by its call. There were only five records during this survey, at C Camp in May 1993 and two records from Tiger Point where one flew off noisily from the inlet in December 1994 and one was heard calling in January 1995. There is another record from August 1989 but there are no further details. Birds were present along the river in the QDS south of the study area in April and June 1988, from the camp at least two birds were heard calling on the Zambezi on 13 September 2004, and one was on Bwarambwa Is. on 24-25 September 2002 (IR). In August 2004 one was heard flying over Rifa Camp (LM, DW, JS). One was seen in October 2012 (NH). This species is fairly common downstream from D Camp to Mupata Gorge. The field cards give records from September and October 1989.

Glossy Ibis *Plegadis falcinellus*

An uncommon visitor sporadically reported in each month, except February and July. Singles and sometimes pairs were seen in the stream below the Hot Springs, at the Marsh and at C Camp in April, August and November. One was seen at C Camp in January 1994 and another flew over camp later the same month. Eight were seen flying in a spiral over the Zambezi in May 1994 near the Fish Farm while a further two were in a pan at the Farm. In August 1996 one was probing mud in the shallows at the upper pool of Bream Pools and in November 1997 one was seen with many other waterbirds on a grassy bank 1 km downstream from C Camp. There is a record of a single flying along the Zambezi near the pump on Nyangombe in March 2004 (LM, DW, JS). Four were at Twin Logs, downstream of C Camp on 12 September 2004 (IR). In March 2005 one was seen at Sunset Point on two occasions, once feeding on damp grassland after a storm and the other time on a shallow sandbank on the river at dusk.

In October 2012 *c.*40 were seen on the Zambezi near the Crocodile Farm (EB, NH). The October record is from the field card. Since the 1990s this species has increased in numbers throughout the subregion including the Zambezi Valley, possibly because of prevailing drought conditions (Tree 1998). Post-breeding birds move NW from South Africa, reaching northern Botswana in February and March, but because of the drought these birds may have now moved further east, finding more favourable conditions in Zimbabwe, including the Zambezi. There are numerous records from the Mana Pools area where larger groups are often noted such as *c.*40-60 in December 1988, 13 in December 1989, *c.*20+ in November 2003, 10 in September 2004, *c.*32 in June 2005, >100 in July 2006, 15 in June and *c.*40 in August 2007 (IR).

African Spoonbill *Platalea alba*

An uncommon and sporadic visitor. A solitary bird was seen at Long Pan and one on an inlet on the Zambian shore near C Camp and one (possibly the same) flying with the Yellow-billed Storks in April 1988 (ACC). At the Fish Farm one or two birds were often seen at the inlet during April and May 1994 and a single in October 1994. Two were at Long Pan in February 1995. One was flushed from Barbel Channel in April 2000. Three were seen in July 2000 at Long Pan (BP) and in June 2002 another three were seen in shrinking channels at Long Pan in company of African Openbill, Yellow-billed Storks and three Grey Herons (GL, LM). Birds (uncounted) were noted in March 2008 (IR). Twelve were on a sandy spit beyond Sunset Point on 29 October 2011 (EB, LM). The June and September records are from field cards.

Family Phoenicopteridae (Flamingos)

Greater Flamingo *Phoenicopterus roseus*

An uncommon sporadic visitor; one was seen on 22 July 2010 standing on the Zimbabwean bank with African Spoonbills 0.5 km below the Sugar Estate pump house. Previously been reported as flying over Rifa Camp and Chirundu Hills but details are lacking. Ten birds were on the river below Chirundu on 2 November 1998 (C Nicholas) and there are records of birds resting on sandbars or flying along various sections of the river; numbers range from 1-36 with *c.*200 at Ruckomechi on 3 March 1999 (TW).

Family Anatidae (Ducks and Geese)

Fulvous Duck *Dendrocygna bicolor*

A rare transient with only three records; two were seen at Long Pan (March 1997), one near C Camp on the banks of the Zambezi (November 1997) and a third in December 1997 (PJM, JP, TC). In all cases they were in the company of White-faced Ducks. Although this species is found in thousands on the Kafue Flats in Zambia as the waters recede (Tree 1997b) and also on the floodplains of rivers in Mozambique (Zaloumis 1989) it is irregular in Zimbabwe and never very numerous.

White-faced Duck *Dendrocygna viduata*

A common breeding species subject to seasonal movements depending on the availability of water and breeding habitat. When there is a good rainy season it can be very common, inhabiting larger pools and pans in woodlands and flooded channels. As these recede the muddy fringes are preferred feeding habitat. It is not common in the Zambezi Valley during the dry season, particularly in drought years but during the rains it may occur in some numbers, including 200 seen in

the New Marsh in December 1996. It breeds from February to May, and breeding has been recorded at Long Pan (Table 1) when it fills to the grass-line and water lilies and other floating vegetation becomes plentiful. In the 1991/1992 rainy season Long Pan was a mere puddle and no ducks bred. It was also reported breeding at the pan at C Camp in 1988. In addition, 70 immatures were seen in April 1993 at Nyachuru Pan and in February 1997 they were seen in Mhenza Pan with tiny chicks. Another breeding record from Arunatius Pan in mopane woodland was of a pair with downy chicks in March 1997. In April 2000 some small groups and also a larger one of about 50 were at the Mhenza Pan complex. At other times of the year in very small numbers, including pairs seen at other inlets of the Zambezi and other pools, although 60 were seen by in November/December 1997 (OAZ/PJM). The July, September and October are field card records.

Table 1. Breeding and post-breeding records of White-faced Duck from Long Pan

<i>Date</i>	<i>No.</i>	<i>Details</i>
April 1988	-	Three-quarter grown young seen
April 1989	50	80% juveniles
May 1989	300	Mostly juveniles
April 1993	76	70+ juveniles and adults
March 1994	48	10 adults and juveniles
April 1996	30	Mostly subadults
May 1996	250	Mostly adults
April 2000	30	Mostly adults, some young

White-backed Duck *Thalassornis leuconotus*

A rare visitor; seen at Nyachuru Pan in April 1993 when the pan held about 1 km² of water and sections were covered by water lilies. They kept to secluded parts of the pan in company with African Pygmy-geese, whose habitat requirements and food it shares (Benson *et al.* 1971). A single bird was seen in April 2013 Mhenza Pan (P Banks) which was 75% full and the duck was in the middle where flooded grasses and water lilies were growing.

Egyptian Goose *Alopochen aegyptiaca*

A common breeding resident often seen in pairs, groups and family parties on inlets and channels of the Zambezi where muddy patches are exposed. It also occurs on floodplain terraces, islands, the Marsh, larger pans in the floodplain, Long Pan, C Camp inlet, larger temporary pans in the mopane woodland and at sulphur springs. In March 2005 it was seen at most water bodies. Numbers fluctuate throughout the year, reflecting an increase in numbers after breeding. A flock of about 50 birds was seen on the flat grassed island off Sunset Point feeding in the grassland, and a smaller flock of 10 was seen in the flooded channel between the Hot Springs and the Marsh. On the same trip a large group (*c.*30) were loafing on a sandbank in the main river opposite Reed's Camp.

There are no documented records from July but field card records exist for that month. Commonly recorded breeding, with chicks commonly recorded from January to April, although there is an October breeding record (field card) and 5 half-grown goslings were seen at Sunset Point on 29 October 2012 (EB). This species often selects vulnerable pans for breeding as at Mopane Pan in the mopane woodland behind Rifa Camp where, in late April 1989, a pair with downy chicks was seen several times. On 27 April 1989, 33 chicks of various

sizes, probably from several broods, were seen on the pan but later they were seen walking on a game path away from the pan unaccompanied by adults. A dead duckling was found at a pan on Bwarambwa Island. In February 1992 a pair was seen with 9 juveniles (IR, LM). Nine chicks were seen at the Nyachuru Pans on 22 March 2008.

Spur-winged Goose *Plectropterus gambensis*

A fairly common breeding resident with breeding records in January and May. Its numbers may be affected by availability of suitable habitat and thus subject to purely local movements. Often seen in association with Egyptian Geese and White-faced Ducks, it is seen in parties of up to 12 birds on pools in the channel and along the Zambezi and also at pans in the mopane woodland, when they contain water. Favoured sites include the Marsh, and Long and Mhenza Pans. In March 2005 pairs were seen at Long Pan and loafing on a sandbank opposite Reed’s Camp in company with other waterfowl. Four were on a beach at Sunset Point on 12 November 2012 (LM, EB). The July and September records come from field cards as does an April breeding record. Birds with small chicks were seen in May 1988 at Long Pan and many of the other records include immatures still associating with their parents. A nest was found in January 1981 (DP) but the contents were eaten by a Spotted Hyaena and so this breeding attempt failed, as did a nest on Bwarambwa Island in January 1993 when three eggs were found destroyed, possibly by a Nile monitor. Recorded breeding at Nyachuru Pans on 22 March 2008.

African Comb Duck *Sarkidiornis melanotos*

A common breeding resident present throughout the year but with a large influx during the rains and a great increase in the number of juveniles after breeding. Usually seen at pans, the Bream Pools and along the Zambezi in small numbers. Large numbers gathered at Long Pan after breeding in April 1988; most were juveniles showing a great variety of juvenile plumages. In April 1989 about 50 birds were at Long Pan with about 88% being juveniles of various ages and in April 1993 at least 250 juveniles were seen at Nyachuru when it was full. Three adult males were also present but these had increased to six three days later. Through-out May 1994 about 60, mostly immatures, were counted at Long Pan on shrinking water while ducklings were reported the same month (locality unknown).

After excellent rains in 1996 several adults with some chicks were seen at Nyachuru Pan and a pair with young was seen at Arunatus Pan in mopane woodland in March 1997. In June 2001 on a single male was seen, flying near Long Pan (AC, BP) and 12 were at scattered localities in March 2004 (LM, DW, JS). A year later birds were recorded loafing on a sandbank with other waterfowl opposite Reed’s Camp and a small group of males, some with very large knobs, came into roost at Sunset Point. On 22 March 2008, 3 adult females with c.50 large chicks were recorded at Nyachuru Pans. Outside this QDS it has also been recorded at Mhenza in August 2004 when four adults were seen. There is a further breeding record from Nyati Pan in March 2004 when chicks were seen with adults (D Rudman).

Red-billed Teal *Anas erythrorhyncha*

A rare transient; there was only one record in the early part of the study, but more are coming to light so it may not be as rare as formerly thought. Two were seen at C Camp in April 1990 and two birds were seen in the lower pool of Barbel Channel in March 1997. Five were seen at the Marsh on 23 September 2002 (IR). There is also a record of two birds at Mhenza Pan (outside this QDS) in December 1995. Eight were seen on a sandbank above Sunset Point amidst green slime (LM, PB) on 27 October 2011 and possibly the same party with ten birds were on a beach at Sunset Point in October 2011 (EB). There is an August sight record (field card). There is a suspected breeding record for June 1997 (no further details) from a field card, but there are few other breeding records from June (Irwin 1981) so this should perhaps be treated with caution.

African Pygmy-goose *Nettapus auritus*

A localised breeding visitor found on large pans with plenty of surface vegetation especially water lilies. There are also records from Mhenza Pan in May 1994 of four pairs and 2 males in suitable habitat and amongst water lilies in March 2004 (LM, JS, DW), and c.6 on 18th March 2014 (LM). These birds appear during the rainy season only if sufficient rains have occurred to fill the temporary pans. There are no records from drought years, when the pans do not fill. In good years it is common in suitable habitat and breeds successfully (Table 2).

Table 2. Breeding records of the African Pygmy-goose in the study area. All records are from Nyachuru, except for the May 1994 record, which is from Long Pan

<i>Year</i>	<i>Details</i>
December 1992	3 pairs present in suitable habitat
April 1993	3 pairs; 1 with large young, 1 with 10 small chicks; 1 pair on own
April 1993	5 pairs; 1 pair on own, 1 with 1 large young, 1 with 5 medium-sized young; 1 with 6 small chicks; 1 pair with 21 young (13 large (rufous below) and 8 small and downy (black and white) (Mundy & Maasdorp 1993a).
May 1994	1 immature on open water (JS)
April 1996	19 chicks
March 2008	2 pairs at one pan; 1 pair with 9 chicks at 2 nd pan

Southern Pochard *Netta erythrothalma*

An uncommon vagrant, the only records being two seen in the middle of Mhenza Pan on 31 March 2013 (P. Banks, J. Stockenstrom), associated with a party of African Pygmy-geese and surrounded by scattered grasses and water lilies. There is an unconfirmed record of one bird flying at Kanyemba’s Island downstream of Chirundu (11 June 1994), while four males and

a female were seen on a sandbar at Rukomechi on 27 October 1999 (IR), followed by a flock (numbers not mentioned) on 20 November 1999 (P. Grobler).

Family Pandionidae (Osprey)

Osprey *Pandion haliaetus*

An uncommon non-breeding Palaearctic migrant. Individuals were recorded on the river in 1940 (Smith 1950), not infrequently being chased by African Fish-eagles. One was seen in mid-August 1989 flying over camp, the Inlet and Nyangombe Island for at least 30 minutes and in April 1993 one was perched on a tree at the fringe of the inlet to Barbel Channel. Two were seen together at the Fish Farm flying over the artificial channel (February 1997) and one was unsuccessfully fishing in a shallow channel at Sunset Point on 19 February 2012 (BLZ). Fifteen minutes later it was hovering over the Zambezi River where it caught a tiger fish, estimated at 300g, which it took to a distant tree. A bird was seen in September and October 2012 and on 22 October it was involved in a clash with an African Fish-eagle over the Zambezi, which it was able to chase off. A single bird was perched on a tree on an island over the Zambezi on 16 March 2014 (EB, BLZ). Midwinter records indicate that some birds, possibly juveniles and subadults, remain throughout the year and it was reported from the Middle Zambezi in March (Cooper 1972).

Family Accipitridae (Vultures, Eagles, Hawks)

Bat Hawk *Macheiramphus alcinus*

An uncommon resident, possibly overlooked because of its crepuscular feeding habits. It has been seen on occasions from August 1988 onwards. One bird was actually observed capturing a bat on the road upstream of camp in mixed mopane woodland. At dusk a Bat Hawk can sometimes be seen flying into the large trees near camp, or flying over the channel chasing bats. In late September one was seen to take a bat at Kockott's Camp just downstream of Chirundu Bridge. One was seen flying at dusk by the Chipandaure cliffs by the OAZ in October 1995 and in January 1997 one was seen on Chirundu Heights (Pat Lister). Another one was seen chasing bats over the Zambian bank near the Pump in September 1999 (OAZ) and on 4 December 2003 two hawking for bats at 21h20 were seen through a telescope set up for viewing the full moon (Chiweshe 2004). Three sightings were made in July 2009 at the Zambezi in the water pump area (BP), one was at Sunset Point on 1 June 2013 (JO) and one was hunting over the river upstream of the channel at 18h09 on 13 June 2014 and at 17h46 in the same area on the 14th (IR, C von Chamier, EB & DW).

Black-shouldered Kite *Elanus caeruleus*

An uncommon to common nomad; originally thought to be a dry-season visitor but records from January and February show that it can arrive at any time of the year. Birds were found well-spaced out along the Zambezi floodplain area from August through to April/May although it is probably present throughout the year. Its numbers vary considerably from year to year depending on rodent abundances in the breeding area. For example, the 1993/1994 season was a 'rodent plague' year and consequently this species was common in the Zambezi Valley and throughout Zimbabwe in middle and late 1994. There is often a single or pair on Bwarambwa Island and in October 1994 an individual on Nyangombe Island was seen mobbing a Verreaux's Eagle-owl which had been disturbed by people walking past its roost. One was seen circling with vultures near Bream Pools in June 2001.

Yellow-billed Kite *Milvus aegyptius*

An uncommon intra-African migrant, mostly seen as single birds between September and January. At the end of January 1994, one was seen at Chirundu Hill and another over a hippo herd in the Zambezi at Tiger Point. This bird appeared to be 'buzzing' the hippos, which responded by gaping and grunting. An occasional sighting has been made in April and there is an August record from 2004 (LM, TC). In early 1995 this species was recorded more frequently than usual. Arrival dates elsewhere in the Zambezi Valley are 20 July 1997 at Lake Kariba (Tree 1998) and 2 August 1995 at Mana Pools (Tree 1996a) and there is a departure date of 1 April 1995 from Ruckomechi (Tree 1995a).

African Fish-eagle *Haliaeetus vocifer*

A common breeding resident, it is one of the most numerous eagles in the area, frequently heard calling from Rifa Camp and anywhere near the river. It feeds mainly on fish from pans, channels and the Zambezi River and attends catfish concentrations ('feasts') at shrinking water bodies but feeds on other items when available. It often snatches impala meat put out at the vulture restaurant, either arriving early and pulling off its own meat or pirating it from vultures, including the large Lappet-faced Vulture. In May 1991 one was the first bird to land and inspect the remains (*Sunbird* 171) and in June 2009, one circled the remains but did not land. Once, while the impala was still on the slaughter block with students and staff dissecting it, one made a daring raid, expertly manoeuvring between the trees, to snatch a chunk of meat and fly off. There has probably been a shift in its feeding habits since the drying out of the channels and it probably now feeds more in the main river, in the Bream Pools when not covered with alien weeds and in temporary pans such as Long Pan.

As such a conspicuous raptor it is frequently mobbed by smaller birds. In September 2001 a pair was seen on a secluded sand spit, bathing and drinking, only to be mobbed by a White-crowned Lapwing and another bird. Flying over the river below Reed's Cottages they were mobbed by two African Skimmers. On 22 October 2012 one clashed with an Osprey over the Zambezi and was chased off by the latter (EB).

It breeds regularly in the area and nests have been monitored for a considerable time (Table 3). In 1988 four nests spaced about 2.5 km apart were found between Chirundu Heights and Tiger Point. About four more nests were established between Tiger Point and C Camp. By December 1997, nearly 10 years on, the Chirundu nest had been abandoned but was probably replaced by the one on Bolt Island and the two on the Rifa floodplain between Vulture Point and C Camp have also been abandoned with the huge piles of sticks collapsing. These nests were in huge apple-ring acacia trees but the nest trees at Chirundu and Bolt Island have not been identified. At least four of these nests were placed in trees located next to channels and are some 1-2 km from the Zambezi. The birds presumably took advantage of the readily available food in these channels such as catfish stranded in shallow water. But with the closing of the floodgates of Lake Kariba since 1981 and the spread of water hyacinth over inland waters, at least two of these nests have been abandoned, including the one near Bream Pools, which was abandoned in 2008. At Barbel Channel a new nest was under construction in March 2009. Regular breeding records are available for the Bream Pools and Barbel Channel nests (Table 3) and juveniles were seen near these nests every year at Bream Pools and nearly every year at Barbel Channel. There are also records of

immatures found at Tiger Point and C Camp. Replacement nests for those abandoned have not been found.

Table 3. Breeding records of the Fish Eagle at the Bream Pools and Barbel channel during the study period

<i>Date</i>	<i>Details</i>
May 1994	Pair calling from nest tree, mating took place and both birds went into nest.
June 1994	Birds sitting at this nest and the Barbel Channel nest; the Bream Pools bird was seen taking meat from vulture restaurant.
11 July 1994	Bream Pools birds seen feeding young over fairly lengthy periods from 07h00. It stands in the nest while feeding the chick.
18 July 1994	Bream Pools birds again seen feeding and one of the parents was in attendance most of the time.
21 June 2001	Bird on Bream Pool nest with 'off-duty' bird perched nearby. There was no feeding at the nest, suggesting nest was at egg-stage.
March 2005	Bream Pools pair present at nest which was in good repair (abandoned in 2008).

The remains of a small crocodile beneath the Bream Pools nest in July 1999 suggests these as a source of food for the chicks (KW). There are many records of juveniles and immatures near the nests or in trees near the river.

Palm-nut Vulture *Gypohierax angolensis*

Seen once, an adult flying over Bream Pools (Brian Marshall, Anthony Cizek and Brian Gratwicke) in August 1999. It may occur in small numbers along the Zambezi and was recorded at Mana Pools in May 1993 and May 2009 (Riddell 2010).

Hooded Vulture *Necrosyrtes monachus*

A common breeding resident usually seen flying around camp from April to October, thereafter less frequently (probably following game and predator distribution). It flies earlier and lower than other vultures. Of 13 vulture feasts it was recorded that this species was the first to arrive on eight occasions and they also stayed on, often with the Lappet-faced Vulture, and were the last to leave. Between May and June 2009, it was the first to eat on four out of five feasts. This prompts the White-backed Vultures to move in and dominate the carcass. The Hooded were often seen to pick up scraps on the outskirts of the feast and they were frequently present for days after a carcass had been finished, checking for any morsels or maggots that had escaped notice or been revealed the previous night by mammalian scavengers. On several occasions in October 1994 they were seen perching in trees near the camp in the early morning and they would all suddenly fly off low in one direction. It was found at the time that they were following a pack of African wild dogs *Lycan pictus*, which were active in the area. In the same month a fresh carcass attracted an African Fish-eagle, which flew off with the entire front leg of an impala, hotly pursued by three Hooded Vultures that tried unsuccessfully to share it. They were easily deterred by the eagle's threats and mantling.

They, together with a few White-backed Vultures, also followed wild dogs to an impala kill in adrenaline grass at the Chipandaure mouth on 13 October 2012. In June 1994, six Hooded Vultures were seen circling the crocodile pens at Chirundu Estates and two landed in the pens. One was seen to take a chunk of meat almost from the jaws of a large crocodile and the other tried to tear off chunks of meat on the bank. They have been reported bathing at the Marsh and at Vulture Point in company with other species of vulture on several occasions. A nest was found in the Chipandaure valley about 300 m upstream from the crossing, with a bird sitting during September/October 1994 but the outcome of the nest is

unknown. Cooper (1972) reported breeding in the Zambezi Valley in September.

Like the other vulture species, its numbers are believed to be declining and there is much concern about its status (Table 4).

Table 4. The current status of vultures according to the IUCN Red List. These criteria are based on the rate at which the population is declining and some endangered species may still be numerous in some areas

Species	Status
Palm-nut Vulture	Least concern
Hooded Vulture	Critically endangered
Cape Vulture	Endangered
White-backed Vulture	Critically endangered
Lappet-faced Vulture	Endangered
White-headed Vulture	Critically endangered

Cape Vulture *Gyps coprotheres*

A rare nomadic visitor. In September 1991 one was seen in company with c.200 White-backed Vultures at Twin Logs, between C Camp and Vulture Point, and another in January 1993 with other vultures at this bathing spot (R. Shattock pers. comm.). One was photographed in August 1993 near B Camp at a carcass (Stiles 1994). Two were seen at an impala carcass put out at the feeding station in front of Rifa Camp in July 1997 (BP, SC) and a bird with a yellow South African wing-tag was seen in front of the camp on 20 April 2009 with 15 White-backed, 2 Hooded Vultures and 2 Marabou Storks (LM). There are records from November and December 1998, which are being investigated more fully. This species can only be a very rare wanderer to the area and there are few reports from the Zambezi Valley in general although one was reported by Chenaux-Repond (1984a) and Cooper (1972) reported an observation from October. Three were seen at Chitake Spring in Mana Pools at the end of September 2001, the birds on a buffalo carcass (Dennison 2009).

White-backed Vulture *Pseudogyps africanus*

A common to abundant resident often seen soaring in numbers from 3-50, e.g. over Chirundu Hills, Vulture Point and C Camp and wherever there is a dead mammal of appreciable size; 104 were at a Black Rhino carcass. No counts have been made at elephant carcasses. Between 11 and 80 vultures arrive at the Rifa baits where this species forms the majority, but a high of 132 White-backed was reported in June 2009. Earlier numbers include 66 in March 2008 and 50 in

November turned up for meagre scraps (JS, LM). A very large count of about 150 came down to a carcass at Rifa Camp in June 2001 (BP, AC) and 48 were counted by the OAZ and PJM in November/December 1997. It is noted for its aggression, both against its own species and other scavengers, and they have been seen attacking White-headed and Lappet-faced Vultures, African Fish-eagles and even sparring with Marabou Storks.

In 2009 a complete skinned impala was put out and consumed in 8 minutes. After feeding at the feast they may hop over to the wallow, wash briefly, drink or wait for a breeze

to take off. One was seen trapped in a Cape buffalo carcass in the bed of the Chipandaure River. One of the camp staff sawed through the pelvic girdle of the carcass and the bird was released. It promptly pecked the hand of the hunter who rescued it and then ran off to shelter under some shrubs, as its feathers were wet (Hustler 1996). They have been seen bathing in large numbers (c.100) in October 1991 (and the maximum seen was c.300) at Vulture Point in company with other vulture species, Marabou Stork and Bateleur. There are a number of breeding records from the area (Table 5).

Table 5. Breeding records of White-backed Vultures during the study

<i>Date</i>	<i>Details</i>
June 1987	On nest on egg on Back Road.
March 1988	An adult on nest on Back Road, Ref QN 033245.
August 1989	An adult with chick on nest in large baobab, Ref QN 006145.
September 1989	Same.
May 1991	An adult on nest in baobab with mate standing on branch nearby; no activity on this nest 1992-1994, Ref PN 997153.
June 1997	On nest in baobab at Rifa Crossing; large chick.
June 1997	200 m away from above; adult on nest with large chick.
August 1997	Bird on nest in baobab over road between Vulture Point and C Camp.
September 1997	Adult on nest with chick (no locality).
2008	On a nest in a baobab at Arunatius Pan.

Lappet-faced Vulture *Torgos tracheliotos*

A fairly common resident, widespread in the area but not as numerous as other vultures. It invariably turns up at vulture feasts, even though, on most occasions, the rewards are small. Numbers arriving range from one to as many as six, but 10-12 were seen in June 2001, mostly adults although two juveniles were also present. In one instance a zebra and a leopard skeleton were the bait and this species, on landing, hopped to the carcass and all the other species backed off. One Lappet-faced Vulture held the leopard skeleton down with one foot and pulled off sinews and tendons. With other bone remains the bird spends a lot of time pulling and tugging at tendons and ligaments and is often the last to leave. In June 1994 some elephant bones and a fresh front end of an impala attracted about 100 vultures. A Lappet-faced Vulture hopped aside with a chunk of meat and was promptly robbed by an African Fish-eagle which flew off with it. In July 2000 five came down to a feast of impala guts and a dead baboon and the birds were heard calling whilst on the ground (BP). Immatures have been observed so it may breed in the area although Mundy (1982) had no documented records from the Zambezi Valley east of Kariba. In August 1997 a ringed and wing-tagged bird arrived at the feeding station, having been ringed in the southern Kruger National Park, South Africa (PJM).

White-headed Vulture *Trigonoceps occipitalis*

A fairly common resident present throughout the year, but in 2012 numbers appeared to have declined with non-attendance recorded at some vulture feasts. They are often seen flying low over camp, particularly in the early morning (for vultures – about 08h30). When carrion was put down in an area about 2 km from Rifa Camp in an area surrounded by trees, it was bold enough to land and eat the meat whereas other species tended to remain in the trees. It is aggressive at carcasses and has more interspecific altercations than other species. Between two and eight have been seen at feasts and squabbling with each other. Both adults and immatures attend

these feasts on occasions and in June 2001, 10 came down to a carcass, two pairs and the rest of all ages, including one very young bird. Fighting between females has been observed twice. One adult was seen to pull hard and move a baboon carcass some metres away while another removed impala offal from the site. They eat both meat and sinew and tendons but were not seen putting their heads inside a ribcage, for example, so their necks do not get soiled. Several have been seen to flush red in the face at the end of feeding. They wash and drink in company with other vultures and the greatest number seen at Vulture Point was twenty, but generally their numbers are low and on one occasion only two out of a congregation of 100 vultures were this species. Cooper (1972) reported breeding records from July in the Middle Zambezi.

Black-chested Snake-eagle *Circaetus pectoralis*

An uncommon resident seen throughout the year but more frequently during the winter months, perhaps because there are more observers at this time. It is not seen as often as the next species. In April 1990 a pair was often seen from C Camp near the Zambezi and more frequently on the Zambian side. The channel in front of camp was cleared of bushes and *Chrysopogon* grass cut short in 2009 and it was subsequently seen more often. At the BLZ October 2009 camp a pair were present and one caught a small snake in front of camp. In October 2012 there were two sightings (NH, EB). Both adults and juveniles have been seen suggesting that it breeds in the QDS.

Brown Snake-eagle *Circaetus cinereus*

A fairly common resident, apparently more numerous during the drier months. Found quite often near the Zambezi and inland in the mopane woodlands. It is often seen perched in trees on the way to C Camp and four were seen together in a tree near B Camp in September 1989. This was an unusual sighting since only one egg is laid and there is only a short

post-nestling attachment to the territory with young birds moving away after a week or so (Steyn 1982).

Western Banded Snake-eagle *Circaetus cinarescens*

An uncommon and localised resident, first reported in May, August and November 1989 (AC, AJT, OAZ) at the bee-eater colony on the Chipandaure River. The bird seen in August had caught a snake, which was half-swallowed and dangling out of its bill in typical snake-eagle fashion. In April 1990 a second-year bird was seen in the same locality and an adult seen there in March 1995. It was recorded again in late May 1991 (OAZ) and in 1992 a pair was reported flying over camp and calling. Its very distinctive and unusual call is often the first indication of its presence and they call frequently during the wet season. In August 1994 one was seen at the Bream Pools. In December 1995 it was heard calling over Rifa Camp and Bwarambwa Island, and in September 1996 one settled on a dead tree behind the Cottage at Rifa Camp and seemed to tolerate the buzz of camp despite its reputation for shyness.

It was heard at a new locality between Vulture Point and C Camp in the riverine forest in November 1997 (PJM). There is a sight record from September 1999 (OAZ, no details). In March 2000 they were displaying singly and as a pair above Rifa Camp (GL) indicating the possibility of breeding. In the Chipandaure/ camp area in September 2002 and adult was seen on the 21st (GL) and 25th (IR) with another at Reed's Camp on the 24th; again, in the camp area in September 2004 and a pair were calling and displaying in March 2008, a single was near the Chipandaure crossing in October 2009 (IR). The presence of adults displaying over the Chipandaure region suggest they breed there but no nest has been found. Subadults have also been seen in the area but this might involve some dispersal from elsewhere.

Bateleur *Terathopius ecaudatus*

This is probably the commonest raptor in the study area, present in every moth, and birds of all ages have been seen. They are often seen flying over mopane woodlands, Chirundu hills and the main tar road, perhaps searching for road kills. Most adults have the 'typical' chestnut mantle but a male with a pale cream mantle has been seen near Rifa Camp from April 1988 until 2000 and in October 1994 a cream-mantled female was also seen in the same area. During the hunting season (April to October) this species is very common in the region of Rifa Camp, along the road to B Camp and at Vulture Point where they bathe in company with vultures and other birds of prey and perch in the trees. They can be quite numerous, with six immature/subadults and two adults counted along the 9 km drive to Vulture Point in June 1994. In March 1991, there was a trip count of at least 14 birds of all ages from juveniles to pre-adults and including the usual resident pair in the Chirundu area (AJT, AH, IH).

In the following month, five (four immatures and one adult) were counted between Chirundu and the Nyakasanga. A juvenile was killed on the main road to Makuti in January 1995 and at the end of January 1995 another juvenile was found behind the dormitories at Rifa Camp with a string noose round its neck and in a very emaciated condition. It died the following day. In June 2001, many juveniles were seen from 1st years up to subadults (black bellies, sexable) but only one mature bird, a female, was seen. Over 21-24 March 2008 IR recorded an adult female at the 315km peg on the Harare-Chirundu road (Marongora QDS) and an unclassified bird at the 348km peg (Chirundu QDS) and on the drive in on the 21st,

17 others were seen around Chirundu/Rifa with a high percentage of juveniles (74%) but, interestingly, none were immatures and there was only a single additional adult female. A sub-adult female was seen at the camp on the 23rd.



Figure 10. An adult male Bateleur, perhaps the commonest raptor at Rifa. Photo: © Roger MacDonald

It is frequently attracted to carcasses, arriving before the vultures. It rarely lands at the "vulture baits" put out in front of Rifa Camp but one August (no year given) two young birds (one 1st year, one 3rd year) landed but did not feed. In another undated record, two immature females were seen to attack a Hooded Vulture in flight. The vulture turned upside down and grappled one of them with its feet. On 26 November 2008 two did land and eat a few pieces of meat but flew off as soon as three Hooded Vultures arrived. At four 'baits' in 2009 Bateleurs were first to circle; two (immatures-subadult) landed on two occasions but did not feed (schools, DK); on 24 June four circled but did not land. There is a report of an adult on a nest in the Vulture Point area but further details are lacking (C. Magner). This species almost certainly breeds in this QDS.

The range of the Bateleur in Zimbabwe has shrunk since the 1960s and it is now only to be found in the larger national parks. It is listed as 'near threatened' in the IUCN red list.

African Marsh-harrier *Circus ranivorus*

A rare visitor or wanderer. The first documented sighting of this species was of one seen 2 km downstream of Chirundu in December 1991 (Tree 1992b). A further record was of a male at Chirundu on 2 September 1992 (Tree 1993a) and in September 1996 one was seen flying low over Vulture Point area (DW) and it was also reported by Eiffel Flats Schools in July 1997. It may only be a seasonal visitor to low altitudes (Irwin 1981) and the timing of these and other records seems to bear this out. Singles were seen at Ruckomechi on 3 December 1989 (A Chambers), 6 & 23 July 1990, 4 August 1990 (IR), 15 June 1991 (TW), 30 September 1991, 10 August 1992 (IR) and 20 October 1996 (F Carbone) and July in the Middle Zambezi (Cooper 1972).

Montagu's Harrier *Circus pygargus*

Rare non-breeding Palaearctic migrant. Five of these birds were seen circling over a sparsely grassed sandbank between Vulture Point and C Camp in February 1997 (LM, AC); the party consisted of one adult male, two subadult males and two "ringtails" (i.e. females or immatures). Records from Ruckomechi are an adult female (19 December 1990; IR), an unsexed bird (23 April 1991; TW), and adult males on 25 March 1996 and 12 December 1992 (IR).

African Harrier-hawk *Polyboroides typus*

A fairly common resident, present throughout the year and seen on almost all camps, at Rifa Camp, on the hill behind camp and at several points upstream. Both adults and juveniles have been seen, suggesting they breed in the area. During the first half of 1994 one was commonly seen around Rifa Camp and on Nyangombe Island. One was observed on Chirundu Hill pulling weaver nestlings out of a nest but further details of this sighting are lacking. In November 1997 a juvenile was seen mobbing a juvenile Martial Eagle on the floodplain near Vulture Point. In March 2005 excellent views of an adult foraging in tall trees were obtained on the hills behind the Bream pools. It was moving from tree to tree and being mobbed by several smaller species, notably Fork-tailed Drongos (LM, ACC, GLR). Juveniles have been reported in the Middle Zambezi area in June (Cooper 1972).

Lizard Buzzard *Kaupifalco monogrammicus*

An uncommon resident, listed every year in small numbers. One was seen hunting from a large mopane at the Chirundu Hotel where it was concentrating its attention on a large lizard. In very hot weather (November 1993) one was seen drinking at the wallow in front of Rifa Camp. There is another August record from the Sharu confluence, which is just outside this QDS. It is probably resident but the few records make this difficult to determine. Cooper (1972) reports specimens from the Zambezi Valley in July and August.

Gabar Goshawk *Micronisus gabar*

A fairly common resident, sighted quite frequently and probably present throughout the year, although not recorded in December; there is a Middle Zambezi specimen from that month (Cooper 1972) and many December records from Ruckomechi (IR). It was recorded in April 1989 in the QDS, along the river (IR). In April 1990 an adult was seen near C Camp and a melanistic individual was also seen at the same time in the same area. In November 1990 one was found bathing in a pool at C Camp and another was seen near Long Pan in late January 1994. On 13 March 1994 an immature female was seen in a tall bare 'albida' tree near 'Albida Pan' chasing a bush squirrel (this locality is uncertain but probably refers to the artificial wallow in front of camp). Its dashing flight in and out of the branches did not lead to a catch while the observers were there. In September 1991 one chased a Three-banded Courser on Nyangombe Island, which evaded capture by diving into sedges on a new mud bank in the riverbed. In October 1991 a melanistic individual was seen in riverine woodland near Vulture Point and in late January 1994 a normal phase was seen in the same sort of habitat near the Rifa River. Two were recorded in February 1999 (IH, LM). A pair was seen displaying at Barbel Channel in April 2000. A grey-phase bird was seen on Nyangombe Island in June 2001 (BP, AC). BLZ/IR recorded it in July 2000 and September 2001, 2002 & 2004. In March 2005 a normal phase bird was

seen perched in one of the isolated *Faidherbia albida* trees between the Hot Springs and the Marsh when it was flushed by a Red-necked Falcon that was being followed by the observers (ACC, LM, GLR). Two were recorded in March 2008 (IR).

African Goshawk *Accipiter tachiro*

A sparse resident most often encountered in thick riparian forest such as that along the Chipandaure valley and in dense mixed woodland. It was seen on a fairly regular basis in the years 1988-1991. It was reported in May 1994 (JS) and in September 1999 (OAZ) while one was in camp on 22 September 2002 (IR). One was seen near Rifa Camp in August (GL, LM, TC) and September 2004 (BLZ) and late October 2011 it dominated the birdbaths in very hot weather (P&P Banks). An immature flew down from a large Nyala berry tree at Long Pan, suddenly spotted the observers and flew off (ACC, LM, GLR). There is a field card record from October 1991. An adult, accompanied by a juvenile, was seen up the Chipandaure valley in April 1990 and a nest with two chicks was found in December 2004 (DP).

Shikra *Accipiter badius*

Resident and probably the commonest *Accipiter* in the area, found in both the riverine fringe and 'inland' woodlands. Their numbers may fluctuate from year to year, and they seem to decline in numbers as the dry season progresses, possibly reflecting a post-juvenile dispersal. On one occasion one was seen to take a frog from a pool in front of the Rifa Camp in April 1988. In March 1993 three different individuals were sighted within three days, one was seen in late January 1994 at Vulture Point, and singles are reported in Nov/Dec 1997 (PJM), in Rifa Camp, July 2000 (BP) and in March 2004 (LM, DW, JS). The presence of juveniles indicates that they breed in the area.

Little Sparrowhawk *Accipiter minullus*

A fairly common breeding resident. An adult and a juvenile were seen in the margins of the flood channel near Rifa Camp in April 1988. One was seen near Rifa Camp in April 1990 and another at C Camp. During intense heat in October/November 1993 an immature visited the birdbath at Rifa Camp Cottage and once perched there for half an hour keeping 55 Meves's Starlings waiting in nearby shrubs. It then landed on the birdbath, scattering all the other birds, and cooled its legs for 10 minutes. It was recorded in July 2000, September 2001, 2002 and 2004 (IR). Meves's Starlings were also the target of another male in March 2005 in Rifa Camp when it perched very close to a nest of that species in the large rain tree above the Hunter's Cottage. There are field card records from May, June and July. The presence of juveniles indicates that it breeds in the area.

Ovambo Sparrowhawk *Accipiter ovampensis*

An uncommon resident. A single bird was seen in mopane woodland on the way to C Camp in April 1988, while another was recorded in floodplain riverine in the QDS in December 1988 (IR). One was seen in late August 1990 and in February 1997 one was seen flying near Chirundu Heights (AC). One was seen in the Chipandaure in late September 2001 and 7 March 2014 (IR). In March 2005 a well-marked reddish immature was seen perched at the top of a large *Faidherbia albida* tree close to the African Fish-eagle's nest near the Bream Pools. There are two May records on field cards from 1988 and 1989. The presence of immatures indicates that it

breeds in the area. There can be identification difficulties with this species and some other *Accipiter* species and also with Gabar Goshawk so perhaps some of these records should be treated with caution. This species was identified as the Rufous-chested Sparrowhawk *A. rufiventris* by Cooper (1972) and this confusion was echoed by Irwin (1981), who stated that even museum specimens, particularly those of immatures, were difficult to differentiate.

Black Sparrowhawk *Accipiter melanoleucus*

Status uncertain, probably rare but easily overlooked. It was seen in August 1997 (Eiffel Flats School) and April 2011 (BLZ). There are three field card records without supporting data (September 1994, June 1995 and July 1997) and two were seen perched in trees fringing the water at Mhenza Pan in March 2005 (LM, GLR). Irwin (1981) thought it might be absent from the Middle Zambezi Valley but it has been observed elsewhere in the valley from April to September (IR).

Steppe Buzzard *Buteo buteo*

An uncommon to common Palaearctic migrant. It was recorded from 17-29 September 1999 (BLZ), a fairly early date for this species. Another was seen on 20 March 2004 (LM, JS, DW) and in March 2005 three were seen from Chirundu Heights, circling in thermals and, again during that same trip, 14 were seen in a thermal at Mhenza Pan (ACC, LM, GLR). It occurs in this part of the valley during the rainy season and on passage, a time when few observers are present. They have been seen over the Zambezi Escarpment and good views of a particularly reddish individual were seen from Chimutsi Outlook car park (halfway up the Escarpment) in February 1996 (ACC). It was reported from the Middle Zambezi in April (Cooper 1972) and there is another very late record from Ruckomechi on 14 May 1994 (IR). This is interesting as there is an increasing tendency for this species to overwinter in southern Africa (Tree 1994a).

Lesser Spotted Eagle *Clanga pomarina*

A rare Palaearctic migrant, possibly overlooked. Recorded in April 1996 (no details), two were seen on 20 March 2004 (JS) and one on 22 March 2008 was perched at the 345 km peg near Kalisho Spring on the Chirundu Road (IR); the following day another bird was suspected at Long Pan (BLZ).

Tawny Eagle *Aquila rapax*

Resident, and probably the commonest large eagle in the region after the Bateleur. Several were often seen on the road to C Camp, especially during the hunting season (April-October). It is sometimes seen circling with vultures in thermals and has been seen bathing in the shallows at Vulture Point. It occasionally visits vulture feasts and is usually one of the early arrivals. In August 1993 one tried to rob an African Fish-eagle that was trying to remove scraps to its nest 1 km from Rifa Camp. In October 1994 a particularly well marked immature was at the feast. Other immatures were seen at Chirundu Estates in September 1989 and one at Rifa Camp in August 1990. One was seen stooping at a flock of Helmeted Guineafowl in the Chipandaure valley in February 1995. In July 2000 one came down to the vulture feast early on but took off almost immediately (BP). There are several breeding records from inside and just outside the study area (Table 6). There are breeding records from elsewhere in the Middle Zambezi in June and September (Cooper 1972).

Table 6. Breeding records of Tawny Eagle in the study area and nearby (in QDS)

<i>Date</i>	<i>Details</i>
August 1989	A bird on a nest in a baobab at the Sharu River, just outside this QDS (also there in 1987).
March 1991	A bird on a nest at C Camp
March 1993	A bird on a nest between Rifa Camp and C Camp, Ref QN 196005
April 1993	A bird showing interest in the above nest but no sign of nesting activity
May/June 1994	A bird on the above nest
September 1995	Two nests at the Sharu, one with a chick.
March 1997	Adult carrying sticks (no locality)
11 September 2004	A bird on a nest in a baobab on the main tar road near Mhenza Pan (IR)

Steppe Eagle *Aquila nipalensis*

An uncommon Palaearctic migrant, only recorded twice. A juvenile came down to the remains of an impala carcass put out for the vultures in front of Rifa Camp in October 1994 (ACC), and picked over some of the remains. Also recorded in October 1991 (field card, without further details). This species could be overlooked owing to its similarity, particularly as adults, to the Tawny Eagle. However, all the birds wintering in southern Africa are immatures or subadults (Irwin 1981). It is normally highly social on migration, following the main rain fronts in search of emerging termites (Steyn 1982) so the sighting of a single bird was unusual. It is considered to be 'endangered' by IUCN and sightings may become increasingly infrequent.

Verreaux's Eagle *Aquila verreauxii*

A rare vagrant. A pair was seen in April 1988 circling high over the Chirundu Hills where hyraxes are found (ACC); this was a chance sighting as this area has hardly been visited during this study. This species is often seen at A Camp and along the Kariba Gorges (outside this QDS). Another sighting was reported between Chirundu and C Camp in February 1996 and it was likely that this was a pre-adult on the hunt for territory (Tree 1996d). The July record is from a field card. There is no suitable breeding habitat in the area although sighting of a pair suggests the possibility of breeding in the area although outside the QDS. There is limited information on the Zambezi Escarpment population of this species and it is amazing how infrequently wandering non-breeding Verreaux's Eagles are ever seen away from natal areas (Tree 1996d). It is extremely prey specific, feeding almost entirely on hyraxes and its distribution must obviously be linked to the distribution of these animals.

African Hawk-eagle *Aquila spilogaster*

A common resident frequently recorded because of its soaring habits, and the relative ease with which adults are identified. It is often seen soaring over the hills behind camp and flying over sandy areas between the Hot Springs and the Zambezi. A pair was seen there in April 1990 with two juveniles, and at the same time two juveniles were seen in the vicinity of a kill near C Camp and a pair was overhead in mopane woodland. Two pairs have been seen at Mhenza Pan. Apart from the records of juveniles in the study area, a definite breeding record is of feathers (identified by the Natural History

Museum) found under a well-used nest at Ref: PN 968058 in the crutch of a baobab in riverine forest (PJM) in September 1989. Cooper (1972) reported breeding records from the Middle Zambezi in August and September.

Wahlberg's Eagle *Hieraetus wahlbergi*

An uncommon intra-African migrant, not recorded from May to August. There are scattered records from September to April but it is probably under-recorded because there are few observers there at this time. This species is often seen near hills, e.g. behind the Bream Pools and at the Chirundu Hills (near the Kalisho turnoff) and especially over well-developed woodland. Three were seen in March 2004 over the Chipandaure and near Long Pan, one of which was in primary moult (LM, JS, DW). There is a record of one at Chirundu on 7 November 1990 (Tree 1991b). It may breed in the area but there are no records. Irwin (1981) thought it was scarce in the Zambezi Valley and probably did not breed there. Arrival and departure dates in the Zambezi Valley are 17 August 1995 from Ruckomechi (Tree 1996a) and 11 April 1995 (Tree 1995a) respectively.

Ayres's Hawk-eagle *Hieraetus ayresii*

Status uncertain, probably an uncommon resident but possibly overlooked or mistaken for the previous species. One, a male, was seen circling over Rifa Camp in April 2000 (ACC, LM). Two or three pairs were reported in the Chirundu area in August 1988 (Tree 1988). An adult and an immature were circling above camp on 3 October 2009 (IR) and one again in October 2012 (NH). This species is said to occur in denser woodland than the previous species with a preference for miombo (Steyn 1982) but also occurs in riverine forest (Thiollay 1994). It is generally considered rare and thinly distributed and vulnerable to woodland clearance.

Martial Eagle *Polemaetus bellicosus*

An uncommon to fairly common resident seen in all months and on most trips. Only one pair is found in the QDS as they have an exceptionally large territory. It has been seen around Rifa Camp on several occasions and a juvenile hunted around the camp all morning on 1 April 1988. Another juvenile was seen in company with other raptors at a kill near C Camp in April 1990. These eagles have been seen flying around or perching in large trees on Nyangombe Island. On one occasion (May 1991) an adult displaced two Tawny Eagles from a tree near Rifa Camp, only to be mobbed by smaller birds. In September that same year a pair was seen on the hill behind Rifa Camp and it was recorded over 3-7 October (OAZ). In June 1993 an immature flew over ducks at C Camp inlet and killed an Egyptian Goose, only to be dispossessed by a baboon. At the end of January 1994 an adult was seen flying with vultures and Marabou Storks at Vulture Point. A juvenile was seen near the Rifa River in March 1995 and another was seen bathing in the early morning at the Hot Springs in August 1997. Yet another juvenile was seen flying overhead on the floodplain being mobbed by an African Harrier-hawk and a juvenile Bateleur in December 1997.

An immature was seen near the camp on 10 July 2000 (IR) and one (adult?) was perched near the Chipandaure Carmine Bee-eater colony later in the month. In June 2001 a pair was seen circling at Hot Springs and while they were doing so a juvenile was seen on the ground on the sandbanks below the springs. It was flapping about as if it had prey on the ground but it could not be seen clearly as it was partially obscured by a

sandbank. Then one of the circling pair made a low dive towards it and "bombed" it before flying off and perching in a low tree. Unfortunately, the outcome of this encounter was not seen. Another record for Hot Springs was October 2012 (NH).

Although no nest has been found in this QDS so far there is a record of an almost fully-grown young on a nest just past the Sharu River, outside the QDS, but no dates are given. That it undoubtedly breeds within, or very close to, this QDS is indicated by the frequency of sightings of young birds which may remain in the natal territory for up to eight months after fledging (Steyn 1982). However, as full adult plumage may not be attained for six or seven years some of these sightings may refer to dispersed juveniles from other territories. Cooper (1972) reported breeding records from the Middle Zambezi in May and July.

Family Sagittariidae (Secretarybird)

Secretarybird *Sagittarius serpentarius*

An uncommon transient, first seen near Rifa camp in 1999 (Jane and Erik Snook), while another was seen at Hot Springs on 11 May 2013, before flying across to Zambia. There is an old record of three birds (a pair and a single) from burnt out cane-fields on Chirundu Estates from 27 July 1968 (Jonker 1968). Elsewhere in the Middle Zambezi, it has been seen regularly at Ruckomechi with singles being recorded on 17-27 September 1988, 18 May 1990, 16 & 30 April 1991(IR), 4 May, 12 & 24 September 1992 (Tree 1993a), 30 April (Tree 1994a), 8 and 10 June (Tree 1995b) and 13-14 September 1994, 4-5 April and 1 June 1995 (IR). Other singles in the area were at Mana Pools on 6 June to 24 August 1990 (IR *et al.*), 5 May 1992 (IR), 20 June 1994 (Tree 1995c). Older records include two at Mana Pools in August 1968 (Holmes 1968). Apart from the one November record it seems to be a dry season visitor to this region.

Family Falconidae (Falcons)

Rock Kestrel *Falco rupicolus*

Rare transient; an adult was seen heading northeast over the river a few kilometres upstream from Rifa Camp on 30 March 1991 (AJT). There is another record from Ruckomechi on 14 and 25 November 1990 (Tree 1991b).

Dickinson's Kestrel *Falco dickinsoni*

Status uncertain, probably an uncommon breeding visitor or transient (AJT). A single bird was seen perched in a baobab in the hills behind the Hot Springs in April 1988. Other records, without details, are of one in May 1989 and one seen on Chirundu Heights. There is another record from just outside this QDS at A Camp in July 1991 (Tree 1991c) and it was recorded on canoe trips in that QDS in March and April 1989. K D Smith in 1940 reported a single bird on the Zambian side of Chirundu perched in a tree in a recently burnt-out vlel in October 1940 (Smith 1950).

Red-necked Falcon *Falco ruficollis*

A rare, but possibly overlooked or resident. Several records throughout the year from the same locality, suggest there may be a resident pair. This species is usually associated with palm trees, which are plentiful on the Zambian side where they are not damaged by elephants. It was reported at the Hot Springs in September 1996 (OAZ) and on 14 December 1996 one was seen at the Rifa camp (Tree 1997b). In late June 1998, it was again seen at the Hot Springs perched in a baobab. One of the highlights of a trip in March 2005 by the authors was a sighting

of this species perched in the isolated apple-ring acacias between the Marsh and Hot Springs. It flew between the trees and at one point flushed out a Gabar Goshawk which had been quietly perched. Another probable sighting was recorded 3 km upstream of Rifa Camp on 30 March 1991, where it was seen to stoop at and catch a bird (JW). Two were just outside the camp on 30 September 2001 and again on the hillside above Bream Pools on 22 March 1008 (IR).

Other records from the Middle Zambezi include one at Mana Pools in late May 1997 (Tree 1997b) and a pair that appeared to be resident at Chikwenya, Mana Pools during July and August 1993 (IR). Riddell (1990a, 1994) discussed the occurrence of this species in the Zambezi Valley and since then it has increased throughout the Mana Pools National Park and is frequently recorded and suspected to breed at Ruckomechi, if not elsewhere (IR).

Amur Falcon *Falco amurensis*

A transient non-breeding Palaearctic migrant. A lone female was seen perched on the utility wires at the back of Rifa Camp on 5 April 2000 (ACC, LM), probably a straggler on migration as the main bulk of the wintering population in the Harare area had left about a week previously. A flock of c.50 was seen at Long Pan on 5th March 2014 (IR) and 2 flew over the camp area on the 16th (DW).

Eurasian Hobby *Falco subbuteo*

An uncommon non-breeding Palaearctic migrant, present in southern Africa from October to March. There are few records from this QDS since there is little observer coverage at this time of the year. In March 1995 several individuals (not in flocks) were seen at several localities hunting at canopy height over riparian forest. At Tiger Point one was seen to harry a small, unidentified passerine over the Zambezi River in November 1995. After several unsuccessful strike attempts and stoops by the falcon, the small bird fell into the river either from exhaustion or in an attempt to escape. The Hobby then left it alone and returned to its perch and the small bird was last seen struggling for the bank while being swept round a bend in the river (AC, LM). A few were seen hawking over the sandbanks near the Bream Pools in April 2000 (AC), and a few were seen in March 2005 hawking round the trees at Sunset Point at dusk (LM, AC). Smith (1950) reported it as being a fairly common migrant in 1940, usually seen hawking prey at the edge of riparian forest. It was also recorded in April 1996. The enormous flocks of Red-billed Quelea that occur here during the rains may attract this species, but the dates of the sightings suggest that it may only occur on passage.

Lanner Falcon *Falco biarmicus*

An uncommon resident, and there may be a resident pair at Chirundu. Two were seen there in November 1990 and another was seen on the main road near Mhenza Pan in the same month. One was seen at Chirundu in April 1993 and another in July 1999 (KW), while in June 2001 one was seen circling below vultures near the Bream Pools. One was recorded flying above Rifa Camp in March 2004 (LM, DW, JS).

Peregrine Falcon *Falco peregrinus*

An uncommon resident and non-breeding Palaearctic migrant. It was recorded at Long Pan in April 1988, and some were seen between 1988 and 1990 (further details are lacking). It was reported from Tiger Point in September 1995 (OAZ) and

one was seen hunting near the Hot Springs in mid-December 1996. In the same month it was also seen near C Camp on the banks of the Zambezi. It seems to prefer lightly wooded areas or grassland for hunting. An old record from 23 March 1983 involves an incident witnessed by Stan Fourie from a boat on the Zambezi about 10 km upstream from Chirundu when a Peregrine stooped at an unidentified small bird which fell into the water. The Peregrine circled agitatedly hoping to retrieve its meal, only to be frustrated by a large Tiger fish which grabbed the prey from below (Irwin & Tree 1983). On 7 November 1990 an adult of race *calidus* was seen at Mhenza Pan (AJT, IH, AH). Two were seen in February 2012 (BLZ) and singles in September-October 2012 (EB, NH). The May record is from the field card for 1989. With the lack of suitable breeding habitat in the QDS birds of the local race *minor* may well be dispersive and transient.

Family Phasianidae (Francolins, Spurfowl, Quails)

Coqui Francolin *Peliperdix coqui*

A rare and localised resident, perhaps overlooked or possibly absent from the riverine fringe, the most frequently surveyed area around Rifa. It was seen in *jesse* bush at the Fish Farm in October 1997 (OAZ) and there is a field card record from September the same year. It has been recorded in the southern extremity of the square (AJT) which is not normally covered by visitors to the study area. It was recorded crossing the main road south near the Nyakasanga bridge in November (ACC) and there is another record from November 1998 (without further details). According to Irwin (1981) it occurs throughout the Middle Zambezi Valley in mopane, though he includes the Kariba area, where it does occur (Donnelly & Donnelly 1983). Cooper (1972) did not record it in the Middle Zambezi Valley.

Crested Francolin *Dendroperdix sephaena*

A common resident occurring in dense scrub, especially along small gullies and tributaries. In October 1994 a pair was seen under dry bushes on extremely bare ground near C Camp. They were feeding under the bushes on small seeds and calling profusely whilst doing so, possibly ill-at-ease at the presence of the observers. Pairs and family parties are usually seen along the road to C Camp and along the Chipandaure valley. Small chicks were seen with adults near the Chipandaure in February 1997. On a trip in March 2005 it was not seen, even in its usual haunts (LM, AC) and the reduction of the area accessible to visitors has resulted in fewer records of this species.

Natal Spurfowl *Pternistis natalensis*

A common to very common resident that lives in dense woodland and scrub and is often seen on the hillsides opposite the Bream Pools and Hot Springs, as well as in riparian thickets along the Chipandaure and near C Camp. In March 2005 it was frequently heard and seen at Rifa Camp in the morning and evening and also along the floodplain and on the road into Chirundu. They were seen to fly up into large trees in camp, including the big fig *Ficus bussei*, at dusk to roost. A pair was seen with dependent fledglings on the road to Vulture Point in February 1997 and there are other documented breeding records from May and August, the latter being from a field card. The changes that have occurred in the floodplain habitat in front of Rifa Camp (higher grass, more woody vegetation; see Figure 6) have made this area more attractive to this species and it may be in process of replacing the following species there (LM).

Swainson's Spurfowl *Pternistis swainsonii*

A very common breeding resident inhabiting more open habitats than the previous two species; it occupies the alluvial plains and grasslands, and is also seen in open mopane woodland. Noisy males often crow from the tops of termite mounds in the early morning and evening and on overcast days. On a particularly wet morning in October 1994 small flocks and family parties fed out in the open in front of Rifa Camp, only taking shelter under clumps of *Chrysopogon* grass when the rain got particularly heavy. However, in June 2001 it was reported to be particularly uncommon and very few were heard or seen and in August 2004, when it was very dry, this species was not seen in this habitat, having been replaced by the Natal Spurfowl (LM). In March 2005 it was present in the vicinity of Rifa Camp but was far less common than the previous species.

Except in the very dry year of 1991 they have bred successfully. Many immatures were seen in November 1993 and 1994. A nest with three eggs was found in April 1991 and in June 1994 one pair has four youngish chicks and another two pairs has half-grown offspring. There is an August breeding record of dependent fledglings from a field card. This was the commonest of the francolins in the area, during the early years of this study, particularly around Rifa Camp. However, recent changes in the habitat of the floodplain (longer grasses, more bushy vegetation) have made this area less attractive to this species and this has led to its replacement by the previous species.

Harlequin Quail *Coturnix delegorguei*

An uncommon intra-African migrant, that favours rank grass and is found in the channel in front of Rifa Camp; its presence, probably on passage, is dependent on rainfall. One was seen in this channel in April 1990 and in March 2005 excellent views were obtained of a male on short grass near some tall *Chrysopogon* grass on the track to the Rifa Camp pump. There are field card records from early May and 21 August 1988. The habitat for this species in the study area is seasonal and rather limited in extent. Irwin (1981) considered this species to be nomadic or subject to more regular movements. It has not been recorded here in the large numbers that occasionally occur elsewhere in Zimbabwe, so it is probably present only on passage. Cooper (1972) reported specimens from the Middle Zambezi from January and November and an observation from April, but at Ruckomechi Camp it has been seen in every month and chicks were recorded in July 1990 (IR).

Family Numididae (Guineafowl)

Helmeted Guineafowl *Numida meleagris*

A common to very common resident found in flocks along the floodplains and areas that are grassy in the wet season and close to woodlands. In October 1994, when it was extremely dry, flocks of 20-30 were seen in scrub mopane areas almost devoid of ground cover on the way to C Camp. Flock sizes vary but are generally lower than 40. In April 1988 a flock of 20 near Rifa Camp contained three-quarter grown birds; in 1993 most flocks had bred successfully and by November the immatures were almost fully-grown. In May 1994 many flocks of up to 30 birds were seen and about one third of them were sub-adults. Seed was particularly plentiful and examination of the crops of birds shot between Rifa Camp and C Camp established that their diet consisted of mainly grass seeds, with some seeds of the family Asteraceae (daisies). These latter

formed a higher proportion of the diet in drought years. Arthropods and molluscs were also found in crop contents. Pairing in 1995 was very late, about six weeks probably due to the drought and a poor breeding season was predicted (LM). That this may have occurred was by their complete absence on a four-day trip in April 2000. Guineafowl were only heard once in March 2005.

There are frequent records of chicks and subadults, mostly between March and May. This species seems to vary in abundance from being very common, with many flocks seen during a trip, to none being seen at all. Presumably this is a result of local nomadism and wandering throughout the home range which may be over 20 km² in extent although the species is sedentary as a whole (Martinez 1994).

Crested Guineafowl *Guttera edouardi*

An uncommon and localised breeding resident; flocks live in tangled bush and riverine thickets on the main tributaries. It lives much further away from the main river than the previous species but obviously wanders occasionally in search of food. A party was seen crossing the road in a thicket just beyond the turnoff to Tiger Point in August 1997. There are field card records for records for January 1995 and November 1996 and hunters at the Sharu, just outside this QDS have also seen it. A pair with a chick was seen near Long Pan in March 1993. It may be overlooked because of its preference for thick vegetation which observers are reluctant to penetrate. It is infrequently seen and may wander between areas of suitable habitat (GL). The reduced accessibility to visitors has resulted in no records of this species in recent years although some habitat some habitat still exists in the reduced area.

Family Turnicidae (Buttonquails)

Kurrichane Buttonquail *Turnix sylvaticus*

Uncommon and status uncertain. It has been seen on five occasions with detailed records of one in April 1990 opposite Rifa Camp in open woodland on Nyangombe Island and another in August the same year on Bwarambwa Island. It was also recorded in the area in April 1989 (IR). Others were seen in April and May 1994 in short dense grassland in parts of the channel below Rifa Camp, a pair was flushed from the road in heavy thick grassland in the Gutu area in March 1995, and it was noted on 21 March 2008. Owing to the paucity of records it is difficult to determine its occurrence here. Although the records suggest a post-rains and dry season bias, this may reflect observer coverage. It may only be an occasional wanderer to the area (AJT), while Clancey (1980) regarded it as a non-breeding visitor to Zimbabwe and Zambia. Irwin (1981) made no comment on its movements but Debus (1996) regarded it as resident with local movements with an influx into Zimbabwe during the dry season augmenting resident populations. Cooper (1972) had an observation from August.

Family Rallidae (Rails, Coots, Crakes)

African Crake *Crex egregia*

An uncommon intra-African migrant. Two birds were seen in April 1988 at a small pool in front of Rifa Camp, one staying for four days. One was in front of camp on 23 April 1993 (PJM) and another was flushed out of *Chrysopogon* grass at Long Pan in April 1993 during a duck survey. Another was seen in April 1994 also at Long Pan and another, or the same bird, at the same locality in May 1994. There is another May record from 1996 from Long Pan when it still had water after good rains. One was seen at the New Marsh in December 1996

and there is a record without details from November 1998. In February 2014 one bird was below the cottage (S Wynn) and a bird or birds was suspected in the same spot in March 2014 (IR) and confirmed by BLZ on the 15th. There are field card records from June 1996 and September 1997 and other observer records from June 1999 and June 2001 (BP) but as this species is a rainy season migrant these records should perhaps be treated with caution.

This species is generally present in Zimbabwe from December to May, and is probably fairly common throughout this time in wet summers, otherwise it occurs on passage. There are scattered records for the subregion from June to October indicating that some birds may remain if suitable habitat persists (Taylor 1996), however there is little suitable habitat in this QDS for a long stay, but the persistence of June records from several observers may indicate overwintering when conditions are suitable.

Black Crane *Zapornia flavirostra*

A fairly common resident recorded in all months and seen on most trips. It occurs in small, scattered parties or singly along rivers and channels in suitable habitat, where it seems to be increasing. It is often found at the Bream Pools on floating aquatic vegetation or in rank fringing grasses but is seldom seen now that the water is covered with a thick, solid vegetation mat. It is also found at Chirundu Marsh and in February 1997 it was seen and heard in the thick fringing vegetation around the ponds at the Fish Farm. In September 1996 conditions at the Bream Pools improved for it and up to eight were seen there. Reedbeds along the main river are also favoured (GL) as is the relatively new marshy area on the river at Sunset Point. In March 2005 one was seen about two metres up in a small *Acacia* tree near Reed's Cottages, clambering around in the branches. It was well away from any reedbeds or other suitable habitat, although there was a small damp temporary channel near the base of the tree. On the same visit it was also recorded at the Bream Pools, despite the thickness of the vegetation mat and it was also heard at Sunset Point. On the waterbird census of January 2009 the single seen at Bream Pools was able to utilise this overgrown habitat by foraging in the narrow, shallow band of open water along the edge of the pool between the hyacinth mat and the flooded couch grass (IR). It almost certainly breeds in the study area and it was reported breeding in the Zambezi Valley in February and September (Cooper 1972). It must be to a certain extent nomadic owing to the unstable nature of some of its habitat.

Spotted Crane *Porzana porzana*

An uncommon Palaearctic migrant, but possibly more regular than records indicate. One was seen at Nyachuru temporary pan on 19 January 2009 (IR) while AJW and BLZ flushed 3-4 birds at Mhenza Pan on 15 March 2014.

Striped Crane *Aenigmatolimnas marginalis*

An uncommon intra-African migrant. An adult female was dropped by a small *Accipiter* species at Long Pan in April 1989. It was identified in the hand and then released (GL). One was seen foraging in fringing grass at a small pan adjacent to Nyachuru Pan in April 1993 and also in the same year individuals were seen at Long Pan in early April and again in early May. A female was seen near Rifa Camp in April 1994. Another bird was very well observed and photographed at Nyachuru temporary pan on 22 March 2008 where it ventured

out of inundated grasses along the bank onto open short aquatic vegetation.

These records suggest that it occurs only on northward passage here but it is an inconspicuous species and may well occur more frequently than the sightings suggest.

African Purple Swamphe n *Porphyrio madagascariensis*

Rare, possibly resident. It was seen at Long Pan in April 1988 when it was full to the grass line (IH). One was seen at the Marsh (April 1990) but further details are lacking, and SW, KW recorded another in April 1995 but no locality details were provided, while two were seen in May 2008 but the locality is uncertain (DK). This species is probably establishing in this region but its skulking habits and thick, sometimes inaccessible habitat, means that it may be overlooked in areas of heavy aquatic vegetation such as the Marsh where usually only the fringes are surveyed. Cooper (1972) reported it from the Middle Zambezi from January to May, making use of ephemeral pans at Mana Pools. Two were seen downstream of Chirundu in December 1987 (IR) and an immature was recorded at Chirundu in April 1990 (AJT). It became established as a resident in marshy channels and islands of the Zambezi at Ruckomechi from 1989 to 1999, when records ceased, and bred in 1990 at least (IR).

Allen's Gallinule *Porphyrio alleni*

A fairly common visitor that breeds at Long Pan whenever there is sufficient rain to flood into the surrounding grass and surface plants cover on the water. In April 1988 many birds were seen, including juveniles, in April 1989 a single downy chick was seen with an adult, and in April 1990 an adult was recorded with three well-grown chicks. Long Pan hardly filled in 1991 and 1992 and no sightings were made. In March 1993 it was breeding at Nyachuru Pan, and in April 1994 three were seen at Long Pan. After good rains in 1995/1996, up to ten were seen at Long Pan, in April 2000 a pair was at Long Pan with two small chicks and another was at Mhenza Pan. A pair was seen displaying at Mhenza Pan at the end of February 2004 (DR) and in March 2005 there were a few pairs there and two well-grown chicks (ACC, LM, GLR). One was seen on Long Pan in March 2006 (JS, DW, LM) and at least six in March 2008 (BLZ). A pair with a downy chick was at Bream Pools on 6 March 2014 (IR), and about three birds were seen at Mhenza Pan on 4 March 2014 (IR) with about eight recorded on the 18th, feeding on the stalks of water plants (LM). There is only one field card record for this species, from May. Irwin (1981) thought that it departed in early April and questioned April breeding records, but most breeding records in this QDS are from April and there are sight records as late as June, although there are no details for this late record. According to Taylor (1996) some may be resident in Zimbabwe and Zambia in permanent wetlands but many more appear to breed during the rains. There is little permanent habitat for it at Rifa but after good rains some of the larger pans and channels will have water throughout the year.

Common Moorhen *Gallinula chloropus*

Uncommon and status uncertain. This species has been on the list since 1989 but with no locality notes, and it was recorded in April 1993, and in November and December 1998 but again with no further information. There is a field card from September 1996 also without details. The only suitable habitat is probably the Marsh and newly filled pans but more detailed records are needed from this QDS. It was reported at

the Sharu confluence in a *Typha* mat on an island in August 1989 (AJT) and it has also been seen at Mhenza Pan in February 1997. A bird was found in marshy habitat near Ruckomechi in November 1999 (IR), and there is an observation from the Middle Zambezi in July (Cooper 1972).

Lesser Moorhen *Gallinula angulata*

An intra-African migrant that probably only occurs when conditions are suitable for it and they breed if they are. Irwin (1981) regarded most of the Middle Zambezi Valley birds as occurring on passage. There is a record from January 1987 in the Marsh (AJT) and a field card record January 1996. Seven were seen on Mhenza Pan in late January 1994 after heavy rain (LM, ACC). The pan retained water throughout the year and had filled up to grass level with water lilies in large patches near the fringes, along with other surface vegetation. They were in company with ducks, including African Pygmy-geese. Two were at a pan in the Mhenza complex in April 2000 and were breeding in March 2008. At least five birds at Mhenza on 4 March 2014 (IR) with *c.*14 feeding on stalks of water plants on the 18th (LM). An adult with three chicks was seen at Nyati Pan, on track 15, in March 1997. On 22 March 2008 an adult with four juveniles were seen at Nyachuru pans on one pan with a pair on another. On 18th March 2014 at least two pairs had chicks, one with four and another with two; one adult left the cover and led two chicks back to the fringing vegetation. It was reported breeding in January and March in the Middle Zambezi (Cooper 1972).

Family Jacanidae (Jacanas)

Lesser Jacana *Microparra capensis*

A rare transient and little recorded. There is a record (without details) of one seen in May 1988 after the rains when it was much wetter and there were many more pans and channels than presently, and another was seen on *Azolla* weed in the Marsh in September 1989. Cooper (1972) reported observations from the Middle Zambezi in May, July and September. According to Jenni (1996) this species is resident where there are permanent wetlands but can appear in some numbers at seasonally flooded habitats, even after an absence during drought years. Under such conditions, it may prefer flooded pans and vleis provided that there is enough floating vegetation, and there is certainly enough habitat here for it when rainfall has been sufficient. It may possibly have been overlooked because of confusion with the independent chicks of the African Jacana.

African Jacana *Actophilornis africanus*

A common resident found on pools, pans and channels (both temporary and permanent) where surface vegetation, particularly water lilies are found. At the Bream Pools, where water lilies flourished despite heavy infestation of Kariba weed, these birds were very common. In 1994 the vegetation mat had become so thick they were only found in the shallow inlets and at the stream entering the pools. They are common at Long Pan when water and surface vegetation are available and also in the Marsh and at C Camp and its inlet. They are quick to colonise new pans, such as the Soccer Pitch, arriving within a day or so. There are breeding records from all of these localities in March and April and recently in October (Table 7). It was also reported to breed in the Middle Zambezi in August (Cooper 1972).

Table 7. Breeding records of the African Jacana during the study period

Date	Locality	Details
April 1990	Long Pan	Male with three half-grown chicks
March 1994	Long Pan	Male with 4 large immatures
April 1994	Nyachuru Pan	Adult with 4 medium-sized downy chicks
June 1996	Bream Pools	Adult with chicks
March 2008	Long Pan	
March 2008	Nyachuru Pan	
October 2009	Sunset Point	2 chicks in old Nyangombe channel

Family Rostratulidae (Painted-snipe)

Greater Painted-snipe *Rostratula benghalensis*

An uncommon, possibly nomadic, visitor, but overlooked as it is remarkably unobtrusive. It occurs on the muddy fringes of swamps and pans that have some grass or other plant cover. There are records from May and August 1988 (without details) and a male was at the Marsh in November 1990. It was recorded both upriver outside the QDS and in the QDS in March 1989 (IR). There are also records (without details) from May 1996 (1 male) and November and December 1998. In May 1996 it was seen at Buffalo Springs (IH) and reported in September 1999 (BLZ). A pair was seen on several visits to Long Pan in June 2001. They were beautifully camouflaged against the mud and patchy Kariba weed clumps at the water's edge but stood out brightly when the female got up to preen. Two females were at Bream Pools plus an adult at the Marsh in September 2002 and a pair at the Marsh in September 2004 (IR). Two were flushed by Alex Masterson from Nyachuru No. 2 Pan and one from Mhenza Pan on 19 February 2012 (BLZ). In August 2012 three females were seen on a new beach about 2½ km upstream of camp (EB, NH). There is a November record from flooded clay with sand, grass and shrubs in the Chipandaure when 2 males were recorded. Cooper (1972) reported that it bred on pans in the Middle Zambezi in December.

Family Recurvirostridae (Avocets, Stilts)

Black-winged Stilt *Himantopus himantopus*

A fairly common resident or wanderer, widespread in suitable habitat but usually found in small numbers, i.e. either singly or in pairs, but six were seen together on one occasion. It is found in shallow waters at edges of marshes, pans when they fill in the rainy season, and pools in the floodplain channels, as well as shallow fringes of the main river. Commonly seen in the Marsh and at C Camp inlet and it has on occasion been seen on a sandbank in company with African Skimmers. It was seen in June 2001 at Vulture Point, Long Pan and on the floodplain, seven were seen in November/December 2003 (DR, TC) and a total of 14 seen in September 2004 (BLZ). There is a field card record for May and the same source also supplied a suspected breeding record from June 1997 but without further details. It has been recorded throughout the year but there is a strong possibility of some nomadic movements due to habitat conditions. It might breed if conditions were suitable in such places as the Marsh, but Irwin (1981) thought its original breeding habitat was sandbanks along the Middle Zambezi. Breeding has been

reported in the Middle Zambezi from August to October Cooper (1972).

Family Burhinidae (Thick-knees)

Water Thick-knee *Burhinus vermiculatus*

A fairly common to common breeding resident; during the day it is found roosting and loafing on the banks of the river, most often at the foot of steep sandbanks on the narrow shoreline. When disturbed they fly off calling as they go, low over the Zambezi. It has been seen feeding on insects in the grassland in the channel below Rifa Camp especially after rain and on moonlight nights. In November 1995 two were seen here under bright moonlight taking insects disturbed by feeding hippo. When the grass cover thickens after good rains, as in April 1991, they do not utilise the floodplain and were not heard. During the drought years of the early to mid-1990s they were rarely heard calling in the channel in front of camp but they returned after the good rains in 1995/1996. In February 1997 a trip was made on the river up to C Camp and about 20 were seen from the boat on the upstream journey. Many of them (about 14) were concentrated on large sand embankments just downstream of C Camp. In addition, there are field card records from May, June and July. In January 1993 there were two chicks in a nest on the sand, near water, on Bwarambwa Island (DP). There are breeding records from the Middle Zambezi from September, October and December (Cooper 1972).

Family Glareolidae (Coursers, Pratincoles)

Temminck's Courser *Cursorius temminckii*

A rare breeding visitor, probably occurring nomadically at Rifa on dry grassland areas, particularly if they had been subjected to fire or severe trampling by wildlife. Recorded in May 1988 (GL). Three adults were seen on bare grassland between the Hot Springs and the Zambezi on 10 September 2004 and the following day they were joined by an adult with 1 chick (IR). Five were reported at the same time, probably the total of these sightings (BLZ). In addition, Cooper (1972) reported a breeding record from the Middle Zambezi in August 1988 and two chicks were seen at Ruckomechi on 10 October 1988 (IR). It has been seen at Ruckomechi from June-December 1988 (seven in December), April-August 1989 (eight in June), June-October 1990 and June-November 1991 (IR). It was there on 26 March 1992, the only record for that year (Tree 1992c) and two were present at Chikwenya on 18 August 1993 with birds also noted in September (IR). Four were at Ruckomechi on 23 June 2001 and six on 26 June 2004 (IR). In Zimbabwe as a whole it is a dry season visitor, usually arriving June/July and departing before the onset of the main rains in November/December (Irwin 1981) though IR gives earlier arrival dates of March 1992 and April 1989.

Three-banded Courser *Rhinoptilus cinctus*

A fairly common to common resident, usually seen in mopane and other open woodland with sparse shrub cover and on bare ground. It is fairly frequently disturbed on walks though this habitat, particularly in the mopane woodland behind Rifa Camp (March 2000, GL) and August 2004 (LM, TC), at Long Pan in March 2004 (LM, JS, DW), in October 2012 (no details, NH) and along the road to C Camp and also on Nyangombe Island. In February 1997 a walk from the road to Long Pan through some lightly wooded grassland flushed two and another two were seen on the road into Chirundu (LM, AC) where it was also seen in June 2001 (BP, AC). It is also

disturbed at night on the roads and one bird was found freshly killed on the roadside behind Rifa Camp in April 1994 (now displayed in the Rifa Museum). There are field card records from January, June, July, August and September. It was reported to breed in the Middle Zambezi from July to September (Cooper 1972). It was said to be absent from Zimbabwe between December and March (Maclean 1996) but there were many sightings at Rifa during this period. This supports the view that it is resident at lower altitudes (Irwin 1981).

Bronze-winged Courser *Rhinoptilus chalcopterus*

Uncommon but probably overlooked owing to its nocturnal habits. It occurs in light woodland where there is a well-represented shrub layer. It is most often seen at night on roads and tracks but also by day resting among small shrubs in a treed area. It is often seen on the road into Chirundu, especially near the 'Baghdad' Township, with two there on 4 November 1990, while in February 1997 two were seen regularly in the same locality. It has been heard calling on Nyangombe Island at night (GL); a few birds (less than five) were heard from camp calling on the night of 9 July 2000 and 1 October 2009 (IR). In June 2001 an extremely squashed bird was found on the road near Long Pan (BP, AC, DW) and two were recorded in September 2004. Irwin (1981) suggested that there may be some seasonal movement with an influx after the rains with a peak in May which agrees with the findings here.

Collared Pratincole *Glareola pratincola*

Fairly common and although there is little habitat now left for this species in this section of the river, some sizeable flocks have been seen. In February 1997, an enormous flock of several hundred birds was seen on a couple of occasions very high above the Marsh and the river from the Chirundu Heights (LM, AC). They were wheeling in the sky like an enormous flock of swallows and were presumably feeding. On a river trip in February 1999 a flock of about 300 was seen resting on a mud-spit made more extensive by recent local flooding in company with White-winged Terns, Kittlitz's Plovers, White-fronted Plovers and Blacksmith Lapwings. In March 2004 about 200 were seen on a sandbank just upstream from Sunset Point, which flew up when disturbed but settled again in the company of a Goliath Heron, Egyptian Goose and several waders (LM, JS, DW) and in March 2005 about 100 were seen at the same locality (LM, ACC, GLR).

Smaller flocks include one of 40 birds, seen on a sandbar about 1.5 km downstream of Vulture Point. This flock was disturbed by something, flew up, gained height and then settled again near the African Skimmers, which also roost there. This is a favourite location for this species but numbers are usually much lower. On 21 March 2008, about 70 were in the area above the water pump and Ian Riddell closely examined as many as possible and they all had chestnut axillaries suggesting that they were either migrants or just wanderers. About 30 were seen near Vulture Point in December 1996. There are records from September and October from the field cards. There are also records from the Sharu confluence just outside this QDS from August 1989. Smith (1950) reported seeing large flocks near Chirundu in August 1940 but only a single bird afterwards in October. These records suggest that it seems to be a rainy-season migrant to the area, contradicting both Benson *et al.* (1971) who reported large numbers only during the dry season in Zambia and Irwin (1981) who stated it is only common in the Zambezi Valley between April and November.

There were no breeding records during this survey but it may breed when conditions are right, and 100 bred on a sandbank island in the Middle Zambezi in 1986 (Williams 1987). Two or three eggs were laid on bare sand, or else in buffalo footprints, and injury-feigning was reported. Cooper (1972) reported breeding records in the Middle Zambezi between August and November.

Rock Pratincole *Glareola nuchalis*

A rare to uncommon intra-African migrant seen mainly near C Camp where there are suitable rocks in the Zambezi. Two birds were observed 5 km upstream of Chirundu in August 1987. Twelve were counted upstream of C Camp on 14 December 1987 and others were heard calling (IR). In August 1989, seven were found on rocky outcrops near C Camp, and it appeared that this might be a breeding site. Five were seen at this location in August and November 1990 but there was no indication of breeding (Tree 1991b). Two pairs were seen there in December 1994. In December 1996 the largest number recorded, with 30 seen, but whether they were in more than one flock is not mentioned (BLZ). There are July field cards records in 1993 and 1997 but an April record is queried, as this would appear to be outside its time of occurrence. There have been no records since 1998 as the C Camp area is no longer accessible to individuals at Rifa Camp.

Though their breeding sites are less vulnerable to unpredictable flooding than birds nesting on fresh sandbanks, they are occasionally affected when the river level becomes very high. It may breed on rocky outcrops on the main river just upstream from C Camp but this cannot be confirmed. There are some suspected breeding records from August in 1986 and 1989 although this may refer to Nyamuomba, which is outside this QDS. Cooper (1972) reported breeding records from the Middle Zambezi in September, October and December on exposed rocks in the river gorges.

This species arrives from Equatorial Africa in late July and August and departs in December to the beginning of February (Irwin 1981). The records from this square fit in with this pattern.

Family Charadriidae (Plovers, Lapwings)

Long-toed Lapwing *Vanellus crassirostris*

An uncommon, irregular visitor that has been seen in the Marsh and in wet channels near C Camp. The first record was of a pair upstream of C Camp in August 1990, in keeping with the increasing number of observations along the Zambezi in recent years. By November 1990 the Marsh was well grazed and the grass quite short and four birds were seen there (Tree 1991b). A pair seemed to be well established on *Azolla* weed at the Marsh in September 1991. In early September 1995 a few were seen on beach fringing the Marsh opposite Bolt Island by people in a boat in a spot more or less inaccessible from the landward side and thus rarely visited by any of the schools. It was seen again from a boat in the same area in March 1997. There is a field card record for June 1995. It has not been recorded at Rifa since 1997. Rainfall has improved generally since then so more suitable habitat may occur elsewhere. Tree (1992c, 1996c) reported a similar build-up of numbers elsewhere in the Zambezi Valley up until that time.

Blacksmith Lapwing *Vanellus armatus*

A fairly common resident found scattered along the Zambezi banks and channels, in the Marsh, in pools (including the Bream Pools) and at temporary pans. It can be quite

common with counts of as many as 45 in February 1999 (IH, LM), 20 in December 2003 (BLZ), 12 in September 2004 (BLZ) and 8 in March 2004 (JS, DW). In March 2005 it was fairly common, being reported from Sunset Point, the Marsh and Long Pan, with a pair also at Mhenza Pan (LM, ACC, GLR). It is commonly found on sandbars in the cooler months and its numbers increase when there is more habitat available, i.e. during the rains. There are field card records from May, June and July. So far there are no breeding records but it probably breeds in the area since it breeds elsewhere in the Zambezi Valley, with records from August to October and January (Cooper 1972).

Spur-winged Lapwing *Vanellus spinosus*

Rare vagrant; recorded twice with single birds at Nyamatusi channels between 30 September and the end of November 2004 (various observers), and at Hot Springs on 17 August 2013 (NH). These are the second and third sightings of this species in Zimbabwe.

White-crowned Lapwing *Vanellus albiceps*

A common to very common breeding resident. It is the common plover of the Zambezi riverbanks but, like the White-fronted Plover, it may be declining because sandbanks have been covered by vegetation since the impoundment of Kariba and the recent droughts. It has been recorded in all months of the year. There may be an influx from elsewhere when conditions are suitable; i.e. when there is more surface water, as there are far more birds seen during this time. It is still seen in fair numbers on Nyangombe Island and its pans, when they hold water, and also at the Bream Pools and Hot Springs but it is rarely, if ever seen more than 500m from the main river. Very few were seen during the dry months of 1995, in the worst drought of the decade, when there was no surface water apart from the main river. By contrast, in years of abundant rainfall, as in April 1988, when pans and depressions were full of water on Nyangombe Island, there must have been about 36 birds between Rifa Camp and the Zambezi via the Soccer Pitch – a shallow pan – and their shrill calls alerted the hippo and basking crocodiles long before any walking parties had reached the river. Other large counts include 30 in November/December 2003 (GL, BLZ) and 20 in February 1999 (IH, LM). There are field card records for May and June. A clutch of three eggs was found next to a grass tuft on an island just below Chirundu, but no date was given (Ewbank 1991). This species has been seen to soak its belly feathers in order to provide evaporative cooling for its eggs or chicks (Williams 1987).

Crowned Lapwing *Vanellus coronatus*

An uncommon and irregular visitor, normally only seen at the Chirundu Estates airstrip and there are records from there from May 1988 April 1989. There are records on file, without details, from November 1986, April 1992, April, May and June 1996 and November and December 1998 and it has been reported in May 1994 (JS) but without a locality. There are many more records on field cards, and it has been reported in every month except January and February (probably reflecting a lack of observers). Records from the Gutu or Chirundu Estates are probably valid as this is the preferred habitat for the species. Irwin (1981) considered it to be sparse in the Middle Zambezi Valley and that its presence was often an indicator of poor land use. Its presence in the valley now may be fairly recent as Benson *et al.* (1971) thought it was unknown there,

although Cooper (1972) reported its presence in August and September.

African Wattled Lapwing *Vanellus senegallus*

Its status is uncertain and it may only be an occasional visitor. A flock was seen on short grassland with scattered trees at the old sugar fields at Chirundu Estates in 1989 (no month given, but field cards suggest it was probably September). Another sighting was of a flock in the Gutu region (old agricultural lands) in rather bare grassland with clumps of trees, in December 1994. In September 2004, nine were seen in grass across the channel near Rifa Camp (LM, GL) and it was also recorded in July 2000 (BP). There are field card records for April (1994, 1996), June (1995, 1996) and September (1989, 1996) but some of these may be misidentifications. Cooper (1972) reported breeding records from the Middle Zambezi in August. The increase in records since the mid-1990s suggests that this species may be expanding its range.

Grey Plover *Pluvialis squatarola*

A rare non-breeding Palaearctic migrant, probably only seen on passage and perhaps overlooked. It was seen at Chirundu in November 1940 (Smith 1950) and there is only one record from Rifa, of two birds seen on rocks above C Camp (AJT) in November 1990. It was recorded elsewhere in Zimbabwe in 1990 with sightings from Victoria Falls, Kazungula and Lake Manyame between 19 November and 14 December (Tree 1991b). It was recorded from upstream of the Mcheni Camps, Mana Pools in October 1992 and four birds in August 1995 (IR).

Common Ringed Plover *Charadrius hiaticula*

A rare non-breeding Palaearctic migrant, once recorded at C Camp in April 1990 (AJT). There is another record from late September 1998 but with no locality details (OAZ). Cooper (1972) reported observations from July to September from the Middle Zambezi but these dates, especially July, are questionable since most Zimbabwean birds are on southward passage from September to December (Irwin 1981), with a lesser return movement in March and April, which fits in with the Rifa observations.

Three-banded Plover *Charadrius tricollaris*

An uncommon to fairly common breeding resident usually seen singly or in pairs along sheltered margins of the Zambezi, as well as pools and flood channels and temporary flooded pans near the river. It has been recorded in almost all months, but whether the same birds are involved is uncertain. This species undergoes little understood and erratic movements within southern Africa, which may be linked to local conditions (Irwin 1981). There are field card records from May, June and July. Breeding records include a bird with two chicks in August 1987 and in September 1994 eggs were found in the sand near antelope droppings (DP, no localities given). Cooper (1972) had breeding records from the Middle Zambezi for May, August and September.

Kittlitz's Plover *Charadrius pecuarius*

A fairly common breeding resident or visitor found on the open shoreline of the Zambezi and in the Marsh amongst short grasslands and muddy patches. A party of about 20 was seen at the Marsh in January 1989. Five were seen at the Sharu confluence in August 1987 and another large party was on a

gravel beach at the same locality (just outside this QDS) in June 1994. Twenty-four were counted during a boat trip along the Zambezi in February 1999 (IH, AH). Four were seen on 9 August 2012 on the Golf Course (NH, EB, DWI). There are several breeding records (Table 8).

Table 8. Breeding records of Kittlitz's Plover during the study period

Date	Details
August 1987	Nest with 2 eggs
September 1989	Nest with 2 eggs found on 28 th
September 1989	2 nests with 1 egg each
August 1990	Deserted nest with 2 eggs on 12 th

This species appears to occur throughout the year although it is doubtful that it is resident. Most are probably visitors from the north, but there is obviously a small breeding population, although whether this is resident throughout the year is unclear. Benson *et al.* (1971) regarded it as rare in the Middle Zambezi, while Irwin (1981) considered that it was a scarce wanderer in the major river valleys and the whole population of Zimbabwe was largely migratory with breeding confined to the central plateau, though the breeding records in the study area contradict this view. Cooper (1972) noted that it had been collected in August and September, but observed only from May to October, suggesting some local movement. He also reported breeding in August and October.

White-fronted Plover *Charadrius marginatus*

An uncommon visitor with some birds remaining throughout the year, found on sandbanks and sandy or gravel shores of the Zambezi. Some were seen at the Marsh and at C Camp in April 1990. In late March 1991 three were seen at the Sharu/Zambezi confluence (just outside this QDS) and a lone bird at C Camp (Tree 1991b). About six were seen on new sandbanks at the Marsh in September 1991 and nine at sandbanks on Nyangombe Island. On 30 June 1992 only two were seen at Chirundu despite the extensive exposure of suitable habitat after a fall in water levels, but numbers had risen to six a few days later (AJT). Six were seen at Chirundu on 2 September 1992 (AJT). One was at Chirundu in August 1994 and September 2002 with one upstream of the Marsh in March 2008 (IR). Other records include 12 birds at the Marsh in January 1989, records in August and November 1989 (no details) and also in August 1992 and 2012 (no details), September 1994 (no details), June, November and December 1998 (no details). Fifteen were seen from a boat on the Zambezi in February 1999 (IH, AH). BLZ recorded 3 in September 2004. The October record (1988) is from a field card, as is the suspected breeding record from August the same year. In August 1987 a bird was seen to partially cover two eggs, leaving a third to a quarter of the eggs exposed (DP). Chicks were recorded at Chirundu in late 1940 (Smith 1943) and there are breeding records from August to October in the Middle Zambezi (Cooper 1972).

Tree (1991b) writes that only three or four birds were seen at only two localities between Chirundu to C Camp, and all were adults presumably living out their lives as non-breeders, as there is no longer any suitable breeding habitat available along this stretch of the river. The future of this species here as a breeding species is in jeopardy because its breeding habitat, the active sandbars, are being stabilized by vegetation, flooding

has been reduced by the Kariba dam and their numbers have seriously declined. This bird formerly left the Zambezi during the peak flood from January to May, but now that seasonal flooding no longer occurs, some birds may linger throughout the year.

Other records from the Zambezi in recent literature include a group of six seen on sandbanks on the Zambezi at the Sharu confluence (just outside this QDS) in September 1995 and fifteen were counted there on a visit in February 1999. At Ruckomechi it was absent during March but was found at Vundu Camp on 4 May 1992 (Tree 1992c). Again, at Vundu Camp, on 11 September 1992 three were seen and another three were at Nyamepi on the same day, while one was seen on 23 October 1992 between Vundu Camp and Mana Pools (IR). Six or seven were at Chikwenya on 18 September 1993 (Tree 1994b). In 1994 none were found between Chirundu and Mana Pools during April and May (Tree 1994a) but by June to August seven sites along this stretch of the river held between one and three birds (Tree 1995b). By 5 September there were eight birds between Ruckomechi and Vundu Camp and also 2 downstream of Mana Pools (IR). Two were reported at Mana Pools 12 days later (DR-G) and on 26 November 1994 one was seen at Kanyemba Island downstream of Chirundu, and others heard calling in the area (Tree 1995c).

Caspian Plover *Charadrius asiaticus*

A rare non-breeding Palaearctic migrant, but possibly overlooked. The only sighting was of about 86 individuals on a pebble bank just below C Camp on 6 November 1990, evidently on late passage. It has been recorded elsewhere along the Zambezi; 15-20 arrived at Ruckomechi on 19 September 1988, c.18 were near Chikwenya on the 27 September 1990 (AA) and six at Ruckomechi on the 17 October (Tree 1991b); seven were there on 15 December (IR). One year later, throughout October and on 15 November (LA), three were recorded at Ruckomechi (IR) (Tree 1993a). In 1992 three were recorded on 23 October and birds were again seen in December (IR). Cooper (1972) reported an observation from the Middle Zambezi from July, which is suspiciously early as first arrivals in the subregion are in August (Irwin 1981).

Family Scolopacidae (Sandpipers, Snipe)

African Snipe *Gallinago nigripennis*

A rare transient and there is little habitat for this species in the study area, the only significant area being the Marsh. There are few records of this species and details are generally lacking. It was recorded in November 1990 (AJT, IH, AH) and in April 1996 (SW, KW). It is generally an inhabitant of higher altitudes (over 1500 m), especially for breeding, although found at lower altitudes after breeding (Piersma 1996). Irwin (1981) regarded it as a bird of the Mashonaland Plateau and thought it largely sedentary although movements could occur in years of above average rainfall. Benson *et al.* (1971) stated it was unknown in the Middle Zambezi Valley, but it now occurs regularly in suitable habitat in and around Mana Pools (Riddell 2009a).

Black-tailed Godwit *Limosa limosa*

A rare Palaearctic vagrant; a first-year bird was seen near Chirundu on 24-30 April 1988 (Hustler 1989). It may have been the same one seen in March 1988 at the Kariba prawn farm, and another Kariba record is of one at Fothergill Island on 15 October 1989. One was recorded at Ruckomechi on 5

April 1990 (IR), one at Mana Pools on 20 December 1992 (M. McAdam) and one at Chikwenya in January 1999 (G. Douglas). In October 2005 two were upstream of Nyamatusi channels on the 5th with one at the channels on the 9th, one near the lodges on the 8th, 2 were downstream of Chikwenya Camp on the 12th (J Varden) and another was seen upstream of the Nyamatusi on the 19th (IR), though it is not known how many birds were actually involved.

Marsh Sandpiper *Tringa stagnatilis*

An uncommon Palaearctic migrant recorded several times in the study area. One was seen near C Camp in April 1990 and another single at the Marsh in November 1995. There are other records without details from November and December 1998. One was seen at the Fish Farm in September 1999 and four were seen November/December 2003 (BLZ). It was seen in September 2001 at Chirundu (IR) and there are field card records from November 1994 and January 1995 but further details are lacking. There is a record from August 1987 from the Sharu/Zambezi confluence, which is just outside the Rifa QDS. This is an early record as most arrivals occur in September (Irwin 1981) but it could be an overwintering bird as some do stay over and there are arrival dates of 2 August 1989 at Ruckomechi, 25 July 1993 at Chikwenya and 22 August 1995 at Mana Pools (IR).

Common Greenshank *Tringa nebularia*

A fairly common non-breeding Palaearctic migrant found in marshy channels and swampy fringes to the Zambezi River and also at Long Pan, the Marsh, and Hot Springs; the largest number seen together was 10-12 at the Marsh in January 1989. Three were seen at the New Marsh where mudflats were exposed when the river level dropped on a Sunday in December 1995. There is a June record from 2001 when a single bird was heard and seen on the floodplain by separate observers on separate occasions (BP, AC, DW). In March 2005 one was seen standing in shallows of the main river near Sunset Point at dusk and another was flushed from the margins at Mhenza Pan (LM, ACC, GLR). It arrives in late July and leaves as late as May (Irwin 1981) but it has been recorded in all months. Winter records almost certainly refer to first year birds, a small proportion of which are known to overwinter in the subcontinent.

Green Sandpiper *Tringa ochropus*

A rare non-breeding Palaearctic migrant, recorded in September 1997 (OAZ), October 1991 (AJT) and in flooded mopane woodland in December 1940 (Smith 1950). Cooper (1972) reported observations from January to May.

Wood Sandpiper *Tringa glareola*

A common non-breeding Palaearctic migrant, considered to be the commonest scolopacid during the rains, e.g. in January 1994. It is found by almost any water, e.g. inland mopane pans, floodplain channels, main river, inlets and at the Marsh. After heavy rain it even feeds in wet grassland. Usually found feeding singly although there are often others nearby. A group of 10 were seen at the Marsh in August 1990 and over 30 at the Marsh in January 1989. Other counts include 20 in September 2004 (BLZ), 15 in October 2001 (BLZ) and 10 in February 1999 (IH, LM). At dusk one evening in March 2005 about 20 were seen flying in to roost in the shallows of a small mud bank on the main river at Sunset Point. Singles and small parties were also seen at Mhenza Pan, the Marsh, Barbel

Channel and even Kalisho Springs, well away from the main river (LM, ACC, GLR) during the same visit. There are records in most months, except the winter although birds have been known to overwinter elsewhere in Zimbabwe (Irwin 1981).

Common Sandpiper *Actitis hypoleucos*

A fairly common to common non-breeding Palaearctic migrant usually found scattered throughout the river and pan systems and preferring a more open waterside niche than the Wood Sandpiper. It is sometimes seen perched on half-submerged trees and trapped clumps of dead vegetation in the main channels of the river and also just below the sandbanks along the narrow gravel beach right on the river. It is usually seen singly. Counts include 15 in October 2001 (BLZ), 15 in November/December 2003 (BLZ) and 10 in February 1999 (IH, LM). It was common in March 2005, even being recorded in damp channels behind Reed's Cottages as well as its more usual haunts along the rivers and at pans. It has been recorded in all months but winter records almost certainly refer to immature birds.

Ruddy Turnstone *Arenaria interpres*

A rare Holarctic migrant recorded only once from the Rifa area. This was of a single bird seen in company with a Curlew Sandpiper, some Little Stints and other waders feeding at the artificial inlet at the Fish Farm in September 1998 (OAZ). It is normally a coastal species, both on its breeding and its wintering grounds but obviously occurs here on passage and there are a few records from elsewhere in the Zambezi Valley; 5-13 birds were at Ruckomechi in October-November 1988, at least 4-10 in September-October 1990, one downstream of Nyamepi Camp in October 1991 and one at Mana Lodges in October 2005; an adult and immature were on Kariba in January 1998 (IR).

Little Stint *Calidris minuta*

An uncommon non-breeding Palaearctic migrant, occurring here on passage with only a few records from the Rifa area. Eight were in March 1991 and four in September 1992, two seen at Kalisho Springs, one of which was in partial breeding dress in September 1995. Some were seen at the Fish Farm inlet in September 1998 in company with one of the previous species and a Ruddy Turnstone. One was seen from a boat in August 1993 (DR) while more than 5 were seen at the marsh with others elsewhere in the area in September 2002 (IR). It was recorded on Zambezi mud banks in September 2004 (BLZ, GL) and in March 2005 two were seen on an exposed mud bank on the main river at Sunset Point (LM, ACC, GLR). It has also been seen at the Sharu confluence (just outside the Rifa QDS) on 31 August 1989 (ACC, AJT). There is also a record on a field card from October 1991. It occurs here sparsely on passage, mainly in September and October but it has also been recorded on its northward trip.

Curlew Sandpiper *Calidris ferruginea*

An uncommon Palaearctic migrant; two in partial breeding dress were seen on new sandbanks (exact locality unknown) in early September 1991. This is an early arrival date although there is also an undocumented record from August 1987. It was recorded at the inlet at the Fish Farm in late September 1998 in company with Little Stint and the first Ruddy Turnstone for the area (OAZ). It was recorded at the Marsh in September 2002 (IR) and on mud banks on the Zambezi in

mid-September 2004 (GL, BLZ). The first record of a bird on northward passage was of one feeding at dusk on an exposed mud bank at Sunset Point in company with Wood Sandpipers and Ruff. It was seen to be a very active feeder with an action far faster than the other waders (LM, ACC, GLR). Smith (1950) recorded a single on mudflats in November 1940. The field cards contain records from October 1991 and 1993 and November 1995.

Ruff *Philomachus pugnax*

A fairly common non-breeding Palaearctic migrant, occurring mainly on passage. This species is usually found on mudflats and in seasonally flooded grassy channels. It is easily disturbed and is often seen flying above such habitat calling. It usually occurs in small parties but a relatively large concentration (about 20) was seen in January 1989 (no details given) and about 60 were seen at the Marsh in March 1995. It has been recorded mostly at the Marsh, C Camp inlet and Vulture Point as well as at the Sharu confluence in August 1989 and generally in March and April 1989 (IR) and at A Camp on the same trip (both localities just outside this QDS). In late September 1998 it was recorded at the Fish Farm inlet (OAZ) but the number of birds involved was not reported. It was seen from a boat on the Zambezi in July 1993 (DR). Four were seen in November/December 2003 (BLZ), in September 2001 and 2002 (IR) and it was seen on mud banks on the Zambezi in September 2004 (BLZ, GL). In March 2005 a few were seen at Sunset Point coming in to roost on exposed mud banks at dusk (ACC, LM, GLR). In March 2008, 2 were near the camp (IR) while a group of seven was flushed from Mhenza Pan on 15 March 2014 (BLZ). The majority of the birds wintering in this region are females as they tend to winter further south (Cramp 1983).

Family Laridae (Gulls, Terns, Skimmers)

Lesser Black-backed Gull *Larus fuscus*

Palaearctic vagrant. A near-adult at Chirundu, on the Zambezi, on 3 April 1960 (Tree 1961) and an adult on 29 March 1991 on a sandbar in the middle of the Zambezi near Chirundu (Tree 1991a) are the only records from the Rifa area. Irwin (1981) thought it occurred regularly in the Middle Zambezi Valley, particularly Lake Kariba where it is mostly recorded between October to March with some remaining throughout the year.

Grey-headed Gull *Chroicocephalus cirrocephalus*

An uncommon dry season visitor seen in singles or in small groups of two to five flying over the Zambezi or loafing on sandbars. A party of five was seen with African Skimmers in April 1988 and one was seen from B Camp flying over the river in October 1994. It was recorded in the QDS in June 1988 (IR) and three were seen in September 2004 (BLZ). Irwin (1981) stated that it may breed along the Middle Zambezi and it is known to breed on Lake Kariba (Worsley & Worsley 1986). Cooper (1972) regarded it as a vagrant with a specimen reported from September and observations from April to September but Ian Riddell has recorded it in all months except February and March. This may reflect an increase in its numbers on lakes Kariba and Cahora Bassa.

White-winged Tern *Chlidonias leucoptera*

A fairly common Palaearctic migrant found over the Zambezi River and its channels in groups of two to 150 from August to April. It flies buoyantly into the wind over open

water hawking for insects. Some occur here in full breeding dress in April, like the majority of those in a flock of about 20 seen near C Camp in early April 1990. The largest flock seen (that of \pm 150 birds) was at the Marsh in January 1989. Twenty were seen on a trip in February 1999 (IH, LM).

African Skimmer *Rynchops flavirostris*

A localised intra-African migrant or resident. This is one of the flagship species for the region and has been closely monitored during this study. It previously bred in the Zambezi Valley when the water level was low but with the formation of Lake Kariba much of its habitat has been submerged. Now lack of seasonal flooding, or more unpredictable floods caused by the opening of floodgates, has resulted in the sandbanks

becoming stabilised by vegetation. Where suitable sandbars do occur Skimmers were often found, e.g. in the C Camp area, below Vulture Point, near the Marsh and downstream of Reed's Cottages. Should breeding occur here and the eggs survive being washed away, further hazards are the disturbance of birds by fishermen and tourists. A pair appeared to be breeding on Bwarambwa Island in 1987, but plant cover is now more extensive there and people fish in the vicinity on most days so further attempts are unlikely. That the Skimmer population was higher in the past can be seen from Smith (1950) who described them as very common around Chirundu in 1940, with 'flocks of 30-40 once seen mobbing Fish Eagle, very immature birds seen 21 October. Undoubtedly resident but not I think in the area under observation'.

Table 9. Sightings of African Skimmer in the study area, 1987-2012

<i>Date</i>	<i>Details</i>
24 August 1987	3 seen (no locality given)
23-28 April 1988	43-46 found on isolated sandbank near Rifa Camp
January 1989	14 including 1 juvenile (no locality given)
September 1989	A pair of adults on a sandy islands 5 km south of Chirundu Bridge
May 1990	17 resting on a sandbank c.2 km below Rifa floodplain (JS)
6 November 1990	Only 4 birds seen between Chirundu and C Camp with no sign of breeding at the 1989 site (Tree 1991b)
30 August 1992	3 at Chirundu (AJT)
2 September 1992	2 at Chirundu (AJT)
June 1993	10 on sandbar, now flooded, 300 m upstream of Rifa Camp pump
3 and 9 August 1993	One at Chirundu (Tree 1994a)
January 1994	21 at Vulture Point with at least 1 immature
October 1994	\pm 10 on a sandbar 1.5 km downstream of Vulture Point, with a flock of Collared Pratincoles
March 1995	2 on sandbars upstream of C Camp
September 1995	9 on a sandbar below Reed's Cottages; one trio was made up of two adults and a juvenile which all flew off when disturbed by a Fish-eagle with the juvenile in the middle; they skimmed back to the sandbar where the juvenile pecked at some wet sand.
November 1995	9 (possible the same group as above) on a sandbar below Reed's cottages, resting in twos and threes; there was at least one juvenile
April 1996	6 adults on a sandbar (no locality given)
December 1996	3 seen on river at New Marsh
November 1997	1 seen on a sandbar below Reed's cottages
June 2001	9 at Vulture Point (BP, ACC, LM)
September 2001	7 seen, 2 of which were seen mobbing a Fish-eagle that flew over their sandbank below Reed's Camp (BLZ)
September 2002	3 on Bwarambwa Is and 7 on sandbar below Reed's Camp (IR)
November/December 2003	9 seen, including 1 juvenile on sandbar above Rifa Camp pump and also at Reed's Camp (BLZ, DR)
September 2004	13 seen on a sand island in the Zambezi below Chirundu Bridge (BLZ, GL)
March 2005	12 seen on a sand island opposite Reed's Cottages, including 1 juvenile bird (LM, ACC, GLR)
September 2012	8 on sandbar below Reed's Camp, mobbed by African Fish-eagle (DWI)
13 September 2012	1 flying at new beach 2km upstream of camp (DWI)
30 September 2012	2 at Sunset Point (DWI)



Figure 11. An African Skimmer, an iconic species of the Zambezi River sandbanks. Photo © Roger MacDonald.

Summary of other Zambezi River sightings

Most of the sightings are summarised above (Table 9) but some additional ones, without further details, include sightings in November 1989, April 1993, September 1997 (OAZ) and June 1999 (BP) and October 2011 (EB) and field card record from July 1994. On 26 August 1987 four birds, of which one pair appeared to be on a nest on a sandbank at the Sharu confluence and in January 1989 two were recorded at grid Reference PN 9815 (both just outside the QDS). Cooper

(1972) reported breeding records from the Middle Zambezi from July to December.

In 1986, during a canoe trip, JW reported them breeding on an island sandbank in the Middle Zambezi, near some breeding Collared Pratincoles. The nest scrapes were excavated by the parent bird kicking sand backwards. The chicks spent the first couple of days in the scrape, ducking low when danger approached.

At Ruckomechi, two fledglings were noted in October 1989, one adult and three immatures on 1 December 1989 and seven adults with an immature on 1 January 1990 (IR). At Victoria Falls they arrived on 6 July 1990 and bred there, raising approximately 1.6 young per pair, however, near Katima Mulilo Zambian fishermen were found raiding nests for chicks which were used as fish bait for catfish (Tree 1991b).

In 1992 groups of six and three were found during a canoe trip between D and E Camps (Tree 1992a). Later that year seven were seen between Vundu and Nkupe Camps, ten on 24 and twelve on 30 September at Nyakasanga confluence and single pairs at Ruckomechi and near Vundu on 23 October (Tree 1993a). Two were present at Chikwenya in August 1993 and bred nearby with two chicks being seen on 22 August (S Lues). Five were seen near D Camp downstream from Chirundu on 17-21 September 1993 (Tree 1994b). Skimmers were present at Ruckomechi on 11 December 1993 (IR). Arrivals in 1994 were 28 May at Victoria Falls (CP) and 22 June at Ruckomechi where fluctuating numbers from two to eight were seen after that and singles upstream at Kanyemba's Is. on 16 July and 13 August and two at Mana Pools on 16 August (IR). In 1995 numbers at Ruckomechi remained low and the highest count was eight on 29 June.

Two were at Kanyemba on 10 August 1996 (Tree 1997c). Details of a breeding colony come from a large island between D and E Camps in the Nyakasanga Safari area in early September 1993. There were four nests, each containing three eggs. The island was opposite "Culling Camp" and measured 1.6 km x 600 m and was covered in permanent vegetation, which the birds normally avoid, preferring bare sandbanks (Zusi 1996). However, the birds had chosen the barest and sandiest patch of the island, siting their nests in an area of about 2 ha. This proved to be a popular spot as a canoe safari company had also chosen it as an overnight campsite and placed their tents within 50 m of the sitting birds who were, surprisingly, unperturbed provided the people kept to the immediate vicinity of the tents. The canoeists, on the other hand, were totally unaware of the birds and despite being bedecked with binoculars were oblivious to the birds within a few metres of them. While they were being observed, another canoe party arrived and were persuaded by the observer to move camp a few hundred metres away. Safari operators need to take care to reduce disturbance to a minimum (Ryan 1994).

At Ruckomechi 'nest-building' was noted on 8 October 2000 with 3 eggs on the 18th (IR). In October 2009 the sandbar downstream of Chirundu was seen to have disappeared, possibly now eroded and two birds were on the reedbed island, having chosen the barest area in the *Panicum* on which to sit.

The increasing senility of the surviving Zambezi birds together with very low reproductive rates bodes ill for the future of this species in Zimbabwe. Tree (1989a) put the Zambezi population then at fewer than 100 pairs. Management measures on the Zambezi need to be augmented in the very near future to ensure some degree of productivity (Tree 1996a).

This species is listed as 'near-threatened' in the IUCN Red List. Threats include dam construction and consequent habitat

changes to rivers, siltation of rivers from poor farming practices and human disturbance, boat traffic, introduced fish species and pollution. It has an estimated world population of between 15,000-25,000 birds (BirdLife International 2007a). It is seen on most trips and has been recorded virtually throughout the year and is probably commoner out of the rainy season when water levels are probably lower, thus exposing sandbanks for breeding and loafing. It is almost invariably recorded resting as feeding is almost entirely crepuscular and nocturnal (Zusi 1996).

Family Pteroclididae (Sandgrouse)

Double-banded Sandgrouse *Pterocles bicinctus*

A fairly common breeding resident, often disturbed on roads and tracks in mopane scrub and woodland and where the ground is bare and stony. It is usually seen in pairs or family groups, frequently flying past at dusk to drink, calling whilst flying and before drinking. Favourite watering points include pools in front of Rifa Camp in the rainy season, the wallow, the Bream Pools, sandbars opposite the Rifa Camp pump in the main river, Tiger Point inlet especially where there are footprint puddles and in the channels below Reed's cottages. It is common on grassy areas of Nyangombe Island. Counts include 22 seen in late September 2001 (BLZ), 20 seen in early November 2003 (BLZ, DR) and 20 in September 2004 (BLZ). A nest on Nyangombe Island consisted of a shallow scrape with three orange-spotted brown eggs, which the female was incubating. A nest with one fresh egg was found next to the tsetse trap on top of Chipandaure cliffs in July 1999 (KW). Another possible record of breeding in the areas involves a female with two nearly grown flying young seen in September 1991. Cooper (1972) reported breeding in August.

Family Columbidae (Pigeons and Doves)

Rock Dove *Columba livia*

Extremely rare vagrant; a few were seen below Chirundu Bridge in October 1994 and there are further records (without details) from November and December 1998. In Zimbabwe, self-sustaining populations only occur in towns and cities and Irwin (1981) maintained that it had failed to spread naturally and did not regard it as an integral part of the avifauna. The birds at Chirundu may have strayed from domesticated populations.

Speckled Pigeon *Columba guinea*

Extremely rare vagrant; five birds flew over the Rifa Camp, heading north, in April 1990 and there is a field card record from May 1989. There is little suitable habitat in the region although the more rugged hills south of Chirundu may hold a small population.

African Mourning Dove *Streptopelia decipiens*

An uncommon localised resident, found only in acacia-type woodland, especially in the apple-ring acacia trees along the Zambezi River. On one occasion a bird was seen in a baobab near C Camp, and in March 1989 it was recorded upstream of that camp (IR). It is sometimes found in the tall trees on Nyangombe Island, opposite the Bream Pools and regularly downstream from Chirundu Bridge at the Fish Farm and Chirundu Estates. Birds were found near Bream Pools and at the top of the Marsh in March 2008 (IR) and up to eight have been seen in 2008. In January 2009 it was found between Sunset Point and the water pump and in June 2014 it was

recorded at Hot Springs in the narrow band of trees fringing the road (IR).

It usually occurs in singles and pairs and is almost always first detected by its call but is generally shy and even a calling bird can be very difficult to see. Reed's Camp, just downstream from Chirundu is a favourite location as there are many apple-ring acacias there and there are sightings there from April 1994 (IR), November/December 1997 (PJM), September 2001 and 2002 (BLZ), c.5 in September 2004 (IR), November/December 2004 (DR, BLZ) and August 2012 (NH). Some of these large trees have been recently destroyed. There are field card records for January, May and October. This species is generally little-known in Zimbabwe owing to its peripheral distribution and relative restriction to apple-ring acacias. Maclean (1984) and Harwin (1989a) also give villages and small-scale cultivation as a habitat preference, while Howells (1985) noted that it was 'exceptionally abundant' around villages in the Dande Communal Land, in the eastern Zambezi Valley about 180 km east of Chirundu.

Red-eyed Dove *Streptopelia semitorquata*

An uncommon resident, recorded in all months but not on all trips and there may be some nomadic movements into the region depending on the presence of fruiting trees and the drying up of surface water elsewhere (Urban *et al.* 1986; Clancey 1980). It is largely confined to the riverine belt and was often heard calling on Nyangombe Island, around Rifa Camp and at Tiger Point. They are usually seen flying in to roost in the large riverine trees, especially those with a lot of cover, such as Natal mahoganies, from about 16h00 in the afternoon until dusk. Vulture Point is another favourite location and many were seen there in June 2001 (BP, AC, LM, DW). In March 2005 it was notably common in the apple-ring acacia trees near the Marsh and there were also many near Reed's Cottages (LM, ACC, GLR). It was absent from February to April 2009.

Cape Turtle-dove *Streptopelia capicola*

An abundant resident found mainly in mixed woodland and seen drinking in large numbers at virtually any water source, even from drowned tree stumps in the main river. When the remaining figs from the Zambezi fig in the Rifa camp disintegrated on the ground in October 1994 this species, together with flocks of Lilian's Lovebirds, picked up the seeds; there were also large numbers in June and October 2008. The crops of three birds shot at Vulture Point inlet contained grass seeds, other seeds such as blackjack seeds, and some insects; one had eaten 28 insects (unidentified). In September 1996 it was reported to be very common and calling incessantly during the day and one was even calling throughout the night next to the Hunter's Cottage at Rifa Camp. Cooper (1972) reported breeding records from August to October in the Middle Zambezi Valley. Rowan (1983) reports some local movements in the more tropical parts of southern Africa with higher numbers occurring during the drier months.

Laughing Dove *Spilopelia senegalensis*

A common to abundant resident and nomad found throughout but in varying numbers during the year. It is fairly common in the rainy months but can become extremely abundant in the drier months when grass seeds are plentiful. In the 1994 season thousands came to feed on the seeds and two crops from birds shot at Vulture Point in November 1994 contained mostly blackjack seeds, while a third contained

mostly small grass seeds. It was found feeding on roads in late afternoon in April 1994 and flocks of around 150 birds fed on dry, fallen seeds of Zambezi figs on the ground at Rifa Camp in October 1994; large numbers utilised the figs in October 2008. In the drought year of 1995 the large influx of doves into Rifa that occurs in years when food is plentiful did not occur. In April 1990 a heavy upstream migration was noted which slackened off towards the end of the week ending 21 April. Mating birds have been seen and they must breed in the area. In addition to the large-scale movements reported here, Tree (1963) described a similar movement of about 4000 birds near Feira, on the Mozambique/Zimbabwe border, again during April.

Emerald-spotted Wood-dove *Turtur chalcospilos*

A fairly common resident, recorded in all months, that frequents the denser woodlands and is more often heard calling from these woodlands than it is seen. It also occurs in dry, dense scrub and can be found quite far away from water and is frequently flushed from roads, when it flies up onto a nearby branch. It would seem to be less subject to movements than the other doves, although it is probably recorded more during the hotter, drier months. It is widespread but in fairly small numbers, and was frequently encountered on a trip in March 2005 when they were flushed whilst walking and often heard calling (LM, ACC). Cooper (1972) reported breeding records in August.

Tambourine Dove *Turtur tympanistria*

Rare; heard clearly in the Chipandaure riverine forest in March 2008 (GL, IR, G Carter) and in the river terrace woodland south of the Chipandaure mouth a day or so later. It has since been heard again. It may have been overlooked, being of shy and retiring habits, while observers may be unfamiliar with its call. Irwin (1981) recorded it in the Zambezi Valley area on the Manyame and Angwa Rivers and upstream to the Chewore-Zambezi confluence. There is also an Atlas record (Harrison *et al.* 1997) for the QDS, as well as two in the Mana Pools area and it must be rare in the valley.

Namaqua Dove *Oena capensis*

An uncommon to fairly common resident, recorded in all months, usually in singles or small parties. Often seen on the road to C Camp and near Baghdad Village, Chirundu, both in mopane woodland but also in the riverine fringe and in grasslands in lightly wooded sandy areas near the old Sugar Estates. It was infrequently reported in 2008 and early 2009, but observers may not have walked much on the dusty tracks where it is often found. Like most of the other doves in the region it is probably also involved in nomadic movements, moving to where seeds are abundant and becoming sparse during the wetter months when there are fewer seeds around (Rowan 1983). Usually seen in the drier regions of the area.

African Green-pigeon *Treron calvus*

A fairly common resident present throughout the year but subject to local foraging movements in search of fruiting trees (Rowan 1983). It can be seen foraging in fruiting Zambezi figs in small parties. There are isolated large trees of this species in the staff area and behind the school dormitories of Rifa Camp and also at Barbel Pan, Long Pan and along the rest of the floodplain to B Camp and wherever the figs are ripening these pigeons are to be found. Some roost throughout the year in the big fig in Rifa Camp. It was well-recorded in 2008 with a peak

in October when the figs were fruiting. In March 2009 about 50 were feeding on the figs at the supervisor's chalet (DK). Figs from other species are also eaten but they do not yield as much fruit, and it has also been recorded eating Wild Mangoes and fruits of Natal mahogany. Because of their frugivorous diet they are often found in company with other fruit-eating species such as Lilian's Lovebirds, Trumpeter Hornbills, starlings, orioles and the like. Cooper (1972) reported breeding records from September.

Family Psittacidae (Parrots)

Lilian's Lovebird *Agapornis lilianae*

An uncommon to very common breeding resident. This is another flagship species for the study area and has been monitored in more detail. Flocks, sometimes numbering over a hundred, are often found near Rifa Camp. They have been recorded feeding on the flowers of Tamarind, young seeds in green pods of Splendid thorns and the fruit of Zambezi figs. In late October 1989 a flock of about 30 was in the Zambezi fig at Rifa Camp and also on the roofs of the dormitories and in the tamarind behind. On Nyangombe Island in December 1993 they were seen in a flock of well over 100, feeding on snowberry and Natal mahogany kernels and apple-ring acacia pods, both on the trees and on those which had fallen to the ground. These birds drink daily so they are never found far from water.



Figure 12. Lilian's Lovebird, a near-endemic in the Zambezi Valley, sometimes found in large flocks. Photo © Desiree Davis

On very hot days (over 40° C) in October and November 1993 they appeared in large flocks in a couple of apple-ring acacias next to an artificial wallow and drank in the shallow water on several occasions, returning to the big trees throughout the morning and late afternoon. At the end of November that year 57mm of rain fell and a week later a further 33mm and the pools and pans filled near Rifa Camp and the lovebirds disappeared for a few weeks. In October 1994 the Zambezi fig in the camp site burst into fruit, attracting huge numbers of frugivores including unprecedented numbers, up to 600 at a time, of this species, which congregated at the top of the tree and in the outer branches. Towards the end of the fruiting, large numbers of them were feeding on dropped and rotting figs on the ground along with doves and sparrows (Maasdorp 1995).

Large flocks are found round the shallow pans in the mopane woodland and in the Kalisho Pan area and those from

Rifa Camp area may have migrated to those areas temporarily and returned by Christmas. Near Kalisho they were observed eating very young green acacia pods. In July 1997 Eiffel Flats School counted flocks numbering 9, 4, 4, 11, 28, 24 and 50 birds. In severe drought years such as 1995 the lovebirds became concentrated in areas where there was permanent water, such as the Bream Pools and the Hot Springs. Notable counts include 300 or more seen daily in August 1988 (SJ), c.100 at Bream Pools, 30-40 at Nyachuru and 20 at WP20 Pan – all in July 2000, 80 in Nov/Dec 2003 (BLZ) and 55 in October 2001 (BLZ). In June 2002 (winter) about 60 were seen sunning on trees near Mopane Pan (GL, LM).

This lovebird roosts and breeds in holes in mopane trees and there are many records of birds entering these holes; normally about 4-6 of them roost in a hole but there is an exceptional record of 25 in a single hole (Fothergill 1984). In June 2001 a pair was seen investigating a hole in a mopane tree near Buffalo Pan at midday (AC, LM). In September 2004 about 150, both adults and immatures, were found going into holes in mopane trees in early afternoon. This occurred in a valley in the Chirundu Hills opposite the Back Road (IR). At Nyachuru Pan several were observed entering holes well after sunset (L Warbuton, LM, GL, DW).

In August 2009, 65 were feeding on the flowers of burning-bush combretum flowers (DK) and 150 on those of shaving-brush combretum in the Chipandaure in October 2009 (BLZ). In August 2012 about 70 were seen inland of Hot Springs feeding on the flowers of the climber *Salvadora persica*, about 30 on combretum flowers (no locality), in September about 120 feeding on burning-bush combretum flowers and about 100 on unspecified plants near Hot Springs (NH). On 10 November 2012 about 100 and about 200 were on two trees at Chitake River/Spring in October in the Mana Pools National Park; they drank from pools and shallow water in the sandy riverbed (R. Maasdorp). The presence of young birds confirms that they almost certainly breed in the area.

This species is classified as 'near-threatened' by IUCN (BirdLife International 2007b), the major threats being from trade and habitat loss. It is common to very common in the QDS but subject to local sporadic movements, which seem to be connected to the presence of standing water or the presence or absence of fruiting trees and seeds. It is said to be rather patchily distributed in the Middle Zambezi but can be locally common (Irwin 1981).

Grey-headed Parrot *Poicephalus fuscicollis*

A fairly common resident or nomadic visitor found in woodlands and riverine forest in all months, although there are few records from November/December, which may indicate some movement elsewhere in search of fruiting trees, possibly into Zambia or onto the central plateau of Zimbabwe. Numbers elsewhere in the Zambezi Valley build up during the dry season from April through to August with groups of up to 46 reported at Mana Pools (IR). It makes daily foraging flights, sometimes over considerable distances and seems to follow regular routes. In April 1988 pairs and small parties were seen flying over Rifa Camp every early morning and evening and this occurred again in April 1991. It is an extremely noisy bird and many records are from hearing birds screeching as they fly over. Two or more pairs are often seen around Rifa Camp but none were seen over 1-4 October 2009, which is unusual (BLZ). It has been seen eating figs and other food includes kernels of Natal mahogany, fruits of *Diospyros* sp. and acacia buds and pods. A party of six was seen drinking

in a shallow inlet of the Zambezi in April 1993. One was seen excavating a hole in a baobab just east of camp in August 2012 (NH, EB) which suggests breeding behaviour.

Meyer's Parrot *Poicephalus meyeri*

A fairly common to common resident found throughout the region in mixed woodland, mopane woodland and the riverine fringe. It is usually seen in pairs or small groups probably consisting of family parties. The largest such group was one of seven seen in the Chipandaure. They feed mostly on pods and the fruits of figs, Natal mahogany (a special attraction in December/January), apple-ring and other acacias. They have also been seen to feed in mopane and baobab trees, and when the large Zambezi fig trees are in fruit they feed assiduously, even calling as they do so.

Family Musophagidae (Turacos)

Purple-crested Turaco *Gallirex porphyreolophus*

A fairly common resident seen regularly in riverine fringe and among the dense bush and trees surrounding the smaller watercourses. It often came to drink at the birdbath at Rifa Camp in October and November 1993, 1994 and 1996 when it was very hot. There are field card records for May 1988, 1989 and 1994. Cooper (1972) reported breeding in November in the Middle Zambezi. Rowan (1983) and Turner (1997) suggest that it moves away from riparian areas during the rains, but this was not the case at Rifa and Cooper (1972) reported observations from May to November only. Any movements are most likely to be determined by food availability.

Grey Go-away-bird *Corythaixoides concolor*

A common resident, widely distributed but found in small numbers (3-7) both in the riverine forest and the mopane woodland. It is often seen at Rifa Camp, Vulture Point, Long Pan and at C Camp. In March 2005 it was also found on Chirundu Heights (ACC, LM, GLR). It is undoubtedly more common than the Purple-crested Turaco although its abundance may vary at different times of the year because of changes in the availability of food and water.

Family Cuculidae (Cuckoos, Coucals)

Jacobin Cuckoo *Clamator jacobinus*

An uncommon intra-African migrant heard in the Chipandaure area on two consecutive days in December 1995 and one was seen in November 1995. One was seen in December 1997 and another flew across the main road south near Nyakasanga in November 1995. Two were seen calling and flying between two tree clumps on Chirundu Heights in February 1999. One was seen in December 1997 and four in December 2003 (BLZ) and there is a record of one in a tree at the Chipandaure River crossing in March 2004 (LM, JS, DW). Two were seen during a visit in March 2005, one in the Chipandaure thickets and another seen flying near the Bream Pools. It has been recorded in August to October 2007, January to March in 2008 and 2009 and there are field cards records from January 1993, April 1993 (2) and October 1993. Its main host, the Dark-capped Bulbul is common here, so it may well breed in the QDS although proof is lacking.

Levaillant's Cuckoo *Clamator levaillantii*

A common intra-African migrant, it is a conspicuous and noisy species seen as singles or in pairs in the riverine forest and mopane woodland. It was seen or heard almost every day at Rifa Camp from November 1994 to January 1995. It was

reported as common in March 2000 (GL) and four were seen during a trip in December 2003 (BLZ). During a trip in March 2005 it was found to be commoner than the previous species and was heard almost daily in Rifa Camp and was seen in the Chipandaure thickets and at the Bream Pools. Recorded in January, March and November 2008 and in January and March 2009, though not heard as often as in the past. There are field card records from May 1989 and 1996, October 1993 and November 1996. Its main host, the Arrow-marked Babbler, is a common bird and a cuckoo of this species was seen visiting a babbler's nest in April 1993. A cuckoo chick was seen with a party of babblers in late January 1997.

Great Spotted Cuckoo *Clamator glandarius*

An uncommon intra-African migrant. One was seen in a tree near the camp in November 1993 and another was recorded January that same year (PJM). In February 1997 very good views were obtained of two separate birds perched in young apple-ring acacia trees on the floodplain near the Marsh (LM, AC). There are two field card records for April in 1993 and 1994 and one from October 1993. This species parasitises crows and starlings (Rowan 1983); the latter are numerous at Rifa but there are no records of breeding as yet.

Red-chested Cuckoo *Cuculus solitarius*

An uncommon intra-African migrant, rarely seen but easily recognised by far-carrying and unmistakable call. Birds were heard in September 2001 (BLZ), October 1989 and the end of January 1994. It has not been heard in recent years though it may be under-recorded to some extent as it is fairly regular downstream. There are field card records from November 1996 and December 1997. Of its authenticated hosts (Rowan 1983) only the White-browed Scrub-robin is common at Rifa. It can be extremely common elsewhere in Zimbabwe but it is rather sparse here, preferring wetter, thicker habitat, and probably occurs here mainly on passage.

Common Cuckoo *Cuculus canorus*

A non-breeding Palaearctic migrant. Only recorded once when a bird was mist-netted and ringed on 1 December 1997. Probably rare but easily overlooked; a hepatic female was recorded at Ruckomechi in April 1992 (TW).

Klaas's Cuckoo *Chrysococcyx klaas*

There are apparently two populations of this species, one consisting of breeding intra-Africa migrants, and another, winter population of inconspicuous, silent birds which perhaps originate in South Africa (Irwin 1981). Like the next two species, it is more conspicuous when it is calling, from about September onwards. It is fairly common at Rifa in summer, but has been recorded in most months. Three birds, an adult and two juveniles were seen in a mixed bird party in the huge baobab behind Rifa Camp on 30 April 1988. One was seen on Bolt Island in May 1994 and another was heard at C Camp in October 1994. More recent records are of it being heard and seen in the Chipandaure in December 1995 and being heard in mopane woodland near Chirundu Heights in April 1996. It was recorded in October 1997 (BLZ), September 2002 (IR), December 2003 when four were seen and in September 2004. More recently recorded in March 2006 and in November 2007 and 2008. A winter record is of a male seen in a big baobab near Long Pan (AC, BP, LM) and two males and two females seen in the Chipandaure riverine on 12 July 2000 (IR). There are field card records from January 1993 and November 1996.

Many of its documented host species, such as small warblers and sunbirds, (Rowan 1983) occur at Rifa so it probably breeds in the area.

African Emerald Cuckoo *Chrysococcyx cupreus*

Status uncertain, the lack of winter records suggests that it is a migrant but it is very inconspicuous if not calling so this may not suggest its absence. There are several records of this species, one seen on 25 February 1990 at the Chipandaure, another heard at Long Pan on 5 February 1995 and both seen and heard in January 1997 (location not given). It was heard calling daily at the Chipandaure in December 1995. In November 1997 a male was seen in a tree downstream from Reed's Cottages and in the following month one was seen in the woodland at the same location. Two others were seen in mopane woodland between Rifa Camp and the Chipandaure, close to the camp dormitories in November 1997. GL reported one in riverine bush near Long Pan in March 2000 and BLZ reported 6 seen or heard in December 2003. In March 2004 a male was seen calling from a tree in the Chipandaure and it was joined by two females (or perhaps immatures) (LM, JS, DW). A male and female were recorded in January 2008, a single in March near the Chipandaure crossing and another in November 2008. There are field card records from January 1993 and April 1996. Its hosts are not well known although the Black-backed Puffback and Grey-backed Camaroptera are suspected (Irwin 1981, Rowan 1983) and both occur commonly here.

Diderick Cuckoo *Chrysococcyx caprius*

An uncommon intra-African summer visitor, recorded from the Chipandaure in September 1988 and also in November of the same year. Its presence was reported in the area in March 1989 (IR) and it was heard calling around Rifa Camp in December 1993 and in January 1994. One was seen in February 1997 (IH, LM) and another was recorded in December the same year (BLZ). It was reported as common in March 2000 (GL) and three were seen or heard in December 2003 (BLZ). Two were recorded in January and March 2008 followed by a record in November. In 2009 one was reported in January, two in February and four in March. This species parasitizes weavers (*Euplectes* and *Ploceus* spp.), which are relatively common at Rifa. Considering that it is such a conspicuous species with a distinctive call and a relative abundance of hosts, it is surprising that there are relatively few records, compared, for instance, with Mana Pools where it is common (IR).

Senegal Coucal *Centropus senegalensis*

An uncommon and localised resident. One pair is always present in front of the cottage at Rifa Camp, being active in the short couch grass and *Chrysopogon* grass but also making their way up to the terrace bushes and trees. They have also been recorded, usually near water, at other sites along the floodplain, such as the Bream Pools where it was seen in fringing vegetation in March 2005 (LM, ACC, GLR). It was seen or heard almost every day throughout 2008, through to March 2009. It can also be recorded away from the floodplain, as at the Chipandaure River crossing in March 2000 (GL) and it has been seen at Long Pan. They are aggressive to other birds on their territory but have been observed a few hundred metres from the following species at the same time, and within 50m of each other at Bream Pools in March 2008 and previously (IR).

There are records from the field cards from May (1988, 1994) and October (1991, 1993) in addition to documented records.

White-browed Coucal *Centropus superciliosus*

A fairly common breeding resident, more numerous than the preceding species and found in small numbers all the way along the river, especially in the *Chrysopogon* grassland but also in fringing trees and bushes. It is often seen at the Bream Pools where the *Chrysopogon* grass is exceptionally thick and well developed. After overnight rain one morning in October 1995, this species, and the previous one, were observed at the same time, a couple of hundred metres apart on the floodplain in front of Rifa Camp. In March 2005 it was quite common with singles seen on the floodplain, at Sunset Point and Hot Springs at Rifa and also recorded further downstream at Reed's Cottages (LM, ACC). There is a record of an adult feeding a newly fledged chick in front of Rifa Camp in April. In March 2008 two dependent fledglings were seen with adults near Bream Pools (GL) and in January 2009 a newly fledged chick was with its parents at Bream Pools (IR).

Family Tytonidae (Barn Owls)

Barn Owl *Tyto alba*

A fairly common resident that, like all owls, is often overlooked because of its nocturnal habits and is generally only noticed when calling. On two occasions in September 1989 individuals were seen occupying a large hole in the bee-eater colony along the Chipandaure. It has been heard frequently around Rifa Camp and they were also found to be occupying the pump house on Chirundu Heights. Feathers were found near a Hamerkop nest near Barbel Channel and they should be looked for in similar situations and also in hollow baobabs. Birds have often been seen flying out of a hole in such a baobab behind the Hot Springs. Recorded once in March, twice in May, three times in June and once in July. There are January, May, June and July records from field cards. Hamerkop nests are favourite nest sites so the presence of a bird in one almost certainly indicates breeding. Cooper (1972) reported breeding in the Zambezi Valley in April.

Family Strigidae (Typical Owls)

African Scops-owl *Otus senegalensis*

A fairly common resident, more frequently heard than seen. One or two birds were often heard calling at night both at Rifa Camp and on Chirundu Heights, thus making it the most commonly reported owl. It has been seen roosting in the Zambezi fig in the camp on a few occasions and a pair was present in September 1992. In August 1997 a torch was shone on a bird calling in the fig tree and it dropped a dormouse which weighed about 28 g, probably a third of the owl's body weight, and an unusual prey item as this species is said to be almost exclusively insectivorous (Steyn 1982; Weaving 1989), although mammalian prey is usually delivered to a nest (Marks *et al.* 1999). In March 2008 one was seen in the fig at night and during the following day; it may benefit from the extra floodlights installed in 2006, which attract insects. However, it is sometimes scarce, absent or silent as in September 1989 and between October 1993 and January 1994. The frequency and intensity of calling may be influenced by season, e.g. breeding, and possibly by moonlight. A number of birds will respond from several directions to a tape recording indicating rather small territory size and a relatively high population density in the region of camp (GL). There are January records from the field cards.

Southern White-faced Scops-owl *Ptilopsis granti*

Rare but possibly overlooked unless observers familiar with its call are listening for it in suitable habitat. It has been heard in the past but details are lacking. On 22 March 2008 at about 20h00 a bird was heard calling in the riverine upstream of the Chipandaure crossing (IR, GL). Irwin (1981) regarded it as sparse in the major river valleys and it was not listed by Cooper (1972).

Verreaux's Eagle-owl *Bubo lacteus*

A common breeding resident, widespread in riverine and mopane woodland surrounding pans. It is heard almost every night and in the early hours of the morning from Rifa Camp and in the distance from Nyangombe Island. It has been seen on Nyangombe Island flying from one tree to another when disturbed from its roost in the deep shade of a Natal mahogany tree. A pair was also flushed out of tall trees in the lower Chipandaure at a washed out crossing and another was seen in the tamarind trees behind the school accommodation blocks in April 1991. At Nyachuru Pan a pair flew out of thick woodland (mainly mopane) in April 1993. One was seen in daylight at camp with a Peter's Epauletted Fruit Bat that it had caught (Schwab & Wright, 1990). An unusual prey item was a Three-banded Courser caught under the camp's main floodlight in about 2006. It has also been seen perched at sunset on dead trees on the road into Chirundu near the lower Hot Springs. The birds at Rifa Camp were heard again in June 2001 (BP, AC, LM). Recorded in July 2000 (IR), September 2002 (BLZ) and January 2009 (IR) although not as common around camp in this decade, perhaps due to the scarcity of rodents. There are November records from the field cards. It bred behind the dormitories at Rifa Camp and the chick was first seen at Christmas 1994 and several times again up until mid-March 1995 when it was 3 months old. On 20 October 2012 a fledgling was seen at Little Mana in the fork of an apple-ring acacia tree (EB, NH). Cooper (1972) reports a breeding record from June.

Pel's Fishing-owl *Scotopelia peli*

A rare resident. Feathers have been found at Barbel Channel and at C Camp, but it has only been sighted twice, once in August 1988 (further details lacking) and again in the afternoon of 11 December 1993 when an adult was seen perched in an apple-ring acacia, half way up, near a largish temporary pan on the southern side of Nyangombe Island. Fishermen sometimes report seeing it from their boats between Chirundu and C Camp. There is also a field card record from 15 October 1993 but without further details. The lack of records makes it difficult to determine its status but it is possible that birds in this rather heavily disturbed part of the river are transients from quieter and more thickly wooded areas.

Pearl-spotted Owlet *Glaucidium perlatum*

A widespread and common resident often seen and heard near Rifa Camp in September and October 1989. In April 1990 a single owl was being mobbed by a mixed bird party, a single bird was heard calling and two or three pairs were found in the region of Rifa Camp that month. In April 1991 a pair was found roosting in the Zambezi fig in camp or in the trees lining the erosion gully to the northeast of it. They did not respond well to the tape recorder but they were heard calling two or three times per night, usually in the evening and early morning. They were also seen in August and November that same year.

One was seen in mid-morning in a tree near Long Pan at the end of January 1994. It was regarded as common in February 1997 (AC, LM, IH) and one was seen perched in a tree along the Back Road in March 2005. It was only reported four times in 2008 and early 2009, possibly because undergrowth had been removed at camp and insects were perhaps less common, but it is not known if this would account for recent scarcity. They are seen more frequently than other small owls, as they are partly diurnal and not shy.

African Barred Owlet *Glaucidium capense*

A fairly common resident, sometimes heard and seen near Rifa Camp. There are records from April and August 1988, October and November 1989, April 1990, March and September 1991. Compared with the previous species it prefers the denser woodland such as that along the riverine terraces and up the Chipandaure. One was heard calling most nights in the camp during late April 1988 and one was seen sitting in the open at old B Camp in September 1991. In September 1996 it was reported to be endlessly calling each night in and around Rifa Camp, and in June 1998 one was seen hawking insects at lunchtime by the staff lawn in the camp. It was recorded in September 1999, October 2001 and September 2004 (BLZ) and it was seen in March 2000 (GL). Recorded from January to July 2008, making it more common at camp over this period than the previous species. There is a field card record from January 1993. It is reported to breed in September-October in the Middle Zambezi (Cooper 1972).

Marsh Owl *Asio capensis*

Rare, but status otherwise uncertain. It has been seen twice at Rifa, once on Bwarambwa Island, which is partly dry sand or grass on sand and partly marshy grassland with areas where pioneer trees have been established, in September 1989 (PJM). There is another record of one seen at Chirundu in January 1989 but without an exact locality (Tree 1989a). It should possibly be looked for at the Marsh when there are inundated grassy areas and perhaps the rarely-visited Bwarambwa Island. The status of this species in the Middle Zambezi Valley is open to question. Irwin (1981) states that it does not occur there, or below 900m but it is increasingly being reported from the Middle Zambezi Valley. There are records from Ruckomechi in May 1992 and at Vundu Camp in the same month (Tree 1992c). Further records from Ruckomechi include sightings in October 1989, January 1992 and September 1999 when 7 were seen; a further bird was near the Mcheni camps, Mana Pools in September 1994 (IR). According to Dean (1989a) it could be subject to local or seasonal movements.

Family Caprimulgidae (Nightjars)

Fiery-necked Nightjar *Caprimulgus pectoralis*

This species has been recorded almost throughout the year but most reports come from August to October when the birds are calling. It is heard from Rifa Camp and also in the Chipandaure, mostly at dusk but also in the early morning. They are sometimes seen hawking along the terrace in front of Rifa Camp. The highest trip count was of 10 during a BLZ visit in September 2001. The lack of records during the height of the rainy season is probably genuine as Irwin (1981) maintains there is a post-breeding exodus of this species occurs in November with a return in April.

Square-tailed Nightjar *Caprimulgus fossii*

An uncommon visitor, recorded in all months except December and January. Its churring call is sometimes the only indication of its presence but there are also some sight records. A few males were seen at different sites in August to early September 1989, and small, scattered numbers were reported to have been seen in May and heard at Chirundu in November 1990. It has been recorded once from the bee-eater colony along the Chipandaure in September 1991 and it was heard in May 1993. In September 1996 it was seen on the road at close quarters during a night drive, and in June 2001 several were seen at dusk hawking over water and damp areas on the floodplain in front of Rifa Camp. There is a record for July 2000 and in the QDS in March (IR). Also recorded in September 2007 and March (IR), June & July 2008. It is a species of more open habitats than the other two nightjars found here. There is a distinct dry-season bias in the number of records. It would appear to be an altitudinal migrant, leaving the central plateau for the major river valleys during the winter (Irwin 1981, Harwin 1989b).

Pennant-winged Nightjar *Macrodipteryx vexillarius*

An uncommon intra-African migrant, most likely to be seen on passage. It was recorded within the study area in September 2001 (BLZ) and November 2008 (JS, LM, DW) and a male at Sunset Point was followed by a different male in front of camp in October 2009 (BLZ, BP, IR). BLZ recorded a bird or birds on the evening of 15 March 2014 on the banks of the Zambezi, though details are lacking. Fifteen were found as road casualties between Chirundu and Marongora on 30 November 1993 (BLZ). Most were males but two females were collected and sent to the National Museum. This species tends to breed in *Brachystegia* woodland (Irwin 1981) but it could occur in more mature mopane woodlands, which are not normally surveyed at night.

Family Apodidae (Swifts)

Mottled Spinetail *Telacanthura ussheri*

An uncommon resident. There would appear to be a hot to wet season bias but this species is generally believed to be resident (Chantler & Driessens 1995). There are identification problems with this species and some of the square-tailed *Apus* species, but if seen well it is very distinctive (Harwin 1989c). A pair was seen at Chirundu in November 1990 and a few seen on the banks of the Zambezi near the Rifa Camp pump house in May 1993. There was said to be 'lots of Mottled Spinetails and Böhm's Spinetails' 3-7 October 1991 (OAZ), though it is not clear whether 'lots' refers to the former. There are other records from Rifa Camp in company with the following species one evening in October 1994 and in the same month it was also seen at the bee-eater colony at the Chipandaure. There is another record with no details from January 1989. It was recorded in 1997 in February (LM, AC, IH) and September (BLZ). The records from December 1994 are from the field cards and there are also supplementary records from January (1995) and October (1991, 1994), also from field cards. This species probably breeds in the abundant baobabs in the area although nests have yet to be found in this QDS.

Böhm's Spinetail *Neafrapus boehmi*

An uncommon resident, encountered more often than the previous species but this could be an identification problem since this species is unmistakable and unlikely to be confused with any other. In April 1988 a single bird was seen flying at

treetop height behind camp in the late evening. Since then it has been recorded on several occasions and in November 1990, two were seen over Chirundu and twenty were seen near C Camp (an exceptionally large group) (AJT, IH). In October 1994 it was reported to be quite common over the riverine terrace forest around camp, near Long Pan and at the Chipandaure. At the Eclipse Camp in June 2001 a single was seen with Horus Swifts just above the bee-eater colony at Chipandaure (LM, BP, AC). It is most commonly seen in the evening but it will forage during the day as well. A high trip count of 20 was recorded in September 2001 (BLZ). At Mhenza Pan about 6 were seen in February 1997 and it was recorded there again by BLZ in September 2004 and again in March 2005 when a small party was seen there (LM, GLR). No breeding records but may do so. This species nests in subterranean sites such as wells or pits up to 9m below ground, but also in hollow baobabs (Maclean 1984) so it may breed in the latter in this QDS. It has been reported throughout the year except for December and January but this probably reflects absence of observers rather than birds although Chantler (1999) reported that numbers in Zimbabwe were reduced during the middle of the wet season which concurs with the sightings here. It is possibly more common further downstream with over 90 seen daily at Mana Pools in October 1987 (SJ).

African Palm-swift *Cypsiurus parvus*

A common resident associated with the Ilala palm in which it builds its nests. These are only established as tall palms on the Zambian side of the Zambezi where they are not damaged by elephants. It is seen on most late afternoons, especially during the rainy season, often in the company of other swifts and swallows, hawking insects over the river and alluvial plains. At some times of the year it is reported as being uncommon with such records of small numbers from April, August and September and larger numbers (<30) being seen in December 2003 (BLZ). There are June and July records from field cards. It probably breeds in this QDS but mostly across the river in Zambia or in ornamental palms in the gardens on Chirundu Heights. It appears to be more common during the rainy season but this may be due to the increase in insect activity.

Alpine Swift *Tachymarptis melba*

An uncommon passage migrant, easily overlooked. Three were seen at close range at the old Chirundu Sugar Estates in late August 1987 (AJT). Another two were seen circling high above a flock of Horus Swifts in late April 1988 at C Camp and another two were seen in a mixed swallow/swift flock over the floodplain between the Bream Pools and the river in October 1994. There is another record from below Marongora, just outside this QDS, where two were seen on 5 September 1992 (AJT). Field card records are from May 1989, 21 August 1994, 1 November 1994 and 6 November 1995. The wandering capabilities of this bird are enormous and they can appear virtually anywhere between April and November and the records confirm this.

Common Swift *Apus apus*

An uncommon Palaearctic migrant or passage migrant recorded in the area in September 1988 (no further details), but there is another record from 25 September 1997 (BLZ) and again in late September the following year. A large flock were recorded at dusk at the Chipandaure River in December 1996 and on a canoe trip in November 1996 (IR); there is another

December (2003) record when 10 were seen (BLZ). These are typical, if slightly early, passage dates which mark the species' arrival in Zimbabwe. Although it is common from mid-November (Irwin 1981), its arrival on the wintering grounds can be from September onwards (Chantler & Driessens 1995; Cramp 1985).

Little Swift *Apus affinis*

A fairly common resident. In August 1987 flocks of up to 200 were seen daily in the Rifa Camp area (AJT). A party of about 20 of these birds was seen on the evening of 29 April 1988. In September 1988 also noted and "early arrivals" of twelve and later twenty were observed in April 1990. Over ninety were seen in August 1990 and it was also recorded in August 1991 when many hundreds were seen along the main road between the Nyakasanga crossing and Chirundu (Tree 1991c). In May 1996 flocks were seen over the floodplain and in September the same year it was seen flying over the Zambezi and also over the Chirundu Heights. It was seen at dusk with other swifts over the floodplain in front of Rifa Camp in June 2001. In March 2005 it was the main component of a mixed hirundine/swift flock at Kalisho Springs and it was also seen from Chirundu Heights. There is an October record from the field card data. This species now breeds almost exclusively man-made structures and these are not abundant in this QDS. They might breed on the Chirundu Bridge or at the old Pump house which should be investigated for signs of breeding. Tree (1991c) states that the Zambezi Valley has only recently been found to be a non-breeding resort for this species but the population involved is not known. The records above would appear to show a dry season bias, which may well be genuine, as there could well be an influx from the central plateau which is generally deserted at this time (Irwin 1981, Chantler & Driessens 1995). As with other swifts, this species should be looked for in the mixed swallow/swift flocks that congregate in the early evening above the river and the cliffs behind the Bream Pools and Chirundu Heights.

Horus Swift *Apus horus*

A common breeding resident most frequently seen in the vicinity of the breeding colony in the Chipandaure Cliffs. In early September 1991 it was noted that there were very few birds at the colony (one flock of eight seen) and this was a very late arrival as in most years breeding starts in August (Tree 1991c). When they are not breeding, the birds also use the colony for roosting and so their numbers are fairly regular with 60-80 birds usually being present, although this seems to decrease during the rains when only tens are seen. In early March 2005 only 10-20 birds were seen at the colony and a few others were seen at Kalisho Springs with other swifts and swallows (ACC, LM, GLR). Some birds have been ringed at the colony (Table 10).

Table 10. The number of Horus Swifts ringed at the Chipandaure Colony

Date	No.	Details
August 1987	7	35 pairs in the colony
February 1989	15	No retraps form 1987; 25-30 pairs in colony
August 1990	16	Retraps included one ringed 1987 and two from February 1989; 60-70 birds in the colony

During a solar eclipse in June 2001, as it got darker, the birds gathered above the colony as at normal dusk. As totality approached all the birds disappeared into their burrows and emerged, rather confused, a few minutes later once the darkness had passed but they did not disperse. Breeding has been recorded in August and September and it breeds in holes in the vertical cliffs in the Chipandaure valley, sharing them with the colonies of White-fronted and Southern Carmine Bee-eaters. It was first confirmed breeding in August 1988, and was reported to breed at the cliffs in September 2004 (BLZ).

It has been recorded at Rifa in all months but numbers tend to be higher during the drier, cooler months when birds of the central plateau may move into lower areas (Chantler & Driessens 1995). Irwin (1981) thought it was resident in lower areas of Zimbabwe but Tree (1991b) suggested that recent observations showed it to be a dry season visitor arriving in April and departing in September. An exceptional concentration of about 500 was seen at the Nyamuomba/Zambezi confluence in August 1986 (DR-G). The Zambezi basin is a stronghold of the species with only scattered or migratory populations elsewhere in east and southern Africa.

White-rumped Swift *Apus caffer*

An uncommon intra-African migrant seen at Chirundu with Horus Swifts in April 1988 and also recorded in April, August and September 1989 and there is a suggested arrival date of 29 August at Chirundu (AJT). A few were found at Chirundu along the bridges of the tar road in November 1991. It was reported in September 1997 and 9 birds were seen in December the same year, and there is another report from December 2003 when 6 were seen (BLZ). It was seen in a mixed flock of swifts and swallows at Mhenza Pan in February 1997 (AC, LM, IH). In March 2005 a few were seen from Chirundu Heights and there were two in a mixed species flock at Kalisho Springs (ACC, LM, GLR). There is a May record (7th) in the field cards, which is on the late side. In addition to natural sites, it utilises the retort nests under bridges and culverts of Lesser Striped Swallows, which are quite common here, so it probably breeds in the area. It is absent from this region of Africa during the coldest months (June/July) but its destination is unknown, probably north of the equator (Chantler & Driessens 1995). Irwin (1981) stated that it was naturally sparse where there were few breeding sites but it could increase with the development of roads and buildings with suitable breeding sites for the swallows.

Family Coliidae (Mousebirds)

Red-faced Mousebird *Urocolius indicus*

An uncommon resident and recorded in all months, but it may wander in search of fruiting trees. There are a few early documented records, from August 1988, January (10 seen), May, September (4 at Chirundu Estates), October and November 1989. Other records include a party of seven seen near Rifa Camp in March 1995 and a small party seen on Chirundu Heights in August 1996. Trip counts reported up to 15 in September 2001 and December 2004. In June 2001 it was reported from the Chipandaure thickets (BP, LM, AC). In March 2005 they were relatively common with several parties seen in Rifa Camp, on Chirundu Heights and in the Chipandaure where a large flock of 10 was recorded. There are field card records from April (1996), June (1995) and July (1994). One was ringed on a visit in August 2004 (TC, FC). Irwin (1981) considered it uncommon or even absent in the

Zambezi Valley except west of Victoria Falls and east of Chiawa in Zambia (downstream from Chirundu). Cooper (1972) reported specimens from August and November and observations from April until November, suggesting that it was a dry season visitor to the Zambezi Valley.

Family Trogonidae (Trogon)

Narina Trogon *Apaloderma narina*

Uncommon and subject to seasonal movements (GL). It may be absent during the depths of winter and the preponderance of December records fits in with the situation in Zambia (Benson *et al.* 1971). There may be more than one population involved here with a breeding summer migrant population and an itinerant winter population. This species is most often seen in the heavy riverine forest along the Chipandaure where one was seen in May 1988 and another in August 1988 opposite the cliffs and below the crossing near some Natal mahogany trees, and there was a further sighting in the same place in April 1990. A pair was seen and heard fairly often in the Chipandaure, at the old crossing, downstream of the present one, in December 1994 and January 1995. In December 1994, presumably the same pair was seen below the Chipandaure cliffs in a Natal mahogany flitting from branch to branch. In December 2003 two were heard in the forest there (BLZ). One was seen in a large forest tree at Reed's launch site below Chirundu Bridge (date not given). A late or overwintering juvenile bird was seen in dense *Lonchocarpus-Trichilia* 'forest' on the floodplain southwest of Bream Pools on 15 June 2014 (IR, C von Chamier, NH, EB). There is a record from the field cards from 17 December 1995 but with no details but it was heard and seen in Chipandaure about 4 days later (GL).

Family Alcedinidae (Kingfishers)

Grey-headed Kingfisher *Halcyon leucocephala*

An uncommon to fairly common intra-African migrant that occurs in most woodland habitats. This species is not always recorded on visits and can be very sparsely distributed at times and yet at others it can be quite abundant, especially during migration when it was common in the study area in late April 1988 (AJT, AC). In June 1997 it was seen and heard calling from a perch opposite the hunters' dining room at Rifa Camp. In June 2001 a pair was seen displaying and wing-flashing with much calling along the old Chipandaure road (BP, AC). There are records from all months except October and the only record from July is from a field card. This species is mainly an intra-African migrant, which departs in May at the latest and arrives in early September (Irwin 1981), but the records show that it is present throughout the year and Harwin (1989d) stated that a few remain throughout the year, especially in the Zambezi Valley, and Cooper (1972) regarded it as resident. The field cards suggest a strong winter presence with 11 out of 17 cards recording it between May and September.

Brown-hooded Kingfisher *Halcyon albiventris*

A fairly common resident seen at Chirundu, at Rifa Camp and through to C Camp, and recorded on most trips. It is widespread but sparse and is more obvious when calling. In January 1994 it was seen and heard several times throughout the area. It prefers thicker habitat along the riverine fringe but has also been seen in more open mopane woodland on the way to C Camp. There are records from July from field cards only. Cooper (1972) reported breeding in September in the Zambezi Valley. One was ringed in the Chipandaure in December 2003

(TC). It has been recorded in all months but it may be more common during the rains, although this could be due to a post-breeding increase in numbers.

Striped Kingfisher *Halcyon chelicuti*

A fairly common resident, more often heard than seen. It characteristically perches on telephone wires, which are few and far between here, but they have been using them at Chirundu Estates. When the electricity supply was put into Rifa Camp they quickly began utilising the wires between the camp and Chirundu. It was seen on most trips but was not recorded in March 2005, despite being such a conspicuous species.

Woodland Kingfisher *Halcyon senegalensis*

A fairly common intra-African migrant present during the rains. It occurs in woodland, especially *Acacia* and mopane, and riverine forest. Sightings have been from September through to May at Rifa Camp, along the river to C Camp, near Chirundu Bridge and on Chirundu Estates. It is also found near pans in mopane. It is a noisy species and easily detected by its call but it generally keeps within the canopy, and when flushed, the electric blue plumage is a striking sight. When displaying the pairs call to one another, raising the bill for the first part of the call then gradually bringing it down during the descending trill. In April 2000 a small party of these birds (five, a family?) were foraging noisily near a group of elephants at Mhenza Pan, obviously feeding on insects disturbed by the mammals. In March 2005 they were quite common with several singles seen, with especially good views of one perched on a dead branch on Chirundu Heights and a small party perched in the riverine trees near the Bream Pools (ACC, LM, GLR). On 11 May 2013 one was at the bird bath at the manager's cottage (EB, DWI). In 2008 it was present until the late date of June and there are two records on the field cards from June in 1994 and 1996. There is a very early August record with no details (JS). Pairs are sometimes seen in displaying pairs but no nest-holes have yet been found.

African Pygmy-kingfisher *Ispidina picta*

A rare intra-African migrant recorded in November 1996 (field card) and December 1998 (no details), while one collided with a window of the manager's house at 06h00 on 29 October 2012 but survived (DWI, EB). A passage migrant in the Zambezi Valley (Irwin 1981) with is a departure date from Mana Pools of 11 May (Tree 1997b). Reported at Ruckomechi in early January 1989 (IR), possibly representing post-breeding dispersal (Tree 1989g). It has also been seen at Ruckomechi in January and November 1990 and 21 April 1995; an arrival date for the valley is 13 October 1991 at Ruckomechi (IR). Cooper (1972) reported observations in the Zambezi Valley in April and November, obviously representing birds on passage.

Malachite Kingfisher *Corythornis cristata*

A common resident seen in most aquatic habitats, especially where the water is lined with reeds and sedges on which it can perch. It is most often seen at the Marsh, Hot Springs and Bream Pools, Vulture Point and elsewhere along the Zambezi where sedges and low perches occur. Its presence at the Bream Pools depends on the amount of open water but it is able to do with much less of this than the Pied Kingfisher. It was recorded in all months from February to November 1996 at the Hot Springs and the Bream Pools. In February 1997 it was seen with dependent fledglings at the Marsh. The only

movements reported would seem to be juvenile dispersal and colonisation of ephemeral habitats (Fry *et al.* 1992, Woodall 2001). Dark-billed young have been seen at the Hot Springs stream and at the Marsh and this may have given rise to spurious records of the Half-collared Kingfisher.

Giant Kingfisher *Megaceryle maxima*

An uncommon resident that seems to prefer water edged by dense trees and shrubs, but a female was seen morning and evening at a small pool in front of Rifa Camp in April 1988. It should be looked for in pans in the forest where it was found to be a fairly common visitor in 1940 (Smith 1950). There are many records from the Fish Farm in October 1994, June 1996 and February, July and September 1997. This may well be a favoured spot for it as the channel, where there are plenty of fish, is well supplied with over-water perches. It was also recorded at Vulture Point (BP, LM, AC) in June 2001. In addition to the documented records above there are field card records from May. Cooper (1972) reported breeding from September. It has been recorded in all months and is generally considered to be a sedentary species where there is perennial water, as here (Irwin 1981).

Pied Kingfisher *Ceryle rudis*

A common resident, widely distributed along the Zambezi and other waters if fish are present, e.g. pools and mopane pans, when they hold water. Usually seen in pairs and small family parties, they were commonly found at the Bream Pools but by 1994, the water was thickly covered with vegetation making it unsuitable for its plunge-diving fishing technique. Floods in December 1995/January 1996 removed the thick Kariba weed sudd which covered the Pools and it was replaced with a thin *Azolla* cover which is at times pushed back by the wind, revealing open water. As a result, the kingfishers were again able to utilise the pools on occasions. They also fish in the Hot Springs stream, and are also found in the channels of the Marsh and at temporary pools, at Long Pan, Vulture and Tiger Points and C Camp inlet, and can even be seen perched in small parties on stranded trees in the main river. In 1993-1994 it was noticed that numbers of this species declined, probably because of the drought and the consequent lack of temporary pools and channels that could have led to a decline in the numbers of small fish. The presence of family parties indicates breeding and elsewhere in the Zambezi Valley they have been reported to breed in August and September (Cooper 1972).

Family Meropidae (Bee-eaters)

Swallow-tailed Bee-eater *Merops hirundineus*

An uncommon visitor. There is a fully documented record late September 1998 when one was seen perched on the branch of a tree in the acacia woodland/grassland between the Chirundu Estates and the Fish Farm (RCR). In April 2000 a small party were seen in the large trees at Long Pan (LM, AC). There are only three other records from August 1988, October 1991 and May 1993 but without further details. There are field card records, again with no details, from May 1989, April 1993 and May 1994. The records so far suggest that this may be a dry-season visitor to the area but there are too few records to be certain.

Little Bee-eater *Merops pusillus*

A fairly common resident found in a variety of habitats, some of which are not necessarily connected with water, which

is the case with some of the other bee-eaters. It occurs in open mopane woodlands, bushes and rank grass near watercourses, both dry and along the Zambezi itself where it is often found in the overhang between the sandbanks and the water, perched on dead stumps or other emergent vegetation. It is seen in pairs or singly on Chirundu Heights, over the Marsh, near Long Pan and in the riverine floodplains. In June 2001, a group of seven were seen perched close together in the early morning light at the Chipandaure crossing. Trip counts include 15 in September 2001 (BLZ), 20 in December 2003 (BLZ training camp) and 10 in March 2004 (LM, DW, JS). Breeding was reported in August 2012 (NH), while Cooper (1972) reported nest records from June, September, November and December.

White-fronted Bee-eater *Merops bullockoides*

A very common resident found along the riverine woodland of the Zambezi and its thickly wooded tributaries. It hawks near or over water, feeding singly or in small groups, but roosts communally at night with one group using nest-holes for roosting. A colony is situated near and amongst the colony of Southern Carmine Bee-eaters on the cliff of the Chipandaure River and it usually consists of 40-70 birds, the largest numbers recorded being 160 between August and early November 1990 by which time breeding was nearly complete. Laying started in August/September in 1989. In December 1997 it was found to be scarce and only seven were seen and it was not present at the Chipandaure cliffs. At the Eclipse Camp in June 2001 these birds were observed gathering at the colony as the darkness started. As totality approached most birds went into the holes and emerged a few minutes later at the false 'dawn'. They were obviously unsettled and were milling around the colony calling, perching in nearby bushes and taking off repeatedly. The birds still seemed confused even on the following morning.

They mostly breed during the hot dry season before the rains, but in March 2003 some were seen excavating holes in the Chipandaure cliffs (LM, DW, JS). Whether this was for breeding, or simply repairs and maintenance on roosting holes, is unknown. In 2004 these bee-eaters nested upstream of the Carmines near the road-crossing. This site had previously been used by both species but slumping caused the Carmines to move downstream to a previous colony. Breeding peaks in September and October.

August/September, when the birds were breeding, was the best time for trapping and a total of 59 were caught and ringed (Table 11). One of them, trapped in September 1989 had the red feathers of the throat replaced by a rich mustard gold (Tree 1989c). This variation is extremely rare and this is the first report from Zimbabwe but has been reported in East Africa (Zimmerman *et al.* 1996).

Table 11. The number of White-fronted Bee-eaters ringed at the Chipandaure colony

Date	No.	Comments
September 1989	26	One bird with a gold, not red throat
April 1990	5	No retraps
August 1990	14	Two retraps from September 1989
September 1990	14	Three retraps from September 1989

Blue-cheeked Bee-eater *Merops persicus*

A common non-breeding Palaearctic visitor. Its numbers build up in November and December by which time it is probably the commonest bee-eater. They are almost always found near water, frequently along the river and among the islands on the alluvial plains in January and as late as March. In late March 1996 they were present in large numbers and about 100 were seen at the pump and at Long Pan and they were still reported in large numbers up to 2 April (the end of the visit). They often feed in the company of other bee-eater species but are not to any extent in competition with the Carmine Bee-eaters as their numbers increase as the latter decrease. They hawk from trees on the riverbank and elsewhere both over water and open ground. During April 1990 they were observed moving northwards over Rifa Camp. Large trip counts include over 200 in February 1997 (IH, LM, AC) and again 200 in February 1999 (IH, LM), 100 near Rifa Camp in late March/early April 1996 (GL), 60 in February 1996 between Chirundu and C Camp (DR), 60 in January 1997 (DR), 30 in March 2001 (DW, LM), 20 in December 1997 (BLZ) and 15 in March 2003 (JS, LM, DW). In April 2000 a large flock of nearly 1000 was hawking over the water at Mhenza Pan. In March 2005 there were only a few and they were in small parties, although well-distributed throughout.

Madagascar Bee-eater *Merops superciliosus*

A scarce summer visitor. They were seen at the end of December 1992 off Bwarambwa Island and other islands on a boat trip to Vulture Point. They were hawking insects over the Zambezi, together with Blue-cheeked Bee-eaters, swooping out from the reed beds on the islands to feed. There are field cards records from December 1994, January 1995 and March 1995. This species may breed in the region (Irwin 1981), and there are breeding records from Mana Pools (possibly the one mentioned by Cooper (1972), and Victoria Falls (Fry *et al.* 1992) but none from the study area. It is probably overlooked and almost certainly misidentified on occasions.

European Bee-eater *Merops apiaster*

An uncommon to common Palaearctic migrant. Smith (1950) described it as a common migrant in 1940. It usually arrives in October and in 1990 was seen in October and November, and there are records from the Hot Springs in March 1995 and over Nyangombe Island in November 1995. Large numbers were seen in December 2003 (BLZ) and on 20 March 2004 a party of 10 was seen flying over the channel in front of Rifa Camp. In March 2005 only one small party was seen hawking above Rifa Camp, but 10 were seen in March 2008 and 22 in February 2009. There are field cards records in April, and in May 1994 from the 4th and 7th but they are presumably late birds on their way north. The May records are extremely late for the Palaearctic population, which is generally arriving on its northern breeding grounds at this time (Fry *et al.* 1992). However, a small population breed in southwest Cape Province in South Africa, which migrates north into central Africa (Fry 2001a), which could explain these late birds.

Southern Carmine Bee-eater *Merops nubicoides*

A very common intra-African breeding visitor that breeds colonially in holes in a vertical bank of the Chipandaure River. It did so from 1987-1990 and again from 1993 onwards and it also bred along the Zambezi from 1987-1993 (from Rifa Camp records). In 1990 it was reported that they were breeding in

both adjacent nesting sites on the Chipandaure cliffs; it was also found that there were four other colonies nearby on the Zambezi totalling 900-1000 holes. The cliffs are also the breeding sites for White-fronted Bee-eaters and Horus Swifts, while Barn Owls have been seen roosting in large holes in the cliffs on a number of occasions. The Carmine Bee-eaters arrive in the first and second weeks of August and most have departed by the beginning of December with their recently-fledged offspring, but about 25% of the birds at both sites were still feeding young in their nest-holes by mid-December. A few were still around at the end of January when one adult was seen feeding a fully-fledged juvenile on Nyangombe Island (1994). It is likely that a few do not migrate and are present all year as there is an undocumented record from May. There are reports of some being seen on northward passage on 14 April 1990.

Successful breeding depends on the availability of large flying insects and very few were noted in September to October 1991 and the same period in 1992. This may explain why no birds nested on the cliffs during those two seasons but did so only on the Zambezi banks where dragonflies and large insects would have been more numerous. In 1993 numbers were much greater than before and breeding resumed at the Chipandaure cliffs. In January 1995 about 60 birds were seen with big insects (cicadas, beetles, and dragonflies) and on 13 October 2012 their diet included the former plus moths and butterflies, and grasshoppers. When observers arrived at the colony it was deserted and the birds were located on a large tree upstream and a Slender Mongoose was seen walking along the top of the cliffs. When it had gone the birds returned to feed their young at the entrance holes.



Figure 13. The Southern Carmine Bee-eater, a flagship species at Rifa. Photo: © Roger MacDonald.

The 1996 season was notable for the largest number of birds recorded in the 10 years or so of observations, about 1000 or more birds, and some eventually bred in cliffs upstream of the main colony. There was a slump in the cliffs in late December but most of the birds had gone by then. It is the birds themselves who tunnel into the bank and cause it to become unstable and thus exacerbate the slumping. In September 1997 they were reported breeding on the banks of the Zambezi opposite Barbel Channel. They had started off at the cliffs but then moved to the new nest site, possibly because of a slump in the cliffs in the previous December. About 500 were reported at the Chipandaure cliff site in September 2001 and in December 2003 about 100 were seen but very few of these were at the cliffs (BLZ). In September 2004, 150 were

seen burrowing into the cliffs. Positioning of the nest-holes in the cliff strata probably depends on grain size, compaction and possibly moisture content (Ward 1971) and this may also be a critical factor in limiting the population.

In 2004 the nests were confined to the upper strata whereas in some previous years the middle strata had been used. In March 2005 none remained at the colony but a couple of flocks, containing the duller juveniles, were seen near the Marsh and the Bream Pools (ACC, LM, GLR). In 2007 they arrived on 14 August and started nesting activity and in 2008 they arrived on 15 August. On this occasion they left the cliffs after a week and dispersed to breed on the Zambezi River banks, making counting difficult; by 25 November about 100 adults and 21 immatures were feeding insects, mainly dragonflies and cicadas, which were abundant.

Just outside this QDS, there was formerly a colony at the Sharu confluence with 400-800 nest-holes (Brooke 1995). There is a field card record from 24 June 1995 which is unseasonal although not impossible, as Irwin (1981) states that they may be present at Mana Pools between May and July, and some may move no further north than Zambia. Andrews (1972) reported small parties present at Mana Pools up until May being joined by others in June and increasing in numbers from then on. Small groups overwintering in the Mana Pools area are a regular feature (IR). This has been noted from the late 1980s, through the 1990s and 2000s, e.g. 30+ around Nyamepi and 38 at Ruckomechi in June 1989.

From August to December 1990 Nancy Langston carried out a study of the Chipandaure Cliffs colony and four other colonies in the vicinity of Chirundu (unpublished). She found depressed breeding success, and small clutch sizes, all of which may have been influenced by food availability. A total of 705 bee-eaters were captured, colour-tagged, wing-tagged and released. Nest-helping was found to be rare but conspecific nest parasitism was common, with females investigating other nests and many eggs being destroyed in the process, which may have contributed to a reduction in breeding success. There would appear to be a balance between early nesting (before heavy rains caused cliff collapse) and food availability which increased with the onset of the rains. The artificially regulated water levels on the Zambezi resulted in continuous minor erosion of riverside cliffs rather than the pre-Kariba situation where seasonal floods created (and destroyed) nesting sites along the river.

One of the ringed bee-eaters was shot (with a catapult) seven and a half months later at Kasisi in Zambia (15°16'S, 28°28'E). In another project in 1990 seven bee-eaters from the Chipandaure colony were taken as fledglings and reared in centrally heated quarters at New York Zoo where they created quite a stir. One of the birds was still surviving after 5 years.

On a hot afternoon (40°C) on 21 November 1993 some were found sunbathing on a dusty road near the cliffs. Some had shut their eyes or rolled them back and some even lay on their backs. This may have been a method of "cooking" parasites to get rid of them. They flew off very reluctantly when disturbed. This aspect of bee-eater behaviour is well-described and illustrated in Fry (2001).

Family Coraciidae (Rollers)

Racquet-tailed Roller *Coracias spatulatus*

An uncommon resident, not often recorded, but it has been seen along the road to C Camp in mopane woodland, in August 1990 and January 1994. It was seen again in cathedral mopane just off the Back Road in February 1999 (IH, LM). In

September 2004 one was seen in flight over dry woodland towards the hills near Mopane Pan (BLZ). There are many more records on field cards, without details, from October 1991 and 1994, April 1994, July 1994 (twice), September 1996 and November 1996. This species should be looked for in the well-developed mopane woodland further inland away from the river and towards the escarpment. It would appear to prefer mature woodland with little understorey and more dense habitats than its congeners (Fry 2001b).

Lilac-breasted Roller *Coracias caudatus*

A common resident, widely scattered and found mostly in the riverine belt, but also in any woodland, especially mopane, where it is often seen perching on dead branches of tall trees. They also occur along the floodplain making use of scattered bushes as their vantage points. A party of five were seen interacting beyond the school dormitories at Rifa Camp, where there is a resident pair that often perch in the large riverine trees in front of the staff quarters, and hunt from there on the floodplain. In December 1997 only four were seen and it was reported to be 'not as common as usual' (BLZ Training Camp). In March 2005 few were seen in the vicinity of Rifa Camp but they were very common in the open areas between the Soccer Pitch and the Marsh where they perched in isolated apple-ring acacias. There was a breeding pair at C Camp and two immatures were seen with their parents there in mid-December 1993. A juvenile was seen with an adult at the Little Pan behind Rifa Camp in November 1993. Irwin (1981) suggested that there was a post-breeding dispersal into more open country.

Broad-billed Roller *Eurystomus glaucurus*

A fairly common intra-African migrant, recorded mainly between October and January, with two records in April in 1993 and 1996. There is an early arrival date of 29 September 1994 from Ruckomechi (IR). On 29 November 1993 after the first rains, five noisy birds were seen in the trees behind Rifa Camp, and it was also seen at Tiger Point that same month. At twilight on the evenings of 28 and 29 January 1994 a flock of 12-15 hawked over the floodplain in front of Rifa Camp in total silence. This roller is known to congregate after breeding, often hawking moths in the evening. In early December 2003 one was seen in altercation with a Meves's Starling over nest-holes in trees on the road to the Bream Pools (BLZ). In March 2005 it was seen perched in an emergent tree on the Back Road and a couple were seen hawking around Rifa Camp at dusk.

Family Upupidae (Hoopoes)

African Hoopoe *Upupa africana*

A fairly common and widespread resident, but in small numbers. It is usually seen in the woodlands, especially in scrub mopane but it also occurs on the ground under the riverine forest trees where no understorey is present, particularly behind the school dormitories at Rifa Camp. It is also found along the road to, and at, C Camp. Generally seen singly or in pairs but there are two counts of eight reported in September 2001 and December 2003 (OAZ). Although recorded in all months their numbers seem to vary between seasons and years suggesting some nomadism; its movements are complex and little understood (Irwin 1981). Breeding in the Zambezi Valley was reported in September (Cooper 1972).

Family Phoeniculidae (Wood-hoopoes, Scimitarbills)

Green Wood-hoopoe *Phoeniculus purpureus*

A very common breeding resident found in all woodlands and in the narrow riverine fringing forest. It occurs in parties throughout the year foraging in the trees for insects and nectar, and the largest party so far recorded was one of 15 birds. Young birds are frequently seen in the parties. This co-operatively breeding species is remarkably sedentary with young birds breeding on their natal territory or moving only between 1-6 territories (Ligon 2001).

Common Scimitarbill *Rhinopomastus cyanomelas*

A common resident, reported in all months. Like the previous species, it is frequently encountered in the more heavily wooded regions of the QDS. It is found less often than the last species and unlike it has a monogamous, territorial mating system (Ligon 2001), so is found only in pairs or families (up to four birds seen together). One has been recorded within a flock of Green Wood-hoopoes. A pair was seen in the heavy woodland surrounding the Chipandaure in April 2000, where they were constituents of a mixed bird party mostly consisting of hornbills and barbets. There are records from May from the field cards.

Family Bucorvidae (Ground-hornbills)

Southern Ground-hornbill *Bucorvus leadbeateri*

A common resident, widely distributed. It occurs in a variety of locations from sandy spits, floodplains and islands close to the banks of the Zambezi, marshy and dry grasslands of the Hot Springs area to open mopane woodlands. Parties of 2-6 are usual and the birds move through the area snapping up insects, snails and reptiles. The groups often consist of two adults and one or more juveniles, as in October 1989 when four birds (two adults and one juvenile and one age unknown) were seen in the channel on the ground and then they flew up to the second terrace. Seven were seen between the camp and Vulture Point in May 1991 (OAZ). It is often heard from Rifa Camp calling in the early morning. In July 2000 three were seen near C Camp turnoff and another three were seen in September 2004 (BLZ). Three adults were seen at Long Pan in October 2011 and 2012, and a lone adult lived on the floodplain below camp and visited the vulture restaurant (NH). In March 2005 a family party of four were seen at Mhenza Pan (GLR, LM). Juveniles are frequently seen in the family parties, as they are co-operative breeders with a dominant pair being assisted by previous offspring, maintaining a large territory (Kemp 2001).

Breeding success can vary from one chick every two or three years to none raised in 20 years (Kemp 2001). Parties of this big bird thrive on open sand or silt patches near woodland. They search the bare areas for dung beetles and in particular their large grubs, other insects, reptiles and rodents. This habitat, with its big elephant populations, provides conditions that promote the highest densities of Southern Ground-hornbill groups in the world.

Family Bucerotidae (Hornbills)

Crowned Hornbill *Tockus alboterminatus*

A common resident most frequently found in riverine forest and fairly dense dry woodland. It is often seen flying across the Zambezi in parties of 5-10, and visits the fruiting trees around camp and along the river. It has also been seen on Chirundu Hill, such as the 10 seen there in May 1999 (DR-G)

and on the trees on the dry hills next to the Hot Springs. In the rainy season, in November/December 1993 and January 1994, flocks were commonly seen in the forest around camp when it was probably the most abundant hornbill. It is mainly an arboreal forager but is occasionally seen foraging on the ground, for example, on fallen fruit.

African Grey Hornbill *Tockus nasutus*

A fairly common resident, but probably the least common of the small hornbills. It prefers the mopane and acacia woodland and is not often seen around camp, but is frequently recorded on drives, especially in the drier areas. It is found singly and in pairs and its presence is often first detected by its call. Unlike the Red-billed Hornbill, it feeds mainly in trees and it will hawk insects. They were recorded in a mixed bird party (mostly this and other species of hornbills) in the Chipandaure in April 2000 and they were recorded there again in March 2005.

Southern Red-billed Hornbill *Tockus rufirostris*

A very common resident, possibly one of the commonest birds at certain times of the year. It prefers the drier interior woodlands of mopane or mixed trees, but is also present in the narrow riverine fringe. It can be found singly but is most often in parties of 2-6 birds foraging for insects and seeds in elephant droppings or eating seeds on the ground or searching for insects or eggs. In January 1994 one was seen trying to hawk termite alates during an emergence in front of camp. In April 1991 an occupied nest-hole was located with at least one bird (the chick?) inside. A pair of adults was seen feeding at least one fledgling during the following week at the same location. In May 1995 a female was seen to emerge from a nest-hole without tail feathers. In March 2001 one was seen carrying food to a tree-hole, presumably to feed a female or chick. One male was ringed in August 2001 (LM, TC).

There are records from all months and breeding is recorded from March to May but there are little-understood fluctuations in numbers. Sometimes there are very few and sometimes they are everywhere in large numbers and there seems to be very little seasonal explanation for these changes. They may be a response to drought conditions in the region when erratic movements are known to occur (Kemp 2001) and in one of these mass movements hundreds of birds drowned while attempting to cross Lake Kariba (Anon. 1998).

Trumpeter Hornbill *Bycanistes bucinator*

A common breeding resident, recorded in all months and often seen flying to and fro across the Zambezi in search of ripe fruit. It eats the fruit of figs, wild mangos and Natal mahogany, and must be an important agent in the seed dispersal of these and other species. In October 1994 the Zambezi fig at Rifa Camp produced a bumper crop and attracted up to six of these birds at a time to its upper branches in company with many other frugivores (Maasdoorp 1995). It is found in small parties of up to six, or in pairs, along the river and it favours the riverine forest. Its wailing cry is often heard in the trees. Young birds have frequently been seen in family parties and they have been reported to breed in the Middle Zambezi Valley between April and November (Cooper 1972).

Family Lybiidae (African Barbets)

Crested Barbet *Trachyphonus vaillantii*

A very common resident heard and seen in a variety of habitats, riverine forests, thickets, mixed and mopane

woodlands. It occurs in singles and pairs scattered from the floodplain to deep into the interior woodland. There is a resident pair near Rifa Cottage. There is a suspected breeding record on a field card from April 1996.

Yellow-fronted Tinkerbird *Pogoniulus chrysoconus*

Uncommon and little recorded, one was heard calling at C Camp in April 1988 and another was seen in a mixed bird party foraging in a *Combretum* near the Bream Pools. It was recorded in September 2002 and on 14 March 2014 (BLZ). There are field card records from May 1989 and May 1994. Irwin (1981) states it is sparse in the Middle Zambezi Valley while Lorber (1989a) considered it to be uncommon in mopane. It can be inconspicuous when not calling.

Black-collared Barbet *Lybius torquatus*

An uncommon resident occasionally seen in mixed woodland, although Benson *et al.* (1971) thought it could be absent from mopane while Irwin (1981) restricted it to riverine habitats in the drier savannahs. One heard calling at C Camp in August, and in March 1991 it was reported to be widespread. It was seen during a trip in July 2000 (BP) and it was recorded in December 2003 (BLZ). There are few detailed records but there are some on field cards from May 1995, August 1994, September 1989, 1995 and 1996 and October 1991 and 1993. The variation in their numbers could be driven by the availability of figs.

Family Indicatoridae (Honeyguides)

Lesser Honeyguide *Indicator minor*

An uncommon resident, infrequently recorded but has been seen at Rifa Camp and at C Camp. One was seen foraging in the fig tree at Rifa Camp in April 2000, and from there it perched on a nearby dead branch and called. There is another call site within Rifa Camp in a tall mopane behind the school's kitchen and one was seen calling there in March 2000 (GL). There are other records of singles from trips in September 2001 and 2004 (BLZ) and in August 2004 (GL, TC) and August to October 2012 (NH). There is an undetailed record from December 1998. Other records from April (1993), June (1995, 1996) and July (1994) are from field cards. This species parasitises barbets and woodpeckers, which are relatively common at Rifa and there are records of it parasitizing bee-eaters (Irwin 1981) and an immature was caught at the bee-eater colony on the Chipandaure cliffs in September 1991 may be significant. Irwin (1981) reports it as very sedentary so the lack of records during the rains above is almost certainly caused by a reduction in observer coverage.

Greater Honeyguide *Indicator indicator*

A fairly common breeding resident that appears to frequent any type of woodland. It was found in Rifa Camp in April 1988 when a male was heard calling; this bird was later seen and it gave the guiding call. In January 1994 a juvenile was seen at the Bream Pools and adults were seen at Long Pan and Nyangombe Island. It was seen in September 1998, September 1999, September 2001 (4 birds) and September 2004 (3 birds) (BLZ). Humans have also been "called" with two incidents reported, one with a school party and another with one of the Rifa Camp staff. In March 2005 an adult was seen on the Back Road and was heard giving its guiding call (ACC, LM, GLR).

Honey badgers are common in the area and the myth that Greater Honeyguides lead them to bees' nests persists in spite of there being no evidence to support this idea (Dean 1995;

Dean *et al.* 1990; Short & Horne 2002; Marshall 2005). There is a breeding record from the field cards in April with juveniles reported being seen. However, the distinctive juvenile/immature plumage is retained for up to a year (Short & Horne 2002), so breeding records of juveniles cannot be pinned down to any particular month. However, it is certain that breeding will occur here and Cooper (1972) reported breeding in September.

Family Picidae (Woodpeckers)

Bennett's Woodpecker *Campethera bennettii*

A fairly common resident seen as singles and pairs around Rifa Camp and at the base of Chirundu Hill. When landing on a branch it does not scuttle round the back of the branch like other woodpeckers and it is more often seen on or near the ground or on the main trunk of a tree. It was reported in July 2000, September 2001 and 2002, in December 2003 (BLZ), at Reed's Camp in September 2004 and it was said to be common in March 2000 (GL). Only one was seen in March 2005, between the Chipandaure and Long Pan (LM, ACC). There is a note of suspected breeding for October 1997 but no further details. One was netted and ringed in the Chipandaure in September 1995. This is recorded more often than the next species, and its absence from some months may reflect diminished observer coverage.

Golden-tailed Woodpecker *Campethera abingoni*

An uncommon resident. In May 1988 it was seen occasionally in singles or pairs in woodlands. Two were recorded in early September 1989 and another two in November 1990 (no localities given). In September 1995 it was recorded in Rifa Camp and again in December 1996 (OAZ). It was seen in the Chipandaure on a Natal mahogany in September 1996. Usually only one or two are seen but four were recorded in September 1999 (OAZ). In March 2005 one was seen on a dead snag behind Rifa Camp. One was ringed on a BLZ training camp in December 1997. Cooper (1972) reported breeding in the Middle Zambezi Valley in October. Irwin (1981) states that this species and the last have a broad ecological overlap in the major river valleys, especially in acacia on alluvium. It has been reported from all adjacent Zambian Middle Zambezi squares (DA).

Cardinal Woodpecker *Dendropicos fuscescens*

A common resident and is perhaps the most numerous woodpecker species in the area. It is particularly abundant in the mopane woodlands and it has also been recorded in the gardens on Chirundu Heights. It is usually seen singly or in pairs and it is frequently a constituent of mixed bird parties. One of the easiest woodpeckers to identify and it often gives its presence away with its distinctive light tapping and chittering call. There is a suspected breeding record with no further details from October 1997 (GL) and another record of a pair nesting at Rifa Camp in September 2001. Cooper (1972) reported breeding in August. A female in wing moult was ringed on 1 December 2001 on the BLZ Training Camp (TC).

Bearded Woodpecker *Dendropicos namaquus*

A common resident, its distinctive drumming is heard on most visits and it has a loud far-carrying call and is therefore rather more conspicuous than the other woodpeckers and thus recorded more frequently. It has been recorded in most months of the year in mopane woodland and the riverine fringe where there are larger trees. In October 1994 it was particularly

abundant around some dying knob-thorns near Long Pan. These old trees provide perfect drumming posts. It is usually seen singly or as well-separated pairs. There is evidently some sexual difference in foraging strategy with females preferring smaller trees and smaller branches (Winkler *et al.* 1995). Up to six have been recorded on trip counts in September 1999 and September 2001 (BLZ).

Family Eurylaimidae (Broadbills)

African Broadbill *Smithornis capensis*

A rare resident (?) first reported in the dense broad-leaved woodlands of Nyangombe 'Island' near the water pump in October 2011 where it was calling and performing its circular display flight (NH). It was also heard calling in the Chipandaure forested area on 17 February 2012 (Richard Dennison). It has long been known to occur across the Zambezi in Zambia, a few kilometres away (Aspinwall 1975). Irwin cites its presence in the Middle Zambezi Valley but it is easily overlooked except when calling. It makes a noise 'like that which one would expect from some gigantic cicada than anything and is totally unavian' (Mackworth-Praed & Grant 1962). This sound can be heard over 50m away.

Family Pittidae (Pittas)

African Pitta *Pitta angolensis*

A rare intra-African migrant, one was seen from the road about 5 km south of Rifa camp (QN 0019) on 17 December 1994. It was sitting under a *Combretum* sp. bush in a small thicket and was thought to be injured. It was approached and picked up but no injuries were found so it was assumed to be exhausted, perhaps just having arrived on migration (IR). It was released unharmed. There is a field card record dated 31 December 1994, which may well be this documented record submitted on a monthly field card. A nest was found in riverine thicket near Mana Pools airstrip in April 2001 (IR). Irwin (1981) stated that it was believed to breed in thickets in the Middle Zambezi but that this had not been confirmed until Alexander (1994) recorded them breeding in the Chizarira National Park. It is extremely secretive and its habit of inhabiting dense thickets makes it extremely difficult to observe. It has a distinctive call (Lambert & Woodcock 1996) but many observers involved here are unfamiliar with it. It has been suggested that the high density of elephants in the square may be removing suitable habitat for this species.

Family Alaudidae (Larks)

Monotonous Lark *Mirafra passerina*

There is only one record from the area (September 1993) from scrub mopane with bare ground (DA). It should occur here and be looked for in such habitat (Irwin 1981) and could be overlooked owing to difficulties in identification and observer ignorance, while its favoured habitat, scrub mopane, is not often intensively surveyed. Cooper (1972) cites an August sight record.

Dusky Lark *Pinarocorys nigricans*

A rare non-breeding intra-African passage migrant. A party of three birds was seen in mopane scrub near C Camp in April 1988; these were almost certainly on passage. In mid-December 1996 a single bird was perched on top of a tree in riverine woodland close to the Zambezi between Vulture and Tiger Points (GL) and there is another December record (no details) from 1998. There are no field card records. This species is normally present in Zimbabwe as a passage migrant

in April-June and again in October/November (Irwin 1981). As with all lark species it is probably overlooked but it is fairly distinctive and should be recorded more often, although its presence can be extremely erratic depending on rainfall conditions (Dean 1989b).

Chestnut-backed Sparrowlark *Eremopterix leucotis*

A sporadic and uncommon sporadic visitor. In April 1988 small parties, mainly consisting of juveniles, were seen on sparsely vegetated sandbanks in the flood channel below the Hot Springs (AJT, ACC). It was also recorded at the same locality later the same year in May. A party of up to 10 was seen on a bare terrace above the Marsh in April 1990. There is also a field card record from April 1994. In March 1995 a party of six was seen on sparsely vegetated alluvial gravel near the Sharu delta just outside this QDS. Irwin (1981) regarded it as probably resident in the Middle Zambezi. Cooper (1972) gave records from December and August, whilst IR has records from all months except January and February and feels it can be overlooked if the right habitat is not surveyed.

Family Hirundinidae (Swallows, Martins)

Eastern Saw-wing *Psalidoprocne orientalis*

Its status is uncertain since there are few records. A party of about 18 was seen feeding with African Palm-swifts amongst bushes close to Baghdad Village, Chirundu, in September 1991 (AJT, AH). Both adults and juveniles were present in the party. The habitat was close to the riparian fringe. There are no additional field card records.

There is some taxonomic confusion between *orientalis* and *holomelas*, which some authorities separate and others combine into one. It has been suggested that in light the underwings of *holomelas* can shine almost as much as to appear white (Turner & Rose 1989). On the other hand, the dull underwing coverts of juvenile *orientalis* can appear dark or blackish unless seen in good light (IR). Since the mid-1990s several observers have reported a small group of *orientalis* regularly at the Nyakasanga/Zambezi confluence from July to December (Tree 1991c, 1992a, 1995d, 1996a, 1997a). It arrives in the Ruckomechi area about April and departs by November at the latest and is now a regular migrant. In September 1991 the flock size was about 80 strong and in June 2007 was similarly estimated at 60-80. Juveniles or immatures have been recorded.

Grey-rumped Swallow *Pseudhirundo griseopyga*

Uncommon, with small numbers being reported most of the year, feeding over the floodplains, which consist of dry grassland and sand. It has also been reported at the Marsh and at Vulture Point. A few were seen on Chirundu Heights in September 1995 and several were seen in December 1996 (GL). Also seen in July 2000, September 2004 and October 2009 (IR) and on field cards from September (1995) and October (1991, 1994). It breeds in rodent burrows on the alluvial floodplain downstream of Mana Pools (Irwin 1981) and may do so in similar habitat here, but as yet there are no records. Although seemingly reported in all seasons this species should be monitored more closely. Elsewhere in Zimbabwe it is mostly a dry season visitor and it is said by to move to lower elevations in winter (Maclean 1984). Its presence in this area during the rains could indicate an influx from the higher regions of the country, although the distribution of records could possibly indicate passage

movement. It has been recorded at Ruckomechi in January and March-December but is most frequent in June-October (IR).

Brown-throated Martin *Riparia paludicola*

Fairly common, probably resident, it is frequently found along the Zambezi River and there is plenty of nesting habitat for it in the vertical sandbanks in this QDS. It is seen in singles, pairs and small flocks over the river and along the alluvial plains next to it. However, the largest concentration seen so far was a flock of about 145 seen upstream of Rifa Camp in January 1989 (Tree 1989a) and another smaller flock was seen upstream of the Rifa Camp pump site in September/October. A pair frequented the river side of Nyangombe Island in August 1990. It was reported to be remarkably scarce in August 1989. It was recorded over the river in February 1997 (AC, LM, IH) and July 2000 and September 2002, both in the camp area and other parts of the river (IR). Eight were seen in September 2004, and hawking over the grassy plains near the Hot Springs in the following month. There are field card records for January (1995) and May (1989 and 1994).

There is plenty of habitat for breeding colonies, but as yet there are no records. The major river valleys are the stronghold of this species in Zimbabwe (Irwin 1981) and it breeds there colonially in sandbanks. There are breeding records from June and September (Cooper 1972) as well as from May-September (IR). Ringing data from the Harare area revealed two non-breeding populations there, the summer visitors having moved up from the river valleys and the winter visitors from South Africa (Tree 1989d). The presence of fairly large flocks along the Zambezi seems to indicate some movements or else post-breeding congregations.

Sand Martin *Riparia riparia*

An uncommon Palaearctic migrant, possibly only on passage. It is almost always associated with water and small flocks were seen flying over the Zambezi in April 1989. Singles were also reported at C Camp in November 1990 and again on April 1991. There is a June record from 1998 but this is being treated as a misidentification of the next species, and there is also a September record (PJM), which seems rather early. Two birds were noted on 15 March 2014 (BLZ) and there are field card records from May 1988, October 1993, October 1994 and November 1995. It may be much overlooked, as many observers tend to ignore mixed swallow flocks or else fail to spot them if they are high in the sky. Maclean (1984) reports an increase in numbers wintering in southern Africa since the 1950s and the winter distribution may be changing in response to the climate change in the Sahel (Tree 1986a).

Banded Martin *Riparia cincta*

An uncommon intra-African migrant, probably only on passage. Two were seen heading north at the Marsh on 19 April 1990 and another two over the main river in April 1988 near Bwarambwa Island. There is another undocumented record from April 1991 at the Sharu delta just outside this QDS (AJT, ACC). There are no field card records for this species. It is reported not to breed in the major river valleys (Irwin 1981) but Cooper (1972) gave a breeding record from August (without further details).

Barn Swallow *Hirundo rustica*

A common to very common Palaearctic migrant. Parties of varying sizes are seen between September and April and it is probably more common at the start and end of this period indicating an influx during passage. It frequently forms mixed flocks with other swallows, martins and swifts and in October 1994 such flocks were very common feeding along the overhang between the sandbanks and the main river at C Camp and near the pump house on Nyangombe Island. In March 1995 it was common hawking over water (the river and pans) and inland in the woodlands. In February 1997 it was reported as very common (AC, IH, LM) and in February 1999 about 1000 were seen hawking for insects over the banks of the Zambezi and the main river. About 500 were seen in December 2003 (BLZ) and in March 2005 this was by far the commonest swallow with birds seen throughout, but particularly over and near the Zambezi, and also over Chirundu Heights (ACC, LM, GLR). There is a winter record from 24 August 1996 from Ruckomechi (FC).

White-throated Swallow *Hirundo albigularis*

An uncommon intra-African migrant, most birds probably occurring only on passage. There are few records, the first being near C Camp in April 1990 and the second at Tiger Point in January 1994. It was seen flying over the Zambezi (not dated) and again in May 1994 (no locality given). There is a February record of two seen on Chirundu Hill in 1997 (IH, LM, ACC). It was recorded from Sunset Point and at Reed's Camp in March 2005 (ACC, LM, GL). There are additional field card records from 21 August 1994 and November 1996. Breeding was reported from upstream of the Sharu River confluence where a nest and two flying young were observed in late October 1991 (AJT). Cooper (1972) recorded it breeding in the Kariba Gorge in August. Irwin (1981) gives an arrival month of August and a departure during April into May so the records above fit in with this pattern. There are further August records from Acacia Point on the Zambezi in 1995 (IR) and in the same month from Ruckomechi (IR), all of which could have been on passage (Tree 1996a). It has been recorded in the Zambian Atlas square 1628B2.

Wire-tailed Swallow *Hirundo smithii*

A common breeding resident that uses trees along the riverbank and those lying half-submerged in the Zambezi for nesting, roosting and perching between hawking insects over the water. It is almost never seen away from water in this area although it also occurs near human dwellings as on Chirundu Heights. Trip counts include 12 in February 1999 (IH, LM), 10 in December 2003 (BLZ) and another 10 in August 2004 (BLZ). A nest with two eggs was found under a branch of a collapsed tree in the main riverbed opposite Nyangombe Island in August 1990 and a previous breeding record, lacking details, was reported from September 1989 and a suspected breeding record was noted in September 1997.

Pearl-breasted Swallow *Hirundo dimidiata*

The status of this species is uncertain due to possibilities of misidentification, but may only be a sparse vagrant. There is a record of one near C Camp in April 1990, there are three records without details from October 1989, October 1991 and June 1994 and there are further records from the field cards from September 1996 and November 1996. It was also seen in September 1998 (OAZ). Owing to confusion with other swallows, particularly the Grey-rumped Swallow, and

immatures of other species, these records should be treated with caution. This species normally occurs on the central plateau of Zimbabwe and its miombo woodland (Irwin 1981). Birds recorded at low altitudes, such as at Rifa, are probably on passage.

Common House-martin *Delichon urbica*

A fairly common Palearctic migrant. There are several reports of this species, including small numbers flying over camp daily during March 1991 and in November 1990. Between 30 and 40 were seen in company with Barn Swallows, Wire-tailed Swallows and African Palm-swifts hunting for insects along the overhang between the sandbanks and the river on Nyangombe Island and also, in the same situation, at C Camp. They were also seen, again in a mixed swallow/martin/swift flock, during the same period over Chirundu Heights where they were joined by Little Swifts and a couple of Alpine Swifts. Flocks of 30-40 (maximum 70) birds were seen daily in January 1989 (AJT). The OAZ reported it in December 1996. They were common in March 2005 in mixed swallow/swift flocks seen at several locations from Chirundu Heights to the Chipandaure (LM, ACC, GLR). There is a field card from May 1988 which is rather late as the bulk of the population has left by early April (Irwin 1981). This species is often overlooked because it usually forages at a considerable height and its nomadic nature means that it can be found in one place for only a day or so before moving on (Tree 1989e). Some confusion with the Grey-rumped Swallow is possible.

Lesser Striped Swallow *Cecropis abyssinica*

A fairly common breeding visitor, with some present throughout the year, but rather locally distributed. They are usually seen flying just above the canopy or perched on dead trees or branches. On the Chirundu Heights they are often seen flying round the houses or perched on utility lines, as in February 1999 when 15 were recorded there (LM, IH). During the eclipse camp in June 2001 several were seen perched with a party of Mosque Swallows in a baobab on top of the Chipandaure cliffs. However, in March 2005, during a 4-day trip, it was not recorded (ACC, LM, GL). According to Harwin (1989e) it is resident in the Zambezi Valley but Irwin (1981) reported considerable seasonal movements, with two populations involved, the breeding population moving out to be replaced by non-breeders from South Africa, but this was most marked on the central plateau.

Mosque Swallow *Cecropis senegalensis*

A fairly common resident usually seen in singles and pairs (and on one occasion at least a party of five) from Chirundu to the Rifa crossing. One pair was seen entering a hole in a baobab behind camp in January 1994. They are usually seen near baobab trees so their distribution is scattered but centred on the alluvial terraces where these trees mostly occur. Several were seen in February 1997 in a mixed flock with Barn Swallows, African Palm-swifts and martins hawking over the plain near the Hot Springs. In June 2002 a large group (variously counted between 28 and 42 by the observers) were seen perched in a baobab on top of the Chipandaure cliffs in company with Lesser Striped Swallows (AC, LM, DW and others). There is a field card record from May. In April 2011 a bird was building a nest inside a baobab at Nyachuru No. 1 Pan (BLZ) and a pair seen entering a hole in a baobab in January suggests that they may have been breeding. This species

replaces the Red-breasted Swallow *C. semirufa* ecologically, occurring in heavily wooded country at lower altitudes. It is not migratory although it is said to wander widely in winter, occurring away from its normal breeding range and having been recorded in larger concentrations in winter in Zimbabwe (Tree 1989f). At Ruckomechi it was sparse and erratic near the river but commoner on higher ground near the escarpment at Marongora/Makuti (Tree 1992c).

Family Motacillidae (Pipits, Wagtails)

African Pipit *Anthus cinnamomeus*

A sparse and localised resident with a possible influx of non-breeding intra-African migrants during the dry season. It is found in short grassland and marsh vegetation, and sparsely covered flat sandy areas along the floodplain and the main river in similar habitat to the Yellow Wagtail. It is usually seen singly or in pairs but in September 1989 small parties were found along the floodplain. One of its main strongholds is the short grass and sandy plain between the Hot Springs and the Marsh and it was here, in September 2002, that chicks were seen with adults (IR). By March 2005 this area was becoming extremely well-grassed and there was much less bare ground, so the habitat here could be becoming less suitable, and only one bird was seen (ACC). There appears to be a resident population restricted to sandbanks in the Zambezi (Irwin 1981). It is present throughout the year but whether there is an influx of migrants as well is not known. Numbers fluctuate considerably throughout the year and this indicates that some movement is involved, possibly by South African birds.

African Pied Wagtail *Motacilla aguimp*

A common, if localised, resident found along the Zambezi in singles and pairs, or small parties, on banks at the water's edge, on partly sunken tree stumps in the river channel and at pans and channels in the floodplain. It walks along the gravelly shelves near the water's edge feeding on small aquatic animals and it also collects insects whilst walking or running in short grassland near receding pans and pools. There is a high trip count of 20 in early December 2003 (BLZ). Additional field card records are from for January (1995) and July (1994).

Yellow Wagtail *Motacilla flava*

An uncommon Palearctic migrant, but most often on passage. They are usually to be found in the sandy and short grass areas between the Marsh and the Hot Springs but should also be looked for on some of the grassy islands and sandbanks such as at Vulture and Tiger Points. There is a record from 5 November 1990 (no locality given) and from the Marsh and Hot Springs area in February (12 birds), March (1 bird) and also in December (a few). At Sunset Point on Nyangombe Island in March 2005, a flock of about 20 were seen at sunset coming in to roost in damp grassland and shallow mud banks in inlets just off the main river. In March 2008 about 10 were on the floodplain above the Marsh (IR). There are also field card records for November and December 1995. This species is highly habitat-specific and thus localised. In Mana Pools area it usually arrives in November (occasionally October) and departs in April; "hundreds" were reported from there in December 1991 (IR).

Family Campephagidae (Cuckooshrikes)

White-breasted Cuckooshrike *Coracina pectoralis*

A rare visitor with only four documented sightings; one at old B Camp in September 1991 (AJT, AH), one in the

Chipandaure valley in riverine woodland in May 1993, and two records from near Rifa Camp, one of which was in the woodland towards the hills behind Camp in September 1995 (GL). On 22 September 2002 one was on the floodplain close to the camp (D Dalziel) and the following day one was at camp, perhaps the same bird (IR). There is a field card record, in addition to these from October 1994, with no details. This species may be a dry-season or passage visitor to the Middle Zambezi Valley (Irwin 1981), and it has been found from May-October at Ruckomechi and Mana Pools (IR).

Black Cuckooshrike *Campephaga flava*

An uncommon intra-African migrant usually seen in the riverine fringe or mixed woodland. A female was seen in an African mangosteen, a tree with dense cover, at Rifa Cottage on 27 August 1987 (LM). They commonly join mixed bird parties and a female was seen in August 1989 in such a party in a thicket along the Chipandaure (AJT, ACC). A male was seen, again in a bird party, in April 1988 in C Camp inlet. One observer recorded it in May 1996 and again in December 1996 (BLZ), and again in December 2003 when three were recorded during the trip (BLZ). It was also recorded in July 2000 (no details, IR). A female was seen on the riverine terrace just south of Rifa Camp in March 2005 (ACC, LM, GLR) and it was seen twice on the BLZ trip in February 2012. There is a suspected breeding report (no details) from October 1997. Despite the August record this species is essentially a rains migrant, spending the drier months further north (DA), whereas Irwin (1981) states that it moves off the central plateau during the drier months into the major river valleys. Some obviously do remain for the dry season as shown by the May and August records. It is not uncommon at Mana Pools and has been recorded in all months except February, when observations are lacking or at a minimum because of the rains (IR).

Family Pycnonotidae (Bulbuls)

Dark-capped Bulbul *Pycnonotus tricolor*

An uncommon to very common resident, seen on all trips and fairly ubiquitous, being found in all habitats. However, it seems to be warier and less tame than those in cities and towns. In October 1994 the large Zambezi fig at Rifa Camp was in fruit and this attracted large numbers of this and other species. Four were seen in December 1997 and in September 2001 it was reported to be common with a total count of 20 (BLZ). In December 2003 15 were seen just after heavy storms (BLZ). In March 2004, only three were seen during one trip (LM, DW, JS). One was ringed by BLZ in the Chipandaure in December 1997.

Table 12. Indications of the occurrence of Dark-capped Bulbuls on various visits to Rifa (ACC)

<i>Date</i>	<i>Abundance</i>
April 1988	Very sparse, few individuals seen
August 1989	Common throughout
January 1994	A few individuals seen but by no means common
October 1994	Very common throughout
March 1995	Quite common
February 1997	Very few seen
April 2000	Only a couple seen
June 2001 (eclipse)	Quite common throughout
March 2005	Quite sparse and localized to thicker vegetation near river

This species varies considerably in abundance (Table 12) and this may be linked to food availability. These observations seem to suggest a strong dry season bias in abundance but more observations are needed. Most observers tend to ignore this common species as soon as they record it.

Sombre Greenbul *Andropadus importunus*

A localised resident, so far found at only one locality in the study area. It is very difficult to observe as it keeps within the dense cover of the riparian thicket vegetation but is given away by its distinctive call. Records are from 3 October 1991 (field card) and 25 September 1997 as well as from September 1999, 2001 and 2004, October 2009 and March 2014 (OAZ/BLZ). More of this habitat exists within this QDS and it should occur there, although its secretive habits may make it difficult to detect except by observers familiar with its call. It has also been found downstream from the Otto Beit Bridge to the Old Pump house. It is likely to occur over more months than shown above (IR). Its distribution extends from Chirundu down the Zambezi to Kanyemba (Irwin 1981) and Cooper (1972) reported specimens from August and November with a breeding record from November. It may be more common on the Zambian bank since its habitat on the Zimbabwean side may be restricted by elephant browsing (Riddell, 2004).

Yellow-bellied Greenbul *Chlorocichla flaviventris*

A fairly common, although rather localised resident seen at various sites in dense undergrowth along the main river and in streambed thickets. They have been seen at the Little Mopane Pan behind Rifa Camp when it contained water, and they also drink from the birdbath at Rifa Cottage. At least 10 were seen in late August 1989 feeding on nectar from the flowers of wild mango at C Camp. They are often seen flying across the road in the thick *Combretum* thicket about 2 km south of the Chipandaure crossing. One was ringed in the Chipandaure thickets in early December 1997 and another ringed there in August 2004 (OAZ/BLZ). It has been recorded in all months except February and July, but this probably reflects observer coverage. It is less dependent on thick cover than the other greenbuls and brownbuls and sometimes ventures into more open habitats (Masterson 1989a).

Terrestrial Brownbul *Phyllastrephus terrestris*

A common resident in suitable habitat. It inhabits thickets and is not often seen, but it calls frequently and thus gives its presence away. All sightings have been in thick bush associated with streams and rivers such as the Chipandaure and it also occurs in the thick undergrowth of the riparian fringe of the main river. After heavy storms in December 2003, 25 were seen and in late September 2004 a group of 15 was reported (BLZ). They are gregarious and often inquisitive, coming to investigate the observer, particularly if sitting quietly or “spishing”, which will initiate calling. They are often heard under thick cover turning over the accumulated leaf litter, giving their muttering calls and sometimes they inadvertently cover themselves with the leaf litter they are tossing about. In March 2005 they were found in thickets over a gully behind the Camp gate at Rifa, in the Chipandaure and also on the Back Road. They were also heard in gardens on Chirundu Heights during the same trip. There are field card records from May (1988, 1989, 1996) and July (1994). In early December 1997 nine were ringed in the thick riverine bush at the Chipandaure by the OAZ. It exhibits a high degree of site tenacity, often

nesting within a metre or so of the previous season's site (Masterson 1989b).

Family Nicatoridae (Nicators)

Eastern Nicator *Nicator gularis*

An uncommon and localised resident found in riparian thickets and valley bush along the Zambezi and the floodplains. Recorded throughout the year (except February and June) and it calls mainly during the rains, when it becomes more conspicuous. In 1940 it was heard to sing at the Otto Beit Bridge and whilst creeping in thick cover the birds often uttered a low "tuk" call (Smith, 1950). At Rifa it was reported in the Chipandaure and the foothill bush behind the camp in April 1988 (AC, AJT), on Bolt Island and at C Camp. At C Camp it has been observed in the bank thicket and in dry grasses at the water's edge several times in July 1994. In November 1995 a pair was seen in a mixed bird party in a huge apple-ring acacia on Nyangombe Island. Small numbers were reported from the Rifa area in August 1988 (SJ). It was seen on the BLZ fieldtrip in thickets below Reed's cottages at Chirundu in September 1999 and other trip counts include 10 in September 2001 and 6 in December 2003 (BLZ). It was described as frequent in thickets near Long Pan in March 2000 (GL) and there is a field card record from May 1995. There are breeding records from the Middle Zambezi in June and December (Cooper 1972).

Family Turdidae (Thrushes)

Kurrichane Thrush *Turdus libonyanus*

A rare to uncommon and localised resident. One bird was seen in a garden on Chirundu Heights in March 2005 (ACC, LM, GLR) and there are eight other records, but none have exact locality or habitat details. They are from May 1988, August 1988, two from November 1989, November 1990 and December 1998, and it was reported in July 1997 (Eiffel Flats School) and December 2004 (BLZ). It does not seem to be common in the Zambezi Valley. Irwin (1981) regards it as sparse in the major river valleys, while Cooper (1972) reported it in the Middle Zambezi between April and November, both from the riverine fringe and miombo woodland. Lorber (1989b) states that while it is tame and confiding in parks and gardens it is shy and elusive in the wild.

Family Muscipidae (Flycatchers, Robins, Chats)

Collared Palm-thrush *Cichladusa arquata*

An uncommon localised resident is dependent on *Hyphaene* palms which are scarce on the Zimbabwe side of the Zambezi because of damage by elephants and the dry conditions since 1988. One was sighted in the garden of the Chirundu Motel in November 1989 and it is seen quite regularly in a certain garden where there are exotic palms at the top of Chirundu Heights, although these records do not seem to be documented. A pair was seen here in February 1997. One was at Tiger Safaris car park on 3 July 1995 (IR). Benson *et al.* (1971) report that in the Luangwa Valley and in the Kafue National Park it associates with human habitations and has even been recorded nesting in houses. Perhaps the birds here are showing similar habitat preferences and may be in the process of colonisation. Irwin (1981) said that it was not recorded between Chirundu and Kanyemba despite suitable habitat. Cooper (1972) reports a specimen (no month) and an observation from July but it was not specified from where apart from its association with *Hyphaene* palms. It is common and resident around Ruckomechi Camp and up the Rukomechi

River; in 1988 a short survey over 200m revealed about 12 birds in riverine habitat, where it also bred in November. In April 1995 it moved into the camp where young palms were growing and was a common and tame resident there in June 2007. It occurs in suitable habitat through Mana Pools and is also resident in the palm area at Chikwenya (IR).

Arnot's Chat *Myrmecocichla arnoti*

Another of the area's 'flagship' species, it is found in well-developed mopane woodland and often seen in this habitat near Kalisho Springs and Nyachuru Pan. It feeds on insects and spiders on twisted trunks of mopane trees. There are trip counts of eight at Nyachuru Pan (DW, LM) in September 1999, 2 pairs in September 2002 and of 7 from BLZ in September/October 2004, also at Nyachuru Pan. In March 2008 over nine and another six were at these pans (IR). It was also reported in September 2004 in tall mopane woodland on Track 15 (GL). There are additional field card records from August 1988, 1989 and 1994. Birds with chicks were seen in the mopane woodland near Nyachuru Pans in March 2008. This species is restricted to climax mopane and *Brachystegia* woodland with an open understorey (Irwin 1981) and is declining elsewhere in Zimbabwe owing to habitat destruction.

White-browed Robin-chat *Cossypha heuglini*

Uncommon and localised and presumably resident. There were several records between 1988 and 1989 but thereafter very few were recorded until the mid-1990s. The flood channel and the surrounding woodland became progressively drier during this period, which may have accounted for the decreased sightings in such a usually well-monitored area. The improved wet seasons since 1994 have probably encouraged recolonisation. It was recorded in riparian fringe thickets at C Camp in September/October 1994 and a male was seen singing in a tree in Barbel Channel, its main stronghold, in October 1994. It has also been recorded in the fringing vegetation under the Otto Beit Bridge in April 1988, and was seen in the Chipandaure thickets in June 2001 (Eclipse Camp). Since 2000, it has been seen frequently and a sighting is no longer an 'event' and by March 2005 they were even heard at Rifa Camp and were also seen and recorded singing from Chirundu Heights, Barbel Channel and Kockott's Camp (ACC, LM, GLR). Trip counts are usually between two and six birds. There are field card records from May (1988, 1989) and July (1994). One was ringed by the OAZ in early December 1997 in the Chipandaure thickets. It is unclear why the numbers of this species should have changed so much, but it is probably related to rainfall and the subsequent amount of cover.

Red-capped Robin-chat *Cossypha natalensis*

A rare visitor, with only a few records, partly because its shy and skulking habits in dense undergrowth mean that it may often be overlooked. A bird, suspected to be this species, was heard singing in the Chipandaure thickets in January 1989 and October 1994 and two were heard singing in the Chipandaure on 10 July 2000 (IR). There is another 'heard' record from August 2004 (TC, FC). One was ringed in the Chipandaure thickets on 1 December 1997 (OAZ). It occasionally overwinters at Ruckomechi and Mana Pools in riverine vegetation, and has been recorded erratically from April to December (IR).

Thrush Nightingale *Luscinia luscinia*

A rare non-breeding Palaearctic migrant, perhaps mostly on passage. There is a single record from 7 January 1989 when 10-12 birds were recorded in the Chipandaure thickets (AJT) and it was recorded without details on 28 December 1989 (IR). At the end of January 2008, it was common on the Heights and also heard on a visit near the camp (DR, GL, LM). This part of the Zambezi Valley is probably one of the more regular areas for this species (Irwin 1981). Its skulking habits and the fact that most observers are unfamiliar with it probably accounts for the lack of records. Cooper (1972) reported a specimen from December and it has been recorded at Ruckomechi in January and March, where it can be quite common in thickets but overlooked if its call is not known (IR).

Bearded Scrub-robin *Erythropygia quadrivirgata*

A scarce resident, seen and heard calling from thickets surrounding the Chipandaure River, a well-monitored area and so it should occur in similar habitat elsewhere. One was in the Chipandaure in May 1993 (Dawson). A trip count of six was reported in September 2001 (BLZ) and it was noted in September 2002 and March 2014 (IR). There are field card records from January (1993) and October (1991, 1994). A pair were netted and ringed in the Chipandaure in April 1990 and another two in the same locality in December 1997. One of the April 1990 birds was recaptured in December 1995. These observations suggest a late dry and wet season bias but there is no mention of any movements in the literature. They were said to be common between Chirundu and Mana Pools in August 1965 (Vernon 1989a) and they were present through all months at Ruckomechi and Mana Pools (IR).

White-browed Scrub-robin *Erythropygia leucophrys*

A fairly common resident found in open scrub, scrub mopane and rank grass on the edge of woodlands. It is sometimes seen in Rifa Camp and on the riverine terraces where they open out into more scrubby country or onto the floodplain. There are several sight records and this bird has been heard calling from thickets on a few occasions but it may be overlooked when not calling. This species responds quickly and aggressively to 'spishing'. In March 2005 they were heard calling often on the Back Road and at the base of the hills behind Rifa Camp (ACC, LM, GLR). There is a January record on a field card. There are sightings from most months but there are few winter records, probably because it is not calling much at that time.

Capped Wheatear *Oenanthe pileata*

An uncommon breeding intra-African migrant, seen in the sparse, short grassland on the sands near the Marsh in December 1996 (OAZ). There is a record of a bird on a nest on the floodplain near the Hot Springs in June 1998 which, as this species appears to nest mainly in rodent burrows (Jensen 1989a), may be incorrect. This species normally spends the dry season in Zimbabwe, when it breeds. It was seen on several dates in July 1988 at Ruckomechi (Tree 1988). There are records for other years from June and July and also December 1989 and 1992 (IR). According to Irwin (1981) its status in the major river valleys is uncertain and Benson *et al.* (1971) regarded it as sparse in the Middle Zambezi Valley. Cooper (1972) reported a specimen and a breeding record from December, which seems rather late, although there is a very old breeding record (1899?) from the Middle Zambezi in Zambia in December (Benson & White 1957).

Pale Flycatcher *Bradornis pallidus*

Its status is uncertain because there are so few records. One was seen in August 1987 (AJT), another in October 1989, and in September 2002 (IR). There is also a field card record for September 1997. More information is needed on the occurrence of this species in the Middle Zambezi Valley since Benson *et al.* (1971) say it is absent and Irwin (1981) only records it twice and it was not reported by Cooper (1972). It would appear to be a bird of *Brachystegia* or richer broad-leaved woodland (Frost 1989) that does not occur in the study area.

Southern Black Flycatcher *Melaenornis pammelaina*

An uncommon and rather localised resident seen in pairs and small parties in mopane scrub at the base of Chirundu Hill, near Baghdad squatter camp and also in the scrubby woodland behind Rifa Camp. This species tends to keep away from the more thickly-vegetated areas and is also found in the rather dry mopane scrub away from the river. It was recorded in a large tree in the Chipandaure in September 1996, and there are records from September 1999 and 2001 (3) and December 1997 (BLZ). In March 2005 the only ones seen were a pair on some dead branches overlooking Mhenza Pan (ACC, LM, GLR). Recorded also in March 2008 (IR). Field card records are available for May (1988) and October (1989, 1991, 1993, 1994).

Spotted Flycatcher *Muscicapa striata*

An uncommon Palaearctic migrant and passage migrant. It was seen with a passage of Willow Warblers in late March 1991, and also seen in January (1989, 1993 and 1994) at the Bream Pools, while one was at Vulture Point in March 1995. One was seen on top of a bush at the top end of Nyangombe Island in November 1997. In March 2005 it was quite common with singles being seen throughout in various habitats from the riverine acacia to the gardens on top of Chirundu Heights, and in mopane woodland (LM, ACC, GLR). It seems to like the presence of well-spaced large trees with some dead snags and bare ground underneath and around them. This species has drastically declined in Britain (85% between 1966 and 1999) (Fuller *et al.* 2005) because of pressures on migration and in its winter range and a reduction of invertebrate food supplies, especially when breeding.

Ashy Flycatcher *Muscicapa caerulescens*

An uncommon resident seen on several occasions during the period. Its main habitat is riparian fringing forest and adjacent woodland (Irwin 1981). A party of three was seen in some thick riverine bush in the Chipandaure in April 1988 and one was seen at the same locality in September 1989. Four were seen at C Camp in April 1988 and another four on Bolt Island in January 1994 in a well-treed area. Seen in July 2000 and September 2002 and 2004 (IR). It was recorded on Chirundu Heights in August 2004 (TC, FC, GL). Birds were recorded over 4-7 March 2014 (IR) and also by BLZ over 15-17 March 2014. There are field card records from May 1988 and 1995 and October 1991. There is a record of a pair with newly-fledged young in January 1989. Cooper (1972) recorded it breeding in December.

Family Platysteiridae (Batises, Wattle-eyes)

Chin-spot Batis *Batis molitor*

A fairly common resident frequently seen and heard in mixed woodland behind Rifa Camp, at Long Pan and at C

Camp. Pairs were reported as being constituents of mixed bird parties in the drier woodland behind Rifa Camp in April 1988. This would seem to be a prime spot for them as a male was seen there, near the boom gate, in March 2005. All counts are of pairs or singles, but it was not recorded on all visits.

Black-throated Wattle-eye *Platysteira peltata*

A rare resident; a pair was recorded in a mixed bird party in Natal mahogany trees at Vulture Point in 1994 (no month stated). Another pair was seen, again in a mixed bird party, in an enormous apple-ring acacia tree on Nyangombe Island in November 1995. They should be looked for in dense tree canopies in mixed bird parties. There is an undetailed record from December 1998 and there is an undocumented field card record from August 1989. According to Irwin (1981) Chirundu is the upstream limit of this species in the Middle Zambezi Valley.

Family Monarchidae (Monarch Flycatchers)

African Paradise-flycatcher *Terpsiphone viridis*

A common intra-African migrant, seen in all months except February, July and August. Most sightings are from September to April but a few might possibly overwinter in this area from mid-May to September (AJT). There are indeed records of overwintering birds at lower altitudes, especially in the Zambezi Valley (Irwin 1981). They will be much less obvious then, as they will not be calling. One such bird was seen in June 1994 on Bolt Island where there are large trees. Birds were also found in camp in mid-June 2014 (IR). At other times of the year they are most often found in the riverine woodland but they also occur in mopane woodland (particularly mature) and thick riverine bush and thickets. Nests have not been found but they almost certainly breed in the area.

Family Erythroceridae (Yellow Flycatchers)

Livingstone's Flycatcher *Erythrocerus livingstonei*

This species occurs in the Chipandaure thickets, nearby riverine forest and at C Camp in the riverine forest fringe. In the Chipandaure a party was found flitting about in bushes about 3 m from the ground fanning their tails sideways. It was seen in November 1989 (OAZ) and about six were seen in the Chipandaure in May 1993 (M. Dawson). Two were seen in thickets on a sandy 'island' in the Chipandaure on 30 September 1994 and the same birds were seen with another two the following day. In March 1995 a mixed bird party, containing at least two of these birds, was seen along the Chipandaure riverbed in an extremely agitated state. The sideways fanning and flicking of the tail were again noticed, and the object of the agitation turned out to be an African Barred Owlet. Three were seen by BLZ in September 2001, and although not recorded in the interim it was heard on 20 February 2012 in the Chipandaure riverine (BLZ). It was found building a nest at Ruckomechi in December 1989-January 1990 (IR). Smith (1950) reported them as 'being often seen in small parties in tall trees near the river in the vicinity of Chirundu' and Vernon (1989b) saw it at Chirundu in September 1957 and in August 1965. This species approaches its western limits in this portion of the Zambezi Valley and it has been recorded as far upstream as Nyamuomba (IR) and Kariba town, at the Peak (B. Marshall). Irwin (1981) mapped its distribution up to the Binga area, and suggested that its distribution had not been affected by Lake Kariba.

Family Cisticolidae (Cisticolas and allies)

Tawny-flanked Prinia *Prinia subflava*

A common breeding resident found in the grassland of the alluvial plain and near channels, e.g. at Long Pan and also in the bush and woodland. It is one of the more common members of this family, being conspicuous and often heard. One at Rifa Camp in October 1994 sat on a small bush just outside the staff accommodation and sang lustily despite the fact it was pouring with rain. There is a trip count of eight by BLZ in early December 2003 and in March 2005 they were quite commonly seen and heard (ACC, LM, GLR). A pair with recently fledged young was seen in flame thorn thickets between the Chipandaure and Long Pan in March 2005. It is a highly adaptable and common species found in almost all habitats.

Red-faced Cisticola *Cisticola erythrops*

A fairly common resident found in the tall rank adrenaline grass, which lines the flood channels and in riverbank vegetation that includes *Indigofera tinctoria* bushes. It is also found on islands with such habitat and seems to prefer thicker, damper locations than the Rattling Cisticola. In February 1995 it was also found in acacias near water at the Fish Farm and in some thicker vegetation lining the inlet. It is seen on most trips and the highest trip count is of eight seen in early December 2003 (BLZ). Its apparent absence in June and July probably reflects a lack of observers and the fact that it could be overlooked when not calling.

Rattling Cisticola *Cisticola chiniana*

A common resident found in the grassland in channels and floodplains, such as those below Rifa Camp and at Vulture and Tiger Points, but also in the drier, scrubbiest areas on the terraces and inland from the river. It is certainly the commonest cisticola in the area and is sometimes found alongside the Red-faced, but usually in drier and more open situations. In August 1987 it was found in small flocks (family parties?) and chicks were reported in April 1989 (IR). In January 1994 it was reported to be very common in the floodplain, and in March 1996 it was present in the old river channel and the dense cover provided by the extensive development of American sicklepod was probably in its favour. Trip counts include 12 in September 2001 and 16 in late November to early December 2003 (IR). One was ringed in August 2004 (TC). The lack of records in July reflects poor observer coverage, as this species is recorded on all visits.

Neddicky *Cisticola fulvicapilla*

An uncommon resident seen and heard in scrub near Rifa Camp in April 1988, and in degraded *Acacia* scrub at Chirundu Estates in August 1989. There is an undetailed record from March 1996 and a field card record, also with no details from September 1997 (OAZ). This species may have been overlooked. Although this is generally thought to be a species of the understorey of miombo woodland, Irwin (1981) noted that it occurred in other woodland types and savannah in the Middle Zambezi. Cooper (1972) also recorded it from the Middle Zambezi but restricted it to isolated patches of miombo on hills in the valley.

Zitting Cisticola *Cisticola juncidis*

A common, if localised, resident found in grass in the channel below Rifa Camp and in the Marsh, and on grass-covered islands but once reported in woodland inland. Display

calling was heard in late January 1994 over the floodplain near Rifa Camp and at both Tiger and Vulture Points. In February 1997 it was heard giving its display flight near Rifa Camp (AC, LM) and it was on the floodplain in September 2002 (IR). It was recorded on the grassy plains near the Hot Springs in September 2004 (BLZ) and one was seen in December 2003 (BLZ). In March 2005 its display call was heard over a well-grassed sandbank at Sunset Point on Nyangombe Island (ACC, LM, GLR). A field card record is from October 1991. Breeding was suspected at Ruckomechi in October-January (IR). This species is rather restricted in habitat and often occurs alongside the next species.

Desert Cisticola *Cisticola aridulus*

An uncommon visitor. Two pairs were recorded in the Marsh in January 1989 (AJT) and one was seen at Vulture Point in August 1990. There is a recent record from the Zambian side, about 11 km upstream from Chirundu in August (Tree 1990a). There is a breeding record of four eggs in a nest in January 1981 (DP). Two pairs were suspected to be breeding in September 2002 (IR). This species is probably overlooked, except by cisticola experts, or when it is performing its display flight. According to Irwin (1981) it was unknown from the Middle Zambezi, other than at Lake Kariba. It was reported performing its display flight from a bare, grassy island in the Zambezi at Mana Pools in November 1980 (Morris 1981). It was a fairly regular late dry and wet season visitor on the floodplain at Rukomechi, returning every year up until 1990 when the habitat of thin, knee-high grass was lost through grazing (Riddell 1991).

Yellow-breasted Apalis *Apalis flavida*

A fairly common resident sighted in August 1989, November 1989 and October 1991 and heard in the Chipandaure thickets in April 1993. Other documented records are from December 1996 (GL, OAZ), March 1997 and September to November 1997. It was seen during the Eclipse Camp in June 2001 (AC, BP) and six were seen in early December 2003 (BLZ). It is an inhabitant of riparian thickets and woodland and may be overlooked. There are field card records for April and August. The riverine acacia and its associated thickets are prime habitat for this species. Cooper (1972) gives records only from the dry season from April to October but there are no other indications of movements.

Grey-backed Camaroptera *Camaroptera brevicaudata*

A common to very common resident and widespread species which can sometimes be heard or seen in almost every thicket. It inhabits thickets along floodplains and in woodlands and is often seen in the ungrazed grass that occurs round the base of bushes and trees. However, in January 1994 it was regarded as being less abundant as usual and the same relative scarcity was noticed during the eclipse camp in June 2001 (BP, AC, LM). It often keeps up a high-pitched soft bleating which is easily overlooked. Two were ringed in the Chipandaure thickets in December 1997.

Green-capped Eremomela *Eremomela scotops*

Uncommon, possibly resident. A small party was seen in a mixed bird party under the canopy of an enormous apple-ring acacia on Nyangombe Island in November 1995 (LM, ACC). In September 1996 a group of five were seen feeding in a knob-thorn on the banks of the Zambezi near Reed's Cottages (BLZ). In March 2005 a small party was seen in the tamarinds

at Rifa Camp and another couple were in a mixed association on Chirundu Heights (ACC, LM, GLR). There is also a field card record from November 1995. These records fit in with an observation from November reported by Cooper (1972). Tall alluvial acacia and riparian fringing forest are given as preferred habitat in the southeast of Zimbabwe by Irwin (1981) so its utilisation of the same habitat here would not be unusual.

Burnt-necked Eremomela *Eremomela usticollis*

An uncommon resident, seen in Chinese lantern thickets below Reed's Camp in September 1997, and again the following year in the same month. In September 2004 it was reported from thorn trees on the banks of the Zambezi below the bridge (BLZ). It is typically found in riverine acacia, especially in tall trees, and should be looked for in this habitat. It occurs in acacia in nearby squares in Zambia (DA). Cooper (1972) reported specimens from August and September and observations in June and July in the riparian fringe, and it has been seen in all months except February, where its absence is attributed to observer bias during the peak of the rains (IR).

Family Acrocephalidae (Reed-warblers)

Sedge Warbler *Acrocephalus schoenobaenus*

A locally common Palearctic migrant, probably mostly recorded on passage. It was recorded on 7 January 1989 when two were at the Marsh (AJT) and also several at the same locality from 15-19 April 1990, and again in March the following year. A single bird was seen in a sedge clump at the Marsh inlet in March 2005 (ACC). There is a record from September 1998 (OAZ) which seems unlikely since its arrival dates in southern Africa are generally mid to late November (Irwin 1981; Maclean 1984). There is a field card record for December 1995. They have a high degree of wintering site fidelity with birds often being retrapped the following season at the same site (Manson & Manson 1976).

Marsh Warbler *Acrocephalus palustris*

A locally common Palearctic migrant seen and heard at B Camp in mid-March 1995 in dense riverine thickets, and in the same habitat at C Camp in February 1997. In December 1995 two birds were seen in reedbeds in the New Marsh and it was also seen below the Hot Springs. It was reported to be frequent in March 2000 when it was seen in bushy cover at the Bream Pools and Long Pan (GL). Two were also seen near the Sharu River in some dense *Lonchocarpus* thickets in March 1995 (ACC). Occurs in Zimbabwe from mid-December to March and is common in thickets and other rank habitats. Often detected by their song, which is famous for its mimicry of both Palearctic and African species, they can sometimes be enticed out of thick cover by 'spishing' although they are not as responsive to this as some other species (ACC pers. obs.).

Great Reed-warbler *Acrocephalus arundinaceus*

An uncommon Palearctic migrant, probably mainly on passage, although some birds may remain if there are enough dense thickets. Its distinctive call was heard from a thicket near the Soccer Pitch in March 2005 (ACC, LM, GLR) and excellent views were obtained of the bird which was foraging for caterpillars, even whilst singing. On the same trip, it was also heard in dense thickets near Reed's Camp, further downstream. There is a record from January 1993 and another of a single bird in February 1999 but further details are lacking, and it was found in March 2008 (IR). This species should occur in rank grassland and thickets on passage. Its loud,

grating call is distinctive and they are noisy birds so they should be detectable during passage times. Cooper (1972) reports specimens from February and November and observations from January, April and August (!), whilst Ian Riddell has recorded it in December, January and March.

Lesser Swamp-warbler *Acrocephalus gracilirostris*

A localised resident, with several records from the Marsh, which seems to be its stronghold and where it can generally be heard singing. There is also a report from Bwarambwa Island in August 1991. It exclusively inhabits reedbeds and other fringing water vegetation and is almost always found near permanent water, not colonizing temporary pans. There are field card records from September 1995 and June 1996.

Apart from the Marsh, there is little habitat for it in the study area, although more almost certainly exists on the Zambian side.

Olive-tree Warbler *Hippolais olivetorum*

A rare Palaearctic passage migrant, recorded only once. A bird was seen in acacia scrub close to the river's edge near Chirundu on 29 March 1991. It was in company with other small night-migrating passerines (Tree 1991a). Not many observers are familiar with this species so perhaps it is under-recorded here and should be looked for in the riverine acacia habitats.

Dark-capped Yellow Warbler *Iduna natalensis*

An uncommon, possibly non-breeding visitor. It was recorded at the Marsh in December 1996 (GL, OAZ) and there are Atlas records from October 1989 and April 1991, both lacking details. It was recorded in the QDS in April 1989 (IR). Irwin (1981) records two from Chirundu in July, which may be the same as those reported by Cooper (1972), but states that it would not be expected to occur there. It has been recorded in Mana Pools in August 1988 (IR). Dean (1989c) reports post-breeding altitudinal movements, which could fit in with the pattern seen here.

Family Phylloscopidae (Leaf Warblers)

Willow Warbler *Phylloscopus trochilus*

Common, sometimes abundant Palaearctic migrant, arriving in October and departing in April. It was seen and heard throughout the austral summer in any woodland and fringing vegetation. There is an early record from 25-27 September 1998 (OAZ). It is frequently seen foraging in the apple-ring acacias and is particularly abundant in *jesse* bush when it is in flower. In October 1994 they were seen at C Camp in a mixed bird party in a flowering wild mango. It was seen and heard in March 2000 (GL) and two were seen in late November/early December 2003 (BLZ). It was very common in the acacias on Nyangombe Island in March 2005. It can be seen throughout the rainy season but it becomes superabundant during passage in October and April. There are only six field card records, which is surprising but probably reflects poor observer coverage during the wetter months. On 26 June 1995 a bird was in full song in Ruckomechi Camp and another (pale plumaged) over-wintered in Mana Pools (27 June 2005); it has been recorded arriving as early as 21 September and departing in May (IR).

Family Macrosphenidae (African Warblers)

Long-billed Crombec *Sylvietta rufescens*

A fairly common resident seen in thickets and well-developed woodlands. It is often present in the acacia woodlands or in the riverine fringe below Chirundu on the main river banks and near the Chipandaure. It is often a component of mixed bird parties and is frequently first detected by its call. In March 2005 it was seen in a mixed bird party in thickets on Chirundu Heights (LM, ACC, GLR). There are field card records from May (1994) and June (1994). According to Irwin (1981) it prefers more thorny vegetation in the Middle Zambezi Valley but also occurs there in scrub mopane. It is one of the favoured hosts of Klaas's Cuckoo (Jensen 1989b). There are specimen records for the Zambezi Valley from February, August and September (Cooper 1972).

Family Sylviidae (Old World Warblers)

Garden Warbler *Sylvia borin*

A rare Palaearctic migrant; one was reported during a BLZ training camp in December 1989 (PJM, LM), and another was seen in December 1997 but without further details. It may stay here for the whole season as suggested by the December date or it may only occur on passage. Cooper (1972) reports a specimen collected in November.

Family Leiothrichidae (Laughing-thrushes)

Arrow-marked Babbler *Turdoides jardineii*

A common resident, recorded in all months and on all trips. It frequently occurs in the rank adrenaline grass in the flood channel in front of Rifa Camp, in bushes around camp and around the buildings, and also in thickets and woodlands elsewhere. A party of about 10 is resident near Rifa Cottage and they often glean spiders and insects from within the buildings. In April 1993 a Levaillant's Cuckoo was seen entering a nest just below the cottage. They are a very noisy, gregarious and conspicuous species and can become quite tame. One was frequently heard tapping on one of the windows at Rifa Cottage in 1996 and the whole party frequently comes onto the verandah. Trip counts of 14 in September 2001 and 24 in December 2004 have been reported (BLZ).

Family Paridae (Tits)

Southern Black Tit *Melaniparus niger*

An uncommon to common breeding resident usually seen in singles, pairs and small parties in riverine, well-developed mopane and mixed woodland. The most observed were in April 1988 when several small parties were seen and heard in mixed woodland and again in January 1994 when a party of four was seen in a mixed species association on the road to the Chipandaure. It is frequently a constituent of these associations. It has a distinctive call and it was heard along the Back Road in March 2005 and near the Bream pools on the same trip (ACC).

Family Nectariniidae (Sunbirds)

Collared Sunbird *Hedydipna collaris*

A sparse resident, recorded by a few observers, mostly at the Chipandaure and at C Camp in April 1988 and 1989 and November 1990. It was also recorded in September 1998 (OAZ) but there are no further details. Two males were seen at the Chipandaure River mouth in July 2000 (IR), six were seen in September 2001 (BLZ) and it was recorded in September 2002 (IR) and August 2004 (TC, FC), and in September 2004

and October 2009 (BLZ) in the Chipandaure thickets, which seem to be its stronghold in the area. There are also field card records from August 1988, May 1989 and April 1993. It is not recorded on all visits, despite its favoured location, the Chipandaure, being one of the most visited spots in the study area and there are large time gaps between records, as between 1993 and 1998 and again a gap until 2000.

Purple-banded Sunbird *Cinnyris bifasciatus*

A rare visitor with only two records, one from Rifa Camp in January 1989, feeding in mistletoe and also in July 2000 (no details, IR). There are no field card records. It is probably overlooked but it cannot be common and probably only occurs when food plants are in flower. According to Irwin (1981) it occurs at Chirundu between May and August, but he then reports its movement off the Mashonaland Plateau, probably in November/December, into the Middle Zambezi and lower altitudes which agrees with Cyrus (1989). Cooper (1972) notes that it was collected in July and observed June to August. Elsewhere it is present mainly from April to September but also in December and January; it is not at all uncommon downstream (IR). It was, in fact, said to be ‘abundant at Mana Pools outnumbering all other sunbird species together’ in January 1989 (Tree 1990b).

Amethyst Sunbird *Chalcomitra amethystina*

An uncommon non-breeding visitor with only a few records. It was seen near Rifa Camp in late August 1989, three males and one female were seen singly on different days in April 1990. One was seen near Chirundu in November 1990 and another at Rifa Camp in September 1991. An upstream migratory movement was recorded at Rifa on 4 September 1991 when some 40 birds passed by, either singly or in groups of up to five, during two and a half hours in the late morning (Tree 2004). Most of them were males. It was recorded in September 1998 but with no details (OAZ) and a female was seen during the Eclipse Camp in June 2001. Also recorded in September 2001 and 2002 (IR). There are field card records from May 1988 and October 1991 and 1994. This species may be a passage migrant in this section of the Zambezi Valley. Irwin (1981) reports movement out of the Kariba Basin in April and a return in September but the annual pattern can vary according to local and regional rainfall and droughts; actual movements are difficult to determine (Tree, 2004).

Scarlet-chested Sunbird *Chalcomitra senegalensis*

A common resident and visitor found in mixed woodland and in riverine forest fringe, it is usually reported in small numbers on most visits. It has been observed feeding on the nectar of wild mangos and shaving-brush combretum in August and September. It must undergo some movements as it varies in abundance with none being reported in late March 1991 (AJT and others) but 2-3 weeks later in mid-April they were reported as common (GL). In March 2005 only one male was seen, perched in a tree near Mopane Pan, and a female was feeding on an exotic plant in a garden on Chirundu Heights (ACC). There are field card records only for May, June and October. Irwin (1981) reported such movements but stated that they might not be regular.

White-bellied Sunbird *Cinnyris talatala*

A common breeding resident and visitor, widespread but in small numbers. Although often found in the drier areas it does not appear to be linked to a particular habitat and probably

moves locally in response to availability of nectar-bearing plants, such as those in Table 13.

This species has a distinctive song, which often alerts observers to its presence. It is frequently recorded at Rifa Camp but has also been seen at Long Pan and on Chirundu Heights. The colour of the belly varies throughout the year; in January 1989 most birds had ‘butter-coloured’ bellies, whilst in August later that year most had white or grey bellies. In November (year not given) a procession of males flying to water at Chirundu was seen, several with yellowish bellies, a couple with grey and one with a white belly (AJT). There is a record trip count of 20 seen in September 2001 (BLZ) and field card records from January, May and July. There is a suspected breeding record (no details) from October 1997 and in September 2002 adults were seen with dependent fledglings, and another nest was found with very small fledglings, as well as fledglings with an adult female in early October 2009 (IR). The change in belly colour suggests there may be some movement from elsewhere but more research and detailed observations of belly colour at different times of the year are needed.

Table 13. Flowering periods of some nectar-bearing plants used by White-bellied Sunbirds

<i>Plant</i>	<i>Flowering period</i>
<i>Loranthus</i> sp.	Throughout
<i>Combretum mossambicense</i>	July-October
<i>Combretum microphyllum</i>	July-October
<i>Salvadora persica</i>	June-July
<i>Combretum microphyllum</i>	September-October

Variable Sunbird *Cinnyris venustus*

Uncommon and status uncertain as there are very few records of this species. One, without details, is of a male being seen in a tree near the Carmine Bee-eater Colony at the Chipandaure cliffs and another is of one seen on tamarind flowers at C Camp in January 1995. It was seen in September 1998 (OAZ) but there are no further details, and there is another from the Eclipse Camp in June 2001. There are two additional records from field cards for October 1991 and January 1993. There may be possible confusion with Collared Sunbird and care should be taken with identification. According to Irwin (1981) this species occurs in the Zambezi Valley between Chirundu and Kanyemba, inhabiting rich riparian fringing forest. Cooper (1972) reported in from July to December with a breeding record in July.

Copper Sunbird *Cinnyris cupreus*

A rare visitor, only recorded once. A single bird was seen foraging for *Loranthus* nectar in the Chipandaure riverbed upstream from the road crossing in September 1998 (OAZ). It is almost certainly only a visitor to this section of the Zambezi Valley; Cooper (1972) reported observations between January and May at Chirundu while Irwin (1981) reports its occurrence on the Zambezi upstream to Chirundu (January, May and September) but states that it is uncommon.

Family Zosteropidae (White-eyes)

African Yellow White-eye *Zosterops senegalensis*

Common, with records so far mostly from the dry season (April-October). Rather surprisingly, it is little recorded but being a small bird that feeds in the canopy of tall riverine trees it is likely to be overlooked. It is often a constituent of mixed

bird parties and the small groups of these birds are quite vocal as they move with the flock, particularly when moving to another tree. It was seen in the canopy of a large tree near the Bream Pools on the Eclipse Camp in June 2001 and it was recorded in September 2002 (IR) and in the Chipandaure thickets in September 2004 (BLZ), and also in March 2008 (IR). There are other documented records only for April 1996 and August 1989, but field card records from May 1989 and 1994, August 1994 and October 1991 and 1994 augment the sparse sightings of this species. These sightings suggest that it is only a winter visitor to the area despite the fact that most authors consider it largely sedentary (Irwin 1981, Chittenden 1989). The view that it may be a winter visitor is supported by its presence at Mana Pools from April to October (IR), while Cooper (1972) reported records from April to September.

Family Oriolidae (Orioles)

Eurasian Golden Oriole *Oriolus oriolus*

An uncommon Palaearctic migrant. A male was seen at Chirundu in early January 1989 and an immature male was seen feeding with many other species in the fruiting *Ficus bussei* in Rifa Camp in October 1994. Another was seen by the Wildlife Society in November 1996 (LM) and it was seen again the following month (OAZ). There is a record from Chirundu Hill in February 1997 (LM, AC, IH) while three pairs were recorded Chirundu on 8-9 February 2013 (I. Louw). Other records, without details, are from November and December 1998 and there is a field card dated 4 April 1993. It probably occurs in the Zambezi Valley on passage and may be overlooked.

African Golden Oriole *Oriolus auratus*

A common to very common intra-African migrant, with some birds seen in winter. It is often found in the forest fringe behind the dormitories at Rifa Camp from January to April where the birds can be seen chasing each other and calling in the trees. In late March 1991 about 20 (mostly males) were seen in the Chirundu area (AJT) and the species was still common in April the same year (GL). This was in contrast to lower numbers reported at the same times the previous year. They are attracted to fruiting trees and in late January they were feeding with many other species in Natal mahogany trees on Nyangombe Island and elsewhere, and they were also reported as very common in March 1995. March seems to be a good month for the species with it being reported as frequent in 2000 (GL) and common in 2001 (LM, DW) and extremely common in 2005 with many birds seen throughout but particularly common on the hills behind the Bream Pools (LM, ACC, GLR). Other trip records include 16 seen by BLZ in December 2003 and four in March 2004. Males seem to be predominant but it may be that their more brilliant plumage makes more obvious than the plainer females and immatures. There are winter records (May to September) on the field cards, one was seen in June 1999 (BP) and a male was seen behind Rifa Camp during the Eclipse Camp in June 2001 (ACC, BP). Winter sightings are not unusual at this altitude, particularly if there are fruiting trees to attract the birds. There is a breeding record, without details, from October 1997. One was ringed on 1 December 1997 (BLZ).

Eastern Black-headed Oriole *Oriolus larvatus*

A common resident found mostly in the riverine woodland, well-developed mopane woodland and deciduous mixed woodland. It is habitually noisy and often only recorded by its

distinctive and far-carrying call. It is often seen or heard near Long Pan and in the Chipandaure throughout the year in singles or pairs. A pair with the male calling on its territory was seen at C Camp in November 1990. Usually two or three are recorded during a trip but BLZ recorded eight in September 2001. Recorded in all months it is reported to be generally resident with some local seasonal movements (Irwin 1981, Dean 1989d).

Family Laniidae (Shrikes)

Red-backed Shrike *Lanius collurio*

An uncommon to fairly common Palaearctic migrant quite frequently reported because their habit of perching on tops of bushes overlooking bare areas makes them quite conspicuous. It probably occurs mostly on passage as the higher number of March and November records indicate although the January record implies that some remain in the area. There have been several sightings of this species around the Rifa Camp dormitories, but mostly at the Marsh where the habitat is probably more suitable. Several were seen there in January 1989 and there is another record from the Marsh in March 1991. There is an undetailed record from November 1990 (AJT, AH) and another in April 1989 (AJT). One was seen on Nyangombe Island in December 1996 and the following year six were seen in various places in November (BLZ). They were recorded quite frequently in April 2000 when they were seen at the Soccer Pitch, along with Lesser Grey Shrikes, and a few other localities on Nyangombe Island (LM, ACC). In March 2005 they were quite common throughout with records from the floodplain, near the Marsh, in mopane woodland behind Rifa Camp and even on Chirundu Heights (LM, ACC, GLR). There are also field card records /from January 1993, 4 and 15 April 1994, December 1995 and 1997. The earliest arrival date for Ruckomechi is 29 October (IR).

Lesser Grey Shrike *Lanius minor*

A rare Palaearctic passage migrant. It perches conspicuously on bushes overlooking open areas and two were seen at the Marsh on 29 March 1989 and one, probably one of the same, two days later. It was reported, without further details in November 1989 (OAZ). One was seen on Nyangombe Island in December 1996 and in April 2000 the authors had very good views of two of these birds perched on small bushes overlooking bare ground at the soccer pitch, and another was seen in a similar situation near Barbel Channel.

Family Malaconotidae (Bush-shrikes)

Grey-headed Bush-shrike *Malaconotus blanchoti*

A common resident occurring in woodland with thickets. One was seen in a tamarind in fairly heavy bush near Long Pan in April 1988 and it has been heard calling in suitable habitats. It has been seen drinking in the birdbath at Rifa Camp cottage during the hot months and it hops about in nearby riverine trees both on the lower and higher branches. In October 1991 a bird killed and ate a Long-billed Crombec at the birdbath in camp (OAZ). In March 2005 good views were obtained of a bird in a *Lonchocarpus* tree near the Bream Pools and another was heard calling near Long Pan. There are field card records from May and August a suspected breeding record from September 1997 but without details (OAZ).

Brown-crowned Tchagra *Tchagra australis*

A common resident recorded throughout the year. It is found throughout the area in mixed woodlands and thickets,

and is often seen feeding on the ground or low down in thickets around the cottage at Rifa Camp and occasionally in the Chipandaure thickets where it associates with mixed bird parties. In March 2005 it was seen on the Back Road and also in thickets near the Chipandaure (ACC, LM, GLR). In addition to documented reports there are field card records for May 1989 and 1994.

Black-crowned Tchagra *Tchagra senegala*

A fairly common resident that frequents the channel grassland in front of Rifa Camp, where most of the records originate. It has also been heard from the hills behind Rifa Camp and the Bream Pools and also on the Back Road. It forages on or near the ground but is inclined to be more arboreal than the next species. It is reported to be the first bird to start singing after a shower of rain, even beating the bulbuls and doves to it. Most of the records are probably of the bird being heard, its call being so distinctive and far-carrying. There are field card records from May, July and November.

Black-backed Puffback *Dryoscopus cubla*

A fairly common resident, with a distinctive call and therefore more often heard than seen. There are many records from mixed woodland and riverine forest. In April 1988 it was seen throughout the area, often as a constituent of mixed bird parties. It was considered very common in August 2004 (TC, LM) and common on the eclipse Camp in June 2001. There are always some present in the tall trees around Rifa Camp as there were in March 2005 (ACC, LM, GLR). There are records for July from the field cards from 1994. Like the previous species, it is probably overlooked when not calling.

Tropical Boubou *Laniarius major*

A common resident found in a variety of habitats such as riverine forest and thickets along stream beds where it skulks in dense cover, being given away by its call. It is fairly tame around Rifa Camp where it drinks from the birdbaths. It is also found in the gardens on Chirundu Heights and downstream along the Zambezi at Reed's and Kockott's Camps in thick acacia.

Orange-breasted Bush-shrike *Chlorophoneus sulfureopectus*

An uncommon to common resident, seen in thickets, woodland and riverine trees particularly near Rifa Camp and Bream Pools; like other bush shrikes this species is more often heard than seen. It has also been recorded further away from the Zambezi along the Back Road and on the Eclipse Camp in June 2001 it was heard at Long Pan and Arunatius Pan. There is a high trip count of eight (all heard) in September 2001 (BLZ). In March 2005 it was seen at Mopane Pan in an emergent tree nearby and there is a May record on a field card.

Brubru *Nilaus afer*

A sparse resident. It has a distinctive call and is more often heard than seen and probably overlooked when not calling. It tends to forage high in the canopy, sometimes as a member of mixed associations, and its main habitat at Rifa here is thickets, stream beds and woodlands, and in riverine trees. It is particularly fond of flowering *Combretum* trees, which attract many insects. There are field card records from January, June, July and November.

Family Prionopidae (Helmet-shrikes)

White-crested Helmet-shrike *Prionops plumatus*

A common to very common resident found in mopane and mixed woodland, and at the edges of thickets where it feeds on the ground or low down in bushes and trees. Groups of from 3-15 birds are often seen throughout the area, sometimes as constituents of mixed bird parties. They were said to be tame in a garden on Chirundu Heights. In April 1990 and again in March 1991 they were considered scarce and may be subject to seasonal movements, as on the highveld where it is mostly a dry-season visitor, especially in drought years. In June 1997 eight parties were seen along the road from Rifa Camp to C Camp and it was considered very common. It was also considered to be common in August 2004 when eight parties of an average of 12 birds were seen (TC) and in March 2005 when it was also seen frequently throughout. There are records for January and May on field cards. A flock with dependent fledglings was being fed on 21 March 2008 at Mhenza (GL), while adults with a begging fledgling were seen in June 2011 (EB, DWI). Its abundance can vary considerably and this should be monitored with details given of numbers seen while on visits. It is present throughout the year and the bulk of this population is resident but there may be irregular influxes from higher ground in response to climatic conditions.

Retz's Helmet-shrike *Prionops retzii*

A fairly common breeding resident occurring in mixed woodland and tall woodland on alluvium where it forages on larger branches and in the canopy. Parties tend to be smaller than those of the previous species and sometimes only a pair are seen, but one party of 10-12 birds has been the largest seen so far. In April 1988 a party of seven, which included newly-fledged young, was frequently seen in the vicinity of Rifa Camp and one of these birds was seen to catch and eat a juvenile ant-lion. It has been recorded from C Camp, Chirundu Heights and in the Rifa Camp area. Long Pan seems to be a favourite haunt and it is often seen in the knob-thorn and Nyala berry trees there, as in March 2005 (LM, ACC, GLR). On that same trip a pair was also seen in the large *Faidherbia* trees near the Soccer Pitch. Cooper (1972) reported breeding in October.

Family Dicruridae (Drongos)

Fork-tailed Drongo *Dicrurus adsimilis*

A very common resident found almost everywhere in woodland, the riverine fringe and the floodplain and it has even been seen hawking from a drowned tree in the Zambezi. It seems to be more common near the river during the dry season.

It becomes quite tame and at C Camp one bird flew alongside an observer at arm's length. It calls loudly at dusk with various calls including imitations of other bird calls. Such an incident occurred in the Zambezi fig in Rifa Camp when one was heard imitating the calls of both the African Green-pigeon and Pearl-spotted Owlet in the early evening in September 1996. It is frequently seen mobbing anything that comes within its territory, especially eagles and owls. Sometimes it takes advantage of large game animals by hawking the insects disturbed by them.

Sometimes it is seen in large numbers with notable trip counts being by BLZ with 50 in September 2004. One was ringed by the OAZ in November 1997 in the Chipandaure. There is some evidence of local movement within the square with the birds vacating the driest areas during the dry season. There seems to be an influx into the Zambezi Valley during times of drought on the plateau, as in August 1987, when

exceptional numbers were reported, especially at Mana Pools (Tree 1987).



Figure 14. A Fork-tailed Drongo, one of the most conspicuous birds in the Rifa Area. Photo © Ian Riddell.

Family Corvidae (Crows)

Pied Crow *Corvus albus*

A wanderer, but possibly becoming resident, that may have only recently arrived at Chirundu. The increase in the human population and activity at the border post and its associated rubbish has probably attracted it. It was first reported during this study in 1989 at the Otto Beit Bridge and 3-4 were recorded in the Chirundu area on 20 December 1991 (IR). There were no further records from the area until August 1996 when two were seen at Chirundu Heights (LM), although one was on the Zambian side on 22 April 1995 (IR). One was recorded on the main tar road 4.6 km before Chirundu with a further four at Tiger Safaris on 25 November 1996 (IR). In June 1997 it was seen flying over the Marsh, and again in February 1997 when two were recorded near the houses on top of Chirundu Heights. They have been seen there on a couple of occasions since, including the OAZ visit in September 1998

and during the Eclipse Camp in June 2001 (BP, AC). However, there are more field card records from September and October 1989, October 1991, January 1993, September 1996 and August 1997. This species is possibly beginning to colonise the area but there is no record of breeding to date. It would be interesting to know its status on the Zambian side of Chirundu where the human population is much larger. Further downstream a bird was around Ruckomechi on 18 September 1988, one on 1 June 1990 with two there on the 17th (IR); their presence was noted at Nyakasanga River mouth on 15 September 1991 (TW). Smith (1950) noted a single wanderer near the bridge in 1940, and sightings from May, June, July and September were reported from the riverine fringe and the floodplain (Cooper 1972).

Family Buphagidae (Oxpeckers)

Red-billed Oxpecker *Buphagus erythrorhynchus*

A common resident almost always found in association with some of the large game mammals. The numbers seen vary and are determined by the number of hosts in the area. It is usually found in small groups and forages on buffalo, kudu, impala, bushbuck, eland and hippo (Table 14). It has never been seen on waterbuck or elephant and neither has it been seen to roost on host animals at night. Hippos are often a popular choice and the birds will even feed on them in the middle of the river.

In September 1996 six were seen perched in a sausage tree near Barbel Channel and eight were seen by BLZ on their trip in September 2001. It was not recorded during a trip by the authors in March 2005 but game was very scarce at that time and other than hippo only one warthog and a leopard tortoise were seen. There are additional records from field cards from July and October. There are breeding records of (a) a pair occupying a nest-hole at C Camp in November 1990; (b) a pair in a knob-thorn along the Chipandaure in September 1998 (OAZ) and (c) a pair at a hole in a mopane near the Mhenza Pan complex.

Table 14. Host species of Red-billed Oxpeckers and number of birds involved

Date	No. of Birds	Host	Date	No. of Birds	Host
May 1988	5	impala	October 1994	1	impala
April 1990	8	impala	October 1994	5	eland
August 1990	2	buffalo	October 1994	2	bushbuck (rarely)
August 1990	6	buffalo	November 1994	13	hippo
June 1993	4	kudu	September 1996	8	hippo
June 1993	10	buffalo	November 1996	not stated	impala
July 1994	5	female kudu	December 1996	5	hippo
July 1994	3	hippo	February 1997	not stated	impala
September 1994	9	hippo on sandbank	November 1997	4	hippo
September 1994	5	hippo on sandbank	June 2001	2	impala
October 1994	4	hippo	October 2012	35	eland/kudu
October 1994	4	hippo	June 2013	4	hippo

Family Sturnidae (Starlings)

Wattled Starling *Creatophora cinerea*

A rare nomadic non-breeding visitor. There is an undated record of a flock seen in a tree at the old sugar fields on Chirundu Estates. Another flock was seen in old agricultural lands, now turned into grassland with scattered woody components, known as the Gutu on 17 November 1994. A few were seen at the Fish Farm in September 1997 and in April

2000 a party of about 100 were seen at the northern end of Nyangombe Island, recently inundated following the opening of Kariba floodgates. They were feeding on the soft ground. About 50 were seen at the Fish Farm in September 1999 (BLZ). This highly social species is well known for its nomadism throughout the subregion and so can appear at any time, but is probably more likely during the dry season.

Violet-backed Starling *Cinnyricinclus leucogaster*

A fairly common intra-African migrant often found in the apple-ring acacia trees on Nyangombe Island and along the floodplain and in mopane woodland. In January 1994 it was found to be associated with fruiting Natal mahoganies with males being in the minority. In September 1994 some males were seen in apple-ring acacias trees. Males were predominant in February 1995 and on a walk along the floodplain from Vulture Point to Rifa Camp it was considered common in the riverine trees. About ten were seen in various places during one visit in November 1997. About 20 were seen in February 1999 and there was a low count of only three seen in March 2004 (IH, LM). However, in March 2005, they were very common with flocks of males only, females only and mixed seen throughout with some of the flocks numbering up to 30-40 birds. There are records from throughout the year although they are sparse in mid-winter with only one July record and nothing in June. Irwin (1981) remarks on the complexity of its movements in southern Africa and postulates that two populations are involved, moving in and out of Zimbabwe.

Red-winged Starling *Onychognathus morio*

A fairly common resident that occurs around Chirundu, particularly the Otto Beit Bridge and among the dwellings on the Heights, and it has also been reported around Rifa Camp. It was not recorded on all trips. Single birds and small parties have also been observed throughout the area in mature mopane woodland, possibly searching for food, as in June 2001 when scattered pairs were reported throughout. In March 2005 a pair was seen to accompany Meves's Starlings to drink spillage from the water tank (ACC, LM, GLR) and it was also recorded on the Heights during the same trip. A pair nested on one of the houses on Chirundu Heights in February 1997 and a pair was feeding a chick in a hole at Rifa Camp over 19-21 January 2009 (IR). The birds seen in Rifa Camp could breed on the buildings there and this should be looked for.

Meves's Starling *Lamprotornis mevesii*

A very common resident found in grassland, woodland and riverine forest where there is plenty of bare ground. Their numbers tend to fluctuate and in January 1989, September 1991 and in March 2005 it was noticed that there were fewer than usual. They are plentiful around Rifa Camp where they forage for insects in the ground, in elephant pats and in trees. At certain times of the year (particularly the dry season) this species exhibits quite marked daily movements with flocks streaming into Zambia and returning in the afternoon. Towards the end of July 1994, parties of these starlings were flying over the Zambezi River at 07h00 at Tiger Point and in the evening one party was seen to return. These birds are attracted to fruiting trees, particularly figs, and were very numerous in October 1994 when the Zambezi fig in camp produced a great deal of fruit (Maasdorp 1995). They also take nectar, as in September 1996 when huge numbers were seen feeding on a wild mango near the Chipandaure, and again in 1999 when they were also in a wild mango in the company of Lilian's Lovebirds and Dark-capped Bulbuls (BLZ).

During the Eclipse Camp in June 2001 the usual large flocks would stream out of Zimbabwe into Zambia, presumably to visit fruiting trees there. Just before the total eclipse, when the sky was getting darker these birds were seen returning to Zimbabwe and exhibiting their normal roosting behaviour, although this was only 14h30 in the afternoon. A couple of the birds that occur regularly round Rifa Camp have

one or two white feathers in the tail; one of them was still present in June 1996). A pair bred in a thick liana in Rifa Camp and in March 2005 a pair was nesting in a slit in a large *Lonchocarpus* above the Hunters cottage, also in camp. Four fully-fledged chicks were seen being fed by their parents at the Chirundu Motel in May 1988.

Family Passeridae (Sparrows)

House Sparrow *Passer domesticus*

Localized resident confined to the settlements clustered around Chirundu. Seen on Chirundu Heights in November 1999 (IH, LM) and recorded there by BLZ in September the same year. In August 2004 GL reported several at the Heights and in March 2005 one male and a couple of females were seen on the track near Peacock's house there.

Southern Grey-headed Sparrow *Passer diffusus*

A common to abundant resident found in scrub, and mixed and mopane woodlands. They occur in groups of up to 20 to drink at pans and at the birdbaths at Rifa Camp and are seen feeding on the ground. They sometimes join mixed bird parties but are more frequently seen perched on dead snags. Noisy and conspicuous, they are seen on all camps. Trip counts range from only nine in early December 1997 (BLZ) to 20 in March (DW, LM, JS) and September 2004 (TC, FC, GL), 40 in February 1999 (LM, IH), 46 in March 2001 (DW, LM) to around 80 in September 2001 (BLZ). In March 2005 it was extremely common throughout. Elsewhere in Zimbabwe it is believed to be sedentary (Irwin 1981) but at Rifa numbers may vary seasonally, perhaps as a result of local climatic conditions rather than a regular seasonal movement.

Northern Grey-headed Sparrow *Passer griseus*

A localised resident only found around the houses and in the gardens on top of Chirundu Heights. It occurs in small parties, sometimes up to 20 if there is an attraction, such as a bird bath as in March 2005 when such a party was seen (ACC, LM, GLR). They also occur alongside the House Sparrow. There are few records as this species is not easily separated from the previous one but there is a field card record from July 1994.

Yellow-throated Petronia *Gymnoris supercilialis*

An uncommon, possibly seasonal visitor found in woodland and bush and also seen around the settlements in Chirundu. It seems to be particularly fond of mopane habitats. There is a documented record from April 1988 and 20 were seen on a trip in September 2001 (BLZ). There are field card records from August 1988, April and May 1994 and June 1995. According to Irwin (1981) this species is sparse in the Middle Zambezi Valley and may be in competition with the Southern Grey-headed Sparrow, which is very common in the area.

Family Ploceidae (Weavers)

White-browed Sparrow-weaver *Plocepasser mahali*

A common to very common breeding resident; one of the commonest and most obvious birds in the area, conspicuous and vocal, and recorded on all visits. It is found in the mopane and mixed woodland but not in the riverine forest. Several nests are built in the one tree, mostly on the west side of the tree and birds were often seen carrying nesting material and food into the nests. There is a suspected breeding record (no details) from October 1997 but this could just refer to the presence of nests.



Figure 15. A White-browed Sparrow-weaver, a common bird at Rifa. Photo: © Ian Riddell.

Red-billed Quelea *Quelea quelea*

A common to superabundant nomadic visitor seen mostly during the rains when large flocks tend to be more conspicuous. Small parties were recorded in August 1990 and September 1991. During the rainy season in December 1993 to early March 1994 the countryside was covered in short grass, mostly annual species, but some perennials, which later produced a huge crop of seeds that attracted and supported hundreds of thousands of queleas. These birds flew in waves of several thousands at sunset to drink and then roost in the Zambezi River reedbeds from the end of May to the start of August 1994 when numbers started to decline. In March 2001 several large flocks of between 50-200 birds were seen at the Rifa Camp pump on Nyangombe Island and at Barbel Channel (DW, LM) but by June the same year only small parties (<20 birds) were seen (Eclipse Camp). In March 2005 it was seen in large wheeling flocks along the floodplain in front of Rifa Camp and at Sunset Point but after a huge thunderstorm one night only small parties were seen and it was far less common. Local conditions must affect their distribution as shown by the change in abundance immediately after rain and it can be highly nomadic at other times of the year. Breeding was suspected in many parts of the Zambezi Valley including the Rifa QDS in December 1988 and March 1989; thorny species in the *jesse* areas are commonly used and the Back Road *jesse* should be checked for nests (IR).

Southern Red Bishop *Euplectes orix*

A common resident, which inhabits rank grass near water and reeds during the breeding season. In April 1990 it was reported to be very common and had a successful breeding season in the Marsh with over 1000 birds being seen in the grassland there. In December 1993, about 25 males and many more females were busy building nests at a small grassed island in the channel at Vulture Point. In March 1994, a number were nesting, along with a smaller number of White-winged Widowbirds, in the flowering adrenaline grass below Rifa Camp. Drought conditions prevailed in the 1994/1995 season and although only a few males in breeding dress were seen in February 1995 and some breeding did take place at the same locality. In December 1996 males were not yet in breeding dress. Trip counts included 30 in February 1999 (IH, LM) and 20 in March 2004 (DW, JS, LM). It was frequent at Long Pan in March 2000 and in March 2005 it was very common, especially in the adrenaline grass on the floodplain near the Soccer Pitch and at the Bream Pools where some of the males were losing their breeding plumage while others

were still immaculate. Field card records are from May 1989 and September 1995. The numbers of breeding birds and timing of breeding seems to vary considerably from year to year, perhaps driven by variations in rainfall.

Yellow-crowned Bishop *Euplectes afer*

A male, and (presumably) several females, of this species was displaying in a reedbed at the Sharu confluence in March 1995 in the company of Southern Red Bishops (ACC). This locality is just outside this QDS. There is a field card with no supporting details from October 1993. Although Irwin (1981) states that it is absent from the Zambezi Valley and there were no records in Harrison *et al.* (1997), there have been some recent documented records from the eastern part of the valley at Mushumbi Pools and at the Mkanga/Angwa confluence in January 1994 (Tree 1994d).

Yellow-mantled Widowbird *Euplectes macrourus*

Probable vagrant; a male with numbers of Southern Red Bishops and White-winged Widowbirds was seen flying over tall grass along a backwater of the Zambezi River on 5 February 1984 (Chenau-Repond, 1984b). An unusual record for the Zambezi Valley, it is usually restricted to the Mashonaland plateau.

White-winged Widowbird *Euplectes albonotatus*

A fairly common but localised breeding resident found in rank grass and reedbeds along the floodplain channels. It is probably overlooked during the dry season when males are not in breeding plumage. In September 2004 a flock was seen on the grassy plain near the Hot Springs, feeding on the ground (BLZ) and there are field card records from December 1995. It nested in Adrenaline grassland in the channel below Rifa Camp in company with Southern Red Bishops in February and March 1994.

Lesser Masked-weaver *Ploceus intermedius*

An uncommon and probably localised resident. It was recorded in September 1998 in riverine vegetation below Reed's cottages near the Zambezi River (BLZ). This is probably where the other records come from, i.e. September 2001 (16 seen), September 2002, and where a flock was recorded in October 2009 (IR), and they have been seen in the camp area (IR), and in September 2004. A group was in a clump of reeds on the main river opposite the camp in October 2009 (IR). A high trip count of 30 was recorded in March 2004 but no locality was given (DW, JS) and six were seen in August the same year (TC). In addition, there is a field card record from October. The spread of records at this time of the year probably reflects the male's assumption of breeding dress. This species is much commoner downstream on the Zambezi and seems here to be ecologically replaced by the Village Weaver (A.J. Tree, personal communication).

Southern Masked-weaver *Ploceus velatus*

A fairly common breeding resident, often seen near water but also in fairly dry woodland. Nests were being built at New Pan (near Long Pan) in January 1994, and again in January 1995. In March 1991 an adult female was seen (no locality given) and in September 1994 birds were seen near Chirundu and Rifa Camp. They also form colonies on the drowned trees in the main river close to the shores of Nyangombe Island. There are November records (no details) from 1996 and 1997. There is a record from May on a field card. Other than the

colonies mentioned, breeding was suspected (males active at colonies) in September 2004, both in the camp area and elsewhere in the area (IR). As with the above species, a bias against winter records probably reflects the fact that the birds are absent from breeding colonies and out of breeding plumage and more difficult to identify.

Village Weaver *Ploceus cucullatus*

A fairly common resident recorded on most visits that usually breeds near water. One colony was active at Little Mopane Pan behind the camp in January 1994 and another at the inlet at the Fish Farm where nest building had started in October 1994. There was a colony in a fallen dead rain tree overhanging the Bream Pools which was active in March 1997 and in November the same year and also in March 2000 and 2008 (IR). A few parties were seen feeding on flowering wild mangos in September 1991. Winter records are few, probably because birds are out of breeding plumage and difficult to separate from Southern Masked-weavers and they are absent from their breeding colonies.

Spectacled Weaver *Ploceus ocularis*

An uncommon resident mostly seen and heard around Rifa Camp and also at Long Pan where there are large riverine trees. It was reported in September (1999 and 2001) (BLZ) and July 2000 (IR) and September 2004; on the latter date it was recorded both at the camp and elsewhere in the area. In March 2005 its distinctive call was heard in a garden on Chirundu Heights. It was also recorded downstream of Chirundu in October 2009 (IR). There is only one documented record for April 1994 and a further field card record for October 1991. Its nests are distinctive and obvious and they should possibly be looked for in gardens on Chirundu Heights.

Golden Weaver *Ploceus xanthops*

An uncommon and localised resident. A female was seen at Long Pan in March 1995 and a male at Rifa Camp cottage in the same month (LM, ACC). Two were seen in November 1997 (BLZ) and in March 2004 a total of five was seen (DW, JS, LM). It was seen in March 2008 in the camp area (IR) and there are field card records from January 1995 and December (1994, 1997). It was found breeding in March 1989 (IR). The records appear to indicate a rainy season presence, but its status cannot be assessed because there are so few records.

Red-headed Weaver *Anaplectes rubriceps*

A common resident occurring in mixed woodland, mopane woodland, and in the narrow riverine forest fringe and river thickets. It is often seen foraging in tall trees such as knob-thorns at Reed's Cottages in September 1996, and it has been recorded feeding on the nectar of wild mango. It is territorial during the breeding season but at Rifa Camp birdbaths up to ten males were seen drinking at the same time during the hottest month – November. Most males assume breeding dress in August. There are field card records from May, June and July. It is common in Chirundu Township where nests are built on electricity wires, but they also used baobabs behind Rifa Camp in October 1994 and on Chirundu Hill in August 1990. The abandoned nests frequently are taken over by Cut-throat Finches.

Family Viduidae (Whydahs, Widowfinches)

Pin-tailed Whydah *Vidua macroura*

An uncommon and localised resident occurring in open mopane and mixed woodland, and in secondary regrowth (grass, shrubs and umbrella thorn) on Chirundu Estates. Usually only the breeding males are seen as they are so conspicuous. It was reported in September 2001, and in September 2004 in grass near the Hot Springs (BLZ). In March 2005 separate males were seen at the Bream Pools, Sunset Point and up on Chirundu Heights (ACC, LM, GLR). Also seen in March 2008 while non-breeding flocks (mostly females) were reported in October 2009 (IR). There are field card records from April (1993), May (1994) and July (1994). Its preferred host, the Common Waxbill, is not common at Rifa, but it must breed here. There are relatively few dry season records because the males are less obvious when not in breeding plumage.

Long-tailed Paradise-whydah *Vidua paradisaea*

A fairly common resident or nomad found in mixed woodland throughout and in the acacia woodland and scrub on Chirundu Estates where the males are often seen perched on the powerlines. Males with their distinctive flight silhouettes are quite often seen high in the sky. In February 1999 there was a trip count of 10 (LM, IH) and in March 2000 it was reported to be common (GL). In March 2001 three males were seen with accompanying females in the Chipandaure and in March 2005 breeding males were seen flying near the Chipandaure, near Bream Pools and on Chirundu Heights where females were also seen feeding on the ground in company with waxbills and sparrows. There are records from the field cards from January (1995), May (1989, 1994, 1995), June (1996) and October (1991). Dry season records are sparse, probably because non-breeding males are inconspicuous and difficult to identify. Its main host, the Green-winged Pytilia is fairly common and it is likely that this whydah breeds in the area.

Broad-tailed Paradise-whydah *Vidua obtusa*

An uncommon resident or nomad. A male was occasionally seen on the powerlines on Chirundu Estates in umbrella thorn and mixed mopane woodland. Three or four males were seen together in dense riverine woodland along the Chipandaure in March 1995 in a mixed bird party with some females and Southern Masked-weavers. In March 2004 a party of 12 males in breeding dress accompanied by about 20 females was seen feeding on the ground in dry grassland in isolated scrub mopane near the Bream Pools and at the Camp Boom (LM, JS, DW). Two males were conspicuous at Long Pan in March 2008 (IR). There are field card records from May 1988 and 1989 and August 1988. Its preferred host, the Orange-winged Pytilia, is present in the area, albeit sparsely. Like the previous species it is difficult to identify when out of breeding dress but there is one August record so it should be looked for.

Steel-blue Widowfinch *Vidua chalybeata*

A fairly common resident that occurs in mopane and mixed woodland and also on the fringes of riverine forest. In August 1989 about eight were seen near Rifa Camp, one male still in full breeding dress. In the same area another party of eight were seen in April 1990. In April 1993 two males were seen at call posts, one on a dead tree at Mopane Pan behind Rifa Camp (this site again occupied in September 1996) and another on an

apple-ring acacia near Barbel Channel which held water at that time (the site still in use in April 1996). A third call post on a dead tree above the Chipandaure cliffs was empty although it had been in use for at least two years prior to 1991. It was seen on the road to the Chipandaure near Mopane Pan in September 1996. In March 2001 three males were calling from song posts at the Chipandaure cliffs, near the Rifa Camp Pump in Nyangombe Island and near Rifa Camp on the floodplain (DW, LM). Calling males were also recorded in March 2005 at the same sites but in addition it was also seen on Chirundu Heights and at Reed's Cottages. It parasitises the Red-billed Firefinch and must breed in the area. Generally commoner than the next species and, like it, has several traditional call posts that are used for several years.

Purple Widowfinch *Vidua purpurascens*

A fairly common resident found in both mixed and mopane woodlands. A flock of about 50 were seen near Rifa Camp in August 1990 and several were seen near C Camp in April 1990. In March 1991 two males were located at call sites, one at Mopane Pan and the other at the intersection of the Back Road with the River Road. A dead tree at the Chipandaure river crossing is a favourite call site and males have been seen here in March 1996, February 1997, March 2003 (GL). In March 2005 a male was seen on a song post in the same area but on the other side of the road to the usual post (ACC, LM, GLR). In addition to documented records there is a field card record for May 1994. It probably breeds in the area as its principal host, Jameson's Firefinch, is common here, particularly in the Chipandaure where this species is almost always seen.

Family Estrildidae (Waxbills)

Orange-breasted Waxbill *Amandava subflava*

Uncommon but possibly resident found in marshes and on dry and wet plains. The main locality for this species seems to be the Marsh and surrounding area. A party of 28 was seen in early January 1989 (AJT, no locality given) and about 10 were seen at the end of August 1989 on the dry sandy plain near the Marsh (ACC and AJT). Another party, number and locality unknown, was seen in August 1990 (AJT) and about 15 in March 1991 (no locality given); 15-20 were seen in September 2004 at its usual location, the Marsh, in rank grass on a grassy plain (BLZ). There are no field card records for this species. Irwin (1981) states that it was known only from Kanyemba in the Middle Zambezi Valley but obviously small populations exist where there is suitable habitat. It may be a partial migrant or nomad (Clement *et al.* 1993) which may well be the case here, it occurring only when conditions elsewhere become unsuitable, and the Marsh at least may offer suitable conditions throughout the year. It is a year-round resident in the Mana Pools area (IR).

Cut-throat Finch *Amadina fasciata*

An uncommon to common localised resident found in dry woodland, particularly the acacia woodland between the main road and the Fish Farm. It is sometimes recorded in mopane woodland and has been seen at Mopane Pan. It occasionally occurs at Rifa Camp and has also been seen in the gardens on Chirundu Hill and also at the National Parks Offices at Marongora. Four were seen at Chirundu and it was postulated that it arrived with the human population, eating grain spilt by people and trucks (DR-G). It was reported in September 2004 in grass near the Hot Springs (BLZ). In March 2005 it was

considered quite common, particularly in Chirundu Township itself where it was seen both on the Heights and near the old Baghdad Township, where it was associated with old Red-headed Weaver nests on the powerlines. On the same trip it was also seen perched on the powerlines at Rifa Camp (ACC, LM, GLR). There are field card records from August 1994 and October 1991 and it has been recorded every month except for November-January (possibly a result of fewer observers at this time). It was found breeding in the crocodile pens at the Crocodile Farm in disused weaver nests in May 1994 and they are known to breed in old Red-headed Weaver nests; their activity around these nests in March 2005 indicates possible breeding. Irwin (1981) reported that it undergoes considerable movements and is probably largely nomadic.

Common Waxbill *Estrilda astrild*

Uncommon to fairly common resident found in reeds and tall grass, usually near water and also in tangled thickets near gullies. Seen at the Marsh and the Bream Pools and occasionally at pans with a record from Vulture Point in September. In March 1991 it was reported to be very common. Twelve were recorded by BLZ Training Camp in December 2003 and in September 2004 it was recorded near the Marsh on damp grassy ground with rank growth.

Blue Waxbill *Uraeginthus angolensis*

A very common breeding resident found in bushes, woodlands with thickets and in reedbeds. A widespread species, far more catholic in its choice of habitat than the firefinches it becomes very tame around human habitation. Around Rifa Camp about six to a dozen of these birds come to the birdbaths to drink, often with firefinches, except during the winter months. During the wet season it is seen at temporary pans every day. There are no documented records for May but field card records exist. Three pairs were found breeding in the thatched roof of Howland's cottage on Chirundu Heights (February 1997) a nest was found in a bush at Rifa Camp (March 2000; GL) and a pair was seen at a nest in camp (January 2011; EB).

Green-winged Pytilia *Pytilia melba*

A fairly common resident that is also found in thickets around small watercourses such as the Chipandaure and along the Zambezi riparian fringes, as well as in mixed woodland and at pans. It is usually found in pairs, foraging on the ground or low down in thickets and it also drinks at the birdbaths at Rifa Camp, frequently during the hot weather but less commonly during winter. It has been seen coming down to drink at Mopane Pan with firefinches and Blue Waxbills at the end of June when the pan normally dries up, but in this case, it still held a large puddle until September 1996. There is a high count of 20 seen in September 2001 (BLZ). In March 2005 males were seen in *Acacia schweinfurthii* thickets on the Back Road, in degraded acacia thicket near Reed's Cottages, in a garden on Chirundu Heights and in scrub mopane on the road into Chirundu from Rifa Camp (ACC, LM, GLR). It must breed in the area since its brood parasite, the Long-tailed Paradise-whydah is common here. One was seen and later ringed in the Chipandaure in November 1997.

Orange-winged Pytilia *Pytilia afra*

An uncommon and localized visitor found in thickets and tangles along small dry streambeds and around pans and also in woodland. A pair was found drinking at Mopane pan behind

Rifa Camp in May 1994 in company with firefinches, a pair of Green-winged Pytilias and Blue Waxbills. It was also observed feeding on the ground. It is frequently seen in the narrow streambed thicket near Rifa Camp, along the Chipandaure and also in gardens and thickets on Chirundu Hill. Also recorded in February 2011 (P&P Banks). There is a field card record from September 1988. No nests have been found but probably breeds in the area since Broad-tailed Paradise-whydahs, which parasitise it, are present. The records suggest that it is only present during the dry season. It has also been recorded outside this QDS at the National Parks offices at Marongora in miombo woodland. According to Vernon (1989c) it is more a bird of miombo and teak woodlands and can be nomadic while Irwin (1981) thought it susceptible to a considerable amount of seasonal or other movements.

Red-throated Twinspot *Hypargos niveoguttatus*

An uncommon and localised resident that occurs in the riverine fringe of the Zambezi at C Camp and in the thickets along the Chipandaure. Away from the Chipandaure there are few records although it was recorded drinking at Mopane Pan in 1996 as well as being seen in the Chipandaure. Recorded in the Chipandaure in March 2008 and 2014 (IR). In addition to these records there are field card records from October 1991 and 1994 and November 1994. Three birds were ringed in the Chipandaure thickets, one in September 1989, a female in April 1990 and another in November 1997. This is a difficult species to spot and it is almost certainly overlooked in some suitable areas. About half of these records of this species are from birds caught in mist-nets reflecting the difficulty of detecting this species.

Red-billed Firefinch *Lagonosticta senegala*

A fairly common resident found in riverine thickets and in the wet season in woodland near temporary pans. It also occurs in gully thickets near Rifa Camp from where it flies to drink at birdbaths. It can also be seen on the floodplain and generally favours more open habitat than the previous species. In September 1989 one observer considered it commoner than Jameson's Firefinch but in general it is recorded less frequently. In September 1996 it was recorded from Chirundu Heights. It would appear to be recorded on most trips, although a notable exception was a trip by the authors in March 2005. There are field card records from January that fill in gaps in the documented records.

Jameson's Firefinch *Lagonosticta rhodopareia*

A common resident, occurring in thickets surrounding streams, gullies and the fringes of riparian forest, in low bushes in rank grass along the floodplain, and in the fringing vegetation of pans. Several drink in the birdbaths at Rifa Camp during the hotter months but during June and July they are seldom seen there. In September 1989 one observer noted that they were very scarce, but in other years they are commonly seen in September.

Bronze Mannikin *Lonchura cucullata*

A rare, highly localised resident. A small party was seen in August 1987 in Chirundu Township (no further details) it was seen there again in June 2001. There are field card records from May 1989 October 1991, January 1993 and August 1994. It would seem, like the House Sparrow, that it occurs at only the one, man-modified habitat. It occurs throughout the entire

Zambezi Valley (1981) although restricted to the edges of riparian fringes (Benson *et al.* 1971).

Family Fringillidae (Canaries, Finches)

Yellow-fronted Canary *Crithagra mozambica*

An uncommon to fairly common resident that inhabits mixed woodland and riverine thickets. In September 1989 it was considered scarce and not as common as would be expected. A flock was seen on Chirundu Heights in April 1991. It is not seen on all visits although there are records from throughout the year, many from field cards. In September 2002 about 20 were near Bream Pools and others were recorded elsewhere in the area (IR). In September 2004 it was seen around the camp and in thickets below Chirundu Bridge (BLZ) and in March 2005 a few singles and small parties were seen at Sunset Point, the Bream Pools and in the gully behind Rifa Camp (ACC, LM, GLR). It was fairly widespread in early October 2009 (IR). Cooper (1972) reported a specimen from October and sight records only from May to November, which is similar to IR's period of April to November.

Brimstone Canary *Crithagra sulphurata*

An uncommon visitor; its status is difficult to assess owing to the paucity of records. There were a few sightings in August 1988 and two were found on Bwarambwa Island in mid-August 1990, and it was recorded, without details, in September 1998 (OAZ). There is an undetailed record from December 1998 and one was seen during the Eclipse Camp in June 2001 (DW). Irwin (1981) recorded it in the Zambezi Valley in drier riverine vegetation but Benson *et al.* (1971) regarded it as sparse there. Cooper (1972) reported specimens from April and August and a sight record from September. Other records are mainly from May to October with some December and January records; in October 1992 a few seemed to come in to the Vundu area with an influx of Yellow-fronted Canaries (IR).

Streaky-headed Seedeater *Crithagra gularis*

Only recorded in June 1999 and July 2000 (BP); also, a record from August 1988 without details and field card records from May 1988 and August 1994. These records are poorly documented and should be treated with caution. Reported to be a winter visitor to the eastern Kariba Basin (Irwin 1981; Donnelly & Donnelly 1983) it was said to be absent from the Zambezi Valley (Benson *et al.* 1971); it was not reported by Cooper (1972) or seen recently (IR).

Family Emberizidae (Buntings)

Cinnamon-breasted Bunting *Emberiza tahapisi*

An uncommon and localised visitor; sighted sporadically throughout the year behind Bream Pools where suitable habitat (dry hillsides with rocky outcrops of loose stone) is present. It makes widespread seasonal movements being absent from many areas in Zimbabwe during the dry season with an influx into others in December (Irwin 1981).

Golden-breasted Bunting *Emberiza flaviventris*

Fairly common resident in mixed and especially mopane woodland, and on the fringes of riverine forests. Feeds on the ground and is frequently flushed while driving along roads, especially in mature mopane on the way to C Camp. It was often seen drinking at Mopane Pan between December 1993 to June 1994 in company with Blue Waxbills and firefinches *Lagonosticta* sp.

Unconfirmed Records from the Rifa Area

The records listed here lack detailed information or were only recorded on field cards. Some species are included because they are obviously out of habitat or range, while others might possibly occur in the study area. These will be added to the full list if their presence can be confirmed.

Family Anatidae

Garganey *Anas querquedula*

A number were seen at Long Pan on 3 April 1994, in company with White-faced Ducks, probably all females as males are not in eclipse plumage at this time of the year. They were very shy and some slipped away behind fringing vegetation to more secluded waters when disturbed. There is a strong possibility of misidentification with immature Comb Duck and this record is rejected.

Family Accipitridae

African Cuckoo Hawk *Aviceda cuculoides*

A record with no locality May 1994 is the only record (JS) but it is rejected because this is primarily a species of *Brachystegia* and *Baikiaea* woodland (Irwin 1981).

European Honey-buzzard *Pernis apivorus*

There is a field card record from October 1991 but more details are needed before it can be accepted. Although the dates fit for this Palaearctic migrant, which would probably occur here on passage, some identification problems exist, particularly with the Steppe Buzzard and other medium-sized raptors (Irwin 1981).

Black Kite *Milvus migrans*

Not yet been recorded in the study area despite being a relatively common Palaearctic migrant to southern Africa. Reported in the middle Zambezi in January and February (Cooper 1972) and at Ruckomechi on 25 March 1989 and also in December 1990 and 1991 (IR).

Pallid Harrier *Circus macrourus*

A record from August 1990 (Jill Stobart), with no locality details, is rejected because it is very early for this Palaearctic migrant. According to Irwin (1981) it does not arrive until October. Cooper (1972) reported a specimen from the Middle Zambezi from November and an observation from April so it is not at all unlikely that this species could be discovered at Rifa although its numbers have declined and it is now very scarce in Zimbabwe.

Dark Chanting-goshawk *Melierax metabates*

There are three field card records from September 1989, May 1995 and June 1995 but more details are needed before these records can be accepted. However, an adult was seen on the Chirundu road 4km SE of Mhenza Pan on 7 March 2014 (IR), while elsewhere in the Zambezi it has been recorded at Vundu Camp, Mana Pools NP on 16 June 1995 and at Acacia Point on 30 June 1995 (IR). There was also one at Chikwenya Island downstream of Mana Pools on 26 October 1992 (Tree 1993a). Other records are October 1990 at Ruckomechi and a probable adult in the *jesse* on the access road to Mana Pools on 9 July 2005 (IR). In the older literature there are observations from the Middle Zambezi from January and April (Cooper 1972).

Augur Buzzard *Buteo augur*

This species has been listed only once in September 1993 but without further details. Suitable habitat is scarce at Rifa but it could occur in the hills around Chirundu where there is some rugged terrain. However, if it did occur here there would have been regular records.

Booted Eagle *Hieraaetus pennatus*

A pale-phase bird was reported between the 23 and 27 November 1996 at Ruckomechi (Tree 1997a) and there is a field card record from early May 1995. This is rather late but still possible for a return-passage bird. Another pale-phase bird was seen at Kariba Heights in early August 1981 (ACC), which is an exceptional date but might refer to a bird from the small South African breeding population that do move north between March and August (Thiollay 1994). Until further details emerge or there are more records this record must remain in doubt.

Long-crested Eagle *Lophaetus occipitalis*

There is a record from the Zambian side of the Zambezi just downstream of Chirundu opposite the old Sugar Estates pump house in May 1992 within this QDS (IR) and Cooper (1972) reported observations in May and July in the Middle Zambezi Valley. One was seen on Zebra vlei, Mana Pools on 17 June 1996 (J Boardman), while single birds were at Ruckomechi on 4 March 1991 (A Deneys) and 20 April 1999 (C Nicholas). It can only be a scarce visitor to this region as there is little habitat for it, but it is renowned for pitching up and sometimes breeding well out of its normal range in response to rainfall and prey availability (Thiollay 1994).

African Crowned Eagle *Stephanoaetus coronatus*

There is a report of a juvenile from April 1995 but without locality details (JS). The similarity between the juvenile plumages of this species and the Martial Eagle is well known and this could be a simple misidentification. The species does occur in the middle Zambezi Valley where it is found in riparian fringing forest (Irwin 1981) so the possibility of its occurrence here cannot be ruled out, particularly of a wandering juvenile. However, as it stands, it is the only record and therefore cannot be accepted until further records or information emerges. An immature in partial adult plumage was seen east of Nyamepi (Mana Pools) on 1 July 1989 (IR) with another sighting in the same general area on 28 September (TW). A first-year bird was well-seen near Ruckomechi Camp on 14 October 1991 (IR) and possibly the same individual on 14 November 1991 (L Agiotis) and another bird on 10 May 1996 (TW).

Family Rallidae

African Rail *Rallus caerulescens*

There is one field card record for June 1995 but further details are required before it can be accepted. It was reported to breed on ephemeral pans in January (Cooper 1972).

Baillon's Crane *Porzana pusilla*

There is an unconfirmed record from the Bream Pools in June 1996 (L Aitken).

Red-knobbed Coot *Fulica cristata*

There is a field card record from July 1994 which, until such time as there are more details or further records, must remain doubtful. This species is highly unlikely to occur here although Cooper (1972) reports a specimen from November and observations in September from pans in the Zambezi Valley. A probable bird was seen at Ruckomechi on 22 April 1990 (A. Atkinson).

Family Burhinidae

Spotted Thick-knee *Burhinus capensis*

Records on field cards from August 1988 and May 1989 but without further details. This species is more frequently seen on roads at night and schools rarely undertake this activity. The possibility of its occurrence in the drier, more degraded areas such as the old Chirundu Estates or further inland in the drier grasslands cannot be ruled out. More details of existing records are therefore required before full acceptance. Cooper (1972) reported observations in the Middle Zambezi in January and July and IR has a record from June 2000.

Family Scolopacidae

Bar-tailed Godwit *Limosa lapponica*

There is a record of one seen from a boat on the Zambezi in August 1993 (DR). This is an extremely rare species inland in southern Africa, although there are other records from the subregion and the date is early although it would fit in with passage movement. A bird photographed at Ruckomechi over 16-19 October 1988 was the third Zimbabwean record (Riddell 1990a). Without further corroboration or more details, this species is placed in this Appendix.

Eurasian Curlew *Numenius arquatus*

Two were seen flying up the Zambezi on 12 September 1940 and several were heard while migrating at night in the same month (Smith 1950). Two were also seen further downstream at the Zambezi-Kafue confluence in October.

Great Snipe *Gallinago media*

There is a report of a snipe on 31 August 1990 attributed to this species (JS), which is unlikely since this species is a very rare Palaearctic migrant generally present from November to April (Irwin 1981). It was almost certainly a misidentified African Snipe.

Family Laridae

Whiskered Tern *Chlidonias hybrida*

There is a field card record from 31 December 1994, but without supporting details it cannot be accepted. Cooper (1972) reported observations from July and September in the Middle Zambezi but Irwin (1981) admitted no acceptable records from this area.

Family Strigidae

Cape Eagle-owl *Bubo capensis*

Reportedly seen once in April 1988 but without details. This is a bird of granite kopjes and a predator of dassies and rock hares, which are absent in this area. It is also rare and localised in Zimbabwe occurring mostly in the Eastern Highlands and the Matopos. It is extremely unlikely to occur at Rifa and this record is rejected.

Spotted Eagle-owl *Bubo africanus*

Four reports, without details, from April, June, November and December 1988. It could possibly occur as a rare resident but Irwin (1981) states that it is sparse in the Middle Zambezi Valley. There are also field card records from April 1993 and November 1996, again without details. This record is therefore rejected until further details or confirmation of records occurs.

African Wood-owl *Strix woodfordi*

There are field card records for July 1994 and January 1995 that on the present information cannot be fully accepted. This species should almost certainly occur in thick riverine woodland but its rather retiring nature makes it rather inconspicuous unless it is calling. It is not uncommon in the Mana Pools sector (IR).

Family Cuculidae

Black Cuckoo *Cuculus clamosus*

There is a field card record from 30 November 1996 which, while probable, has no supporting details and there are no other records other than a specimen from the Middle Zambezi collected in November (Cooper 1972). Until we have more information this record cannot be accepted. It has been recorded at Ruckomechi in October-December 1988, January and October-December 1989, January and December 1990, January and November-December 1991, January and December 1992, and November 1996 (IR).

African Cuckoo *Cuculus gularis*

There is only one record to date, from a field card from 30 November 1996. Until further records or more details are available, this record cannot be accepted because of identification problems with the Common Cuckoo *C. canorus* to which it is closely related. It was reported as being quite plentiful at Ruckomechi in April/May 1992 (Tree 1992c). Cooper (1972) reported observations from April and July from the Middle Zambezi.

Family Apodidae

Mottled Swift *Tachymarptis aequitorialis*

Four were reported near Chirundu in May 1989 (AJT) with another record on a field card (15 October 1993) with no further details. This species is virtually confined to the granite shield of Zimbabwe and it is highly habitat-dependent on rock overhangs of which there are few, if any in this QDS. It is extremely unlikely to occur here although Irwin (1981) reports a sight record from Kariba in June and states that some post-breeding dispersal is possible.

African Black Swift *Apus barbatus*

There is a field card record from 22 September 1989 but there is very little habitat in this area for this species, which is not a migrant. This date is very similar to records of Common Swift and this record could be a misidentification since the two species are difficult to distinguish. Cooper (1972) reported it in June, August, September and November but this was from the entire Middle Zambezi Valley including the Kariba Gorge where the species is almost certainly resident. There is only one confirmed identification of low-flying birds at Ruckomechi in December 1990 (IR).

Family Alcedinidae

Half-collared Kingfisher *Alcedo semitorquata*

There is a field card record from May 1988; while it is not impossible for this bird to occur here it normally occurs on fast-flowing water with rocks and well-timbered banks (Irwin 1981) and little of this habitat occurs in this QDS. There are also identification problems with juvenile Malachite Kingfishers. There is a record of one seen at Mbera River mouth at Mana Pools on 24 May 1986 (Tree 1986b) and a bird was reported from between D Camp and Nyakasanga River mouth on 2 October 1991 (C Black). Until more records come to light this must remain in the unaccepted category.

Family Coraciidae

European Roller *Coracias garrulus*

Reportedly seen on a couple of occasions but the dates given (August and September 1993) are far too early for this Palaearctic migrant, which starts to arrive in mid-October (Irwin 1981). However, Cooper (1972) reported a specimen from the region dated September and sight records in April, September and December. It would probably occur here as a passage migrant and should be looked for in early and late summer. Smith (1950) reported 'a few on migration, not common' and there are records from January 1989, December 1989, 1990 and 1991, January 1992 and April 1994 (IR).

Family Bucerotidae

Southern Yellow-billed Hornbill *Tockus leucomelas*

There is one field card record (3 August 1997) but Irwin (1981) states that this species does not occur in the entire Middle Zambezi Valley, although more recently it has been found down the valley as far as Binga and it occurs again downstream from Feira. Cooper (1972) had observations from May to September on the floodplain and in mopane woodland. Any records from this QDS would have to be well documented and confirmed.

Family Indicatoridae

Brown-backed Honeybird *Prodotiscus regulus*

There is a sighting of one bird in August 1987 and another in February 1994 but as these records lack details this species is included here rather than in the main text. It was said to be common on the edges of riparian forest in the Middle Zambezi (Benson *et al.* 1971) and one was recorded at Vundu (Mana Pools) on 2 September 2007 (IR). Its probable host, the Grey-backed Camaroptera is common in the area.

Scaly-throated Honeyguide *Indicator variegatus*

This species was reported when one was heard calling on Chirundu Hill in January 1994 (AC). Irwin (1981) states that it should occur in the Middle Zambezi Valley and records its habitat as including apple-ring acacias, tall riparian fringing forest and alluvial woodland. Cooper (1972) recorded it in his appendix as being observed once.

Family Alaudidae

Red-capped Lark *Calandrella cinerea*

There is only one record (May 1989) without further details. It would be likely to occur here only in winter on short grassland, bare ground or roads and Irwin (1981) described it as a wanderer into the major river valleys. It is now recorded regularly at Ruckomechi on passage in October through to December (Riddell 1991).

Family Hirundinidae

Black Saw-wing *Psalidoprocne holomelas*

Its status is unclear owing to the paucity of records. It was sighted at the Chirundu Estates in April 1993, flying with Wire-tailed Swallows (Mundy & Maasdorp 1993b). In September 1997 it was reported downstream of Reed's Camp (BLZ) but this record has not been accepted. It has also been reported in the Zambian Atlas square 1628B, although Dowsett *et al.* (2008) consider this record to be erroneous. Cooper (1972) gave records from December and August but the taxonomic treatment here includes race *orientalis*. Although hundreds of Eastern Saw-wings have been recorded in the Ruckomechi area over nearly 20 years, *holomelas* has never been recorded.

African Rock Martin *Ptyonoprogne fuligula*

There is a report of this species but no details can be found. Suitable habitat for this species is scarce in this QDS but it could possibly occur in the hills behind Chirundu or near the Chirundu Bridge where there are suitable rock formations. This species is also not averse to nesting on man-made structures (Every 1989) and it may utilise the bridge or buildings in the village. It may well occur on the escarpments of the Middle Zambezi Valley (Irwin 1981) and colonisation may occur from these populations.

Greater Striped Swallow *Cecropis cucullatus*

There is a field card record without details from 15 October 1993. This is a species primarily of montane and mid-altitude grassland but is an intra-African migrant which could occur here on passage. Indeed, Irwin (1981) mentions a small flock at Chirundu from 15 October, and it has been recorded several times as a passage migrant in adjoining Zambian squares in April-May (DA). More details of the field card record would be desirable.

Red-breasted Swallow *Cecropis semirufa*

A report of this swallow says 'A rather surprising record was of one seen 5 km south of Chirundu on 7 September 1991' but the observer cannot be traced for confirmation; there is also a field card record from October in the same year, again with no details. These could possibly be misidentifications of the Mosque Swallow which occurs quite commonly in the area. This species is an intra-African migrant present in Zimbabwe (mostly above 900m) from July/August to March and it could occur in the Zambezi Valley on passage (Irwin 1981). The dates of these records might suggest they were arriving, but arrival dates in Zimbabwe are generally a month or so earlier. A bird on migration was recorded on 18 August 1990 and this was considered very unusual for the valley (IR). Cooper (1972) reports an observation from September.

Family Motacillidae

Cape Wagtail *Motacilla capensis*

There is a field card record for 04 April 1994 but this species does not occur in the Zambezi Valley downstream of Victoria Falls so this record is rejected. It may refer to a misidentified juvenile African Pied Wagtail.

Family Turdidae

Groundscraper Thrush *Psophocichla litsitsirupa*

Listed on a field card from April 1993 but may have been confused with a Dusky Lark (DA pers. comm.). Although

apparently absent from the Zambezi Valley (Benson *et al.* 1971) a sighting from April has been reported (Cooper 1972).

Family Muscicapidae

Familiar Chat *Oenanthe familiaris*

There is one record of a bird seen in October 1991 on a field card without supporting details. Until further information or more records come to light this cannot be accepted. Irwin (1981) states that this species does occur in the Middle Zambezi Valley and it could occur in areas with rocky outcrops such as the hills behind Rifa Camp.

African Dusky Flycatcher *Muscicapa adusta*

There are records awaiting details. Cooper (1972) reported a specimen from October and this may be the one shown in Hall & Moreau (1970) from just above the Zambezi/Luangwa confluence. However, Irwin (1981) reports its occurrence only to the lip of the Zambezi escarpment and its adherence to richer *Brachystegia* woodland. Benson *et al.* (1971) report seasonal altitudinal movements into the lower Zambezi Valley so it could occur here. Riddell (1991) recorded an April to August movement into Ruckomechi with occasional birds as far upstream as the Nyakasanga River mouth and there is a record in February 1988 from Chirundu (Paxton 1988).

Family Cisticolidae

Bar-throated Apalis *Apalis thoracica*

There is a field card record with no substantiating details from October 1994. This species is absent from the Zambezi Valley below the escarpment (Irwin 1981) with the nearest populations being a long distance away on the plateau.

Yellow-bellied Eremomela *Eremomela icteropygialis*

In three reports considered to be widespread and fairly common in suitable stream bed thickets and woodlands but further details and dates are lacking. There is another record from a field card for May 1988. According to Benson *et al.* (1971) it is unknown in the Middle Zambezi Valley and Irwin (1981) records it only from Bumi and Gache Gache (both now on Lake Kariba) during the winter months and suggested movement down from the escarpment. Cooper (1972) had an observation from December. Therefore, this species is not accepted until more detailed records come to light.

Family Locustellidae

Little Rush-warbler *Bradypterus baboecala*

There is an undocumented record from March (year not given) and a field card record from April 1996. Neither record has any locality or habitat details and so cannot be fully accepted although there is no reason for it not to occur here, particularly in the bulrushes in the Marsh. Benson *et al.* (1971) report only a single record from the Zambezi Valley although Irwin (1981) gives a record from Mana Pools. It is a resident of reeds and bulrushes further downstream, having become established in about 1990.

Family Acrocephalidae

African Reed-warbler *Acrocephalus baeticatus*

There is a field card record (2 April 1996) but no further details. This species should occur in the Marsh and similar habitats but is rejected at present because of the absence of information about its status in this QDS. According to Benson *et al.* (1971) it is rare in the Zambezi and Luangwa Valleys

although Irwin (1981) regarded it as widespread in the major river valleys.

Icterine Warbler *Hippolais icterina*

There is a record from October 1991, which is an exceptionally early date as Tree (1989g) states that it arrives in November in southern Africa. Benson *et al.* (1971) give a date of late October while Irwin (1981) gives it as mid-October. This species' favoured habitat in southern Africa is acacia savannah but it may occur in any patch of acacia (Irwin 1981) so the riverine acacia is probably suitable habitat. Cooper (1972) reported a specimen from the Zambezi Valley in December and there is a sight record from January. One was recorded in acacia in mixed savannah in the Dande Communal Lands on 7 February 2001 (Riddell 2009).

Family Macrosphenidae

Red-faced Crombec *Sylvietta whytii*

There are field card records of this species from November 1995 and October 1997. It is a 'miombo special' that only reaches the lip of the Zambezi Escarpment and does not descend into the Valley (Irwin 1981). These records are almost certainly misidentified Long-billed Crombecs.

Family Remizidae

Grey Penduline-tit *Anthoscopus caroli*

There is a field card record with no details from 25 September 1997 (OAZ) and further details are required before they can be accepted. It is likely to occur here, particularly in the riverine acacia and may be a dry season visitor between April and September (Irwin 1981), which fits in with this record. Cooper (1972) reported a specimen from the Middle Zambezi and an observation in September (albeit listed as *A. minutus*).

Family Sturnidae

Cape Glossy Starling *Lamprotornis nitens*

One field card record (May 1995) but probably a misidentification of the next species, since this one is confined to semi-arid acacia savannah on the central plateau and the Limpopo Valley (Irwin 1981).

Greater Blue-eared Starling *Lamprotornis chalybaeus*

Once recorded as a possible sighting (25 September 2002) on Nyangombe Is. (IR). It has appeared as a late dry to wet season visitor from Zambia with a peak of 18 at Ruckomechi in October 1990 (Riddell 1991).

Family Ploceidae

Black-winged Bishop *Euplectes hordaceus*

Recorded on a field card record (March 1995) but without further details. Although Irwin (1981) states that it occurs in the Zambezi Valley between Chirundu and Kanyemba, there is no evidence of this in Harrison *et al.* (1997) and Ian Riddell has never recorded it in over 20-odd years of birding in the Zambezi Valley.

Yellow Bishop *Euplectes capensis*

Recorded on field cards from September (no year given and 1997) and October 1994. It sometimes wanders into the Zambezi Valley between May and October, particularly near the escarpment (Irwin 1981). More detailed records are required before this species can be accepted.

Records of Interest from the Middle Zambezi Valley

These are records of species recorded elsewhere in the Middle Zambezi and which might possibly occur within the study area but have not yet been recorded there.

Family Phoenicopteridae

Lesser Flamingo *Phoenicopus minor*

Cooper (1972) reported an observation from the Middle Zambezi in December but gave no details.

Family Anatidae

Yellow-billed Duck *Anas undulata*

A most remarkable record for the Zambezi was the occurrence of eight birds seen and photographed in the Ruckomechi area on 8 August 1992 (Tree 1992a). The drought being experienced at that time must have displaced these birds. This was probably also true for a spate of records in the area in 1995 with two birds, again near Ruckomechi, on 4 July (C Nicholas), two downstream of Chikwenya on 25 July and one near Ruckomechi (IR) on 28 August (Tree 1996a). On 7 September 1995 two birds were seen again in the Ruckomechi area (C Nicholas).

Hottentot Teal *Anas hottentota*

One of these birds seen at Ruckomechi on 14 August 1992 may well be the first definite record for the Zambezi (Tree 1992a). This was followed up two years later with two at Ruckomechi on 8 November 1994 (TW) which could well have come from Zambia. Seven were seen on 27 October 1998 (C Nicholas), two on 3 March 1999 (C Nicholas), one on 17 May (TW) and two on 23 June (C Nicholas).

Family Falconidae

Lesser Kestrel *Falco naumanni*

Two birds were seen at Ruckomechi on 11 March 1993 (Tree 1993b). A flock of c.20 was seen on Kariba Heights in March 1979 (ACC) although this is a very different habitat from the Zambezi Valley downstream. Cooper (1972) reported a specimen from March in the Middle Zambezi Valley. It might be recorded in this QDS on passage, as with the sightings above.

Family Gruidae

Wattled Crane *Bugeranus carunculatus*

Unusual records were of a pair in the Ruckomechi area on 29 June 1995 (C Logie) and 9 July 1992 (Tree 1992a). These may have been wanderers from the Kafue Flats in Zambia and the only possible habitat at Rifa would be the Marsh. Its presence there would be highly unlikely.

Family Otididae

Black-bellied Bustard *Lissotis melanogaster*

There are no records from Rifa but a female was seen on Chikwenya Island on 16 September 1993 (Tree 1994b) and one was seen at Nyamepi, Mana Pools on 24 June 1994 (Tree 1995b). A male was present at Chikwenya on 4 November 1996 and a female on 18 November the same year (Tree 1997a). According to Tree (1995b) this is a sparse winter visitor to the Zambezi Valley so the November records are noteworthy. There are many other records between 1988 and 1998 in addition to the above and the closest to Rifa was a female south of Kakomomarara Hills (east side of the old Sugar Estates) in December 1988; recorded in April, June and August-December (IR).

Family Recurvirostridae

Pied Avocet *Recurvirostra avosetta*

Two appeared at Ruckomechi in November 1993 (T Williamson).

Family Scolopacidae

Common Redshank *Tringa totanus*

First recorded at Ruckomechi in June-September 1988, followed by two birds in April 1989 (Riddell 1990a), another single appeared in January 1990 (IR). A single was seen at Nyamepi on 28 September 1990 and, presumably the same, 2 km downstream the following day (Tree 1991b). Two unconfirmed birds were seen near Nyamepi on 22 August 1995 (IR).

Terek Sandpiper *Xenus cinereus*

One was seen at Ruckomechi on 18 and 25 November 1990 (IR), and another photographed at Long Pool, Mana Pools, on 7 August 2013 (IR & C von Chamier).

Sanderling *Calidris alba*

There are old records from Chirundu on 7 October, 11 November and 8 December 1940 (Smith 1950). It was not recorded during the present survey at Rifa but there are other records from the Middle Zambezi with one at Ruckomechi from 2 September-17 October 1990 (Tree 1991b). One arrived there on 28 September 1991 and was seen the following day, with two on 9 and 29 October (IR), and another at the same locality on 26 September 1993 (Tree 1994b).

Family Cuculidae

Thick-billed Cuckoo *Pachycoccyx audeberti*

There are several records of this species from Mana Pools; a fledgling being fed by its host, Retz's Helmet-shrike, in June 1990 probably bred in the area (Riddell 1990b). An immature was at Ruckomechi in May-June 1994 and several records followed in June 1995 (Tree 1996a) and May 1997 (Tree 1997c). It has also been reported from Chikwenya with 18 call or sight records from there in July to September 1993 (Riddell 1994); its main host, Retz's Helmet-shrike, was common in the area. A bird was calling at the Mcheni camps in April 2005 (IR). This species can be unobtrusive and should be looked for in the study area, particularly as the host species is also common there.

Barred Long-tailed Cuckoo *Cercococcyx montanus*

This has been recorded from the Middle Zambezi near Fiera (Irwin 1987), the Gwaze River area (Jones 1987) and also from Mana Pools (Hustler (1985). There are several records from the Gwembe Valley on the Zambian side of the Zambezi River between December and February (Zambian Orn. Soc. Newsletter, 1983, 13(2): 29-30; 13(11): 170; 13(12): 188. Irwin (1987) suggested that this cuckoo is widespread in parts of the Middle Zambezi, at least during the rains.

Green Malkoha *Ceuthmochares aereus*

One of these birds was found in the 'pitta patch' on the Gwaze River some 5 km from its confluence with the Manyame in the Dande Communal Lands (QDS 1630B2) and about 160 km due east of the study area (Masterson & Parkes 1998), followed by one photographed near Nyamepi Camp, Mana Pools National Park in October 2010. Up until these records the furthest west in the Zambezi Valley was believed to

be Muira River, Nyakafura, Mozambique some 100 km downstream from Tete (Irwin 1956). It is unclear if these records represent a range expansion or better observations.

Black Coucal *Centropus grillii*

This rainy season migrant has been extensively recorded on the Ruckomechi floodplain in *Chrysopogon* grassland since 1989, usually arriving in November or December and departing in April or May (IR). Irwin (1981) reports some winter records from the Middle Zambezi but there is very little suitable habitat for it in the region.

Family Caprimulgidae

Freckled Nightjar *Caprimulgus tristigma*

This species has been recorded on sandy islands and bare floodplain, at Chikwenya in March 1988, downstream of Chirundu in April and June 1988, at Rukomechi in September 1988, August, October and November 1990, and June and September 1991 (Rukomechi), and in October 1991 in the Chikwenya area (IR). When breeding this is a species of granite kopjes and outcrops and well-wooded escarpments (Irwin 1981) but in the non-breeding season some disperse

away from these habitats. The October record seems unusual since this is the height of its breeding season (AJT).

Family Coraciidae

Purple Roller *Coracias naevius*

Not yet recorded from the study area but should occur, particularly in the winter months; one was reported at Nyamepi, Mana Pools on 5 August 1992 (Tree 1992a).

Family Corvidae

White-necked Raven *Corvus albicollis*

Cooper (1972) noted that a specimen had been collected in November, and it had been observed from May to November in the riparian fringe and on the floodplain. They were reported in eight out of 17 field cards (48%) from Mana Pools prior to 1978 (Marshall 1979) and there are records from Kariba to Mana Pools in the atlas (Harrison *et al.* 1997). The last published report was from Morris (1981) and sightings at Mana Pools in 1988 (IR) and while it seems to have suffered a range contraction and disappeared, stragglers or vagrants might appear from time to time.

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Leslee Maasdorp, Harare ✉ birds@zol.co.zw
Anne Cotton, Stirling, Scotland ✉ anne.cotton@bto.org

Appendix: Scientific names of non-avian species mentioned in the text

Plants

Common names for plants are from Wursten, Ballings, Coates Palgrave and Hyde, *Flora of Zimbabwe* (<https://www.zimbabweflora.co.zw/>). Note that trees formerly placed in the genus *Acacia* are now assigned to *Vachellia* or *Senegalia* but the common name 'acacia' is retained here.

Adrenaline grass *Chrysopogon nigritanus*
American sicklepod *Senna obtusifolia*
Apple-ring acacia *Faidherbia albida*
African mangosteen *Garcinia livingstonei*
Baobab *Adansonia digitata*
Blackjack *Bidens pilosa*
Bulrush *Typha capensis*
Burning-bush combretum *Combretum microphyllum*
Chinese lantern *Dicrostachys cinerea*
Common reed *Phragmites australis*
Couch grass *Cynodon dactylon*
Flame thorn *Senegalia ataxacantha*
Ilala Palm *Hyphaene petersiana*
Kariba weed *Salvinia molesta*
Knob-thorn *Senegalia nigrescens*
Lowveld Newtonia *Newtonia hildebrandtii*
Mistletoe *Loranthus* spp.
Mopane *Colophospermum mopane*
Natal Mahogany *Trichilia emetica*
Nyala berry *Xanthocercis zambeziaca*
Paper-bark tree *Commiphora* sp.
Rain tree *Lonchocarpus capassa*
Sausage tree *Kigelia africana*
Shaving-brush combretum *Combretum mossambicense*
Snowberry *Flueggea virosa*
Spiny white-leaved bushwillow *Combretum obovatum*
Splendid thorn *Vachellia robusta*
Stamperwood *Ehretia obtusifolia*
Tamarind *Tamarindus indica*
Torpedo grass *Panicum repens*
Umbrella thorn *Vachellia tortilis*
Water hyacinth *Eichhornia crassipes*

Water lilies *Nymphaea nouchalis*
Wild mango *Cordyla africana*
Wild Syringa *Kirkia acuminata*
Zambezi fig tree *Ficus bussei*

Animals

African catfish *Clarias gariepinus*
Armoured cricket *Acanthopplus* sp.
Black Rhinoceros *Diceros bicornis*
Buffalo *Syncerus caffer*
Burchell's Zebra *Equus burchelli*
Brown Hyaena *Hyaena brunnea*
Chacma baboon *Papio ursinus*
Eland *Taurotragus oryx*
Elephant *Loxodonta africana*
Gerbil *Tatera leucogaster*
Hippopotamus *Hippopotamus amphibius*
Honey badger *Mellivora capensis*
Impala *Aepyceros melampus*
Kudu *Tragelaphus strepsiceros*
Large Grey Mongoose *Herpestes ichneumon*
Leopard *Panthera pardus*
Lion *Panthera leo*
Nile Crocodile *Crocodylus niloticus*
Nile Monitor *Varanus niloticus*
Pangolin *Manis temmincki*
Peter's Epauletted Fruit Bat *Epomophorus crypturus*
Pronghorn Antelope *Antilocapra americana*
Rocky Mountain Elk *Cervus elaphus*
Slender mongoose *Herpestes sanguineus*
Spotted Hyaena *Crocuta crocuta*
Tigerfish *Hydrocynus vittatus*
Tsetse fly *Glossina morsitans* and *G. pallidipes*
Vervet Monkey *Chlorocebus pygerythrus*
Waterbuck *Kobus ellipsiprymnus*
Wild Dog *Lycaon pictus*
Wild Turkey *Meleagris gallopavo*



BIRDLIFE ZIMBABWE COUNCIL 2018-2019

President	Neil Deacon	neilrobindeacon@gmail.com	0772-363369
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Hon. Treasurer	James Ball	jameszwe@gmail.com	024-2494409
			0772-310351
Acting Hon. Secretary	Paula Dell	paula.dell@strachansphoto.com	0712-610746
Councillor, Finance	Russell Clark	jrclark000@gmail.com	024-2496554
			0772-338077
Councillor, Mashonaland	Tony Alegria	tonyalregria47@gmail.com	024-2490375
Councillor, Matabeleland	Karen Learmonth	afspeg@yoafrica.com	029-285666
			0772 -231819
Councillor, Education	Leslee Maasdorp	dorothywakeling@gmail.com	024-2883316

BLZ Member Consultants

Library & Wetlands	Dorothy Wakeling	dorothywakeling@gmail.com	024-2304298
			0772-376506
National Membership	Sylvia Muzavazi	sylvia@blz.co.zw	024-2481496
Waterbirds, SABAP 2	Ian Riddell	gemsaf@mango.zw	0772-117054
Special Species Survey	Peta Ditchburn	specialspecies@blz.co.zw	029-244596
			0775-940714

Publications

Editor, Honeyguide	Brian Marshall	brian.marshall01@gmail.com	
Honeyguide Design & Production	Vacant		
Editor, The Babblers	Ian Riddell	gemsaf@mango.zw	0772-117054

BLZ NATIONAL OFFICE

Chief Executive Officer	Julia Pierini	juliapierini@birdlifezimbabwe.org	0772-894562
Finance & Administration	Sylvia Muzavazi	sylvia@blz.co.zw	024-2481496
Conservation Officer, Special Species	Fadzai Matsvimbo	fadzai@blz.co.zw	024-2481496
Research Projects	Togarasei Fakarayi	toga@blz.co.zw	024-2481496
Messenger/Caretaker	Vengai Dengu		024-2481496

35 Clyde Road, Eastlea, Harare – PO Box RVL 100, Runiville, Harare
 Telephones: +263 (024) 2481496 – E-mail: birds@zo1.co.zw
 Web: www.birdlifezimbabwe.org – Facebook: www.Facebook.com/BirdLifeZimbabwe



Arnot's Chat, a 'flagship' species usually found in mature mopane woodland
Photo © Roger MacDonald

Three-banded Courser in mopane woodland on the Back Road at the base of Chirundu Hill
Photo © Ian Riddell



Immature Narina Trogon near Bream Pools
Photo © Celesta von Chamier