

# Coastal wetland bird census Sierra Leone, January-February 2005

Short report



Working Group International Waterbird  
and Wetland Research (WIWO)  
The Netherlands

The Conservation Society of Sierra Leone  
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## **Coastal wetland bird census Sierra Leone, January-February 2005**

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**Published by:** Working Group International Waterbird and Wetland Research (WIWO), The Netherlands in co-operation with The Conservation Society of Sierra Leone (CSSL)

**Partners:** Government Wildlife Conservation Branch (WCB).

**Summary:** Five coastal wetland areas were censused for bird numbers during the period January/February 2005: Scarcies Estuary, Sierra Leone River Estuary, Yawri Bay, Turtle Islands and Sherbo Island. In total 92,454 waterbirds were counted and more than 100,000 were estimated to be present in coastal brackish and marine wetlands. Based on the results, all areas met the ornithological criteria to list the areas as Important Bird Areas (IBA's) or as Wetlands of International Importance (Ramsar Convention). Apart from this, staff of CSSL and WCB were extensively trained in waterbird identification, counting waterbirds and related methods (use of GPS-analysing techniques). Also, during the trip 11 villages were visited for extensive discussions with local authorities about conservation topics. From these interviews information was collected about occurrence of other taxa (e.g. marine turtles, manatees) as well as hunting pressure and willingness to conserve threatened species.

**Project team:** Jan van der Winden, Sjoerd Dirksen, Martin Poot (WIWO) , Alhaji Siaka, Kenneth Gbengba, Abdul Jalloh, Francis Rogers (CSSL), Joseph Bangalie (WCB).

## Introduction

In total the coastal wetlands of Sierra Leone cover about 4,840 km<sup>2</sup> including coastal swamps, cultivated wetlands, floodplains and lakes. Coastal wetlands of Sierra Leone are diverse in types of habitat ranging from estuaries, mangrove shallows, lagoons to river along the entire coast. The coastal zone has four main estuary systems. These are: the Scarcies Estuary, Sierra Leone River Estuary, Yawri Bay and Sherbro Island Estuary (including Turtle Islands) with a total of 578,600 hectares mangroves and 17,750 hectares mudflats (Altenburg 1987, Bah 1994).

During the period 1981 to 1984 for the first time some parts (less than 10% of the total area) of these wetlands were counted for birds indicating a high proportion of international flyway numbers of species like Ringed Plover, Curlew Sandpiper and Redshank. Based on rough extrapolations it was assumed about 130,000 to 200,000 waders would be in Sierra Leone during the period October up to February (Tye & Tye 1987). From that census up to 1992 no serious counts were undertaken in these wetlands. Between 1992 and 1994 more or less regular census attempts were made and a few wetlands, like Aberdeen Creek, Sierra Leone River Estuary and Yawri Bay were counted but most of them incomplete. After this period, the civil war hindered census work up to 1998.

In July 1998 and January 2000 again, several wetlands have been revisited and partly counted by the Conservation Society of Sierra Leone. However, these counts revealed surprisingly low numbers of species and individuals compared to previous counts. Especially, when the figures are compared to the estimates of Tye & Tye (1987) the reported numbers were extremely low. For example only very low numbers of Curlew Sandpiper were counted (333) and species like Lesser Crested Tern were not mentioned at all in the country reports for Sierra Leone (Dodman & Diagana 2003). Preliminary visits during the period October-December 2004 to the Sierra Leone River Estuary, Scarcies and Yawri Bay area by CSSL staff together with Jan van der Winden (WIWO), showed that much higher bird numbers are actually present in those areas. Also the Lesser Crested Tern was encountered on a regular basis, which makes it most likely a tern species common in Sierra Leone, and for which numbers might be of international importance. Also the total numbers of other species like Royal Tern, Black Tern, Sanderling, Greenshank, Whimbrel and Grey Plover, mentioned in the African Waterbird Census report, were likely much too low. The underestimates in these reports are either partly due to incomplete census of the areas or because of lack of experience with identification and counting of some bird species by local ornithologists.

By the end of the civil war it was acknowledged that census work on waterbirds had to be resumed so that the importance of Sierra Leone for waterbirds will be known and monitored, and possibilities for wetland protection to come up on the national agenda. Not only is public awareness for nature conservation growing in Sierra Leone, but also the pressure on natural resources increases. For instance, in the south (Sherbro Island) large areas with undisturbed mangrove forests exist while in the northern part more and more of these forest disappear caused by woodcutting for fire (smoking fish) or agriculture. Other threats include high fishing pressure, construction of electric power dams and pollution. This gives a proper opportunity to take up census work and to combine it with nature conservation priorities.

As many data are lacking and numbers of many important species are too low, the Working Group International Waterbird and Wetland Research (WIWO), in close co-operation with The Conservation Society of Sierra Leone conducted a bird census of coastal wetlands in the

period January-February 2005. This short report gives preliminary results from this census. An extensive report will be published in due time, containing detailed information on sites and species.

## Objectives

The overall objectives of the census project were:

- To count waterbirds in January-February 2005 in the following wetlands: Scarcies Estuary, Sierra Leone River Estuary, Yawri Bay, Sherbro Island and Turtle Islands.
- To set up a clear system of counting units for comparable future bird counts.
- To locate possible breeding colonies of herons, cormorants, pelicans, terns or other relevant species.
- To train staff of CSSL and WBC as well as students from Njala University during fieldwork in bird census techniques as well as analysing data and reporting.

## Investigated areas

Five coastal marine/brackish wetland areas were counted for waterbirds (Table 1). In this way all but one (Thauka and Bagru Creeks area), coastal wetlands were counted for waterbirds. The areas were covered as completely as possible. Large mudflat areas, sandbanks and important bird islands were all visited. Additionally, samples of smaller and larger creeks were taken for several kilometres each. Generally, these creeks were followed (and counted) 5 to 10 km inland and occasionally up to 20 km.

Table 1. List of wetlands censused for bird numbers and distribution.

| Name   | location  | total size (km <sup>2</sup> ) |
|--|---|-------------------------------|
| <b>Sierra Leone River Estuary (18 to 23 January)</b> |   | <b>259</b>                    |
|  | Aberdeen Creek, Bunce River, Tasso Island,<br>Rokel river mouth, Port Loko river mouth,<br>Lungi-Pepel Creeks |                               |
| <b>Yawri Bay (26 to 30 January and 24 February)</b>  |   | <b>495</b>                    |
|  | Maswari-Ribbi Creeks, Bumpe Creek, Kargboro Creek   |                               |
| <b>Turtle Islands (2, 3 and 6 February)</b>          |   |                               |
|  | Hoong, Mut, Baki, Yele, Sei   |                               |
| <b>Sherbro Island (3 to 6 February)</b>              |   | <b>100</b>                    |
|  | Boama, Delken Creeks, Macauley Island, Bonthe, Mania,<br>Kittam Creek, York Island Long Island                |                               |
| <b>Scarcies Estuary (8, 9, 10 and 11 February)</b>   |   | <b>78</b>                     |
|  | Little Scarcies river mouth, Greater Scarcies river mouth,<br>Kortimaw Island, Yelibuya Island, Mahela Creek  |                               |

## Methods

All wetlands were counted by using small outboard engine boats. All areas were counted during low tide when waterbirds were present on mudflats. Counting ended at high tide as waterbirds hide in mangroves or gather on inland plains. Most effective was sailing along mudflat shores and counting from the boat (see Tye & Tye 1987, Trolliet & Fouquet 2004). Whenever large mudflats occurred, counts were executed by foot walk using telescopes. In some areas it was possible to walk stretches, in other areas regular drop offs by boats to the mudflat shore were necessary to execute the counts. Important mudflat areas and large sandbanks were always visited during low tide periods. Smaller creeks and rivers were mainly

visited during the remaining daylight hours around high tide. Although birds cannot be counted as effectively as during low tide, it turned out that bird numbers around creeks were never high (visits at low tide) and most of these birds were present at high tide at small (sometimes consisting of individual birds only) high tide roosts at the banks or in trees bordering the creek. So we got the impression that the high tide counts in creeks were a good reflection of actual bird numbers present.

The project focussed on marine coastal habitats such as mudflats, sandbanks, shores and inshore open waters. Birds of more offshore open waters (terns) were counted at coastal day roosts. Terns feeding inshore (close to the coast) were included in the “land” counting unit. Circling storks and raptors were included in the specific counting unit. Inland habitats such as floodplains and rice fields were only counted if bordering creeks, coasts or rivers. During such counts, the team did not leave the boat, but counted waterbirds in open areas up to 200-300 m from the shore, resulting in a strong bias towards larger birds such as herons and storks. Creeks in mangrove forests were counted from the boat and in such cases only the banks were covered. Creeks were subdivided in 1 km counting units for which habitat type was registered generally (mangroves, rice fields etc.).

All traditionally known waterbird species (pelicans, cormorants, herons, spoonbills, flamingos, storks, ducks, coots, waders, gulls, terns), were included in the counts as well as some additional groups such as raptors related to wetlands (Palm-nut Vulture, African Fish Eagle, Osprey, Yellow-billed Kite and Marsh Harrier) and Kingfishers. White-faced Whistling Ducks were included in the counts although they do not use the counting units as feeding habitat. The units are partly used by the ducks as day-time roosts. Observations of large mammals (monkeys, manatee, otters) and crocodiles were registered in the same way as birds.

During the fieldwork, CSSL and WCB staff was trained in bird identification and census methods such as the use of counting units, habitat mapping and use of GPS.

During the field work, all areas were split up in counting units. These were delineated on maps and GPS positions were carefully recorded. In the near future, these data will be worked out in GIS. Future counts by any organisation e.g. CSSL can be repeated by using this counting unit system.

## Results

In total **92,451** waterbirds were counted, divided over **87** species (Table 1). The most abundant species were Curlew Sandpiper, Redshank, Ringed Plover, Grey Plover, Royal Tern, Whimbrel, Bar-tailed Godwit and White-faced Whistling Duck. For three species more than 5% of the fly-way population is present in these four Sierra Leonean wetlands. These are: Lesser Crested Tern (13,4% of population), Gull-billed Tern (6,4%) and Little Tern (5,2%). This means Sierra Leone as a whole, is of significant importance to conserve these species. In all separate areas, at least one species exceeds the 1% level, identifying an area as internationally important for birds. Two areas (Yawri Bay and Sherbro Island) hold numbers of over 20,000 waterbirds, thus meeting a second criterium for an international importance of a wetland.

All areas counted were rich in species composition. The diversity in habitat types ranging from marine into freshwater marshlands is partly the reason for this. In the Scarcies area most species were recorded, but this is partly due to the more extensive survey in freshwater habitats. In total 87 waterbird species were observed in the wetlands. Among them, three species have never been recorded before in Sierra Leone: Eurasian Spoonbill, Eurasian Shoveler and Terek Sandpiper.

During the survey one breeding colony of herons was located (Bird Island near Shenge). Although local fisherman claimed other colonies (including pelican colonies) especially near Yawri Bay, we were unable to locate these and confirm such statements.

During the surveys, 8 bird rings were presented to us by local hunters. Hunters mostly could not give enough information about the species they captured, but among them were at least two Royal Terns, a Sandwich Tern (ringed as nestling in Holland, July 1999), a Bar-tailed Godwit (ringed on migration in France, October 2002) and a Grey Heron (ringed as nestling in Brandenburg, Germany, in May 2004). The rings thus provide extra information about the annual movements of waterbirds wintering in Sierra Leone.

### *Sierra Leone River Estuary*

The area is an Important Bird Area (SL005) and designated as Wetland of International Importance (Ramsar Convention) (Okoni-Williams *et al.* 2001). The estuary is large with many smaller creeks and few major rivers entering it. Only three areas were found to have extensive mudflats: Aberdeen Creek, Bunce Creek and mudflats south of Tasso Island. All other areas were exposed sandbanks or smaller mudflats bordering mangrove coasts. Mangroves are exploited on a minor scale although in some areas they were replaced by rice fields. The estuary mouth holds deeper waters and strong marine currents. Within the estuary, highest numbers of waders were present at the Aberdeen Creek mudflats and on the Tasso Mudflats. But due to the long coastline bordering creeks, many bird species are numerous although present in low densities (e.g. Common Sandpiper, herons). Terns are common in the estuary as well as at the estuary river mouth, especially Royal Tern which feeds mainly offshore. The area is of international importance for **Lesser Crested Tern**.

**Table 2.** Species composition and counted numbers in four coastal wetlands in Sierra Leone. Bold figures represent numbers higher than 1% of the flyway population (Wetlands International 2002), indicating international importance. \* Species included in the Ramsar list.

| Species                     | SL Estuary | Yawri       | Sherbro I. | Scarcies | TOTAL       |
|-----------------------------|------------|-------------|------------|----------|-------------|
| Wilson's Storm Petrol       |            | 1           |            |          | 1           |
| Long-tailed Cormorant*      | 138        | 43          | 54         | 52       | 287         |
| African Darter*             |            |             |            | 1        | 1           |
| Pink-backed Pelican*        | 10         | 413         | 43         | 402      | <b>868</b>  |
| White Pelican*              |            | 253         |            | 5        | 258         |
| Black-headed Heron*         | 2          | 1           |            | 8        | 11          |
| Grey Heron*                 | 162        | 532         | 93         | 121      | 908         |
| Purple Heron*               | 1          | 1           | 1          | 1        | 4           |
| Goliath Heron*              | 5          | 1           | 4          |          | 10          |
| Squacco Heron*              |            |             |            | 42       | 42          |
| Green Heron*                | 152        | 11          | 70         | 25       | 258         |
| Black Egret*                | 31         | 59          | 28         | 1        | 119         |
| Great White Egret*          | 89         | 1336        | 105        | 96       | 1626        |
| Intermediate Egret*         | 4          | 9           |            | 33       | 46          |
| Little egret*               | 135        | 292         | 183        | 179      | 789         |
| Western Reef Egret*         | 292        | 637         | 466        | 240      | 1635        |
| Cattle Egret*               | 2          | 28          | 5          | 97       | 132         |
| Black-headed Night Heron*   | 1          | 2           |            | 10       | 13          |
| White-crested Tiger Heron*  | 2          |             |            |          | 2           |
| Yellow-billed Stork*        |            | 174         | 3          | 13       | 190         |
| Open-billed Stork*          |            | 4           | 1          | 15       | 20          |
| Woolly-necked Stork*        | 5          | 31          | 39         | 13       | 88          |
| Spoonbill*                  |            | 286         | 11         | 12       | 309         |
| European Spoonbill*         |            |             |            | 12       | 12          |
| Sacred Ibis*                | 1          | 62          | 7          | 77       | 147         |
| Hamerkop*                   | 11         | 3           | 2          | 2        | 18          |
| Flamingo*                   |            | 286         |            |          | 286         |
| Pintail*                    |            | 165         |            |          | 165         |
| Garganey*                   |            | 1           |            |          | 1           |
| Shoveler*                   |            | 18          |            |          | 18          |
| White-faced Whistling Duck* | 23         | 424         | 156        | 2518     | 3121        |
| Yellow-billed Kite          | 64         | 30          | 68         | 229      | 391         |
| African Fish Eagle          | 4          | 3           | 3          | 1        | 11          |
| Palm-nut Vulture            | 107        | 102         | 101        | 115      | 425         |
| Osprey                      | 20         | 16          | 7          | 10       | 53          |
| Marsh Harrier               |            | 1           |            | 3        | 4           |
| Black Crake*                |            |             | 1          |          | 1           |
| Purple Swamp Hen*           |            |             | 2          |          | 2           |
| Finfoot*                    | 1          |             |            |          | 1           |
| African Jacana*             |            |             | 6          |          | 6           |
| Oystercatcher*              | 1          | 137         | 35         | 25       | 198         |
| Avocet*                     |            | <b>1023</b> |            | 1        | <b>1024</b> |
| Black-winged Stilt*         | 32         |             |            | 12       | 44          |
| Senegal Thickknee*          | 1          |             |            | 14       | 15          |
| Collared Pratincole*        |            | 51          |            | 2        | 53          |
| Bar-tailed Godwit*          | 76         | 2050        | 862        | 151      | 3139        |
| Black-tailed Godwit*        | 1          | 253         | 8          | 60       | 322         |
| Eurasian Curlew*            | 14         | 187         | 20         | 14       | 235         |
| Whimbrel*                   | 754        | 1900        | 849        | 535      | <b>4038</b> |

| <b>Species</b>                   | <b>SL Estuary</b> | <b>Yawri</b> | <b>Sherbro I.</b> | <b>Scarcies</b> | <b>Total</b> |
|----------------------------------|-------------------|--------------|-------------------|-----------------|--------------|
| Grey Plover*                     | 556               | <b>2530</b>  | 732               | 737             | <b>4555</b>  |
| Ringed Plover*                   | 1126              | <b>4436</b>  | 783               | 1053            | <b>7398</b>  |
| Kentish Plover*                  | 27                | 140          | 14                | 27              | 208          |
| White-fronted Plover*            | 1                 | 1            |                   | 5               | 7            |
| Kittlitz's Plover                |                   |              |                   | 1               | <b>1</b>     |
| Redshank*                        | 1057              | <b>4282</b>  | 2315              | 517             | <b>8171</b>  |
| Greenshank*                      | 268               | 611          | 216               | 101             | 1196         |
| Marsh Sandpiper*                 | 1                 | 39           |                   |                 | 40           |
| Terek Sandpiper*                 |                   | 1            |                   |                 | 1            |
| Sanderling*                      | 147               | 592          | 454               | 659             | <b>1852</b>  |
| Curlew Sandpiper*                | 1066              | <b>18690</b> | 2090              | 3009            | <b>24855</b> |
| Red Knot*                        | 2                 | 2880         |                   | 128             | <b>3010</b>  |
| Little Stint*                    | 5                 | 1685         | 6                 | 10              | <b>1706</b>  |
| Temmincks Stint*                 | 1                 |              |                   |                 | 1            |
| Ruddy Turnstone*                 | 163               | 178          | 46                | 156             | 543          |
| Common Sandpiper*                | 795               | 379          | 590               | 211             | 1975         |
| <i>waders small unidentified</i> |                   |              | 520               |                 | 520          |
| Pomarine Skua                    | 1                 |              |                   | 1               | 2            |
| Lesser Black-backed Gull*        | 2                 | 7            |                   | 2               | 11           |
| Grey-headed Gull*                |                   | 75           | 1                 | 4               | 80           |
| Black-headed Gull*               |                   |              |                   | 1               | 1            |
| Common Tern*                     | 4                 | 2            | <b>2681</b>       | 4               | <b>2691</b>  |
| Arctic Tern*                     |                   |              |                   | 2               | 2            |
| Roseate Tern*                    | 1                 |              |                   |                 | 1            |
| Caspian Tern*                    | 7                 | 24           | 8                 | 5               | 44           |
| Royal Tern*                      | 312               | <b>1615</b>  | <b>1724</b>       | 665             | <b>4316</b>  |
| Lesser Crested Tern*             | <b>69</b>         | <b>277</b>   | <b>118</b>        | <b>70</b>       | <b>534</b>   |
| Sandwich Tern*                   | 254               | 233          | 832               | 186             | 1505         |
| Little Tern*                     | 78                | <b>1020</b>  | 298               | <b>386</b>      | <b>1782</b>  |
| Black Tern*                      | 120               | 1            | 2569              | 11              | 2701         |
| White-winged Tern*               |                   | 1            |                   |                 | 1            |
| Gull-billed Tern*                | 90                | <b>305</b>   | <b>130</b>        | <b>308</b>      | <b>833</b>   |
| African Skimmer*                 |                   | 1            | <b>240</b>        |                 | <b>241</b>   |
| Giant Kingfisher                 | 6                 | 2            | 2                 | 2               | 12           |
| Pied Kingfisher                  | 55                | 34           | 65                | 42              | 196          |
| Grey-headed Kingfisher           | 1                 |              | 1                 |                 | 2            |
| Woodland Kingfisher              | 1                 | 1            |                   | 1               | 3            |
| Blue-breasted Kingfisher         | 6                 | 10           | 2                 | 11              | 29           |
| Shining Blue Kingfisher          |                   |              | 1                 |                 | 1            |
| Malachite Kingfisher             | 52                | 10           | 7                 | 8               | 77           |
| <b>TOTAL</b>                     | 8,415             | 50,888       | 19,678            | 13,470          | 92,451       |
| <b>Species Number</b>            | 61                | 69           | 56                | 68              | 88           |

### *Yawri Bay*

The area is an Important Bird Area (SL008) (Okoni-Williams *et al.* 2001). Yawri Bay is a huge shallow bay with few creeks entering it. The banks have extensive mangrove forests with wide (more than 500 m at most places) mudflats bordering it. The mudflats consist of soft clay sediment. Yawri Bay is the area most rich in waterbird numbers. The soft clay soils and extensive mudflat areas especially hold high densities of herons and waders. The mudflats occur throughout the area and are especially rich in the Kagboroo Creek region. The shallow bay holds troubled water with extensive shallow areas. The mudflats, except the creeks itself, holds high bird densities. The area is of international importance for the following species: **Avocet, Grey Plover, Ringed Plover, Redshank, Curlew Sandpiper, Royal Tern, Lesser Crested Tern, Little Tern and Gull-billed Tern.**

### *Turtle Islands and Sherbro Island*

The Turtle islands are at the western outskirt of the Sherbro Estuary. In this area sandbanks and sandy areas dominate with clear shallow water. Along the edges of the islands some small mudflats occur with a relative sandy structure. Between the islands are extensive sandbanks, extending also into northern direction. The islands and waters are most important for terns which feed especially at the currents between the islands and the inlets bordering the sea.

The extensive Sherbro Island is fringed by mudflats and sandbanks. Extensive mudflats dominated by clay soils occur mainly at the northern border of the peninsula (Delken-Boama area). In the vicinity of Bonthe and its surroundings smaller mudflats occur mostly mixed with sandy soils. The abundant islands near Bonthe hold mostly at one side some mudflats and are bordered by small strips around the rest of the island. The mudflats with highest bird numbers (waders, herons) occurred in the western part of the island (Delken area). In other areas bird densities were lower, but due to the vast coast length absolute numbers are high. At Mania (Bonthe outlet to the sea) large numbers of terns were present. The northern shore of the Estuary (Thauka and Bagru Creeks area) was not visited. Based on earlier reports and habitat descriptions (Tye & Tye 1987; Altenburg 1987), comparable bird rich mudflats are to be expected as present at the Delken coast. The area is of international importance for: **Common Tern, Royal Tern, Lesser Crested Tern, Gull-billed Tern and African Skimmer.** It is likely that it will also exceed 1% level for: **Redshank, Curlew Sandpiper and Little Tern,** if the Thauka and Bagru Creeks area are included.

### *Scarcies Estuary*

The most extensive mudflats in the area occur near the coast of Yeliboya and Kortimaw Island. The latter is more rich in waterbirds. At Yeliboya, mudflats are more sandy and less rich in bird numbers. The Greater and Little Scarcies hold many islands and sandbanks (especially Little Scarcies). Most of these are sandy and bird numbers are relatively low. The rivers are surrounded by rice fields rich in birds. The river banks itself hold minor bird numbers. The extensive rice fields were not censused completely, but White-faced Whistling Ducks were common. Part of these birds rested during daytime at large water bodies in the estuary and were included in the census. The area is of international importance for: **Lesser Crested Tern, Little Tern and Gull-billed Tern.**

### **Completeness of the census**

The project focussed on areas with mudflats, sandbanks and shallows near mangrove forests. So coastal areas with sandy or rocky beaches were hardly visited and counted. Neither were inland wetlands (e.g. Lake Sonfon) or coastal fresh water wetlands (e.g. river plains at

Western Peninsula, Lake Mape or Lake Mabesi). However most mangrove-dominated wetland areas were censused. Two major mangrove areas were not covered: the Thauka and Bagru Creeks area (and adjacent coast) and Konakridee-Tagrin coast. It is expected that especially the first holds large numbers (thousands) of waterbirds which actually should be added to the presented Sherbro Island Estuary numbers to get a complete picture. All other wetlands (Scarcies, Sierra Leone Estuary, Yawri Bay and Sherbro Island), were covered for about 60 to more than 90%. These figures are rough field estimates to be presented more accurately in GIS in the later report. The overall impression is that in all wetlands the most important mudflat areas were visited so relatively low numbers of birds were missed. However, one should bear in mind that birds occurring along creeks or within inland habitats (rice fields, mangroves, flood plains) were counted incomplete. For this reason the presented figures can be regarded as more or less complete for coastal habitats and not reflecting the entire wetland ecosystem. In the extensive report some estimates of birds in habitats not visited will be presented.

### **Earlier bird counts**

In previous years, the wetlands were never counted as completely as in 2005. In the period 1981-1984 only minor parts of these wetlands (6-7%) were surveyed, used for extrapolation into total numbers (Tye & Tye 1987). Most extrapolations resulted in (much) higher numbers than were found during the 2005 survey and some other species in lower numbers. Although extrapolations were executed with care and habitat (soil type) differences were taken into account, it is likely that the actual (micro)habitat differences are larger than expected from soil maps. In order to check (gauge) both methods original counting units (and their bird density) have to be compared with those executed in 2005.

Counts in the period 1991-2001 always were far from complete. In 1994 the most comprehensive count in history was executed in Yawri Bay and the Sierra Leone Estuary (Thompson 1994). The original reports quite accurately describe counting areas. If these areas are compared, bird numbers in 2005 were significantly higher. In Yawri Bay 15,500 waterbirds were counted in 1994 whereas in 2005 39,100 waterbirds were present in the same area. In the Sierra Leone Estuary, 1124 waterbirds were counted in 1994 while in 2005 2,938 birds were counted in the same counting units. Although minor differences in interpretation of counting units might have occurred, the differences still are relatively large. Most of these differences, however can be attributed to better optical equipment (telescopes) and more intensive surveys in 2005. In contrast to 1994, in 2005 the boat was more often left in order to count difficult areas by foot using telescopes.

Resuming these contradictory results, it is difficult to conclude about possible changes in bird numbers. In larger species (less likely to be underestimated in 1994) no major differences in numbers were visible. In the extensive report more emphasis will be paid to differences in bird numbers among earlier census work. In future counts the same counting units, methods and experienced staff as in 2005 should be used, in order to compare among years.

### **Other wildlife**

Nile Crocodiles were found in three wetlands (Scarcies, Sierra Leone Estuary and Yawri Bay). Adults as well as subadults were observed along banks of larger creeks (rivers). Crocodiles seem not to be common in these areas with a very localised occurrence. These impressions were confirmed by local people. Near Yeliboya Island, a West African Manatee was observed in the shallow waters near the coast. In this estuary, local people regularly catch (and eat) Manatees near the coast as well as in the major creeks. At the Sierra Leone Estuary

two Clawless Otters were observed near Pepel in a small creek. According to local people, otters are also abundant (and consumed) in the Little Scarcies. The occurring species is unknown but are probably Clawless Otter. Along the coasts occasionally Callithrix Monkeys were observed. They are likely common in the wetlands and are able to visit islands.

### **Threats to wetlands**

The Scarcies Estuary has changed most of all five wetlands, due to reclamation of mangrove forests into rice fields. These fields are not intensively used and intercepted with many creeks and small patches of mangroves. Several bird species are likely to profit from these changes. In other areas, mangrove forests still dominate the intertidal areas with smaller or larger mudflats bordering it. Mudflats are used for collecting shellfish (e.g. cockles, oysters) all by manual methods. Fishing in the wetlands is common practice with all kinds of net types and locations. In general small boats are used for transport and small creeks are used for trapping fish moving in and out. In Yawri Bay, small scale salt production is practised.

Birds and other wildlife (sea turtles, manatees, otters, monkeys) are hunted by local villagers in an unknown intensity. In each coastal village, local hunters were present who confirmed to catch birds and other wildlife. As several bird rings were provided to us and even some more were present but not shown to us, it is clear that hunting pressure is fairly high. All bird species are hunted and local hunters told us about hunting adult birds as well as collecting eggs and young birds in breeding colonies for consumption. The capture of adult sea turtles and egg collection on Turtle Islands is likely severe. As stated by local fishermen sea turtles are nowadays rare in comparison to former periods. Also capture of manatees is likely severe as in some villages they are regularly captured and killed. Apart from local hunting for extra food, in some areas “tourists” regularly hunt (illegally) at birds and other wildlife. During these hunting trips all species are hunted, including pelicans, herons and raptors as stated by the villagers.

### **Recommendations**

All data will be elaborated in a future extensive report. This can be used to emphasise and underline the importance of Sierra Leonean wetlands. From a conservation perspective it is most important to recognise the importance of wetlands and its wildlife. For this reason the following activities are recommended:

- Submitting Yawri Bay, Scarcies and Sherbro Island (including Turtle Islands) as Ramsar site (Wetlands of International importance).
- Investigate the use of natural resources in coastal wetlands in more detail including a spatial analysis.
- Investigate wildlife consumption in the coastal wetlands and start education and conservation programmes. For Manatee and sea turtles, this should be started as soon as possible, as it seems populations are seriously threatened already
- The heron breeding colony of Bird Island should be protected from future egg and young collection.
- A seminar (29 March 2005) will be organised in Sierra Leone for Governmental deputies, responsible for wetland conservation. Results of the survey will be used as a start for future wetland conservation.

For future research, the following recommendations can be given:

- The remaining (not counted) coastal wetland areas should be censused within 2 or 3 years in order to get a picture of the importance of the entire coast for wetland birds.
- Possible other breeding colonies of herons and even pelicans should be localised in the rainy season (2005 or 2006).
- Future complete census work should be executed in the same counting units and with the same methods in order to compare data.
- A few hotspots should be monitored for waterbirds on a more regular basis. The final report will identify future monitoring areas and methods.
- In future a comparable census of inland (freshwater) wetlands should be executed.

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## References

- Altenburg W. 1987. Waterfowl in West African coastal wetlands: a summary of current knowledge. Zeist, Netherlands: WIWO report 15.
- Bah O.M. 1994. A first draft of an inventory of Sierra Leone Wetlands. University college of London, Wetland Research Unit minco 102 pp.
- Dodman T. & C.H. Diagana 2003. African Waterbird Census 1999, 2000 and 2001. Wetlands International Global Series No 6, Wageningen, The Netherlands.
- Okoni-Williams A.D., H.S. Thompson, P. Wood, A. P. Koroma & P. Robertson 2001. Sierra Leone. Pp. 769-778. Important Bird Areas in Africa and associated islands: Priority sites for conservation. Newbury & Cambridge, UK: Pisces Publications and Birdlife International (Birdlife Conservation Series No 11).
- Thompson H.S. 1994. African Waterfowl census – 1994. Country report Sierra Leone. Fourah Bay College unpubl.
- Trolliet B. & M. Fouquet 2004. Wintering waders in coastal Guinea. Wader Study Group Bulletin 103: 56-62.
- Tye A. & H. Tye 1987. The importance of Sierra Leone to waders. Wader Study Group Bulletin 49, Suppl./IWRB Special Suppl. 7: 71-75.
- Wetlands International 2002. Waterbird Population Estimates – Third Edition. Wetlands International Global Series No. 12, Wageningen, The Netherlands.