

Numbers of Ruff *Philomachus pugnax* wintering in West Africa

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During 1998–2001, aerial counts revealed about 300,000 wintering Ruffs on the Inner Niger Delta and 500,000 in the Lake Chad region. Studies in 1990–1993 had shown 170,000–200,000 in the Senegal Delta. The sum of estimates from these three main and other minor areas suggests that the total population of Ruff wintering in West Africa is just over one million.

INTRODUCTION

Most of the global Ruff *Philomachus pugnax* population winters in the African tropics, especially in the Sahel where there are three wetlands of international importance. These are the Senegal Delta (Senegal and Mauritania), the Inner Niger Delta (Mali) and the Lake Chad basin (Chad, Cameroon, Nigeria, Niger).

In the Senegal Delta, a species-specific survey scheme was applied to count the wintering Ruff population of 170,000–200,000 during 1990–1993 (Trolliet *et al.* 1992 and 1993). The other two major wetlands – the Inner Niger Delta and the Lake Chad basin – are huge and ground access is often extremely difficult. Therefore aerial surveys are the only practical means of obtaining accurate counts. As the last surveys took place as long ago as the mid 1980s, our aim was to obtain up-to-date information on the numbers and distribution of wintering Ruffs at these important sites.

STUDY AREAS

The two main study areas were the Inner Niger Delta and the Lake Chad basin (described by Hugues & Hugues 1992).

In the Inner Niger Delta, the amount of rainfall in 1998 and 1999 was greater than the average recorded over the previous thirty years (IRD, Bamako, pers. comm.). This resulted in very high levels of the two main rivers, the Niger and the Bani, which inundated the inner delta. The flooding of the whole of this large delta is a slow process: the northern part fills with water four months after the southern part. The lakes farthest from the rivers do not fill every year (i.e. those in the eastern, north-western and northern parts of the delta). In 1998 and 1999, all the lakes were filling in mid-January, providing good habitat for waterbirds. In 2000, rainfall was lower than in the previous two years so a much smaller area was flooded in January 2001. Some of the lakes in the eastern and northern parts of the delta were dry or only beginning to fill. Nevertheless, hundreds of thousands hectares were suitable habitat for Ruffs.

Similarly, in the Lake Chad basin, 1998 and/or 1999 rainfall was higher than average levels recorded by several weather

stations since they were set up half a century earlier (Beauvilain 1995, data from the Direction des ressources en eau et de la météorologie). In the lower parts of the Logone and Chari Rivers, flood levels were high in 1998, and even higher in 1999 when they exceeded maximum water levels recorded in the previous 25 years. By December 1999, after two successive years of abundant rainfall, Lake Chad had reached its normal expanse, covering almost 2.1 million hectares (including the north-western part in Niger).

METHODS

In the Inner Niger delta, aerial counts were carried out by O. Girard and J. Thal (18–27 January 1999, 18–23 January 2000 and 13–18 January 2001) who were assisted sometimes by B. Nialibouly, B. Fofana and M. Diallo. In 1999 and 2000, the plane was a Cessna 172 and, in 2001, a Piper (PA 32). Counts were made while flying at 100–300 feet above the ground.

Each year, the total duration of the flights over the Inner Niger delta alone was about 40 hours. In 1999, 2000 and 2001, the flight paths over the central and western parts of the delta were almost identical. However, the south-western and south-eastern parts of the delta were covered more intensively in 1999 than in 2000 and 2001 and the north-north-eastern part was covered more intensively in 2000 and 2001 than in 1999.

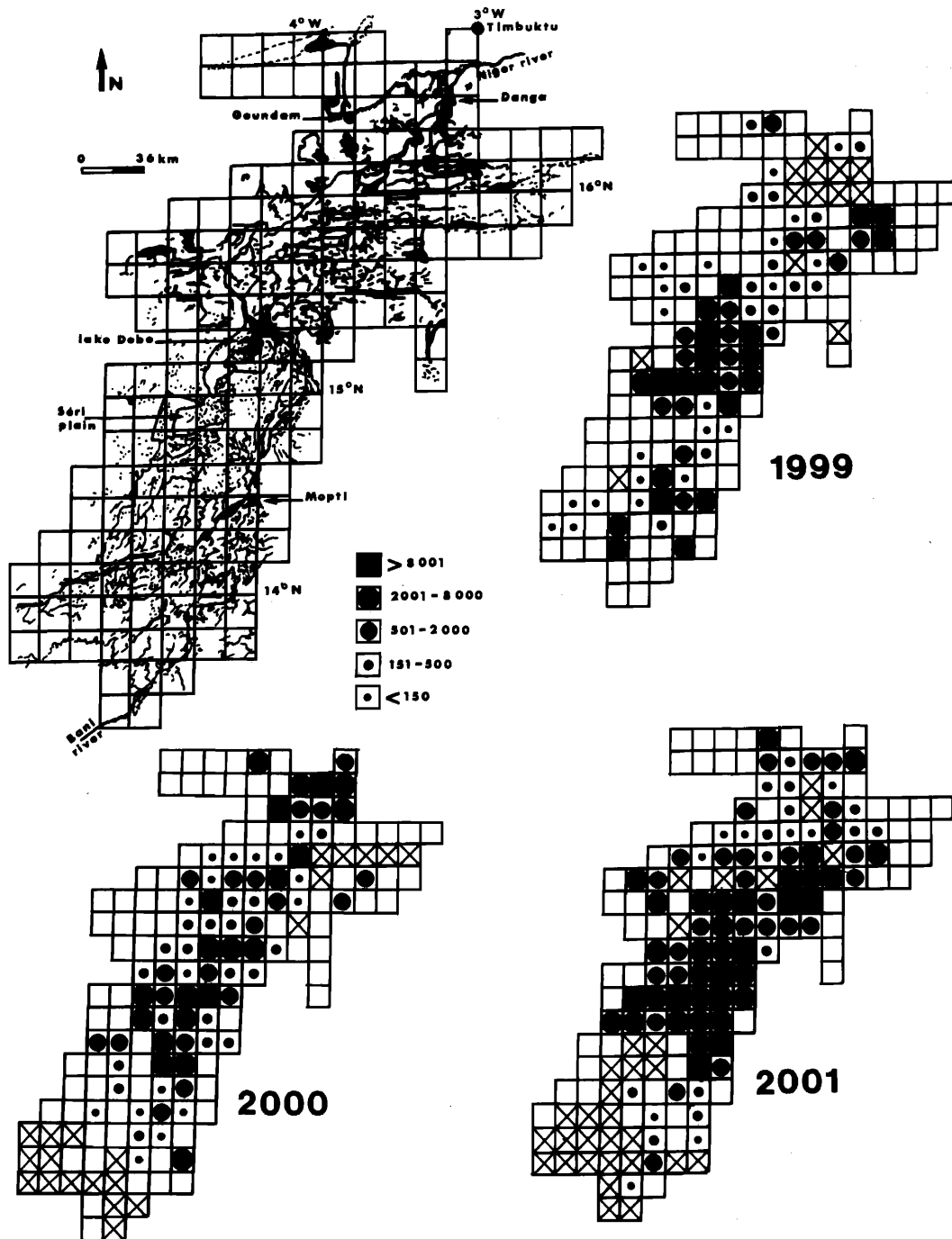
In 1999, the Niger River was also explored between Bamako and Mopti and between Timbuktu and Gao and visits were made to a few Sahelian ponds between Gao and the delta, i.e. east of the delta (for about ten more hours).

In 1999, aerial surveys were carried out in the Lake Chad basin during 7–12 February by B. Trolliet and J. Thal (aggregate duration: 30½ hours) and during 7–18 December by B. Trolliet and J.B. Mouronval assisted by A. Noldet Telly (aggregate duration: 68 hours).

In December 1999, the coverage was more complete than in February of that year. The main areas covered were Lake Chad, except the northwestern part, Lakes Fitri and Maga and their surroundings, the Chari and Logone rivers downstream of Kaba and Bongor respectively, Bas-Chari (on the

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Map 1. Distribution of Ruffs in Inner Niger delta (X: quadrat not covered).

Cameroon and Chad sides of the Chari River north of 12°N, and the Chadian part of the Logone floodplains (Map 2).

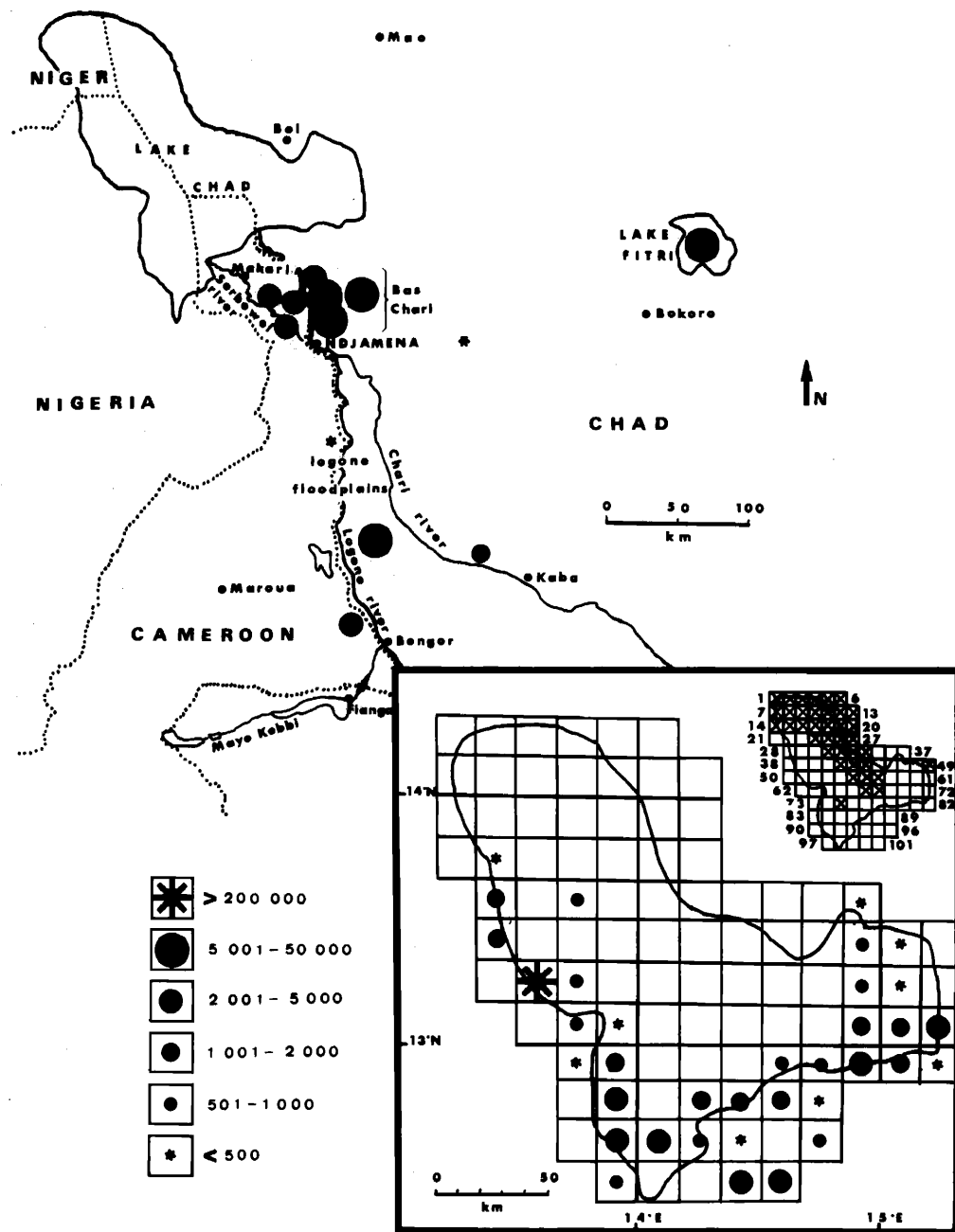
All counts in the Lake Chad basin were made from a Cessna 150 or a Cessna 206, flying at 80–250 feet above the ground.

Flights covered all habitats suitable for Ruffs as fully as possible. Rivers, where Ruffs roost on islets or banks, were covered either by one passage down the middle, or, on wider rivers, by two passages over the banks. Where there were ponds, the aircraft flew over almost every pond. Where there were very large expanses of water, such as flooded areas and lakes, flights were mainly over the edges and the areas of shallow water. Ruffs could often be seen on the ground, before flying as the aircraft approached. The size of most

small flocks could be estimated very quickly. When larger flocks were found, the aircraft would circle in order to allow more time to obtain an accurate count. Except on some rice fields, Ruffs were never observed in dry habitats, either from the air or the ground. They were almost always in very shallow water or on mud, where they fed.

According to circumstances, the position of the aircraft in the two study areas was established either visually or by GPS. Hence, the locations of the birds were recorded and can be cross-referenced to the *Wetlands International* count sites (already existing or defined by us). The Inner Niger delta and Lake Chad are divided into 10' × 10' quadrats (ca. 17 km × 17 km), each covering 28,900 ha. These are shown on Maps 1 and 2.





Map 2. Distribution of Ruffs in Lake Chad basin (X: quadrat not covered).

RESULTS

Mali

The total numbers of Ruffs counted in Mali during the 1998–1999, 1999–2000 and 2000–2001 winters were 148,000, 135,000 and 188,000 respectively. Their distribution varied considerably from year to year (Map 1). Ruffs were recorded in 46%, 50% and 62% of the quadrats surveyed in 1999, 2000 and 2001 respectively.

In 1999, there were two big concentrations: 21,600 on the Séri plain and 38,800 around Lake Débo. All the other birds were dispersed throughout the delta.

In 2000, the two largest concentrations were in the northern part of the delta: 12,200 in the quadrat east of Goundam and 10,500 in the quadrat west of Danga.

In 2001, there were large concentrations in the eastern and southern part of Lake Débo (9,550 and 25,000), on the Séri plain (12,600) and in the ricefields near Mopti (9,150). In 2001, Ruffs were more dispersed throughout the whole delta. There were more big flocks (>1000) than in 1999 or 2000, but average flock-size was smaller (Table 1). Each year, the median flock-size was around 150.

Lake Chad basin

In the Lake Chad basin, only 23,400 Ruffs were found during the partial count in the 1998–1999 winter. In 1999–2000, the total was 339,000. Their distribution is shown in Map 2.

The only large concentrations, totalling 200,050 birds, were found in a single quadrat on the Nigerian shore of Lake Chad (Map 2). Ruffs were present in 35 other quadrats, but



Table 1. Flock-size of Ruff censused in 1999, 2000 and 2001 in the Inner Niger delta (n = number of flocks).

Flock size	<500 birds			500 to 1000 birds			>1000 birds		
	1999	2000	2001	1999	2000	2001	1999	2000	2001
Average	95	125	145	540	550	570	2900	3000	2100
(n)	(305)	(292)	(342)	(45)	(50)	(66)	(31)	(21)	(44)

numbers were always less than 5,000. The species was also well represented elsewhere, especially to the south of Lake Chad in the Logone valley and in the Bas-Chari region. Flock-size was not recorded in the Lake Chad basin, but the median value appeared to be similar to that in Mali.

DISCUSSION AND CONCLUSIONS

Mali is the only country in West Africa where Ruffs have been counted more or less regularly. Usually these counts have only related to the Inner Niger Delta, but sometimes other minor areas have been covered. The results of these counts for years when coverage was reasonably complete are summarised in Figure 1 and show that there has been no clear trend.

If the wetlands that were not censused are taken into account, the number of birds wintering in Mali during 1998–2001 would be about 300,000. This corresponds to the highest value of the range (200,000–300,000) suggested by Lamarche (1980).

In the Lake Chad basin, aerial counts were carried out in 1984, 1986 and 1987. These were made in shorter time-spans than in December 1999, but they took place during a period of drought in less extensive wetlands, and they were almost as exhaustive as in December 1999. The highest of these counts was of 185,000 in 1987. Most of these birds were in the western part of Lake Chad, in the same sector where we

found the highest concentration (Pérennou 1991a). More recently, OAG Münster (1991) reported an estimated 200,000–300,000 Ruffs in the North of Cameroon in 1991. The aerial and terrestrial counts carried out in the same area before and after that year, including in December 1999, did not come to more than some tens of thousands of birds. This might be explained by the varying distribution of Ruffs in the Lake Chad basin over time. To the birds we counted in December 1999 should be added those wintering in the Hadejia-Nguru region of Nigeria where the population was estimated at about 70,000 during 1995–1998 (Dodman & Taylor 1995 and 1996, Dodman *et al.* 1999). Further additions include the few thousand, or even tens of thousands, which are known to occur at other sites in Cameroon and Niger. Moreover, it is likely that some areas, such as the extreme north-western part of Lake Chad and Bahr el Ghazal, which have never been censused and were flooded in December 1999, could have held Ruffs in unknown numbers. Therefore in the whole Lake Chad basin it would seem likely that the normal wintering population of Ruffs exceeds 500,000.

In Cameroon, Ruffs are also usually present in tens of thousands at sites peripheral to the Lake Chad basin like the Bénoué valley (pers. obs.).

In Burkina-Faso, Ruffs are not abundant and surveys in 1999 and 2000 revealed not more than a few hundred individuals (J. Broyer, pers. comm.).

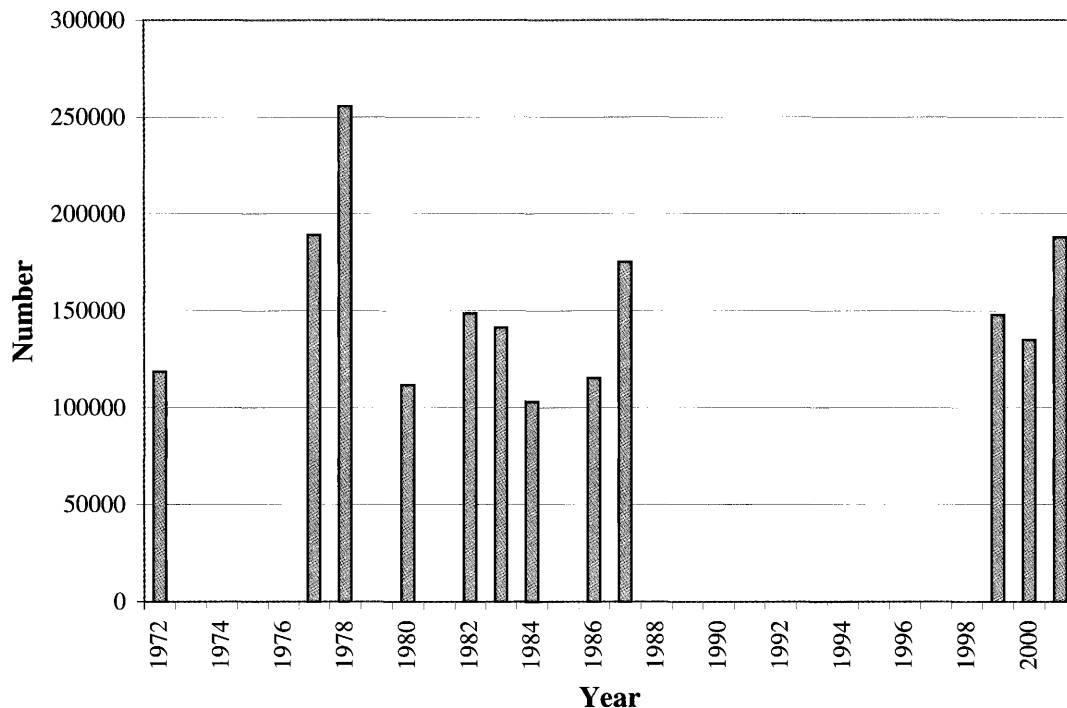


Figure 1. Numbers of wintering Ruffs counted in Mali during 1972–2001 (either no data or only partial data are available for those years for which there is no bar).



In Mauritania, outside the Senegal Delta, some 4,500 Ruffs were counted in January 1999 and January 2000, mostly on Lakes Aleg and Mâl (M. Benmergui, pers. comm.).

In Senegal, the number of Ruffs wintering in the Delta was 170,000–200,000 in 1990–1993 (Trolliet *et al.* 1992, 1993).

In Guinea-Bissau, the only data available are a 1983 estimate by Altenburg & van der Kamp (1986) that 50,000–75,000 Ruffs winter there in rice fields. In Guinea and in Sierra Leone, the Ruff is rare (Tye & Tye 1987, Walsh 1987, Morel & Morel 1988, Fouquet *et al.* 1998, 1999, 2000 and 2001).

The various counts and estimates reported in this paper or referred to above indicate that just over a million Ruffs are currently wintering in West Africa. Unfortunately, the scarcity of the counts means that it is not yet possible to assess population trends. That will require more regular and systematic surveys.

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