

# Observations on Palearctic waders wintering in the inner Niger Delta of Mali

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A field expedition in the inner Niger delta was carried out during the winter of 1990-91 to study some aspects of the wintering biology of the Black-winged Stilt *Himantopus himantopus* and also to collect information on other wader species in different habitats (including rice-fields, rivers, lakes and temporarily flooded-plains). This survey, although specific and limited, revealed the importance of some areas and habitats of the inner Niger Delta for wader species which have not been noted during previous field research and aerial surveys.

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Зимой 1990-91 гг. была проведена полевая экспедиция во внутриматериковой дельте р. Нигер с целью изучения некоторых аспектов биологии ходулочника *Himantopus himantopus* на зимовках, а также для сбора информации о других видах куликов в разных биотопах (в том числе на рисовых полях, реках, озерах и временно залитых равнинах). Обзор, несмотря на его специфичность и ограниченность, показал значимость некоторых участков и биотопов внутриматериковой дельты р. Нигер для видов куликов, не отмеченных во время предыдущих полевых исследований и авиаучетов.

## Introduction

The inner Niger Delta in Mali has long been recognized as one of the most important wetlands for Palearctic waterbirds wintering in Africa. In the winter of 1990-91 a field expedition was carried out to study some aspects of the biology of the wintering Black-winged Stilt *Himantopus himantopus*. During this research information on other Palearctic wader species was also collected. Irregular winter counts of this area had been made starting in 1969, but the most comprehensive counts were made in the period 1984-87 by means of aerial surveys (Perennou 1991a).

Boat and land-based surveys, such as those carried out in the winter of 1990-91 to collect data on the Black-winged Stilt, are obviously inadequate for making exhaustive counts, because large areas of shallow water can be reached only with difficulty and such surveys take a lot of time. However, this kind of survey is the only way to check for the presence of scarce or unusual species and to estimate the population of several waders usually missed or under-estimated by aerial surveys.

Data collected during this research provide useful information on the population size of some wader species in the winter of 1990-91, which may be added to the data collected by an IWRB team in the

same period on a small part of the inner Niger Delta visited by boat (Perennou 1991b). Habitat conditions in the inner Niger Delta certainly have a great influence on the population dynamics of Palearctic waders wintering in the Sahel region. For Black-winged Stilt, the importance of habitat conditions for population dynamics has been shown by a statistically significant correlation of winter count data in the years 1983-87, both with the trend of the maximum height of annual surges on Lake Debò and the number of breeding pairs counted in Italy during the same years (Tinarelli 1992 and in press).

## Study Area and Methods

The inner Niger Delta is a flood plain of about 38,000 km<sup>2</sup> in extent, situated between 13° N and 17° N in central southern Mali (Figure 1). It is formed by a mosaic of wet and dry habitats. The annual flood of the Niger is mainly due to summer monsoon rainfall in the highlands of Guinea. A delay of several months occurs between rainfall in the southern catchment areas and the commencement of flooding. Replenishment of the northern lakes (e.g. Faguibine) and the farthest depressions occurs irregularly. Flooded areas reach their maximum extent in July-August. More details on habitat description are given by Curry & Sayer (1979) and by Grove (1985).

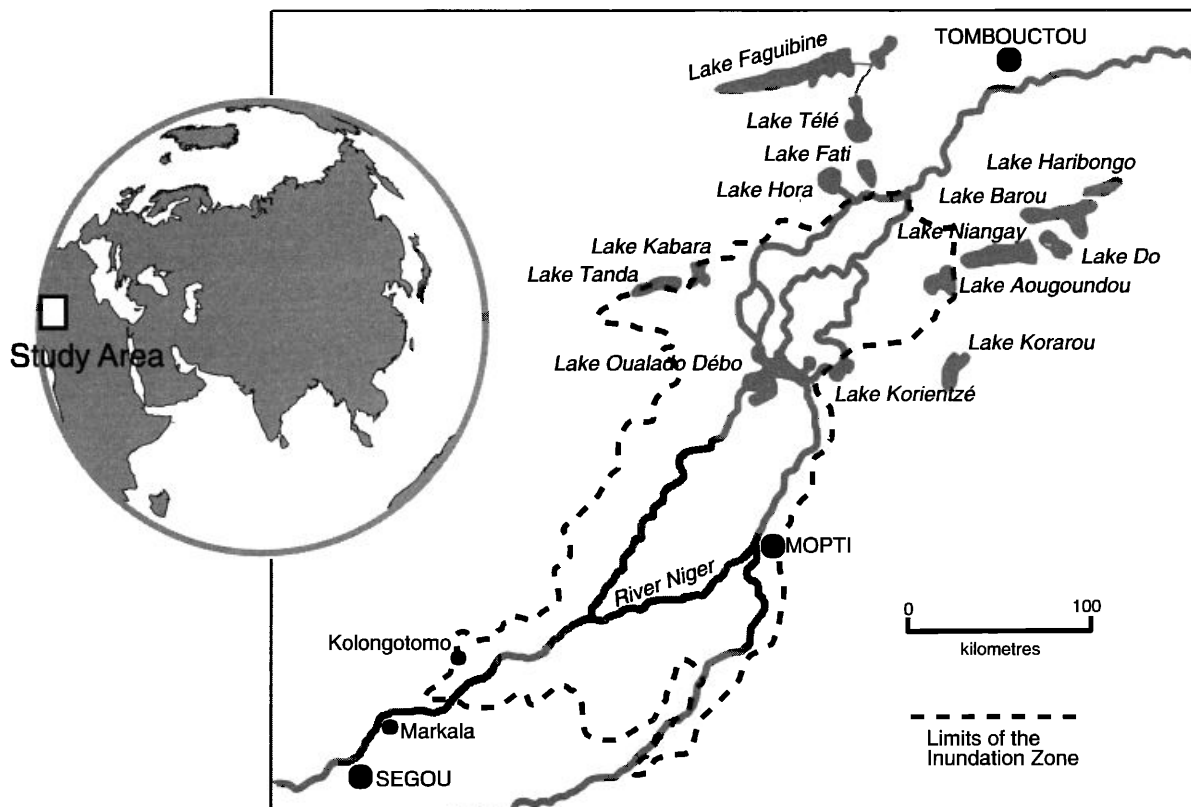


Figure 1. Study area.

The data for this study were collected in the following areas:

- Kolongotomo rice fields (28 and 29 December 1990);
- Niger branch between Mopti and the Lake Debò (1-3 and 15-16 January 1991);
- Lake Debò (3-10 and 13-14, January 1991); Issa Ber (two Niger branches) (11-13 January 1991);
- Lake Korientzé, and floodplains between Mopti and Korientz, on the western side of the Niger (19 and 20 January 1991).

Lake Korarou was completely dry as were lakes Aougoundou, Niangay, Do, Garou and Faguibine, according to information from local people. During the research, the water level of the Niger decreased by 3-5 cm/day.

For each area the richness (number of wader species), the index of diversity (H) (Shannon & Weaver 1963) and the index of equitability (J) (Pielou 1966) were calculated.

## Results and Discussion

Compared with earlier reports (Perennou 1991a, 1991b; Lamarche 1980), our surveys highlighted the following interesting points:

- We found a few Turnstones *Arenaria interpres* wintering inland in the Delta: Turnstone had formerly never been recorded during the winter. Dowsett (1980) reported large numbers of Turnstones crossing Africa in autumn but very few spending the winter inland.

- The total number of Little Stint *Calidris minuta*, Spotted Redshank *Tringa erythropus*, Greenshank *Tringa nebularia*, Wood Sandpiper *Tringa glareola* and Common Sandpiper *Actitis hypoleucos*, counted in the visited areas were greater than those previously reported by Perennou (1991a) for the overall area.

- The number of Black-winged Stilt counted in Lake Debò (2,696) was greater than the maximum value (2,200 in 1985) recorded until now.

- Other species with interesting figures were Collared Pratincole *Glareola pratincola*, Ringed Plover *Charadrius hiaticula* and Curlew *Numenius arquata*.

Among the visited areas Lake Debò, with very large emergent sand and mud-flats, harboured the highest number of wader species and individuals. The Ruff *Philomachus pugnax* was the commonest and the most abundant species everywhere. Little Stint was one of the most abundant species in Lake Debò but it was very scarce in other areas. Greenshank, Wood Sandpiper and Common Sandpiper were numerous and ubiquitous species and were particularly abundant in the rice fields of Kolongotomo, where other wader species are very scarce. The observations of wandering flocks of waders in Lake Debò and the results of repeated counts carried out along the same Niger branch between Mopti and Lake Debò (see Table 1), indicate a high mobility of wintering waders in the inner Niger Delta.

**Table 1.** Palearctic waders counted in the following areas:

**A** rice fields of Kolongotomo (28 and 29 December 1990), **B1** Niger branch between Mopti and the Lake Debò (1-3 January 1991), **B2** Niger branch between Mopti and the lake Debò (15-16 January 1991), **C** Lake Debò (3-10 and 13-14 January 1991),

**D** Issa Ber (two Niger branches) (11-13 January 1991), **E** Lake Korientz, and floodplains between Mopti and Korientz, on the western side of the Niger (19 and 20 January 1991); values of the dominant species ( $\pi > 0.050$ ) are underlined;

H = index of diversity; J = index of equitability.

Area	A		B1		B2		C		D		E	
	n	$\pi$	n	$\pi$	n	$\pi$	n	$\pi$	n	$\pi$	n	$\pi$
<i>Himantopus himantopus</i>	6	0.006	264	0.026	150	0.028	2,696	0.033	211	<u>0.067</u>	87	<u>0.105</u>
<i>Recurvirostra avosetta</i>							112	0.001				
<i>Cursorius cursor</i>											5	0.006
<i>Glareola pratincola</i>					1,402	<u>0.265</u>	300	0.004				
<i>Charadrius dubius</i>	40	0.042										
<i>Charadrius hiaticula</i>							40	0.000	30	0.010		
<i>Calidris minuta</i>			10	0.001			30,000	<u>0.371</u>	22	0.007		
<i>Calidris ferruginea</i>							8	0.000	2	0.000		
<i>Calidris alpina</i>							300	0.004				
<i>Philomachus pugnax</i>	500	<u>0.523</u>	9,740	<u>0.951</u>	3,940	<u>0.745</u>	35,000	<u>0.433</u>	2,690	<u>0.857</u>	680	<u>0.819</u>
<i>Limosa limosa</i>			48	0.005	62	0.012	10,000	<u>0.124</u>	60	0.019	11	0.013
<i>Numenius arquata</i>					2	0.000	200	0.002	13	0.004	10	0.012
<i>Tringa erythropus</i>							1,200	0.015			10	0.012
<i>Tringa totanus</i>							50	0.000				
<i>Tringa stagnatilis</i>			10	0.001	2	0.000	15	0.000				
<i>Tringa nebularia</i>	60	<u>0.063</u>	110	0.011	70	0.013	600	0.007	60	0.019	20	0.024
<i>Tringa ochropus</i>	3	0.003									5	0.006
<i>Tringa glareola</i>	200	<u>0.209</u>	20	0.002	11	0.002	200	0.002	10	0.003		
<i>Actitis hypoleucos</i>	150	<u>0.157</u>	40	0.004	8	0.002	100	0.001	40	0.013	2	0.002
<i>Arenaria interpres</i>							7	0.000				
<b>Total</b>	<b>959</b>		<b>10,242</b>		<b>5,287</b>		<b>80,828</b>		<b>3,138</b>		<b>830</b>	
Richness	7		8		9		17		10		9	
H	1.89		0.38		1.17		1.86		0.91		1.05	
J	0.67		0.13		0.37		0.46		0.27		0.33	

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