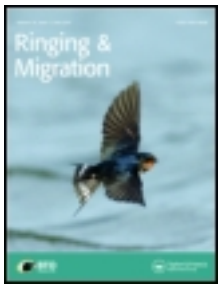

Ringing & Migration
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/tram20

First confirmed connectivity between breeding sites and wintering areas of the globally threatened Aquatic Warbler Acrocephalus paludicola

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Available online: 22 May 2012

To cite this article: Anatoliy Poluda, Martin Flade, Julien Foucher, Grzegorz Kiljan, Cosima Tegetmeyer & Volker Salewski (2012): First confirmed connectivity between breeding sites and wintering areas of the globally threatened Aquatic Warbler Acrocephalus paludicola , Ringing & Migration, DOI:10.1080/03078698.2012.691250

To link to this article: http://dx.doi.org/10.1080/03078698.2012.691250

Ringing & Migration (2012) **iFirst**, 1–3

SHORT REPORT

First confirmed connectivity between breeding sites and wintering areas of the globally threatened Aquatic Warbler *Acrocephalus paludicola*

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Knowledge of population-specific non-breeding areas in sub-Saharan Africa for the globally threatened Aquatic Warbler *Acrocephalus paludicola* is paramount for the implementation of successful conservation strategies that consider the species' entire annual range. This may be the case especially for declining marginal populations. Here we report on two Aquatic Warblers that were ringed in the Inner Niger Delta in Mali and in the region of the Djoudj National Park, Senegal. The first was recaptured in the Supoj mire, Ukraine, and the second observed in the Biebrza marshes in Poland. These records represent the first proof of connectivity between wintering areas and breeding sites for the species.

The Aquatic Warbler *Acrocephalus paludicola* has a scattered breeding distribution in the Palearctic region and migrates to sub-Saharan Africa during the non-breeding season (Flade & Lachmann 2008). Except for anecdotal records and incidental observations (compiled by Schäffer *et al* 2006) the exact non-breeding areas have been unknown until recently. In 2007, a major wintering site was discovered in and around the Djoudj National Park, northern Senegal (Salewski *et al* 2009), but further efforts during the following years to locate more wintering areas in Senegal, Mauritania and Gambia remained unsuccessful (Flade *et al* 2011). Since 2007, 198 Aquatic Warblers have been ringed in and near the Djoudj National Park at about 16°26'03"N 16°13'39"W. Between 2008 and 2011, 69 of these birds were marked with a white colour ring in addition to the usual aluminium ring in an ongoing project on the non-breeding ecology of the species (Tegetmeyer 2008). One of the colour-ringed birds has been observed during the breeding season in the Biebrza marshes, eastern Poland, in June 2011 at 53°16'37"N 22°35'17"E. As the respective bird has not been recaptured it is not possible to give more details about its initial time of capture, but as there are no other current projects that use the described combination of rings there is no doubt that at least some Aquatic Warblers from the breeding population in the Biebrza marshes are wintering in the Djoudj area in Senegal.

In February 2011 another important wintering site for Aquatic Warblers was discovered in the Inner Niger Delta in Mali. There, 12 Aquatic Warblers were ringed (J. Foucher in prep.). One of these birds was mist-netted on 9 February at the Mayo Dembé near Kofel at 15°11'56"N 04°3'56"W and ringed with the Paris ring 6445985. This bird was recaptured on 1 June 2011 in the Supoy mire north of Mala Berezanka, central Ukraine, at 50°24'48"N 31°44'14"E by members of the BirdLife International Aquatic Warbler Conservation Team.

These records are the first proof of connectivity between wintering sites and breeding populations for this species. The orthodrome distances between the Djoudj area, Senegal, and the Biebrza marshes in Poland and between the Inner Niger Delta, Mali, and the Supoy

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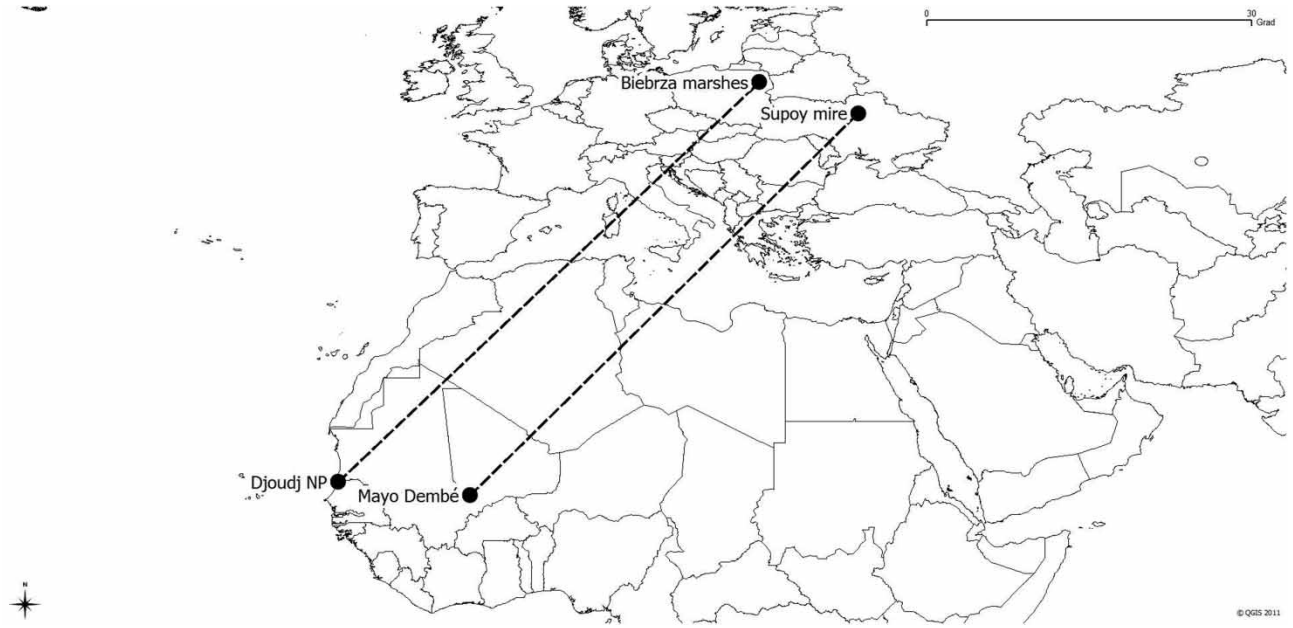

Figure 1. Connectivity between two breeding populations and the respective non-breeding areas of the Aquatic Warbler. Shown are the locations where the birds were ringed (Djoudj National Park, Senegal; Mayo Dembé, Mali) and the breeding sites where they were observed or recaptured (Biebrza marshes, Poland; Supoy mire, Ukraine). The dotted lines connect records of the same individuals but do not indicate their migration routes.

mires, Ukraine are about 5,300 km and about 5,100 km respectively (Fig 1). However, the actual migration distances are certainly longer. Aquatic Warblers are hardly recorded in central Europe during autumn migration. Regular records in Belgium, southern England, and along the French Atlantic coast (Julliard *et al* 2006) indicate an initial migration route westwards. A southward turn is then indicated by records of migrating Aquatic Warblers in Spain (Miguélez *et al* 2009), Portugal (Neto *et al* 2010) and Morocco (Schäffer *et al* 2006), from where Aquatic Warblers are suggested to reach their sub-Saharan non-breeding areas (Fig 1). Since Aquatic Warbler nestlings that were ringed in the Biebrza marshes, were recaptured in autumn in the UK and in Belgium (Mead & Clark 1991, N. Roothaert pers com), we have evidence that birds from this population use this flyway. That Aquatic Warblers breeding in Supoy take this migration route is indicated by another recaptured bird. An Aquatic Warbler that was ringed on migration in August 2009 in the Loire estuary, western France, was recaptured in July 2010 in the Supoy mire during the breeding season. Additionally, two Aquatic Warblers that were ringed in the Djoudj area were recaptured on the following autumn migration in western France (Flade *et al* 2011), and two birds ringed on migration in northern Spain were recaptured in Djoudj (Flade *et al* 2011, C. Zumalacárregui pers comm). Therefore, the putative migration distance of Aquatic Warblers from the Biebrza mire and from the Supoy region via northern and western France, Spain and Morocco to the winter quarters in Senegal and Mali is probably more than 6,000 km. On spring migration Aquatic Warblers may take a shorter, more direct route. This loop migration is suggested by an individual that was captured in Brittany, northern France, during its autumn migration in August 1995 and recaptured during the following spring migration in Italy in April 1996 (Spina & Volponi 2008; see also de By 1990, Atienza *et al* 2001).

The Aquatic Warbler is the only globally threatened passerine species of continental Europe (BirdLife International 2004). Potentially suitable wintering habitat for Aquatic Warblers is now found at only a few scattered localities mainly in the valley of the Senegal River, southern Mauritania and the inner delta of the Niger River in Mali (Buchanan *et al* 2011, Flade *et al* 2011). Therefore, knowledge of the precise location of the non-breeding areas in sub-Saharan Africa is paramount for the urgent implementation of conservation strategies (Flade & Lachmann 2008, Flade *et al* 2011). The records described show that ringing can help to gain information about connectivity between

breeding and wintering sites for a better understanding of factors that threaten certain populations.

ACKNOWLEDGEMENTS

We wish to thank A. André, S. Arbeiter, A. Berndt, M. Boucaux, M.T. Diop, H. Dugué, B. Giessing, E. Giraudot, O. Ilucha, I. Legeyda, J. Peters, M. Thiam and M. Thoma for help in the field in Ukraine, Senegal and Mali. P. Marczakiewicz communicated the observation of the colour-ringed Aquatic Warbler in the Biebrza marshes to us. R. Mayer helped with the preparation of Figure 1. P. Jones kindly improved our English. The expedition to Mali was made possible by the Association pour la Connaissance et la Recherche Ornithologique Loire et Atlantique (ACROLA) and the Agencia Española de Cooperación Internacional para el Desarrollo (AECID), and the work in the Djoudj National Park by the Deutsche Bundesstiftung Umwelt and the MAVA Foundation for Nature. The expedition to Ukraine was supported by the O.M.H. Schmidt-Felsche-Stiftung.

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(MS received 11 October 2011; accepted 16 December 2011)