

Atypical wintry capture of Great Reed Warbler *Acrocephalus arundinaceus* (Linnaeus, 1758) in Lower Loukkos wetlands complex (North Morocco)

Capture hivernale atypique d'une Rousserolle turdoïde Acrocephalus arundinaceus (Linnaeus, 1758) dans le complexe de zones humides du Bas Loukkos (Nord du Maroc)

Raphaël MUSSEAU^{1*}, Hamid RGUIBI IDRISSE² & Sonia BESLIC¹

1. Biosphère Environnement, 52 quai de l'Estuaire, 17120 Mortagne-sur-Gironde, France. *(r.musseau@biosphere-environnement.com)
2. Equipe de Recherche "Valorisation des Ressources Naturelles et Biodiversité", University Chouaib Doukkali, Faculty of Sciences, B.P. 20, El Jadida, Morocco.

Abstract. On 9th February 2015, a Great Reed Warbler *Acrocephalus arundinaceus* (Linnaeus, 1758), a trans-saharan migrant passerine, breeding patchily in North-West Africa and widely in Europe, was caught and ringed in the Lower Loukkos wetlands complex (North Morocco, near the city of Larache). This atypical wintry data reveals the early arrival of a local breeder or of a bird migrating to northern areas. In either case, the data documented here highlights that in the future regular ringing efforts during winter in North Moroccan wetlands, and globally in North Africa, might allow a better understanding of migration strategies of reed bed passerines with high selective value in the context of climate change.

Keywords : reed bed passerines, *Acrocephalus arundinaceus*, spring migration, Morocco.

Résumé. Le 9 février 2015, une Rousserolle turdoïde *Acrocephalus arundinaceus* (Linnaeus, 1758), un passereau migrateur trans-saharien se reproduisant localement en Afrique du nord-ouest et largement en Europe, a été capturé et bagué dans le complexe de zones humides du bas Loukkos (nord du Maroc, près de la ville de Larache). Cette donnée hivernale atypique révèle l'arrivée précoce d'un nicheur local ou d'un individu migrant vers des contrées plus nordiques. Dans les deux cas, la donnée présentement documentée met en évidence qu'à l'avenir la répétition d'efforts de baguage réguliers en période hivernale dans les zones humides du nord du Maroc, et plus globalement en Afrique du Nord, pourrait permettre une meilleure compréhension des stratégies migratoires de passereaux paludicoles à haute valeur sélective dans le contexte du changement climatique.

Mots-clés : Passereaux paludicoles, *Acrocephalus arundinaceus*, migration pré-nuptiale, Maroc.

From 5th to 9th February 2015, bird ringing operations were conducted in the Lower Loukkos wetlands complex (Aïn Chouk-Boucharen marshes, near the city of Larache). The mission was set up at the beginning of a program developed to reinforce the knowledge related to bird communities breeding in the Western Palearctic regions and exploiting Moroccan Atlantic wetlands in winter. During the mission, between three to five mistnets (12 m × 2.50 m, 16 mm mesh, 5 shelves) were installed daily over a period of four days on a small section of the outskirts of the marsh (35 09'1.17"N; 06 06'47.41"W).

The sampled area is essentially composed of dense, almost impenetrable, vegetation dominated by *Cladium mariscus*, *Typha latifolia* and *Iris pseudacorus*. The mission afforded the capture of 71 birds (18 species) of which, almost a third belonged to the reed bed passerines community, including the following numbers: *Acrocephalus arundinaceus*: 1; *Acrocephalus melanopogon*: 1; *Acrocephalus scirpaceus*: 2 (Moroccan morphotype wintering regularly in northern Morocco, see Amezian *et al.* (2010) and Jiguet *et al.* (2010); *Cettia cetti*: 16; *Cisticola juncidis*: 1; *Remiz pendulinus*: 1. On 9th February 2015, a Great Reed Warbler *Acrocephalus arundinaceus* was caught. Given the state of knowledge of wintering and spring migration strategies of the species, this

data is atypical and raises questions about the status of this bird (early local breeder or early migrant).

The Great Reed Warbler is a long-distance migrant passerine, breeding in European and Western Asian marshes and wintering over the whole of sub-Saharan Africa (De Roo & Deheegher 1969, Cramp 1992). The nominate race breeds patchily in North-West Africa, and widely in Europe, from Western France to the Caspian Sea, and from the Iberian Peninsula to Southern Scandinavia (Cramp 1992). Populations belonging to the nominate race winter in the south of Sahara, from Sierra Leone to southern Ethiopia and South Africa (Del Hoyo *et al.* 2006). The arrival of the dry season in the northern wintering areas generates mid-winter movements to the South, probably with variations between years depending on weather conditions (see Hedenström *et al.* 1993, Lemke *et al.* 2013). Generally, in the Western Mediterranean areas and in the North-West of Africa, first individuals are detected at the end of March and the number of captures regularly increases from mid-April to a peak in the first half of May (López-Iborra & Castany 2011). In Morocco, the main passage occurs between mid-April and mid-May (Thévenot *et al.* 2003) but birds can be detected from early March and one bird has been observed in Southern Morocco (oued Massa) on 2nd February 1993 (Redman in Thévenot *et al.* 2003). Data collected on a sample of six males breeding in Sweden and fitted with

geolocators revealed that departures from their last wintering sites were initiated between 1st and 27th April (mean: 12th April, Lemke *et al.* 2013).

The first hypothesis to explain the wintry capture in North Morocco documented here is an early arrival of a local breeder. The second hypothesis is the arrival of a bird migrating to more Northern latitudes. In both case, the data collected is atypical and reveals that for the future, there is a need for regular ringing efforts during winter in North Moroccan wetlands and globally in North African wetlands. This might yield interesting data allowing for a better understanding of migration strategies of reed bed passerines with high selective value. Indeed, it has now been established that migratory birds with high selective value tend to arrive early on breeding sites (see Møller *et al.* 2004). In many song bird species, early-arrivals at breeding sites allow birds access to better territories and mates (Møller 1994) resulting in higher reproductive success (Velmalala *et al.* 2015).

To date, very few ringing operations have been conducted in North Africa during winter. Implementation and development of wintry ringing schemes in North Africa is even more justified given that climate change is associated with changes in the migration and the breeding phenology of birds, with many species breeding or migrating earlier in warmer springs (see review in Gordo 2007, Lehikoinen & Sparks 2010). Highly experienced birds should therefore be expected to start spring migration at increasingly early dates. Wintry ringing schemes in North Africa dedicated to reed bed passerines would provide important data to better understand:

1. The ecology of local breeders or migrants with high selective value (playing key roles in the maintenance and the conservation of populations).
2. The relative importance of plastic and evolutionary responses of birds towards global changes.
3. The ecological functionalities of North African wetlands as stopover sites for birds with high selective values.

ACKNOWLEDGEMENTS

Ringing sessions have been conducted with the authorization of the Moroccan High Commission for Waters, Forests and Desert Control and the technical support of the French Center for Population Biology Research (French National Museum of Natural History). We particularly thank Sophie Musseau and Jean-Marie Habar for their valuable technical assistance to prepare the mission, Haytem Bouchri, Ayoub Cherdoud and Abdelfettah Messoudi for

their precious collaboration to manage ringing sessions, the Chehibita family for their warm hospitality, and Su Braden and John Allen for a thorough re-reading of this paper.

REFERENCES

- Amezian M., Cortes J., Thompson I. *et al.* 2010. Complete moult of an undescribed resident taxon of the Reed Warbler *Acrocephalus scirpaceus* / *Baeticatus complex* in the Smir marshes, Northern Morocco. *Ardea*, 98, 225-234.
- Cramp S. (ed) 1992. *The Birds of the Western Palearctic*. Oxford University Press, Oxford, 6, 728 p.
- Del Hoyo J., Elliott A. & Christie D.A. (eds) 2006. *Handbook of the birds of the world*. Lynx Ed., Barcelona, 11, 798 p.
- De Roo A. & Deheegher J. 1969. Ecology of the Great Reed Warbler *Acrocephalus arundinaceus* (L.) wintering in the Southern Congo savannah. *Gerfaut*, 59, 260-275.
- Gordo O. 2007. Why is bird migration dates shifting? A review of weather and climate effects on avian migratory phenology. *Climate Research*, 35, 37-58.
- Hedenström A., Bensch S., Hasselquist D. *et al.* 1993. Migration, stopover and moult of the Great Reed Warbler *Acrocephalus arundinaceus* in Ghana, West Africa. *Ibis*, 135, 177-180.
- Jiguet F., Rguibi-Idrissi H. & Provost P. 2010. Undescribed Reed Warbler breeding in Morocco. *Dutch Birding*, 32, 29-36.
- Lehikoinen E. & Sparks T.H. 2010. Changes in migration. In : Møller A.P., Fiedler W. & Berthold P. (eds). Effects of climate change on birds. *Oxford University Press, Oxford*, 89-112.
- Lemke H.W., Tarka M., Klaassen R.G.H. *et al.* 2013. Annual cycle and migration strategies of a trans-Saharan migratory songbird: a geolocator study in the Great Reed Warbler. *PLoS ONE*, 8, e79209.
- López-Iborra G. & Castany J. 2011. Great Reed Warbler *Acrocephalus arundinaceus*. In: Gargallo G., Barriocanal C., Castany J. *et al.* (eds). Spring migration in the Western Mediterranean and NW Africa: the results of 16 years of the Piccole Isole project. *Monografies del Museu de Ciències Naturals, Barcelona*, 6, 158-165.
- Møller A.P. 1994. Phenotype-dependent arrival time and its consequences in a migratory bird. *Behavioural Ecology and Sociobiology*, 35, 115-122.
- Møller A.P., de Lope F. & Saino N. 2004. Parasitism, immunity and arrival date in a migratory bird. *Ecology*, 85, 206-219.
- Thévenot M., Vernon R. & Bergier P. 2003. *The Birds of Morocco*. British Ornithologists' Union, Peterborough, 594 p.
- Velmalala W., Helle S., Ahola M.P. *et al.* 2015. Natural selection for earlier male arrival to breeding grounds through direct and indirect effects in a migratory songbird. *Ecology and Evolution*, 5, 1205-1213

Manuscrit reçu le 22/10/2015

Version révisée acceptée le 16/11/2015

Version finale reçue le 23/12/2015

Mise en ligne le 21/01/2016