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## What do ring recoveries and resightings tell us about migration and wintering of Finnish Terek Sandpipers?

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The critically endangered Finnish Terek Sandpiper *Xenus cinereus* population is one of the most endangered shorebird populations within the European Union (Rassi *et al.* 2010, Birdlife International 2015a). This population is separated by hundreds of kilometers from the main breeding range of the species in Russia and has always been small. The Finnish Terek Sandpiper population was largest in the 1980s with *ca.* 30 pairs, but has since declined to 5–10 pairs (Valkama *et al.* 2011) and now faces extinction. Information about the possible genetic differentiation from the main breeding population in Russia and about migration routes and wintering areas are needed to try to safeguard this population (e.g. Birdlife International 2015a).

The Terek Sandpiper is one of the least studied shorebirds in the Northern Hemisphere, at least in terms of scientific literature, and still little is known about its breeding ecology despite the few recent studies on distribution,

habitat selection, phenology and biometrics (Karlionova *et al.* 2006, Golovatin *et al.* 2010, Meissner *et al.* 2012, 2013). The natural history of the Terek Sandpiper has been studied in Finland from 1965 to the late 1990s, involving metal and colour ringing of individuals (Saurola *et al.* 2013). In 2005, I started to mark Terek Sandpipers as part of a research and conservation project. Here I report the resightings of Terek Sandpipers (i.e. individuals identified by colour rings or by reading the number of the metal ring without capturing the bird) and recoveries (i.e. birds with metal ring only that were caught or found dead) outside the breeding sites. I combine data from the literature (Saurola *et al.* 2013) and my own data and discuss what these records tell us about the migration and wintering sites of the Finnish Terek Sandpipers.

### RECOVERIES AND RESIGHTINGS

By summer 2015, 1,104 Terek Sandpipers had been ringed

**Table 1.** Summary of recoveries and resightings of Finnish Terek Sandpipers during the non-breeding season between 1967 and 2015. Individual 9 is indicated on the map in Fig. 1 with red, individual 10 with green, and individual 11 with yellow.

Individual	Ringing		Recovery/Resighting			
	Age	Date	Age	Date	Site	Observation
1	ad	21 Jun 1966	ad	12 Jul 1967	Camargue, France	Recovery
1	–	–	ad	22 Jul 1971	Camargue, France	Recovery
2	juv	6 Jul 1972	juv	14 Aug 1972	Rügen, Germany	Recovery
3	juv	5 Jul 1969	juv	28 Sep 1973	White Sea, Russia	Recovery
4	ad	5 Jul 1981	ad	16–24 Jul 1981	Lappeenranta, Finland	Resighting
5	juv	5 Jul 1978	ad	17–19 Jul 1981	Lappeenranta, Finland	Resighting
6	ad	28 Jun 1983	ad	20 May 1989	Paimio, Finland	Resighting
7	ad	21 Jun 1992	ad	24–25 Jul 1998	Westerhever, Germany	Resighting
8	ad	21 Jul 2005	ad	26 Jul 2005	Siilinjärvi, Finland	Recovery
9	ad	19 Jun 2005	ad	7 Jul 2006	Hauke-Haien-Koog, Germany	Resighting
9	–	–	ad	29–30 Jun 2008	Halmstad, Sweden	Resighting
10	ad	17 Jun 2011	ad	5 Jul 2011	Pori, Finland	Resighting
11	juv	19 Jun 2005	ad	29 Jun 2011	Öland, Sweden	Resighting
11	–	–	ad	29 Jun 2012	Öland, Sweden	Resighting
11	–	–	ad	19–21 Jul 2013	Gotland, Sweden	Resighting
11	–	–	ad	15 May 2013	Öland, Sweden	Resighting
11	–	–	ad	11 Jul 2014	Scherpenisse, Netherlands	Resighting
11	–	–	ad	21–22 Jul 2015	Öland, Sweden	Resighting

in Finland. Of these, 11 individuals have been recorded outside the breeding areas on 18 different occasions (Fig. 1). Nine observations occurred between 1967 and 1998, and the others after 1998. All observations of adults occurred between late June and late July during southward migration, except for two observations during spring migration in May (Table 1). Two juveniles were recovered during their first autumn migration in August and September.

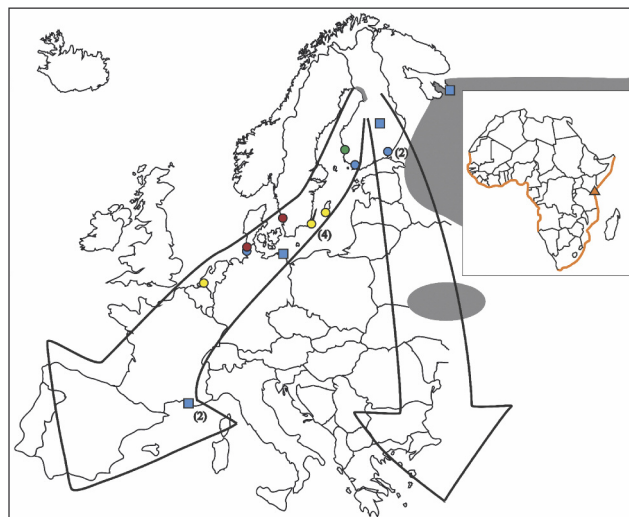
Three individuals were observed in more than one year. A male which was ringed as a chick in 2005 in Oulu, Finland, annually returned to breed at its natal territory from 2007 until at least 2015. This male was caught and marked at its first return on the breeding grounds and resighted six times during migration (Fig. 1), of which four were at the same location in Öland, Sweden. Other locations included Gotland, Sweden (Träff 2013) and the Netherlands (Fig. 1). Interestingly, the mother of this bird was seen twice on migration in Germany and Sweden (Table 1; Fig. 1) and seemed to have a similar direction of migration. In addition to these birds, a similar history was recorded for another bird that was seen twice in the same area on the coast of the Mediterranean Sea in Camargue, France in 1969 and 1973 (Saurola *et al.* 2013).

Perhaps the most interesting information was obtained in 2008 when I caught a breeding male that had been ringed by Colin Jackson and his team as a juvenile bird in Mida Creek, Kenya (3°20' S, 39°58' E) on the 20<sup>th</sup> of November in 2003 (Fig. 2). This was direct evidence for a wintering site 7,770 km south-east from the breeding area (Fig. 1). Another juvenile individual was found dead on the coast of the White Sea during its first autumn migration in late September 1973 (Fig. 1) and had apparently strayed in the wrong direction.

## MIGRATION ROUTES AND WINTERING SITES

The resightings of the same individuals at exactly the same locations suggest that at least some Terek Sandpipers can be site faithful to their stop-over or staging sites during both autumn and spring migration. Knowledge of this kind is important for conservation because it should be those locations that are especially important to the few individuals of this small population. Terek Sandpipers have also been found to be site faithful to their wintering grounds (Underhill *et al.* 1999).

The data shown here suggest that Finnish Terek Sandpipers do not have a narrow species-specific migration route, but instead migrate widely through both W and E Europe. This is consistent with reports of Terek Sandpiper sightings from Europe (e.g. Mauer & IJzendoorn 1987). This contrasts to the earlier belief that Finnish Terek Sandpipers migrate across E Europe and then across the Mediterranean and Sahara (van Gils & Wiersma 1996). However, most of the sightings available in the present study originated from the East Atlantic flyway along a western route via the Wadden Sea area. Although this route has been suggested before (Martin 1983), this does not necessarily imply that it is more commonly used than routes through



**Fig. 1.** Locations of Finnish Terek Sandpipers resighted (bird identified by colour rings or by reading the number of the metal ring without capturing the bird; circles) or recovered (bird with metal ring caught or found dead; squares) outside the breeding area. Blue indicates observations between 1969 and 2005. Yellow, red and green indicate observations of specific individuals resighted between 2007 and 2015 (Table 1). Numbers in parenthesis indicate resightings per location. The breeding distribution of the Finnish population and the main distribution are shown in gray. The suggested main migration routes are indicated by large arrows. Inset: ringing site of the individual at the known wintering site in Kenya is shown with an orange triangle. Wintering range of Terek Sandpipers is shown as orange lines on the coast.



**Fig. 2.** A male Terek Sandpiper in breeding plumage in Kemi, Finland on 21 June 2008. This bird was first ringed at Mida Creek, Kenya five years earlier (20 November 2003). The background shows typical characteristics (open areas with wood debris) of the artificial breeding habitats of Terek Sandpipers in Finland (photo: Olli Pakanen).

E Europe. An observer bias could be the cause of this, if more observers are active along the western route, as possibly suggested by the multiple sightings of the same individuals along the more western route (Table 1). Because the Terek Sandpiper is a rarity in NW Europe, which is densely populated by bird watchers, observations of colour-ringed individuals might be more likely in NW Europe than in E Europe, where the species is not rare and where birds may stop at inland water bodies that are not as accessible to bird watchers.

Despite the small breeding range of Finnish Terek Sandpipers, the wide range of migration directions suggests that these birds spread widely across the species' winter range. The wintering sites of the individuals taking the western route are unknown; however, the direction from the breeding area to the locations during migration suggest these birds might winter around the Mediterranean Sea or, perhaps more likely, in a large area extending from Northern to Western and Central Africa, together with birds breeding in Russia (Martin 1983, Mauer & IJzendoorn 1987). Indeed, there are observations of Terek Sandpipers from this vast area, and even as far south as Namibia (Waltner & Sinclair 1981, Cramp & Simmons 1983, Kirby & Delany 2009, Birdlife International 2015b). The main wintering area of the Western Palearctic Terek Sandpipers extends from South Africa following the coast of the Indian Ocean to India (Kirby & Delany 2009). Individuals that were observed during migration in SE Finland possibly take a more eastern route towards this main wintering area. The single winter record in Kenya indeed indicates that E Africa is a wintering area of (some) Finnish Terek Sandpipers.

At least some Finnish Terek Sandpipers thus share wintering sites with the main breeding population originating from Russia (Kirby & Delany 2009) suggesting weak migratory connectivity between breeding and non-breeding sites (Webster *et al.* 2002). Such mixing of individuals may facilitate interchange between the Finnish and the Russian Terek Sandpiper populations. Especially juveniles may disperse to a different breeding area via a wintering area that is shared by individuals of both breeding populations. This could provide both genetic and demographic rescue to the endangered Finnish population via immigration. The single observation of a juvenile bird on its first autumn migration that strayed from Finland to Russia, unfortunately does not confirm actual breeding dispersal. A distribution-wide analysis on Terek Sandpiper population genetics could reveal whether such mixing truly occurs. Tracking studies, for example using geolocators, would bring additional valuable information on staging sites, wintering distribution, and migratory connectivity between breeding and wintering sites across the Terek Sandpiper breeding range.

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### NOTICE OF THE 2016 ANNUAL GENERAL MEETING OF THE INTERNATIONAL WADER STUDY GROUP

The Annual General Meeting (AGM) of the International Wader Study Group (IWSG) will be held at 9h00 on Saturday 10 September 2016 during the Annual Conference in Trabolgan Holiday Village, Whitegate, Middleton, East Cork, Co Cork, Ireland. Nominations for the election of Officers and other members of the Executive Committee may be made in writing to the General Secretary not less than 14 days before the AGM. Each nomination must be proposed and seconded by fully paid-up members and accompanied by the nominee's written consent.

#### AGENDA

1. Apologies
2. Minutes of the 2015 AGM (published at <http://www.waderstudygroup.org>)
3. Chairman's report (Yvonne Verkuil)
4. a) Treasurer's report for 2014 (David Turner)  
b) Auditor's report for 2014
5. Membership Secretary's report (Rick & Elis Simpson)
6. Editors' report (Humphrey Sitters & Jesse Conklin)
7. Project Coordinator's report (Jannik Hansen)
8. Conference Coordinator's report (Triin Kaasiku)
9. IWSG-Wetlands International Liaison Officer's report (David Stroud)
10. Colour Marking Officer's report (Jim Wilson)
11. Election of Members of the Executive Committee
12. IWSG Conference 2017
13. Any other business

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