



Light-logger mapping of migratory connectivity of Dotterels breeding in alpine Fennoscandia

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KEY POINTS

- winters in known wintering areas in North -Africa
- spring migration longer, but quicker than in autumn
- low return rates make logger retrieval difficult, especially for females that also stay shorter in the breeding grounds

BACKGROUND

The Eurasian Dotterel *Eudromias morinellus* is a wader species with reversed sex roles, breeding in the arctic-alpine zone of Palearctic. For the conservation of migratory species, the details of annual migration cycle and migration strategies of different populations should be identified. The Dotterel is one of many wader species with scant information. Here we present the first full-year tracking of the Dotterel together with all foreign ring recoveries of Fennoscandian-ringed Dotterels.

METHODS

In years 2011-2019 altogether 44 Dotterels were equipped with Intigeo P65C2-11 light-loggers in four areas in Finland and 2 areas in Norway. 12 loggers were mounted on a leg-ring, but after 2017 all loggers were attached as a leg-loop harness. Calculation of the silicon cord harness (1.5mm 60 shore Polymax) size followed Naef-Daenzer (2007). Five Dotterels were also instrumented in Norway with 4.7 g Microwave solar panel ARGOS transmitters, but only two gave tracking data presented here. Light-logger weight including harness averaged 1.13 grams, which accounted for 1.0 and 0.9 % of the body mass for males (average 112 gram) and females (average 122.5 gram), respectively. Satellite transmitters accounted for 4.9 and 4.5 % of the body mass for the sexes.

The geollogger data were analysed and prepared with FlightR (Rakhimberdiev 2017), defining stationary periods, in this case, as long as min. 6 twilights (corresponds c. 3 days) with the probability cut off of 0.2. For each stop-over location 95% CI was calculated. Map analyses were done with ArcMap 10.5 and ArcView GIS 3.3 with Animal Movement extension 2.04.

Approximately 2000 Dotterels have been ringed in Norway, Sweden & Finland since 1913, which have resulted in 5, 2 and 10 foreign recoveries respectively. In the map the recoveries are divided by months on autumn (August-September), winter (October-March) and spring (April-May) periods, and follows the same colour coding in the *Year wheel* for the geo-logger individual.

ACKNOWLEDGEMENTS

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RESULTS

Light-loggers:

- Of the 44 attached loggers only one logger bird was recaptured – a male in Kaunispää, North Finland
- The logger data covered the period from 30 June 2017 till 3 July 2018
- All major migratory legs where quick and done in 1-2 days
- Autumn migration lasted 58 days, with start from Finland in late August with a 54 days main staging period in Black Sea till mid-October.
- Winter was spent in Libya from mid-October till end of March, accounting for 45 % of the year
- Spring migration started 31 March and lasted 48 days, and included a 11 days staging period in Cyprus, 25 days in Ingushetia and 6 days in Volgograd with arrival back on the breeding grounds in mid-May.
- The total migration distance in autumn was 4544 km and in spring 6244 km -the latter was 37 % longer but lasting 17 % shorter in days.

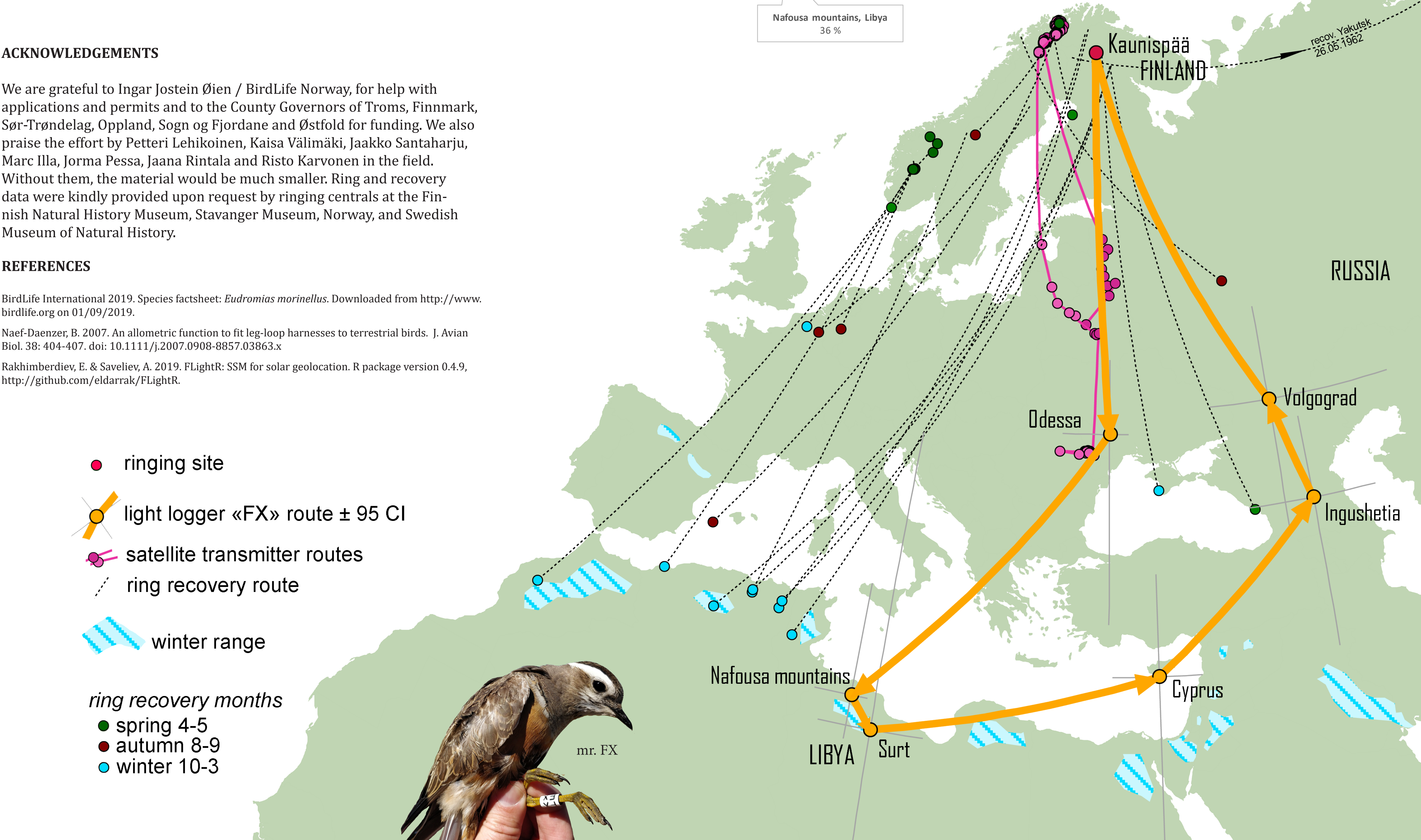
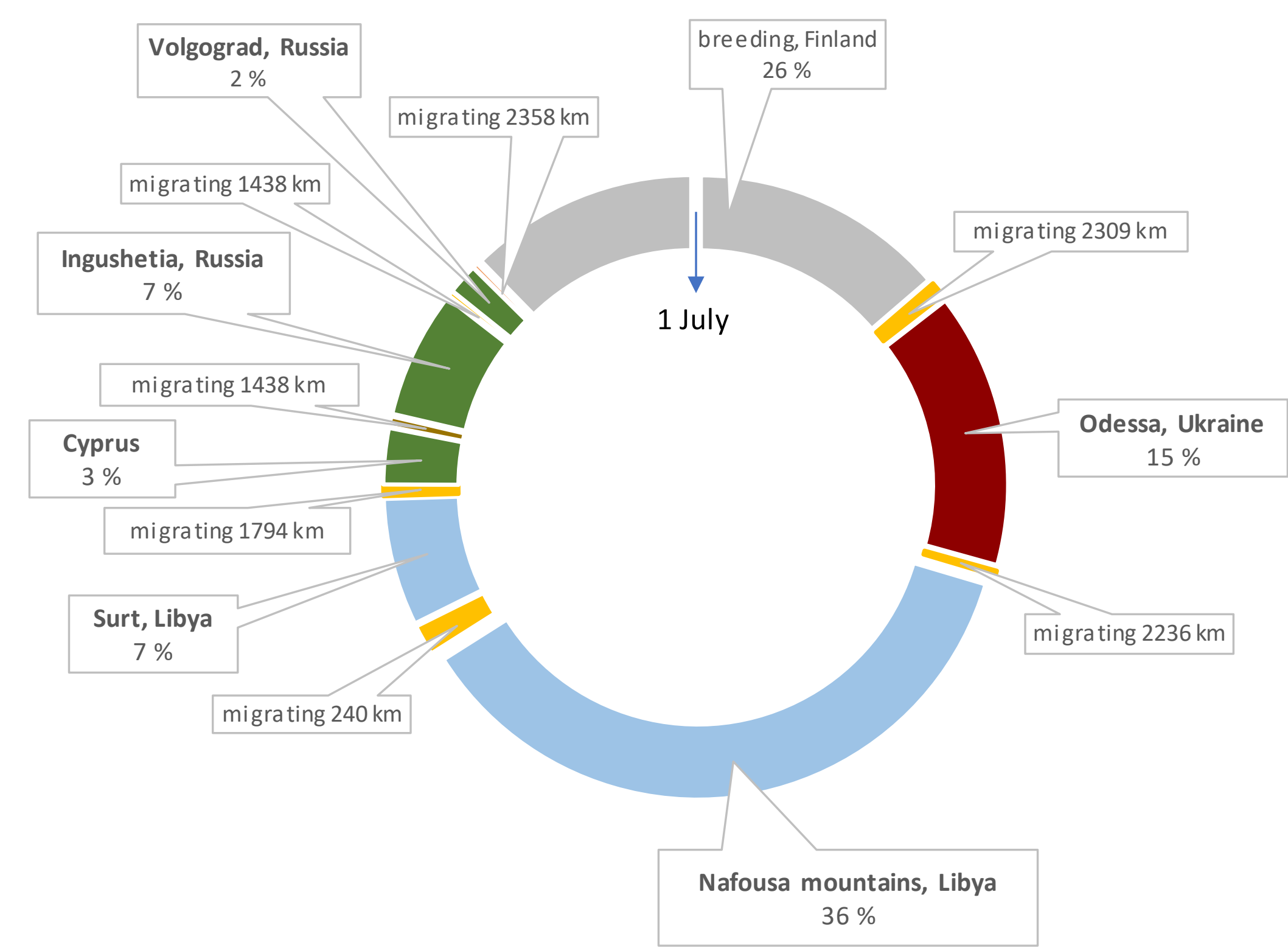
Ring recovery data:

There are 17 foreign ringing recoveries of Fennoscandian Dotterels. All recoveries after November are from North Africa: Morocco (1), Algeria (6), Tunisia (1), while two in November (defined here as winter) are still on migration (France 1 & Russia 1). There are five recoveries from autumn migration (Sweden 1, Belgium 1, France 2, Russia 1), and two spring recoveries (Russia 1 Finland 1).

Satellite transmitters:

Low successrate of satellite tracking, but two autumn migration tracks follows same route as the geo-logger individual.

Year wheel for light-logger Dotterel "FX"



- ringing site
- light logger «FX» route ± 95 CI
- satellite transmitter routes
- ring recovery route
- winter range

ring recovery months

- spring 4-5
- autumn 8-9
- winter 10-3

