

Intercontinental migration of an Eurasian Hobby (*Falco subbuteo*) tracked by means of a 5g satellite transmitter

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Introduction

The Eurasian Hobby is a small falcon. It breeds across Europe and Asia and is a long-distance migrant. European birds winter in Africa. More than 5,700 Hobbies have been ringed in 10 European countries, but so far there have been only two ring recoveries south of the Sahara desert. Satellite tracking using the Argos system is now an accepted technique for long distance migration studies of birds. It is generally accepted that any device we burden a bird with should weigh no more than 3% of the bird's weight if we are not to affect its behavior.

Method

The prototype of the smallest satellite transmitter (PTT) produced so far weighing just 5 g was fitted for the first time to an adult female Hobby (weight 265 g) on 9 August 2008 in Germany near Berlin and successfully recorded the annual migration route. The Hobby had raised two offspring and was trapped near its eyrie using the dho-ghaza-method. This new type of solar-powered PTT was still in the trial phase and is still working (in August 2009).

Results

This smallest and lightest satellite transmitter produced to date delivered astoundingly high numbers of good Argos Doppler fixes (LC:2 and LC:3).

After leaving on migration in the second week of August, and a short rest period on the island of Elba off the west coast of Italy from 6 to 13 September, the bird flew at first in a southerly direction towards North Africa. The falcon held this course more or less until reaching its main wintering area in Southern Angola on 17 October. The migration to southern Angola took 49 days including some days on the island of Elba and one day (8 October) in Cameroon when the falcon was not moving. On average the falcon migrated 174 km per day including the days when it did not migrate.

Outward migration route in 2008 up to the southernmost point in Zimbabwe not showing local movements during wintering in Angola

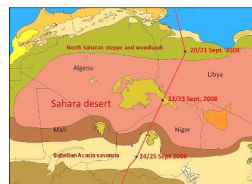


Over two months after arriving in southern Angola it migrated further in a south-easterly direction and arrived in Zimbabwe on 29 December. On 1 January 2009 it reached the southernmost point of its migration between the cities of Bulawayo and Harare in central Zimbabwe. The distance migrated from the breeding site, not including regional movement, was up to this point over 10,000 km. The Hobby did not linger for long in Zimbabwe and retreated almost immediately to its wintering area in Angola. The bird arrived back at its old breeding site in Brandenburg in May.



Female Hobby with the prototype of a satellite transmitter weighing only 5 g. Photo: B.-U. Meyburg, 9 August 2008.

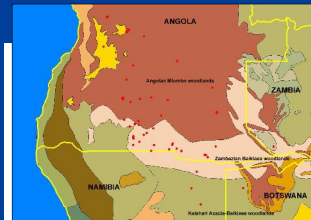
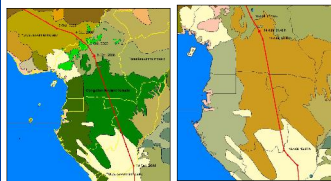
Interesting data was obtained on the winter habitat used, the home range size in winter and migration speed when crossing ecological barriers (e.g. the Sahara).



Crossing of the Sahara desert in autumn 2008

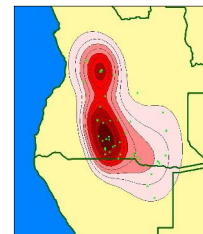
The West African equatorial rain forest proved to be one such significant ecological barrier. Migration was noticeably rapid here with distances of up to some 580 km flown per day - also partly at night. In order to reach the northern perimeter of the area the bird flew an additional 260 km after sunset on 14 April, and arrived at its night roost clear of the rain forest as late as midnight. On one part of the route, 57 km in length, it flew at an average speed of 34.2 km/h.

Autumn and spring migration routes while crossing the rain forest belt in West Africa.



But even in its wintering area the small falcon showed an eagerness for travel, as witnessed by the recording of 543 different fixes. Of the barely 25 weeks spent in the south the bird never spent as long as a week in the same place up to six weeks preceding return migration. In the wintering period from 16 October 2008 to 7 April 2009, the bird covered a total distance of at least 9,025 km. This calculation is based on the distance between the 76 precise night roost fixes, which amounted to somewhat less than the half of all overnight roosting places. Within Angola the fixes during the night, usually recorded at an interval of 48 hours, were sometimes more than 300 km apart. This means that the actual distance covered by the bird during wintering was probably significantly greater.

Kernel analysis of the winter home range of the Eurasian Hobby in Angola and Namibia



The bird spent 50 % of its time in the Angolan Miombo woodlands, a habitat made up of alternating moist, large-leaved savannah and 5-10 m high woods interspersed with grassland, at an altitude mainly between 1,000 and 1,500 m ASL.

While wintering the falcon spent another 37 % of its time in the Zambezi Baikiaea woodlands, a mosaic of dry deciduous forest, thicket, and secondary grassland. A large part of the bird's diet probably consisted of energy-rich termites, which are particularly common in the area visited during the rainy season.

The bird spent 86% of the time in southern Angola and the rest of the wintering period in Namibia, Zambia, Botswana and Zimbabwe.

In July and August 2009 eight more adult Hobbies were marked with even smaller satellite tags (seize: 9.3 x 30 x 16.4 mm).