On the biology of the Honey Buzzard (*Pernis apivorus*) - Results of Satellite Tracking

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Introduction

European Honey Buzzards are long distance migrants. Little is known about the migration of German breeding birds. Many questions can be answered with the help of satellite telemetry, using state-of-the-art GPS transmitters, which were available to us from 2009. These included questions on habitat use, home range size and flight height and speed etc. (see Meyburg & Fuller 2007).

Methods

In the time frame 2001 to 2010 we fitted nine adult German Honey Buzzards (six males and three females), primarily in Schleswig-Holstein, with solar cell powered satellite transmitters (PTTs), of various types and producers, weighing 18-22 g. Ten transmitters were used. In the last two years 3 male birds were fitted with GPS transmitters, in 2010 one of theses birds with a 3-D transmitter, which also transmits data on flight height, speed and direction. The 2-D transmitters used in 2009 transmitted only GPS fixes but no other data. A female was caught again after three years and fitted with a new transmitter. A male was also retrapped after two years but the transmitter was not replaced as it was still in good working order.

Results

Signal transmission lasted up to three years. With the exception of the last fitted transmitter with GPS location data was transmitted almost only during migration. Outside migration periods the birds probably remained in vegetation that was too dense to allow the transmitters to be adequately recharged.

Migration

We were able to record up to six complete autumn and spring migration routes of individual birds. There is no previous description in the relevant literature of pre-nuptial migration of European Honey Buzzards fitted with satellite transmitters. For two of the years both members of a pair could be studied. They migrated separately and wintered far away from each other. All birds migrated to West Africa.

The second longest migration route was taken by a male with transmitter No. 57029 that flew 7,7612 km as far as Gabon (see Fig. 6). It covered on average 167 km daily. With the exception of male No. 52033 it is the only Honey Buzzard to date that has crossed the Equator.

Data on flight height and speed became available for the first time on autumn migration 2010 (for male No. 52033). It reached its highest flight altitude over the Sahara at 1,703 m ASL at a flight speed of 60 kph. The fastest flight speeds (72 und 76 kph) were also recorded here. Speeds of between 60 and 70 kph were recorded on seven occasions. The Honey Buzzard spent the night of 10/11 September at a height of 1750 m ASL in the Pyrenees.

Two birds perished on migration while crossing the Sahara and Mediterranean respectively.

Fig.1: Most Honey Buzzards migrated to Africa via the Straits of Gibraltar. In a few cases the Mediterranean was traversed in wider places

The map shows the spring migration routes of male No. 41504 in the years

2004

2005

and

2006

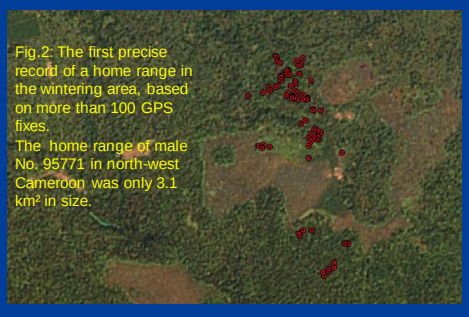

Fig.2: The first precise record of a home range in the wintering area, based on more than 100 GPS fixes.
The home range of male No. 95771 in north-west Cameroon was only 3.1 km² in size.

Fig. 3: One of the male Honey Buzzards tracked.
Photo: B.-U. Meyburg

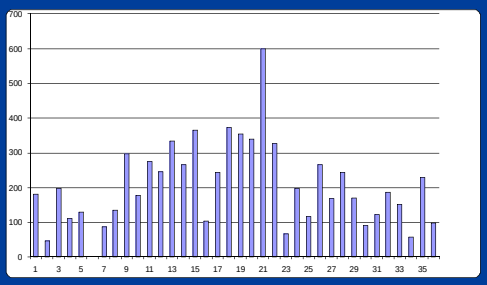

Fig. 4: The daily flight distances, up to a maximum of 600 km, covered by male No. 95771 on autumn migration 2009.

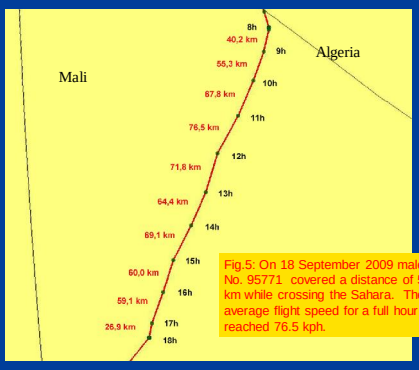

Fig.5: On 18 September 2009 male No. 95771 covered a distance of 591 km while crossing the Sahara. The average flight speed for a full hour reached 76.5 kph.

Fig. 6: The second longest route: male No. 57029 migrated over the Equator as far as Gabon.

A few details:
Migration dates 25 August to 10 October 2006

Crossing of the Pyrenees on the morning of 5 September.
Crossing of the Straits of Gibraltar on 8 September (approx. 10:00 am)

Wintering

In so far as the birds could be tracked as far as their wintering area, four Honey Buzzards spent the winter in Nigeria and one each in Gabon, Guinea, Cameroon, the Congo and Liberia. Male No. 52033 wintered furthest south (2°22'S/ 12°42') in Congo (Brazzaville). Of the birds that were tracked more than once as far as their winter quarters it was established that they returned to the same areas. The home range size in the wintering area was determined for the first time with the assistance of GPS telemetry (see Fig. 2).

Behaviour in the breeding area

The main diet is the larva of ground-dwelling wasps. They build their nests above all in woodland, but also in countryside border structures (hedges, woodland fringes, waysides etc.), and to a lesser extent in open areas. The GPS fixes were accurate enough to enable the dug-out wasps' nest to be found in some cases.

The core area of foraging can change in the course of the breeding season. Male No. 95770 for instance daily sought out a piece of woodland 17 ha in size from 12 to 25 August 2009 but in the preceding period from 19 July to 11 August not at all. We found three exploited wasps' nests there.

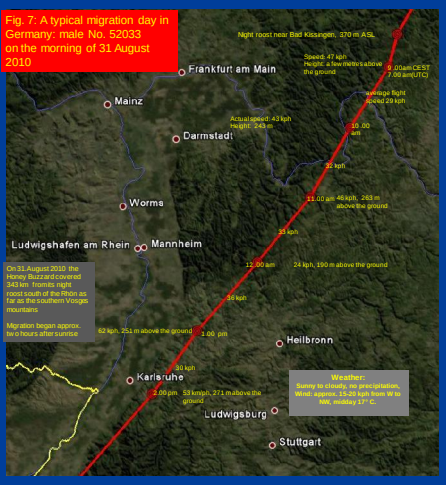

Fig. 7: A typical migration day in Germany: male No. 52033 on the morning of 31 August 2010

Fig. 8: 643 GPS fixes of male No. 95771 in the breeding area in Schleswig-Holstein (northern Germany) in summer 2009. Home range size: 17.4 km² (MCP 95%), 8 km² (MCP 80%), maximum recorded distance from nest 5 km.

Fig. 9: Male No. 95770 on the town limits of Plön (Schleswig-Holstein, northern Germany) provided 461 GPS fixes in the summer 2009. Home range size 12.3 km² (MCP 95%), maximum recorded distance from nest 6.2 km. The map shows night roosts (red), wasp nests found (yellow) as well as the boundary of the MCP at 100 %, 95 % and 80 %. Half of the night roosts were within a radius of a maximum of 250 m from the nest, the remainder further afield - as far as 3.4 km distant.

The birds sometimes spent the night in their foraging areas in close proximity to the wasps' nests found (Fig. 9), which had probably not yet been completely exploited.
The home ranges of neighbouring pairs overlap to a great extent and aerial territorial conflicts are common. They help patient observers to determine the distribution of territories (Ziesemer 1997).

Literatur

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