DIE VOGELWARTE

Band 35 Heft 3 Juni 1990

Die Vogelwarte 35, 1989: 165–168

High body masses of migrating Wrynecks *Jynx torquilla* in southern Sweden*

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Abstract. HEDENSTRÖM, A. and Å. LINDSTRÖM (1990): High body masses of migrating Wrynecks *Jynx torquilla* in southern Sweden. – Vogelwarte 35: 165–168.

We have studied body masses and visual fat depots of Wrynecks *(Jynx torquilla)* at stopover sites in South Sweden. Most of the birds were trapped at Ottenby Bird Observatory. Especially in autumn some birds were very fat and estimated average fat depots were higher than the average for passerines in similar migratory conditions. The large fat depots, together with the recovery pattern of Swedish ringed Wrynecks, indicate that individuals of this species migrate over the European continent in one or only a few long flights.

Keywords: Wryneck, migration, body mass, fat

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1. Introduction

Wrynecks *(Jynx torquilla)* breeding in central and northern Europe most likely spend the winter in Africa south of the Sahara (MOREAU 1972, GLUTZ & BAUER 1980, CRAMP 1985). The crossing of Sahara demands large fat reserves as fuel and accordingly some very fat Wrynecks have been trapped prior to migration across the desert (SMITH 1966, BAIRLEIN 1988).

However, there are indications of Wrynecks possessing large fat reserves also without being close to migration over ecological barriers (e. g. GLUTZ & BAUER 1980). In this paper we present data on body mass and fat reserves of Wrynecks from southern Sweden and discuss the migration strategy of this species.

2. Study sites and methods

The Wrynecks of this study were caught at four different localities in southern Sweden. Most of the birds were trapped in 1984–1988 within the standardized ringing routines at Ottenby Bird Observatory (56°12' N, 16°24' E), on the southernmost point of the island of Öland in southeastern Sweden. More information about the locality and the trapping efforts can be found in HANSSON & PETTERSSON (1989). At this site, Wrynecks occur regularly both in spring and autumn. Median dates for Wrynecks trapped at Ottenby in 1950–1984 is 7 May in spring (N = 419) and 26 August in autumn (N = 254, ENQUIST & PETTERSSON 1986). Birds trapped in the small exposed garden of the bird observatory will be referred to as "garden" birds. In the autumns of 1985 and 1986 we also carried out daily trapping (from 10 July to 20 August) at two other localities, two and five km north of the bird observatory garden, respectively. These two localities are characterized by meadows with interspersed bushes and smaller trees in close vicinity to the Ottenby lund – a luxurious oak *(Quercus robur)* forest. Further, two birds trapped 23 an 26 August 1985 in a similarly vegetated area near Vitemölla (55°42' N, 14°12' E), NE Scania, have been included. We will refer to the three latter localities as "inland".

* Contribution no. 124 from Ottenby Bird Observatory

Ageing was based on eye colour and plumage characters (CRAMP 1985). For each bird the visual amount of fat was scored from 0 to 6 using the method of PETTERSSON & HASSELQUIST (1985). A bird in fat class 0 has no visual fat and a bird in fat class 6 is very fat. Birds were weighed on a Pesola spring balance and their body mass estimated to the nearest 0.1 g.

Acknowledgements: We are grateful to the staff of Ottenby Bird Observatory for collecting most of the data. We also thank Jan Pettersson for comments on an earlier draft of the manuscript. This study was supported by funds from Axel Bucht's Ottenby Foundation. Research on bird migration at Ottenby Bird Observatory is supported by grants from the National Swedish Environmental Protection Board (SNV/PMK).

Table 1: Average body mass and fat scores (see text) of Wrynecks trapped in southern Sweden 1984–1988. Age symbols as follows: 1y = a bird in its first calendar year; 2y = second calendar year; 2y+ = second calender year or older; 3y+ = third calendar year or older.

Season	Age	Body mass (g) ± SD	Range	Fat score	Range	N
Autumn	2y+	36.4±5.4	31.2—44.8	4.0±1.9	1—6	9
	1y	38.0±3.2	31.8—45.0	4.3±1.8	0—6	19
	All	37.5±4.0	31.2—45.0	4.2±1.8	0—6	28
Spring	3y+	35.5±4.8	31.9—45.5	3.4±1.7	1—6	9
	2y	34.0±2.9	28.6—40.2	3.0±1.5	1—6	22
	All[1]	34.1±3.4	28.6—45.5	3.0±1.8	0—6	40

[1] including 9 unaged birds

3. Results

Wrynecks seem to live a very secretive life during the period of fat deposition. At the inland localities, we only saw Wrynecks in the area when they were trapped and they were almost always trapped in the lowest shelf of the net. At Vitemölla, both birds were caught in small mealworm-baited dap-nets on the ground. These observations correspond well to the information given by CRAMP (1985) that Wrynecks very often feed on the ground.

In autumn, altogether 28 Wrynecks were weighed and classified for subcutaneous fat depots (Table 1). Twelve birds were trapped at the inland localities (10 at Ottenby and 2 at Vitemölla) between 11 and 26 August. Sixteen birds were trapped in the bird observatory garden between 15 and 29 August.

Pooling data from all localities, juveniles were heavier and fatter than adults, but not significantly ($P>0.05$, t-tests for both body mass and fat). When both age groups were pooled, inland birds were heavier and fatter than coastal birds (38.9±3.4 g (SD) vs. 36.4±4.3 g and for fat 4.9±1.1 vs. 3.6±2.0), but not significantly ($P>0.05$, for both). None of the inland birds, but six birds trapped in the garden, had a fat score lower than 3. The mean body mass of the 25% heaviest autumn birds was 42.8±1.8 g (n = 7). We have no information on fat deposition rates as none of the birds were retrapped.

In spring, 40 Wrynecks were ringed and examined in the bird observatory garden 23 April – 17 May (Table 1). There was no significant difference in body mass of fat score between the age groups ($P>0.05$, for both). The average body mass of the spring birds, all ages pooled, was significantly lower than in autumn ($P<0.001$, t-test). The mean body mass of the 25% heaviest birds was 38.6±3.1 g (n = 10).

4. Discussion

ALERSTAM & LINDSTRÖM (1990) compared the fat levels of a sample of tropical wintering passerines on migration over areas without obvious ecological barriers (e. g. the European

continent). Assuming that the weights of the 25% heaviest birds in a sample reflect the normal departure weights, they found a median fat level of 24% (fat as % of lean body mass). Though the Wryneck is a Piciform species we believe it to be most natural to compare its migration ecology with passerines. Four Wrynecks in fat class 0 at Ottenby had an average body mass of 31.0 g. If we assume this to be a representative lean body mass, the 25% heaviest autumn birds had an extra mass (presumably most of which is fat) corresponding to 38% of their lean body mass. Obviously, Wrynecks carry comparatively large fat reserves when departing from southern Sweden in autumn.

Recoveries from outside Sweden of Swedish ringed Wrynecks are distributed from Portugal in the west to Italy in the east (Swedish Bird Ringing Centre 1989). The nearest autumn recovery is from southern Germany, 725 km south of Sweden. The other 19 autumn recoveries are from southern Europe and North Africa, none of them closer than 1000 km from Sweden. This absence of autumn recoveries from northern Europe gives further indications that Wrynecks put up large fat reserves in southern Sweden and use this fat for a first long flight southwards over Europe.

In spring, the fat levels of the 25% heaviest birds correspond to about 25% of fat, similar to the median fat levels of passerines listed by Alerstam & Lindström (1990). The lower fat levels in spring do not exclude that Wrynecks use a similar strategy to that in autumn. The spring birds trapped at Ottenby may have covered a longer distance than the autumn birds before being trapped. The pattern of spring recoveries south of Sweden is completely different from that in the autumn (Swedish Bird Ringing Centre 1989). The six spring recoveries are reported from Central Europe up to Denmark, with a total lack of recoveries from the Mediterranean area. This indicates that Wrynecks make long flights also in spring. Further, the heaviest of all Wrynecks at Ottenby (45.5 g) was caught in spring.

Body mass data of Wrynecks are reported from other localities along the migration route between Europe and tropical Africa. Interestingly, the mean body mass of 15 Wrynecks trapped in autumn in northern Algeria, probably birds bound for southward passage over the Sahara, was lower than the autumn birds from Sweden (34.8±5.4 g, range 28.8–48.7 g, n = 15, Bairlein 1988). However, the maximum body mass recorded by Bairlein (1988), 48.7 g, and two spring birds from Nigeria weighing 45.5 and 52.5 g (Smith 1966) are above the range of the Swedish birds. After the Sahara passage in spring, both Ash (1969) and Erard & Larigauderie (1972) found average body masses close to, or even lower than, our estimate of lean body mass, reporting 27.7 g (range 23.1–32.0 g, n = 41) and 30.5 g (range 26.5–37.0 g, n = 9), respectively.

Besides in connection with trans-Saharan flights, heavy birds have been reported also from northern Europe. Glutz & Bauer (1980) give an average mass of 38.3 g (range 33.5–47.3 g, n = 25; spring and autumn combined) at Helgoland, northern Germany, and ten birds from southern England had an average body mass of 37.1 g (range 27.5–46.7 g; spring and autumn combined, Ferguson-Lees 1966).

In conclusion, migrating Wrynecks seem to carry on average more fat than many passerines when passing the European continent. Possibly they also carry out their migration in only one or a few long flights. However, the ecological significance of this migratory behaviour reamins to be clarified.

5. References

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