

## Sex and age composition during autumn migration of Pygmy Owl *Glaucidium passerinum* in Central Sweden in 2005

*Köns- och åldersfördelning hos höstflyttande sparvugglor Glaucidium passerinum i mellersta Sverige 2005*

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### Abstract

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During an invasion in 2005, 164 Pygmy Owls were trapped and ringed at Hammarö Bird Observatory on the north coast of lake Vänern between 28 August and 31 October using play-back of territorial male calls. The most intensive migration was recorded in the third decade of September. Eighty percent of the owls were females. There was no difference in the timing of migration of males and females. More than eighty percent were yearlings, and they were migrating earlier than adults. Most Pygmy Owls were trapped at dawn, but some also in the evening, at night and during the day. Two recoveries were received, an immature bird controlled 123 km to the west in the same autumn and another immature individual from Nordre Osen, Hedmark, Norway in March

2008 (247 km to NNW). Twelve re-traps were made at the ringing site, each bird only once and on average one week after ringing with the longest staying bird controlled 22 days after ringing. The paper also shows photographs demonstrating the different wing patterns of yearling and adults.

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### Introduction

The Pygmy Owl is the smallest European owl (Mikkola 1983) with breeding populations inhabiting mostly the northern and north-eastern part of its European range (Cramp 1985). The most numerous breeding populations exist in Russia (10.000–100.000 pairs), Sweden (12.000–16.000 p.) and Finland (8.000–13.000 p.) (Mikkola 1997, Mikusek 2004).

This species is active mainly at dawn and dusk, while less active during the night (Mikusek 2004). Pygmy Owls are mostly resident, but in periods of low prey availability they can migrate long distances (Mikusek 2004). Some individuals disperse after breeding to search for breeding partners or for areas rich in food. Some of them probably cross the Baltic Sea (Mikusek 2006). Males are more sedentary than females.

The main aim of this note is to describe some aspects of Pygmy Owl migration in Sweden, particularly migration dynamics and phenology, including possible age and sex differences.

### Study area and methods

Pygmy Owls were trapped and ringed at Hammarö Bird Observatory on the north coast of Lake Vänern in 2005 (Ehrenroth 2005). Birds were caught in mist nets using tape lures (typical territorial male songs and calls) in the period 15 September to 31 October.

The most intensive migration period of Pygmy Owls was 15 September–15 October within the study area (Ehrenroth 1978, 2004). Loudspeakers were placed close to the nets, which were checked every 15 minutes between the hours 5.00 and 7.00 in the morning. The owls were trapped in the ecotone between forest and a bushy area and only in good weather (without rain or snow, during high pressure and low or no wind). Birds were also trapped in the evening (from half an hour before sunset) and at night if the weather was very good (high pressure, no wind, full moon). Statistics were performed using SPSS 12.0 PL for Windows statistical package.



Figure 1. Differences between wings of immature (upper) and adult (lower) Pygmy Owls.  
Photo: Michał Polakowski.  
*Skillnader mellan vingar av juvenil (övre) och adult (nedre) sparvuggla.*

## Ageing and sexing in Pygmy Owl

Juvenile Pygmy Owls (=1CY) undergo a post-breeding partial moult (=sp) in July–October, whereas adults (=2CY+) show a complete moult (=SC) in the same period (Cramp 1985). First year birds do not moult the outermost greater coverts (=GC) but only a variable number of the innermost ones. This leads to a contrast between the two feather generations, which was easily visible in the field (Figure 1, upper photo).

Some juvenile owls moulted most of the GC and left only 1–2 feathers unmoulted. The number of unmoulted GC among the ringed birds ranged between 0 and 14, median value = 5.69. Also the Primaries (PP) and Secondaries (SS) differed between the juveniles and adults. The juvenile birds had brownish feathers without grey colour (Figure 1). The white spots on the tips of the PP and SS of the juveniles had less contrast compared with the adults which had more whitish tips (Figure 1). The bases of the juvenile feathers were more brownish than greyish and also darker than the adult ones. The stage of moult was very helpful for ageing until October. Many adults did not finish SC and it was still possible to see incomplete growth of the innermost SS or the outermost PP.

Sexing of trapped birds was made from wing length (Cramp 1985). Wings of females are longer (>101 mm), males shorter (<100 mm). We used these measurements during this study.

## Results and discussion

During the whole autumn migration season of 2005, between 28 August and 31 October, 164 Pygmy Owls were ringed (2.5 birds/day). The early date of the first individual on 28 August suggests that this first year bird belonged to a local population. The main migration period began on 9 September and finished on 31 October.

Pygmy Owls were migrating almost every day from the first week of September through mid October. The most intensive migration was recorded in the third decade

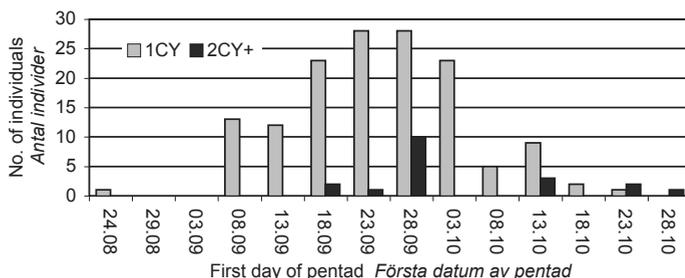


Figure 2. Migration dynamics of immature (1CY) and adult (2CY+) Pygmy Owls at Hammarö Bird Observatory during autumn 2005.

*Flytningens tidsmönster hos unga (1CY) och gamla (2CY+) sparvugglor vid Hammarö fågelstation hösten 2005.*

of September when 48% of the birds were caught. The maximum was on 22 September, when 15 Pygmy Owls were ringed. First year birds started their migration in the first decade of September, while 2CY+ started 11 days later (Figure 2). The peak of migration for 1CY birds was on 26 September, while 2CY+ birds peaked on 7 October. The last bird was a 2CY+ trapped on 31 October (Figure 1). 1CY Pygmy Owls were finishing their main migration earlier and already during the first decade of October, their numbers fell rapidly.

The Pygmy Owl autumn migration at Hammarö Bird Observatory in 2005 was similar to that recorded here in the latest years (Ehrenroth 2004) but migration in 2005 started slightly earlier with clear peak in the third decade of September. According to Ehrenroth (2004) migration of this species during 1970–2003 showed the peak at the end of September and beginning of October. However, during all

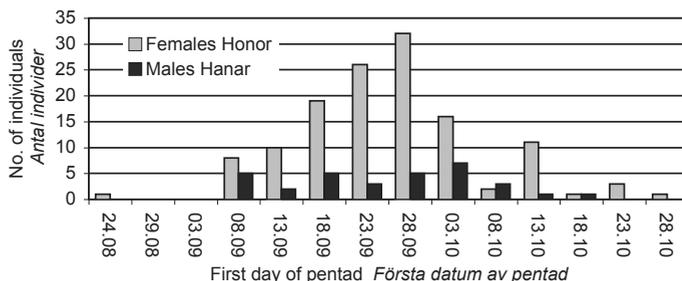


Figure 3. Migration dynamics of female and male Pygmy Owls at Hammarö Bird Observatory during autumn 2005.

*Flytningens tidsmönster hos honor och hanar av sparvuggla vid Hammarö fågelstation hösten 2005.*

Table 1. Differences in wing lengths (mm) of the trapped Pygmy Owls.

*Skillnader i vinglängd (mm) hos de fångade sparvugglorna.*

	Range Intervall	Average Medelvärde
1CY årsunge	93–112	104.6
2CY+ adulta	101–110	105.5
Females Honor	101–112	106.1
Males Hanar	93–100	98.4

autumn migration most of the birds were migrating between mid September and mid October.

#### *Sex and age-structure of Pygmy Owls*

A majority (80%) of 162 sexed birds were females. There was no difference in timing of migration between the sexes (Figure 3;  $U = 35.5$ ,  $Z = -1.327$ ,  $p = 0.184$ ). The ranges of wing lengths (Table 1) were wider than described by Cramp (1985). Sex structure of migrated Pygmy Owl's is very little known and demands more study (Cramp 1985). 1CY Pygmy Owls were migrating earlier than 2CY+ ( $r = 0.194$ ,  $p = 0.012$ ,  $N = 164$ ). Wing length of adult Pygmy Owls was more than 1 mm longer than that of 1CY birds (Table 1). This difference was not significant ( $U = 984.000$ ,  $Z = -1.405$ ,  $p = 0.160$ ). It could be an effect of small numbers of adults ringed during autumn 2005 at Hammarö Bird Observatory.

#### *Recovery and re-traps*

We received only one recovery in the same autumn from the Pygmy Owls ringed at Hammarö Bird Observatory in 2005. It was an immature bird, controlled at Strömstad (59.04 N, 11.22 E) on the western coast of Sweden 123 km W of the ringing site. This information suggests that at least some of those ringed during autumn 2005 spent the winter in Sweden and did not move further. There were 12 re-traps during the study period at the site. They were re-trapped only once and stayed a short time (average 6.6 days). However, two birds were controlled longer after ringing (12, 16 and 22 days later). They were first year individuals. Some of the longest-staying Pygmy Owls used a feeding area

near Hammarö Bird Observatory to prey on passerines there, during the day.

A second recovery, also one of the birds ringed as immature, was made in March 2008 at Nordre Osen, Hedmark, Norway (247 km to NNW).

#### *Selected aspects of Pygmy Owl's autumn migration in 2005*

Most of the 163 Pygmy Owls were trapped at dawn (140, 86%). Some individuals were caught in the evening (15 individuals, 9%), only 3 (2%) at night (in full moon weather condition) and 5 (3%) during the day.

The majority of Pygmy Owls ringed during the migration of 1978 were also trapped at dawn (more than 53%). A larger proportion than in 2005 was trapped at dusk (>7%) and late at night (>13%) (Ehrenroth 1978). In 1978, only slightly more than 20% of the individuals were trapped using tape lures (Ehrenroth 1978).

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## Sammanfattning

Sparvugglor är mestadels stationära, särskilt hanarna. Men vid födobrist kan de flytta långa sträckor. I denna uppsats beskriver vi en flyttningshöst vid Hammarö fågelstation 2005, då ett stort antal sparvugglor fångades och ringmärktes samt bestämdes till kön och ålder. Sparvugglorna fångades i spegelnät med hjälp av bandspelare med sparvugglesång och andra läten under september och oktober.

Årsungar av sparvuggla genomgår en partiell ruggning i juli–oktober, medan adulta ugglor ruggar fullständigt under samma period. Ungfåglarna ruggar inte de yttre större täckarna utan bara ett varierande antal av de inre. Detta leder till en kontrast mellan de två fjädergenerationerna, en ålderskaraktär som var lätt att urskilja i fält (Figur 1, övre fotot). Även hand- och armpennorna var olika hos unga och gamla individer. Ungfåglarnas pennor var brunaktiga utan grått och de ljusa fläckarna i spetsen av hand- och armpennorna var vitare och mera kontrasterande hos de gamla än hos de unga (Figur 1). Ruggningsstadiet var till hjälp vid åldersbestämningen ända till oktober eftersom många aduler ännu inte hade rugga färdigt.

Ugglorna könsbestämdes med hjälp av vinglängden (Tabell 1). Fåglar som hade en vinge som var längre än 101 mm ansågs vara honor och fåglar som hade en vinge som var kortare än 100 mm ansågs vara hanar.

Vi fångade totalt 164 sparvugglor mellan 28 au-

gusti och 31 oktober (Figur 2). Den första tidiga individen den 28 augusti var antagligen en lokal fågel. Flyttande ugglor började uppträda den 9 september. Flyttningen pågick nästan varje dag, men den intensivaste perioden var sista tredjedelen av september då 48 procent av ugglorna fångades. Toppen nåddes den 22 september, då 15 sparvugglor fångades. Ungfåglarna startade flyttningen elva dagar före de adulta. Ungfåglarnas topp inföll 26 september och de gamlas topp 7 oktober. Den sista fågeln var en adult den 31 oktober. Ungfåglarnas flyttning minskade kraftigt redan i början av oktober. Flyttningsmönstret 2005 liknade det som registrerats vid Hammarö tidigare år.

En majoritet av de flyttande sparvugglorna var honor (Figur 3). Det fanns ingen tidsskillnad i sträckets förlopp mellan könen.

Vi fick bara ett längre återfynd samma höst. Det var en ungfågel som kontrollerades vid Strömstad 123 km väster om märkplatsen. På märkplatsen fick vi 12 kontroller, bara en gång av varje fågel och vanligen bara ett fåtal dagar efter märkningen. Den längsta tiden mellan märkning och kontroll var 22 dagar. Ytterligare ett långåterfynd erhöles i mars 2008. Fågeln hade märkts som årsunge och återfanns i Nordre Osen, Hedmark i Norge, 247 km åt NNV.

De flesta av de 163 sparvugglorna efter den första fångades i gryningen (86%), de flesta av de övriga i skymningen och bara ett fåtal under natten eller dagen.