

Literature

- ARNOLD, M. L., & S. A. HODGES (1995): Are natural hybrids fit or unfit relative to their parents? *TREE* 2: 267–266.
- CORDERO, P. J. (1990): Phenotypes of juvenile offspring of a mixed pair consisting of a male House Sparrow and a female Tree Sparrow *Passer* spp. *Ornis Fennica* 67: 52–56. • Ditto & J. D. SUMMERS-SMITH (1993): Hybridisation between House and Tree Sparrow (*Passer domesticus*, *P. montanus*). *J. Orn.* 134: 69–77.
- GJERSHAUG, J. O., P. G. THINGSTAD, S. ELDOY & S. BYRKJELAND (1994): Norsk Fugleatlas, Hekkefuglenes utbredelse og bestandsstatus i Norge. NOF/NINA. • GRANT, P. R., & B. R. (1992): Hybridization of bird species. *Science* 256: 193–197.
- SUMMERS-SMITH, J. D. (1988): The sparrows: a study of the genus *Passer*. Calton. • Ditto (1995): The Tree Sparrow. Guisborough.

Mate Fidelity in Chiffchaff *Phylloscopus collybita*

Pavel Brandl

BRANDL, P. (1996): Mate fidelity in Chiffchaff *Phylloscopus collybita*. *J. Orn.* 137: 528–531. — Two cases of year-to-year mate fidelity in Chiffchaff occurred in the subpopulation of 6 males and their females in a region of South Bohemia. The first nesting of both females failed in the first season. One of them was secondary female in the first season. Both pairs renested in a new territory in the second season. The nesting of both of them was successful in this season. This is probably the first record of remating between seasons in this species.

Inst. of Ecological and Systematic Biology, University of South Bohemia, Branišovská St. 31, CZ-37005 České Budějovice.

Chiffchaff is considered a facultatively polygynous, monoterritorial warbler (MØLLER 1986, CRAMP 1992). Although there were observations of the same partners breeding repeatedly together within the same season (SCHÖNFELD 1978), Chiffchaff was not considered to maintain a long lasting pair bond. This suggestion is supported by its reproductive strategy — males obviously do not participate in nest building, incubation and the feeding of young. This strategy allows them to desert the primary female and search for another one. Polygynous males were recorded in studies made in Poland (WESOŁOWSKI 1987), Germany (SCHÖNFELD 1978) and in the Czech Republic (BRANDL 1994).

Material and methods

Observations were made in the earlier flood-plain along the now regulated Vltava River in South Bohemia during the study of foraging patterns of *Phylloscopus* warblers. The study area was covered by two types of vegetation: (1) hedgerows dominated by willows (*Salix cinerea*, *S. caprea*, and *S. fragilis*) and (2) a narrow belt of poplars (*Populus alba*) and young willows (*S. caprea* and *S. cinerea*). The whole area was isolated by large meadows and by the river from

other suitable warbler habitat. Observations were made during the years 1992 and 1993. The study area was inhabited by 6 males and 8 females in 1992 and by 6 males and 9 females in 1993. All 6 males and 6 out of 8 females were colour-ringed in 1992 and 3 new males and 2 new females were colour-ringed in 1993. Nests of 6 females were found each year. Data of nest building or feeding of the young were recorded to find the mating status of females of polygynous males (primary, secondary or tertiary). Period of field work did not include the period of the second breeding.

Results

In the 1993, 3 males (MK, MJ, MG) and 2 females (K2, J1), ringed during the breeding season of 1992, came back to the area. Both females remated with their previous mates. Both pairs did not re-nest in the same territory as they held in the 1992.

Female no. K2 was the secondary female of male MK in the season of 1992. Breeding of female K2 was delayed by 16 days in comparison with the primary female (K1). There was strong aggression of the primary female towards female K2 (with a maximum of 49 chases during 15 minutes) during the period before nest building and before incubation. The nesting of both females failed in the season of 1992 due to the nest predation (Table 1). In the season of 1993, the female K2 was the primary female of the same male (MK). This male paired with three females during this season (K2, K3, K4). All of them reared their young successfully (Table 2).

Tab. 1. Chiffchaff mate fidelity, data of major events during the breeding season 1992. All females but K1 had been colour-ringed.

| Event | Female/Date | | |
|----------------------|---------------|------------|--------------|
| | K1 | K2 | J1 |
| 1st. record | 12.—15. 4. | 12.—15. 4. | 11. 4. |
| Nest building | 30. 4.—3. 5. | 16. 5. | 1. 5. |
| Nest destroyed | before 27. 5. | 8. 6. | ? |
| Comp. nesting | ? | ? | 28. 5.—2. 7. |
| Feeding of comp | — | — | from 18. 6. |
| No. of eggs | ? | 5 | 5 |
| No. of young fledged | 0 | 0 | 5 |
| Male | MK | MK | MJ |

Female no. J1 paired in the season of 1992 with a monogamous male (MJ). The first nesting of the female failed this season. Compensatory nesting with the same male was successful (Table 1). This male (MJ) became bigamous in 1993. The female J1 was his primary female. Her nesting history was similar to what it was in 1992. Her first nesting was unsuccessful, but the compensatory nesting with the same male was successful. The secondary female (J2) did not start nesting during the period of observation (Table 2).

There was no marked difference in the number of eggs produced by females K2 and J1 and other females. The number of raised offspring was a little bit smaller in these remated females than in other females (5 and 4 versus 6, 5, 5 and 5), but it could have probably been influenced by the manipulation with the nestlings during the study.

Tab. 2. Chiffchaff mate fidelity, data of major events during the breeding season 1993. Females K2, K4 and J1 had been colour-ringed.

| Event | Female/Date | | | | |
|--------------------------|-------------|-------------|------------|----------------|---------------------|
| | K2 | K3 | K4 | J1 | J2 |
| Feeding of the 1st brood | from 21. 5. | from 28. 5. | from 9. 6. | — | no breeding attempt |
| Nest destroyed | — | — | — | ? | attempt |
| Compensatory nesting | — | — | — | from 5.—10. 5. | — |
| Feeding of comp. brood | — | — | — | from 28. 5. | — |
| No of eggs | 6 | 6 | ? | 5 | — |
| No. of young fledged | 5 | 6 | ? | 4 | — |
| Male | MK | MK | MK | MJ | MJ |

Discussion

There is no published evidence of long term pair bonds of Chiffchaff in previous studies. During the years 1974—1976, SCHÖNFELD (1978) observed remating within a season in 6 pairs out of 24, but no remating in following years. Prolonged duration of the pair bond in this species with a loose partnership during nesting was not expected by CRAMP (1992).

The case of remating of the secondary, unsuccessfully nesting female (K2) with the same polygynous male was very remarkable. The unsuccessfully nesting females of the Willow Tit (*Parus montanus*) often divorce and pair with another male (ORELL et al. 1994). Secondary females of other species of small passerines with male parental care obtain little or no portion of this care (JOHNSON & KERMOTT 1993, URANO 1994, GJERSHAUG et al. 1989, KEMPENAERS 1995). Females of such species reject to pair with polygynous males (BENSCH & HASSELQUIST 1992, ALATALO et al. 1981, DALE & SLAGSVOLD 1994). On the contrary, the remating of the secondary Chiffchaff female with the same male correspond to the reproductive strategy of this species. In Chiffchaff secondary females do not suffer (WESOLOWSKI 1987), because male parental care is only minor (SCHÖNFELD 1978, CRAMP 1992).

Two cases of year-to-year mate fidelity were recorded in the Willow Warbler (*Phylloscopus trochilus*) in Great Britain. This is the only other European *Phylloscopus* warbler with known occurrence of a long lasting pair bond. Among other European Sylviidae, mate fidelity regularly occurs in some reed warblers (*Acrocephalus arundinaceus*, *A. scirpaceus*, *Cettia cetti*) and also in non-migratory *Sylvia* warblers (*S. sarda*, *S. undata*; CRAMP 1992).

Zusammenfassung

Zwei Fälle von Partnertreue im Folgejahr wurden bei farbmarkierten *Phylloscopus collybita* in S-Böhmen nachgewiesen. In beiden Fällen hatten die Weibchen 1992 ihre Brut durch Nestraub verloren. Ein Weibchen war sogar nur Zweitweibchen seines Partners gewesen. Trotzdem waren beide 1993 mit denselben Partnern verpaart, allerdings in neuen Territorien. Beide zogen 1993 ihre Brut erfolgreich auf. Dies ist der erste Nachweis für Partnertreue im Folgejahr beim Zilpzalp.

Literature

ALATALO, R. V., A. CARLSON, A. LUNDBERG, S. ULFSTRAND (1981): The conflict between male polygamy and female monogamy: the case of the pied flycatcher, *Ficedula hypoleuca*. *Am. Nat.* 117: 738–753.

BENSCH, S., & D. HASSELQUIST (1992): Evidence for active female choice in a polygynous warbler. *Anim. Behav.* 44: 301–331. • BRANDL, P. (1994): Potravní ekologie budníčka menšího a budníčka většího. [Foraging ecology of chiffchaff and willow warbler]. M. Sc. Thesis. 163 p., Charles Univ., Praha.

CRAMP, S. (1992): Handbook of the birds of Europe and the Middle East and North Africa. Vol. VI. Oxford.

DALE, S., & T. SLAGSVOLD (1994): Polygyny and deception in the pied flycatcher: can females determine male mating status? *Anim. Behav.* 48: 1207–1217.

GJERSHAUG, J. O., T. JÄRVI, & E. RÖSKAFT (1989): Marriage entrapment by “solitary” mothers: a study on male deception by female pied flycatcher. *Am. Nat.* 133: 273–276.

JOHNSON, L. S., & L. H. KERMOTT (1993): Why is reduced parental assistance detrimental to the reproductive success of secondary female house wrens? *Anim. Behav.* 46: 1111–1120.

KEMPENAERS, B. (1995): Polygyny in the blue tit: intra- and inter-sexual conflicts. *Anim. Behav.* 49: 1047–1064.

MØLLER, A. P. (1986): Mating systems among European passerines: a review. *Ibis* 128: 234–250.

ORELL, M., S. RYTKÖNEN & K. KOIVULA (1994): Causes of divorce of monogamous Willow tit, *Parus montanus*, and consequences for reproductive success. *Anim. Behav.* 48: 1143–1154.

SCHÖNFELD, M. (1978): Der Weidenlaubsänger *Phylloscopus collybita*. N. Brehm-Büch. 511. Wittenberg Lutherstadt.

URANO, E. (1994): Polygyny in great reed warblers of northern Japan: an effect of a cool climate? *J. Orn.* 135, suppl.: 130.

WESOŁOWSKI, T. (1987): Polygyny in three temperate forest passerines (with a critical reevaluation of hypothesis for the evolution of polygyny). *Acta Orn.* 23: 273–302.