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A successful mixed breeding between *Parus cinctus* and *Parus montanus* in Finnish Lapland

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In 1987 a female Siberian Tit *Parus cinctus* paired with a male Siberian Tit and a male Willow Tit *Parus montanus* at Kilpisjärvi (69°03'N, 20°50'E), NW Finnish Lapland. The three birds were captured and measured in the vicinity of the nest. The female was born in the area in 1983 and bred there in 1984–86. The males were of unknown age. A Willow Tit female was never seen in the neighbourhood.

The nest was in a box, near a wet mountain birch forest. The nest-box (entrance diameter 40 mm) was erected in 1969 (new box 1986), and was occupied for four years by the Siberian Tit, for two years by the Redstart *Phoenicurus phoenicurus* and for one year by the Pied Flycatcher *Ficedula hypoleuca*. The Willow Tit, which uses nest-boxes at Kilpisjärvi less willingly than the Siberian Tit (Järvinen 1982), has not bred in any boxes nearby, but observations of permanent pairs indicate that it has sometimes bred in rare, natural cavities. The density of both the Siberian Tit and the Willow Tit is low at Kilpisjärvi (<1 pair/km²; Järvinen 1982).

The first of the nine eggs was laid 21 May (mean for 25 Siberian Tit nests 25 May ±10 days (SD), and for 5 Willow Tit nests 27 May ±6 days in 1966–80; Järvinen 1983). All the eggs hatched and seven young fledged. The nest was visited ten times between 21 May and 2 July, and both males usually came to the nest to give warning. The Willow Tit male was seen six times at the nest and the Siberian Tit five times. The Willow Tit male often chased the Siberian Tit male away from the nest. Both males and the Siberian Tit female fed the young approximately equally frequently.

Of the seven young that fledged, six were brown-headed and of the Siberian Tit type, whereas one was black-headed and of the Willow Tit type. There were no visible intermediate plumage characters in the full-grown nestlings. The black-headed young fledged at least a day before the brown-headed young (nestling period about 19 days for the Siberian Tit and about 17–19 days for the Willow Tit; Järvinen 1982, v. Haartman et al. 1967–72, Haftorn 1971). After the black-headed young fledged, the Willow Tit male continued to feed the brown-headed young in the nest-box (the black-headed young flew around the nest during this time).

Recently, mixed pairs of the Siberian Tit and the Willow Tit have been observed in northern Finland. In 1984 a female Willow Tit paired with a male Siberian Tit at Kilpisjärvi, but the two-egg clutch was abandoned probably due to a lack of communication between the parents (Järvinen et al. 1985). Also, in 1984, a female Siberian Tit paired with a male Willow Tit in Kuusamo. In this nest only one egg was laid, and the young died at the age of 6–7 days (Hildén & Ketola 1985). In autumn 1986 several hybrids obviously of the Siberian Tit and the Willow Tit were captured at northern Finnish bird observatories (Hildén & Nikander 1987).

The present case is exceptional in two respects: 1) there were three parents involved in the mixed nesting, and 2) unlike the earlier reported cases, the nest contained a usual number of eggs and most young fledged successfully. Disturbances probably did not occur in the breeding performance because the Siberian Tit female was accompanied by the Siberian Tit male. Because the density of both these closely related tit species is so low at Kilpisjärvi, it may facilitate mixed nesting. Possibly the lack of a conspecific partner was the cause of hybridization (cf. Löhrl 1987). There was no lack of suitable nest-sites, since numerous empty boxes were available in the area.

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Selostus: **Lapin- ja hömötiaisen onnistunut sekapesintä Kilpisjärvellä**

Kesällä 1987 yhden lapintiaisnaaraan todettiin Kilpisjärvellä pariutuneen samanaikaisesti sekä lapintiais- että hömötiaiskoiraan kanssa. Ensimmäinen yhdeksästä munasta

munittiin 21. toukokuuta. Kaikki munat kuoriutuivat ja seitsemän poikasta lähti pöntöstä lentoon. Kaikki emot ruokkivat innokkaasti poikasia, joista kuusi oli ruskeapäisiä lapintiaistyyppisiä ja yksi mustapäinen hömötiaistyyppinen.

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Statistical methods used in Ornis Fennica

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Statistics is an essential part of today's ornithological literature. Investigations have become increasingly quantitative. Objective analysis and interpretation of data and evaluation of the reliability of conclusions is difficult or impossible without adequate statistics. Statistics can also help in the planning of experiments and in the testing of hypotheses.

To gain insight into the most common statistical methods used by ornithologists writing articles for Ornis Fennica, I analysed the contents of Ornis Fennica from 1980—83 (n=55 articles) and from 1984—86 (n=43). I compared the data with the statistics used in Ornis Scandinavica from 1984—86 (n=114; Table 1). I do not, however, discuss whether the authors have used suitable or unsuitable methods.

In Ornis Fennica statistics has become more popular during the 1980s. In 1980—83 the median number of different statistical methods per article was one, but in 1984—86, three. In the same period the percentage of articles without statistics ("none" in Table 1) decreased from 31% to 9%. Nonparametric methods seem to have become relatively more common than parametric methods.

In 1984-86 the statistical repertoire of Ornis Fennica has been similar to that of Ornis Scandinavica. For instance, in both journals the relative frequencies of the five most common methods are nearly equal. However, there are also some relevant differences between the journals. Nonparametric, matched pairs tests (Wilcoxon signed rank test and sign test), Fisher's exact test, rank correlations (Spearman and Kendall) and multivariate methods are relatively rare in Ornis Fennica. Ornis Fennica also contained more articles where the methods are not described (only the probability has been given; "unknown method" in Table 1).

Since the sample size of Ornis Scandinavica is clearly larger than that of Ornis Fennica in 1984—86, Ornis Scandinavica naturally contained more methods. According to a rarefaction analysis based on the distribution of methods used in Ornis Scandinavica, the expected number of methods in Ornis Fennica, in 1984—86, was 27 ± 4 (95% limits), when 24 methods were actually used (including "none").

For those who dislike statistics, Table 1 carries a delightful message: no more than 10 methods are needed to understand all, or nearly all, statistics in most articles. Sophisticated methods occur in less than 10% of the articles. Both in Ornis Fennica and in Ornis Scandinavica the analysis of variance is surprisingly rarely used, and even rarer are multiple comparison tests as a constituent of ANOVA.