

# Use of Playback in Estimating Numbers of Bearded Tit *Panurus biarmicus* Outside the Breeding Season.

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## 1. Introduction

Although the European population of Bearded Tit *Panurus biarmicus* is largely sedentary, there have been only a few studies of Bearded Tits outside the breeding season. The camouflaging effect of their habitat (reedbeds) and their reduced vocal activity are the main difficulties presented during this time (Wawrzyniak and Sohns 1986). Nevertheless, studies outside the breeding season may be crucial for monitoring changes in the numbers and range of the Bearded Tit population (Gosler & Mogyorósi 1997). In this study of Bearded Tits outside the breeding season, the efficiency of undertaking point counts that were combined with playback was assessed in comparison with traditional methods.

## 2. Study area and methods

The survey took place in Western Poland in landscape dominated by arable fields. In a 40 km×52 km plot, I selected randomly 45 reed-beds whose width was at least 5m. At each reedbed I used a fixed observation post at the edge of the reeds. I controlled each site 10 times between the end of September 2000 and the beginning of

March 2001 at 10-15 days intervals, performing the surveys between 0700 and 1500 during fine weather. On each occasion I censused Bearded Tits using three different variants of point count, applied in the following sequence:

1. 180 seconds of observations without any stimulation.
2. 140 seconds of observations preceded by 40 seconds of noisy walking through reeds.
3. 140 seconds of observations preceded by 40 seconds of playback of taped contact calls. (6 W).

If Bearded Tits were present during census, I played up to 300 seconds of playback calls to attract birds as close as possible to the observer. I measured the time from the beginning of playback to the first visual observation of the birds. When the birds approached, I recorded the following information: number of birds, sex, the nearest approach distance to the observer (to the nearest half metre) and type of behaviour. I used SPSS software for the statistical analyses.

## 3. Results

During the study, I recorded Bearded Tits at 29 sites (64.4% of controlled sites). I recorded 348 birds from 112 visits. The

Tab. 1. Results of census obtained by point counts without stimulation (W), point counts without stimulation but preceded by noisy walking through reeds (W+N) and playback technique (P).

	W	W+N	P
number of sites with at least one record	20	24	27
number of records	49	76	109
number of individuals	141	180	297
males [%]	11	11	35
females [%]	9	8	28
unidentified individuals [%]	80	81	37

overall results obtained from the three census methods are at Tab. 1.

The efficiency of playback in detecting Bearded Tits was independent of the date of the census (differences between September-December and January-March were tested,  $\chi^2=0.50$ , DF=1,  $p=0.48$ , N=33) and the number of individuals at each site (differences between flocks detected through the use of different censusing methods were tested using Kruskal-Wallis ANOVA;  $H=2.28$ ,  $p<0.33$ , N=112). Bearded Tits were attracted by playback successfully in 71 cases (64%). In 24 cases (21%) there were only vocal responses. The efficiency of attracting the species was independent of the method of detection used ( $\chi^2=0.93$ , DF=2,  $p=0.63$ , N=71) and the frequency of playback use at a particular site (differences between sites with 1-4 and 4-8 records were tested,  $\chi^2=0.51$ , DF=1,  $p=0.47$ , N=71). The mean time of attracting birds was  $93.17\pm 81.21$  seconds. The mean time did not vary in

relation to the number of individuals at a site (differences between sites with 1-2 and 3-8 individuals were tested using Mann-Whitney U test,  $z=-0.37$ ,  $p=0.71$ , N=70). The mean closest distance to which birds approached was  $3.00\pm 1.84$  m (min=0.5 m, max=15 m, N=112), there being no difference between males and females (Mann-Whitney U test,  $z=-0.47$ ,  $p=0.64$ , N=118).

The behaviour of birds attracted by playback could be classed as 'natural' or 'nervous'. The former, typical of c80% of birds, was characterised by occasional calls, pluming perching or foraging. The latter, applicable to the remainder of the birds that called frequently, moved restlessly between reed stems, sought the playback source intensively and rarely foraged. A total of 136 of the observed birds foraged.

#### 4. Discussion

The results obtained suggest that the occurrence of Bearded Tit outside the breeding season might be quite widespread and regular even when there are no irruptions (compare Spitzer 1972). Accidental information on the numbers of Bearded Tit outside the breeding season, that is the main source for regional monographs (*e.g.* Kuźniak 2000), may have been an underestimate, by a factor of two (Tab. 1). It is therefore likely that distrib-

Tab. 2. Spearman rank correlation matrix for the number of records and individuals recorded, comparing the two non-playback census methods with the playback method (n=10). (See Tab. 1 for explanation of the categories).

Census Method With Playback	W	W+N
P <sub>records</sub>	$r=0.59$ , $p=0.073$	$r=0.72$ , $p=0.018$
P <sub>number of individuals</sub>	$r=0.69$ , $p=0.028$	$r=0.82$ , $p=0.004$

ution and habitat selection analyses based on those data are in error, and may be even less reliable because of the low delectability of the species (see Tab. 2). In theory, more precise methods of census based on detailed counts along reedbed edges (von Einstein 1985) or on mist-netting (von Dürr *et al.*) may give more accurate results than the methods I have presented of point count variants. In practice, however, these precision methods are expensive of time and effort, and so regular surveys usually are limited to one site (*e.g.* a lakeside) or require several years to gather sufficient data. It is very probable that playback increases count efficiency significantly and improves results of mist-netting and behavioural observations. With my method, the majority of birds would approach very closely, showing no fear of the observer and behaving naturally. Another advantage of the playback method is its equal efficiency with respect to season, flock size, frequency of use or the presence of noise caused by walking through the reeds. Results presented below are undoubtedly preliminary, and further studies are needed, espe-

cially for different populations and in other habitats and during different weather conditions.

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