

Part 3. What about an experiment?

The scientists chose two similar sized plots to do their experiment. The first was the observation plot. On this plot, no manipulations occurred and breeding pairs were only observed and later blood samples taken from parents and offspring. In the study plot, removals were performed for the experimental group and a second group, the control group, were also observed. For the removals, the scientists captured males by broadcasting a playback of taped male songs from a loudspeaker located next to a mist net. The mean \pm SD time from start of playback until capture was 37 ± 28 min ($n = 16$). All removals were conducted on day -1 or 0, where day 0 was the day the first egg was laid. They held each captured male for 60 min in a small cage (kept on the territory, but covered with a cloth and out of sight away from the nest) and supplied him with food (mealworms) ad lib. After this confinement period the male was released back onto his territory.

For the control group, eight additional broods on the experimental plot survived the fledging, and the males associated with these nests were not exposed to song playback nor captured during the female's fertility period. They compared the frequency of extrapair young (EPY) in these eight control broods to that in the eight experimental broods, and the broods from the observation plot.

Part of the data has been reproduced in the handout (Fig. 2).

- 1- Predict the results of the other values by plotting the values on the graph. Why have you made these predictions?

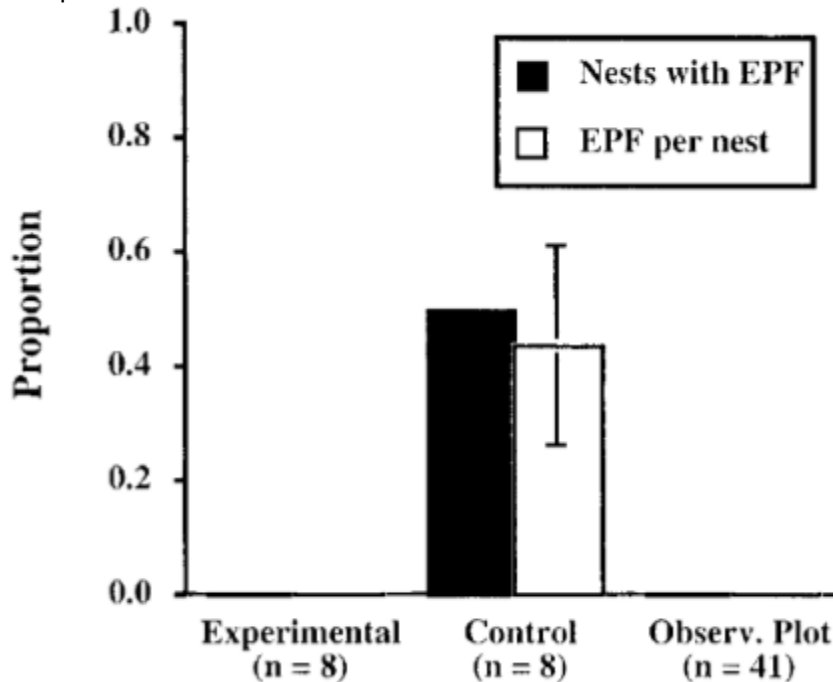


Figure 2

The proportion of nests containing at least one extrapair nestling (shaded bars) and the proportion of extrapair nestlings per brood (open bars, error bars give one standard error) for experimental and control nests on the experimental plot. Data for the observation plot are shown for comparison; n , total number of nests analyzed.

Part 4. The rest of the story

In Fig. 3, you will see the real results that the authors collected.

2- How do the data compare with your predictions?

The authors ran a series of statistical tests and noted that there were no significant differences between the control group and the observation plot group in any of the measures.

What does this suggest?

But in the experimental group where the males were removed, there were significantly more EPCs and there were a significantly higher proportion of eggs in a nest that were sired by extrapair males.

3- What conclusions might the biologists make about their original hypothesis?

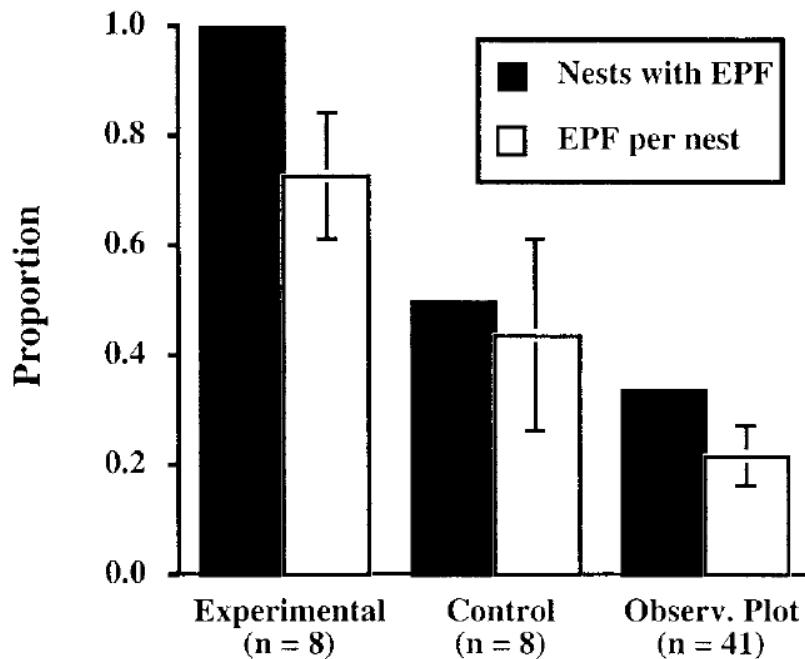


Figure 3

The proportion of nests containing at least one extrapair nestling (shaded bars) and the proportion of extrapair nestlings per brood (open bars, error bars give one standard error) for experimental and control nests on the experimental plot. Data for the observation plot are shown for comparison; *n*, total number of nests analyzed.

The proportion of control nests containing EPY did not differ from the proportion of nests on the observation plot with extrapair young (Fisher's exact test, $p = .459$). In contrast, EPY were present in the nests of all eight experimental males (experimental vs control nests: Fisher's exact test, $p = .039$). The proportion of EPY \pm SE was 0.729 ± 0.115 in experimental nests ($n = 29$ young in eight nests vs 0.438 ± 0.175 in control nests ($n = 26$ young in eight nests).

Figure 1

Intensity of male mate guarding, as measured by (a) the rate at which males followed females and (b) the proportion of time the male spent within 20 m of his mate, for broods with ($n = 2$) and without ($n = 6$) extrapair young.

The scientists found that two measures of mate guarding were correlated with each other ($r = .791, n = 11, p = .002$), and both were strongly associated with the probability that a brood would contain extrapair young: Males who followed their mates frequently and spent more time within 20 m of them had a low probability of having an extrapair nestling in their nests. Other behaviors measured were not associated with the presence of extrapair young.

