Consequences of Divorce on Reproductive Success of Nesting Grassland Songbirds in Vermont

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Introduction

Bobolinks (*Dolichonyx oryzivorus*) and Savannah Sparrows (*Passerculus sandwichensis*) are grassland songbirds that breed in hayfields and pastures in New England. These species have complicated mating systems; they are both socially and genetically polygynous. We studied the frequency, cost and benefit of divorce on reproductive success, defined as the choosing of a different social male by a female to nest with. We explored divorce both within and between breeding seasons, including how agricultural management affects these processes.

Hypotheses

1) Divorce will increase the number of young fledged both within- and between-years.
2) On hayed fields, synchronous nest failure will constrain pairs to social monogamy post-harvest. Therefore divorce rates following nest failure due to haying will be lower than those followed by predation.

Methods

This study was conducted in 2002-17 in Shelburne, VT. We monitored 436 pairs of Savannah Sparrows (235 within-year, 201 between-year) and 121 pairs of Bobolinks (15 within-year, 106 between-year). Each bird was banded with a unique combination of colored leg bands (Fig. 1), allowing for identification with binoculars. We then assessed divorce rates and compared reproductive success for those who divorced with those who re-paired.

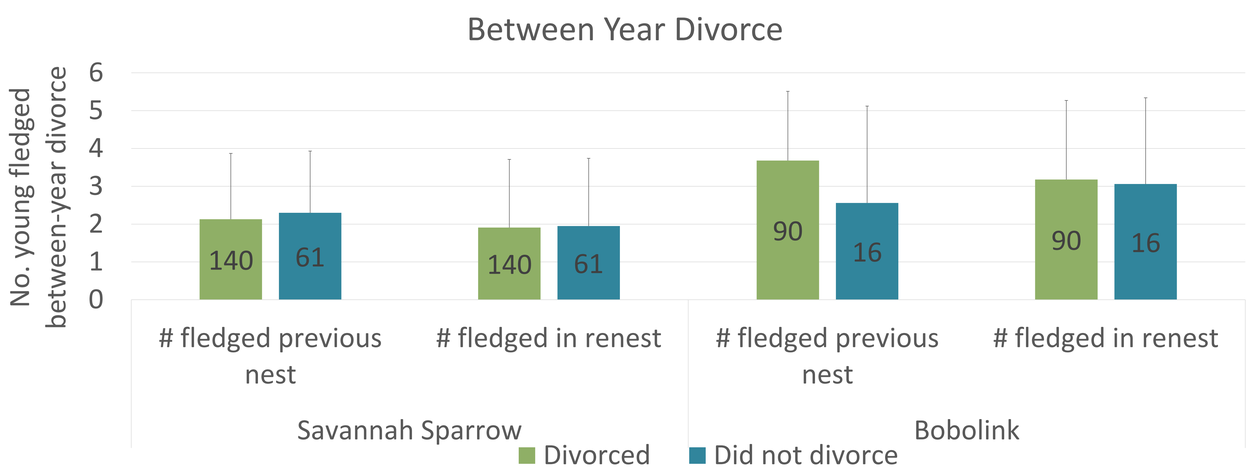

Fig. 2. The mean number of young fledged from a first nest and the renest after divorce or re-pairing between years (error bars indicate the standard deviation). Number on the bars represent nest sample size.

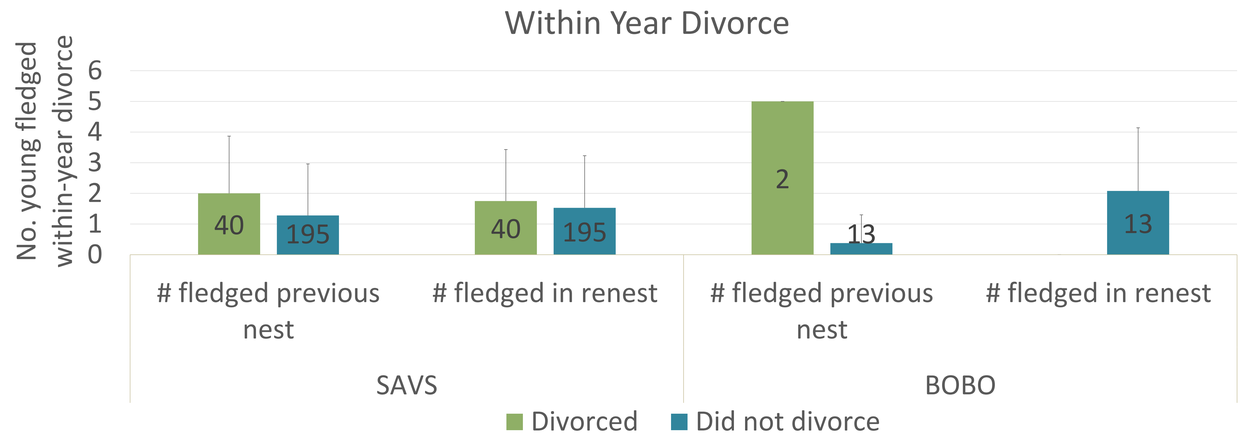

Fig. 3. The mean number of young fledged from a first nest and the renest after divorce or re-pairing within years (error bars indicate the standard deviation). Numbers on bars represent nest sample size.

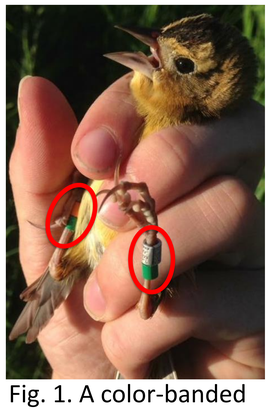

Fig. 1. A color-banded female Bobolink.

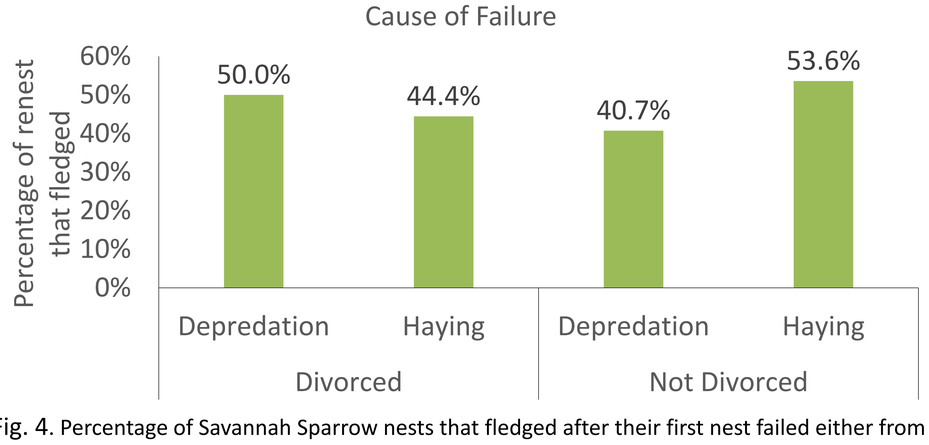

Fig. 4. Percentage of Savannah Sparrow nests that fledged after their first nest failed either from predation or haying.

Results

Between-years Bobolinks were more likely to divorce after nest failure, compared to Savannah Sparrows with divorce rates of 84.9% and 69.1% respectively.

Subsequently, between-years, there was no reproductive adaptive benefit or cost to divorce in Savannah (Fig. 2 and 3). Surprisingly, Bobolinks that divorced fledged significantly more young pre-divorce than post-divorce, indicating a cost to divorce (Fig. 2).

Within-year divorce rates for Bobolinks and Savannah Sparrows were 0% and 17%, respectively. However, divorce in Savannah Sparrows did not increase reproductive success.

Divorce rates were not different between nests that failed from agricultural haying or predation within- or between-years for either species (Fig 4.). Therefore, breeding synchrony due to haying did not influence divorce rates of either species.

Our results indicate no clear adaptive benefit to divorce in these species. Alternatively, divorce may result in an adaptive loss for the Bobolink. Additionally, we find no influence of haying on divorce rate.

Acknowledgements

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