

Supplemental results for “The recent expansion of Fox Sparrow (*Passerella iliaca iliaca*) breeding range into the northeastern United States”.

#### Supplemental results.

The frequency of eBird checklists reporting the occurrence of Fox Sparrow was not sensitive to the choice of a size for the grid cells used in the analysis. When repeated on a grid with cells 5 km<sup>2</sup> in size, the analysis produced results nearly identical to those reported in the analysis on cells that were 10 km<sup>2</sup> in size. Qualitatively, the results yield identical inference: the frequency of reports of Fox Sparrow increased significantly, whereas neither of the two co-occurring species analyzed – Blackpoll Warbler and Bicknell’s Thrush – did. This suggests that the increase in the proportion of eBird checklists reporting Fox Sparrow during the breeding season in the northeastern United States is not due to changes in observer effort or behavior that make detections of Fox Sparrow more likely.

Quantitatively, too, the results are similar. The proportion of grid cells containing complete eBird checklists that noted the presence of Fox Sparrow increased from 2003-2016 ( $b_{year} = 0.17$ , 95% CI = 0.085 – 0.255,  $P < 0.001$ ; the comparable values for the analysis using 10 km<sup>2</sup> grid cells were  $b_{year} = 0.18$ , 95% CI = 0.097 – 0.275,  $P < 0.001$ ) (Supplemental Fig. 1).

The proportion of grid cells containing complete eBird checklists that noted the presence of Blackpoll Warbler decreased from 2003-2016 ( $b_{year} = -0.054$ , 95% CI = -0.085 – -0.023,  $P < 0.001$ ; the comparable values for the analysis using 10 km<sup>2</sup> grid cells were  $b_{year} = -0.030$ , 95% CI = 0.064 – -0.005,  $P = 0.09$ ). Although this test rejects the null hypothesis that the slope was 0 over the course of the study, which the analysis on the 10 km<sup>2</sup> grid cells does not ( $P = 0.09$ ), it is qualitatively similar to the results obtained in the analysis using 10 km<sup>2</sup> grid cells.

The proportion of grid cells containing complete eBird checklists that noted the presence of Bicknell’s Thrush decreased from 2003-2016 ( $b_{year} = 0.025$ , 95% CI = -0.024 – 0.075,  $P = 0.33$ ; the comparable values for the analysis using 10 km<sup>2</sup> grid cells were  $b_{year} = 0.03$ , 95% CI = -0.029 – 0.109,  $P = 0.30$ ).

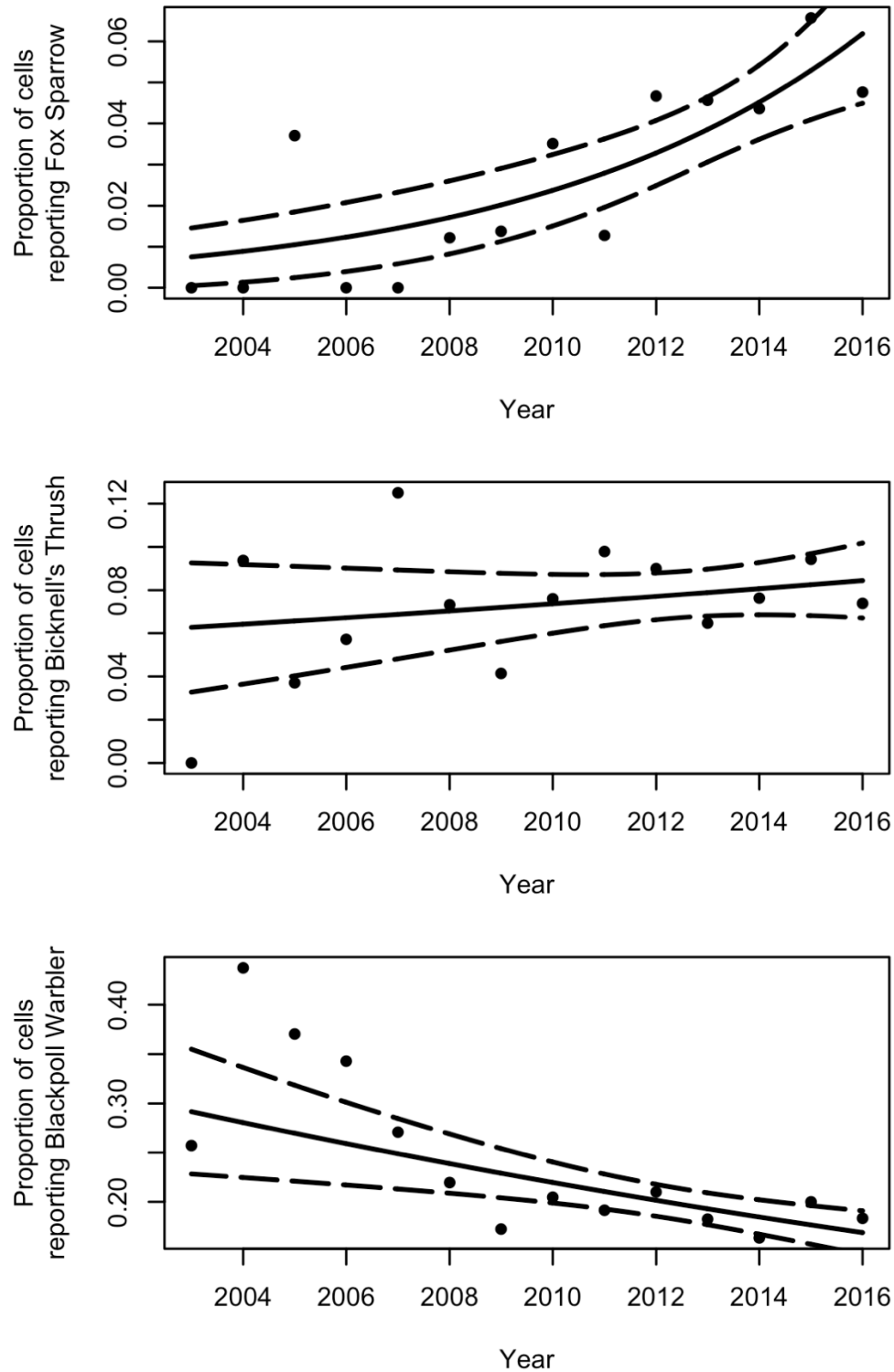


Figure 1. The proportion of 5 km<sup>2</sup> grid cells (solid dots) in northern and western Maine and northern New Hampshire containing breeding-season records of Fox Sparrows reported to eBird increased ~17% per year from 2003-2016 (top panel). Neither Bicknell's Thrush (middle panel) nor Blackpoll Warbler (bottom panel), both of which occur in similar forest types as Fox Sparrow, showed a significant temporal trend in the proportion of grid cells reported as occupied. The solid lines indicate the predicted relationship; dashed lines are 95% confidence intervals.