Data S1

R and BUGS code to implement integrated species distribution models accounting for spatial misalignment using Breeding Bird Atlas and eBird data.

Authors [of the material provided in DataS1.zip]

Krishna Pacifici
Department of Forestry and Environmental Resources
North Carolina State University
Raleigh, North Carolina 27695
jkpacifi@ncsu.edu

Brian J. Reich
Department of Statistics
North Carolina State University
Raleigh, North Carolina 27695
bjreich@ncsu.edu

David A. W. Miller
Department of Ecosystem Science and Management
Pennsylvania State University
University Park, Pennsylvania 16802
Dxm84@psu.edu

Brent S. Pease
Department of Forestry and Environmental Resources
North Carolina State University
Raleigh, North Carolina 27695
bspease@ncsu.edu

File list (files found within DataS1.zip)

```
BBA_cleaned.csv
```

```
eBird_grid.csv
GridCovariates_CoS.csv
GridCovariates_No_CoS.csv
grid1.wbnb.Rdata
high.Rdata
low.Rdata
coords.Rdata
EE.Rdata
YY.Rdata
```

Description

- `BBA_cleaned.csv` - Breeding Bird Atlas data from Pennsylvania, USA for black-throated blue warblers (*Setophaga caerulescens*). This serves as the primary data source.
- `eBird_grid.csv` - eBird data for black-and-white warblers in Pennsylvania, USA summarized within misaligned grid cells.
- `GridCovariates_CoS.csv` - Grid information containing coordinates for each grid size as well as average forest cover for each grid cell (covariate information). This file should be used with the **Change of Support** models.
- `GridCovariates_No_CoS.csv` - Grid information containing coordinates for each grid size as well as average forest cover for each grid cell (covariate information). This file should be used with **No Change of Support** models.
- `grid1.wbnb.Rdata` - Spatial neighborhood information for the finest grid.
- `high.Rdata` - This file is for Change of Support models. Informs BUGS how many finer grid cells are within coarser grid cells.
- `low.Rdata` - This file is for Change of Support models. Informs BUGS how many finer grid cells are within coarser grid cells.
- `coords.Rdata` - This file is for the covariate model. Coordinates of eBird grid cells.
- `EE.Rdata` - This file is for the covariate model. Smoothed eBird effort using `mgcv::gam`
- `YY.Rdata` - This file is for the covariate model. Smoothed eBird counts using `mgcv::gam`