Supplemental Materials for Fournier et al.

(Site-selection bias can drive apparent population declines in long-term studies)

R code for population simulations

R code for the generation and analysis of simulated population data is provided (as five text files separate from this document)

File 1. 01_sims.R Code to generate temporally autocorrelated population data for multiple sites, and then estimate the temporal trend for (a) the two sites with highest year-1 population density, and (b) two randomly chosen sites.

File 2. 02_percent_trend_negative.R Code to compile fractions of negative trend estimates (population declines), for Figure 5, top panel.

File 3. 03_create_csv_files.R Code to compile trend estimates (regression slopes) for Figure 2, bottom panel.

File 4. 04_compare_random_and_highest.R Code for statistical analysis of simulated time series with and without site-selection bias, for Table 1.

File 5. 05_sim_fig_1.R Code to create Figure 5.

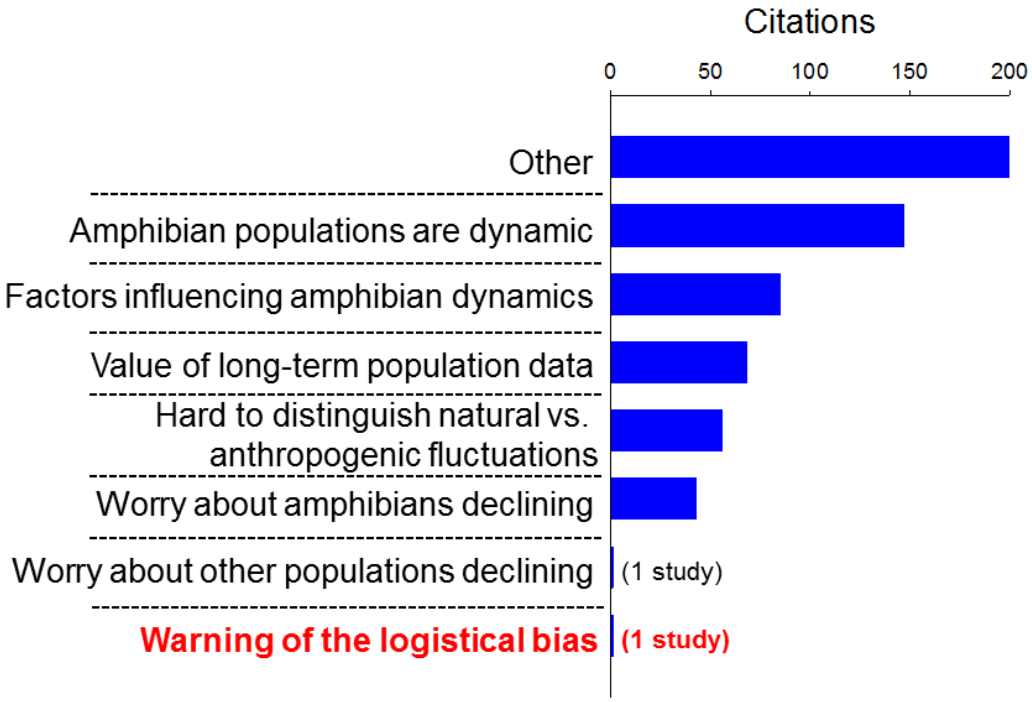

Figure S1. Reasons for citation of Pechman et al. (1991). Citation data from Scopus™, n = 478 papers (many of which fall into more than one citation category).

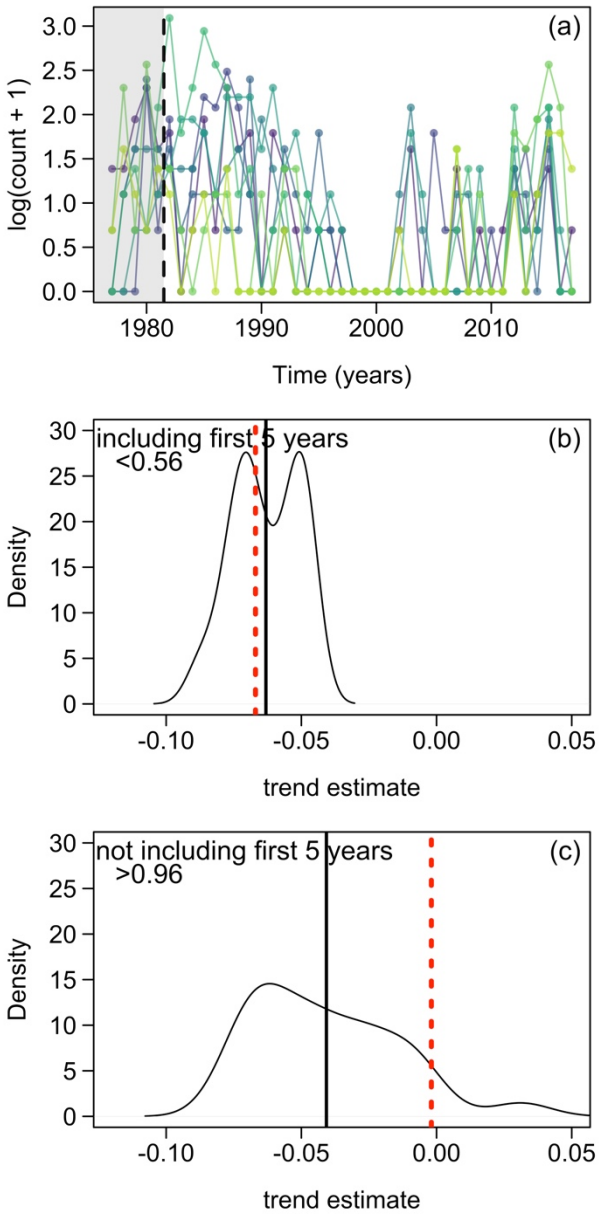

Figure S2. Analysis of time series for *Onychomys leucogaster* from the Portal Project. (a) Counts in eight subpopulations (plots), 1977-2017. (b) Trend estimates (log-transformed regressions slopes) for subsets of two plots, 1977-2012. The curve is the distribution for randomly chosen pairs of plots, the solid black line is the mean slope for randomly chosen pairs of plots, and the dashed red line is the slope for the two plots with highest year-1 densities. (c) Same as panel (b), but using data for 1982-2017.

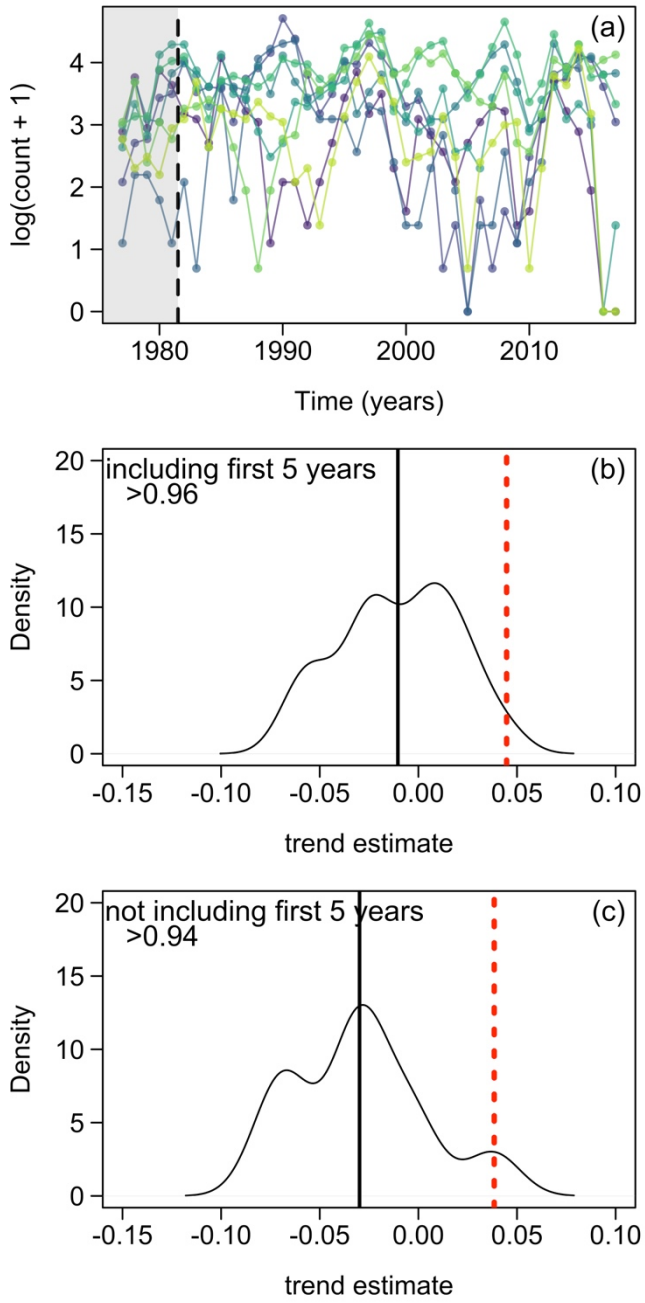

Figure S3. Analysis of time series for *Dipodomys merriami* from the Portal Project. (a) Counts in eight subpopulations (plots), 1977-2017. (b) Trend estimates (log-transformed regressions slopes) for subsets of two plots, 1977-2012. The curve is the distribution for randomly chosen pairs of plots, the solid black line is the mean slope for randomly chosen pairs of plots, and the dashed red line is the slope for the two plots with highest year-1 densities. (c) Same as panel (b), but using data for 1982-2017.

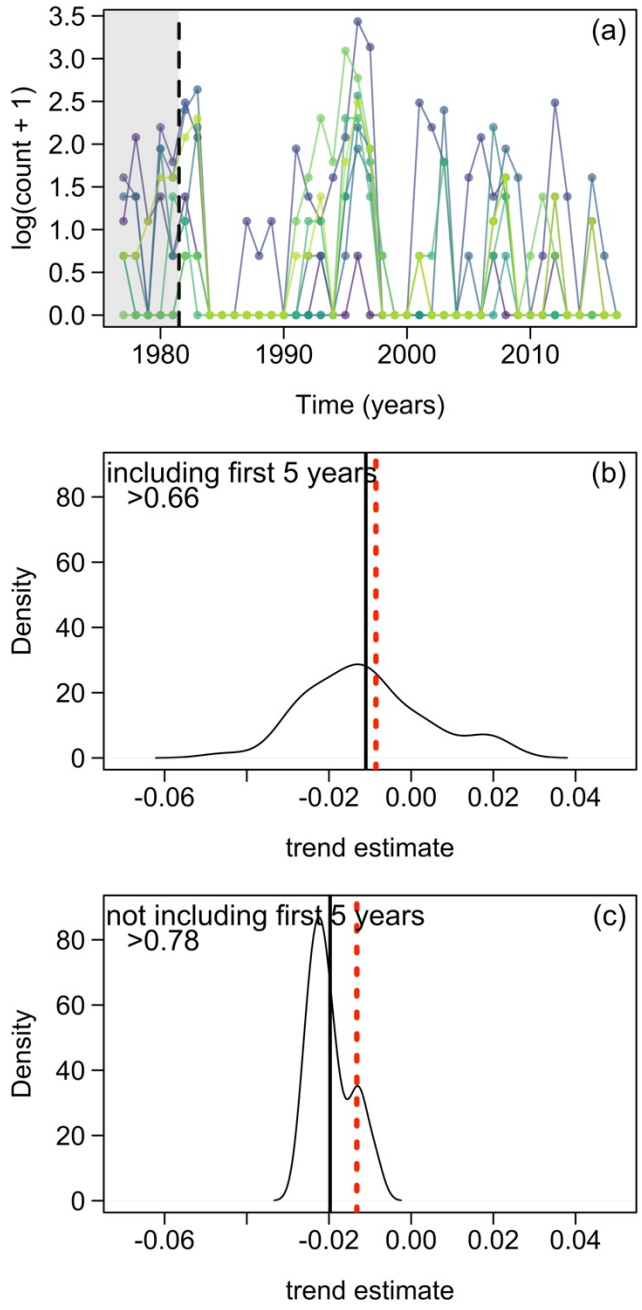

Figure S4. Analysis of time series for *Perognathus flavus* from the Portal Project. (a) Counts in eight subpopulations (plots), 1977-2017. (b) Trend estimates (log-transformed regressions slopes) for subsets of two plots, 1977-2012. The curve is the distribution for randomly chosen pairs of plots, the solid black line is the mean slope for randomly chosen pairs of plots, and the dashed red line is the slope for the two plots with highest year-1 densities. (c) Same as panel (b), but using data for 1982-2017.

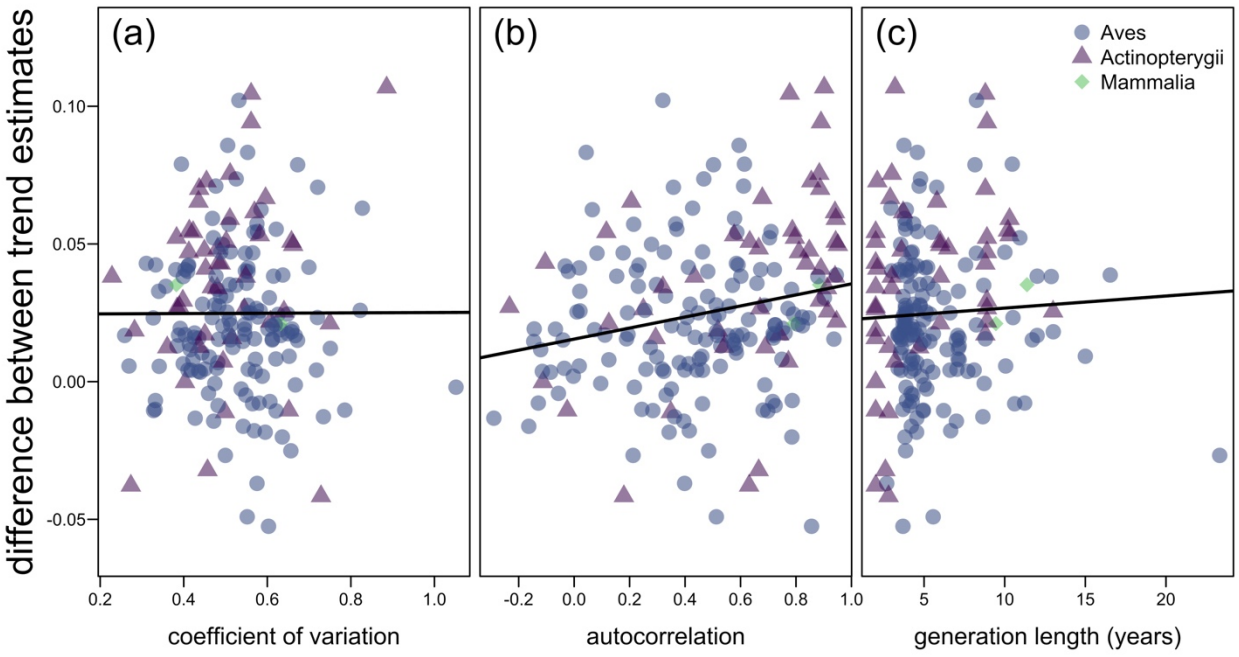

Figure S5. Difference between trend estimates for 15-year time series segments starting at, or centered on, the high point of the full time series. A positive difference indicates that starting at a high point yields an overestimate of population decline. The difference between trend estimates is weakly correlated with (a) coefficient of variation in population size, (b) a temporal lag-1 autocorrelation, and (c) generation length in years.