Supplementary material

Supplementary code:

Annotated R code for implementing our analyses are available in the files `bac _ ants _ raref.R`, which includes code for Figs 2-3, and `bac _ ants _ act.R`, which includes code for the Fig. 4. Code for reproducing the temperature summary figures in Fig. 1 and S1-3 are available in the files `make _ bac _ temp _ figures.R`, and `plot _ daily _ temp _ trend.R`, respectively. These are also available online at github.com/adamtclark/BAC_ant_analysis.

Supplementary data:

Supporting ant data for analyses:

pitfall_ants_bac.csv – Data from BAC experiment, sampled 2011-12

Column labels refer to:

ID – unique sample ID
smpDate – sample date (month/day/year)
PlotID – plot number
Subplot – heat treatment (heated or control)
Cup – left or right trap (all data are pooled in analyses)
spCode – six character ant species abbreviation
Count – number of individuals collected
Larsen – binary variable, indicating whether plot was sampled by K. Larsen in 2000
BAC – binary variable, indicating whether plot was sampled in the BAC experiment
Plant_Species – number of sown plant species in the plot
reduced_spCode_larsen – species code matching species names used by K. Larsen in another study at Cedar Creek

Ant data also available at doi.org/10.6073/pasta/1991371638f8e2efc783f6bdd04cf80c. Plant biomass data are also available at doi.org/10.6073/pasta/214b327bc6fc0a240ec705b339e6dd83. Temperature data are also available at doi.org/10.6073/pasta/1333b6c2cda080536479b918d8caa483.

Supplementary figures S1–7

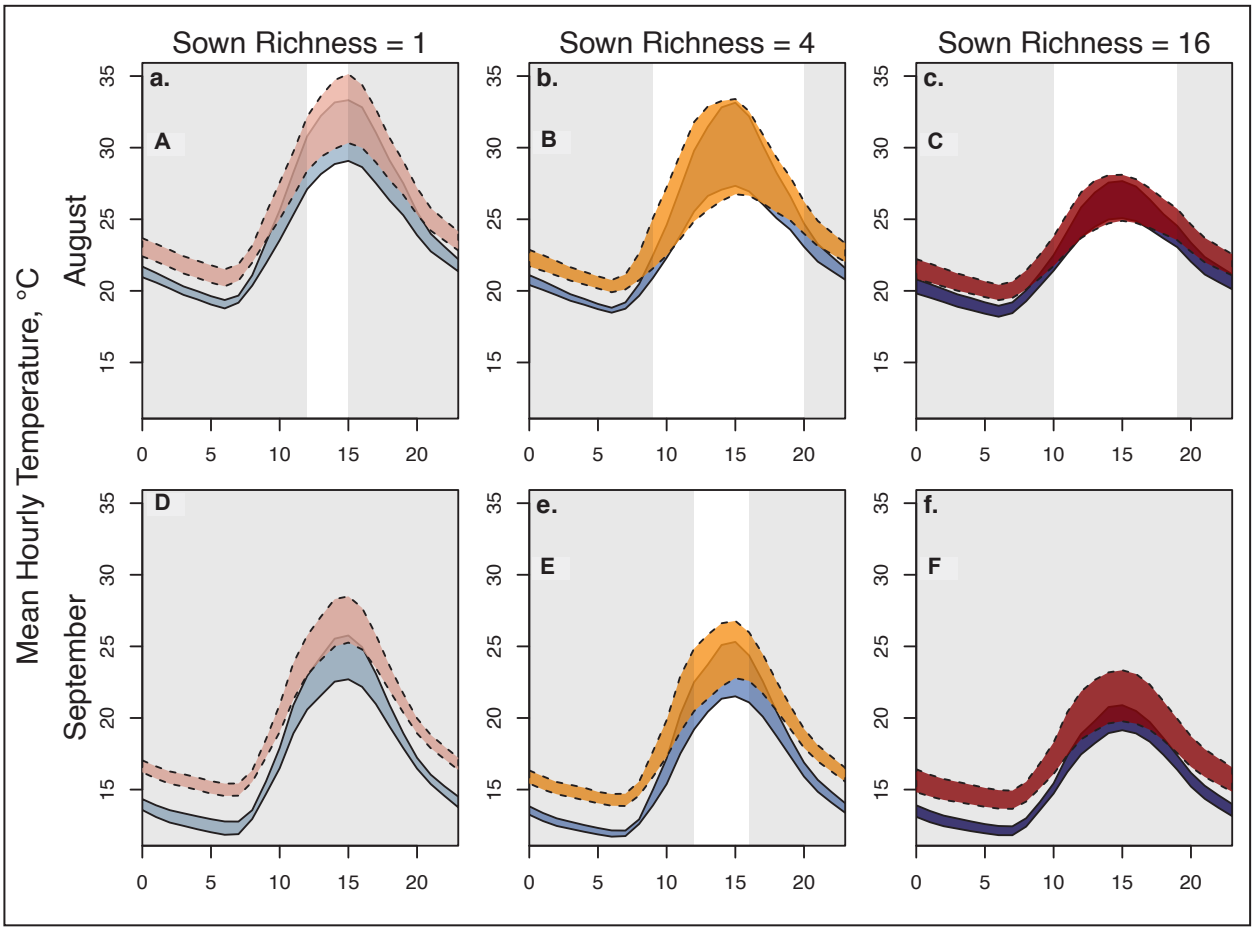

Figure S1. Average daily temperature profiles across heating sampling months, and sown plant species richness treatments, measured as average hourly temperature at 1 cm below the soil surface. Regions outlined in dashed lines show profile for heated subplots, regions outlined in solid lines show controls; shaded region indicates mean temperature ± one standard deviation measured across all plots within each subset of treatments and sampling times. Grey shaded regions indicate hours when mean temperatures of heated vs. control subplots differ significantly at $p < 0.05$.

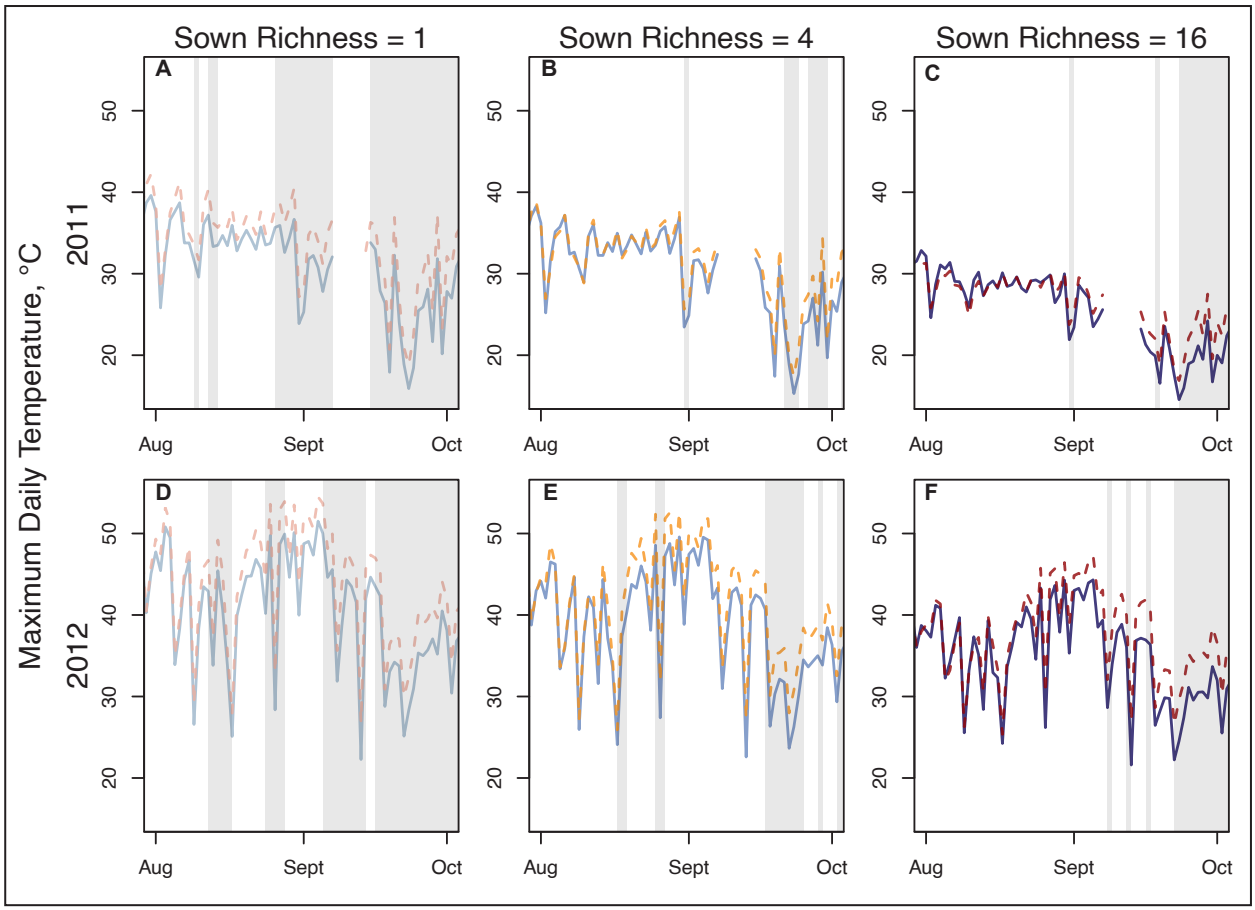

Figure S2. Daily maximum temperature during the sampling period for each year, heating treatment, and sown plant species richness treatment, based on hourly measurements taken 1 cm below the soil surface. Dashed lines show mean maximum temperature across heated subplots... , solid lines show mean maximum temperature across control subplots. Grey shaded regions show timespans for which differences among heated vs. control subplots within each subset of sown richness treatments and sampling times differ significantly, at $p < 0.05$. The gap in 2011 data is for a time period where temperature sensors were removed from the field for data collection.

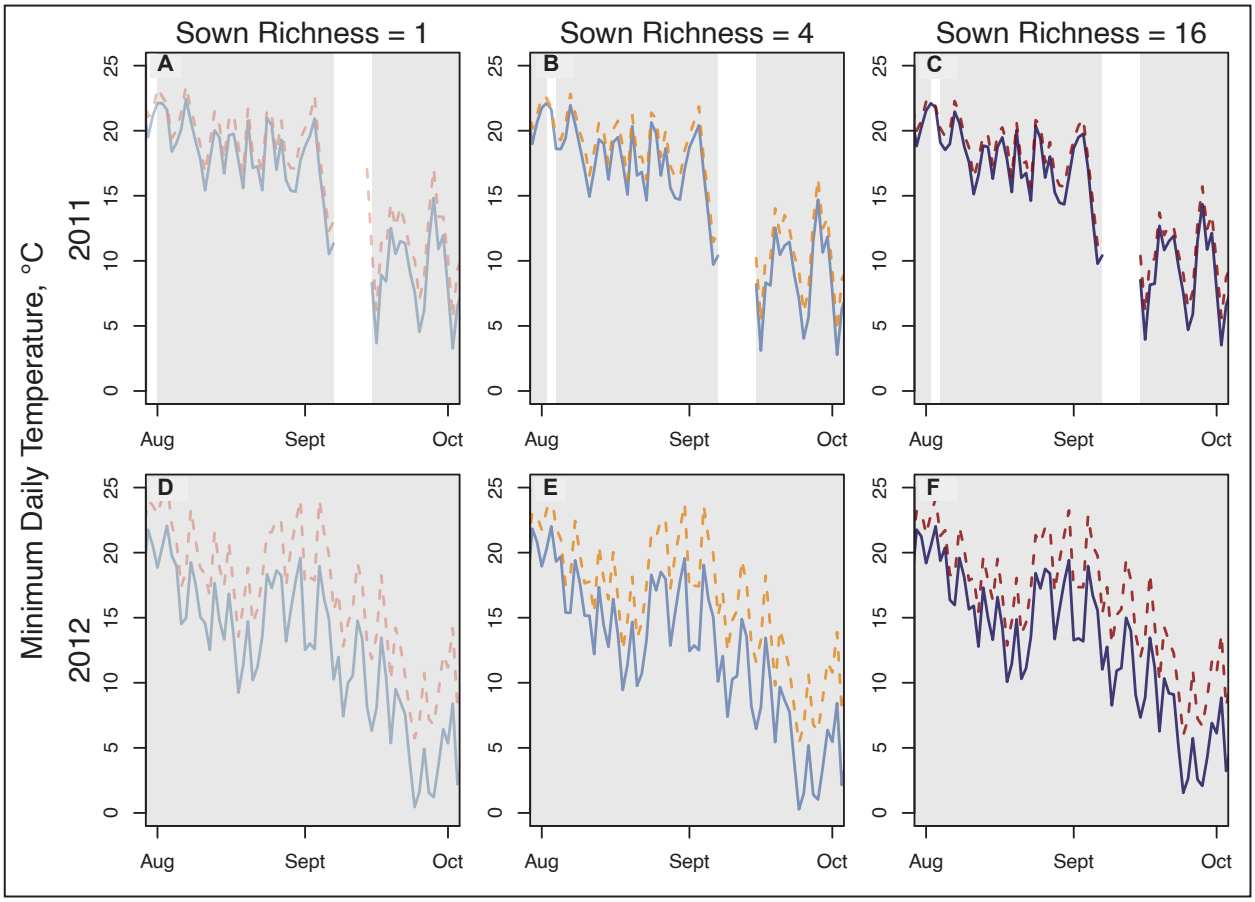

Figure S3. Daily minimum temperature during the sampling period for each year, heating treatment, and sown plant species richness treatment, based on hourly measurements taken 1 cm below the soil surface. Dashed lines show mean minimum temperature across heated subplots... , solid lines show mean minimum temperature across control subplots. Grey shaded regions show timespans for which differences among heated vs. control subplots within each subset of sown richness treatments and sampling times differ significantly, at $p < 0.05$.

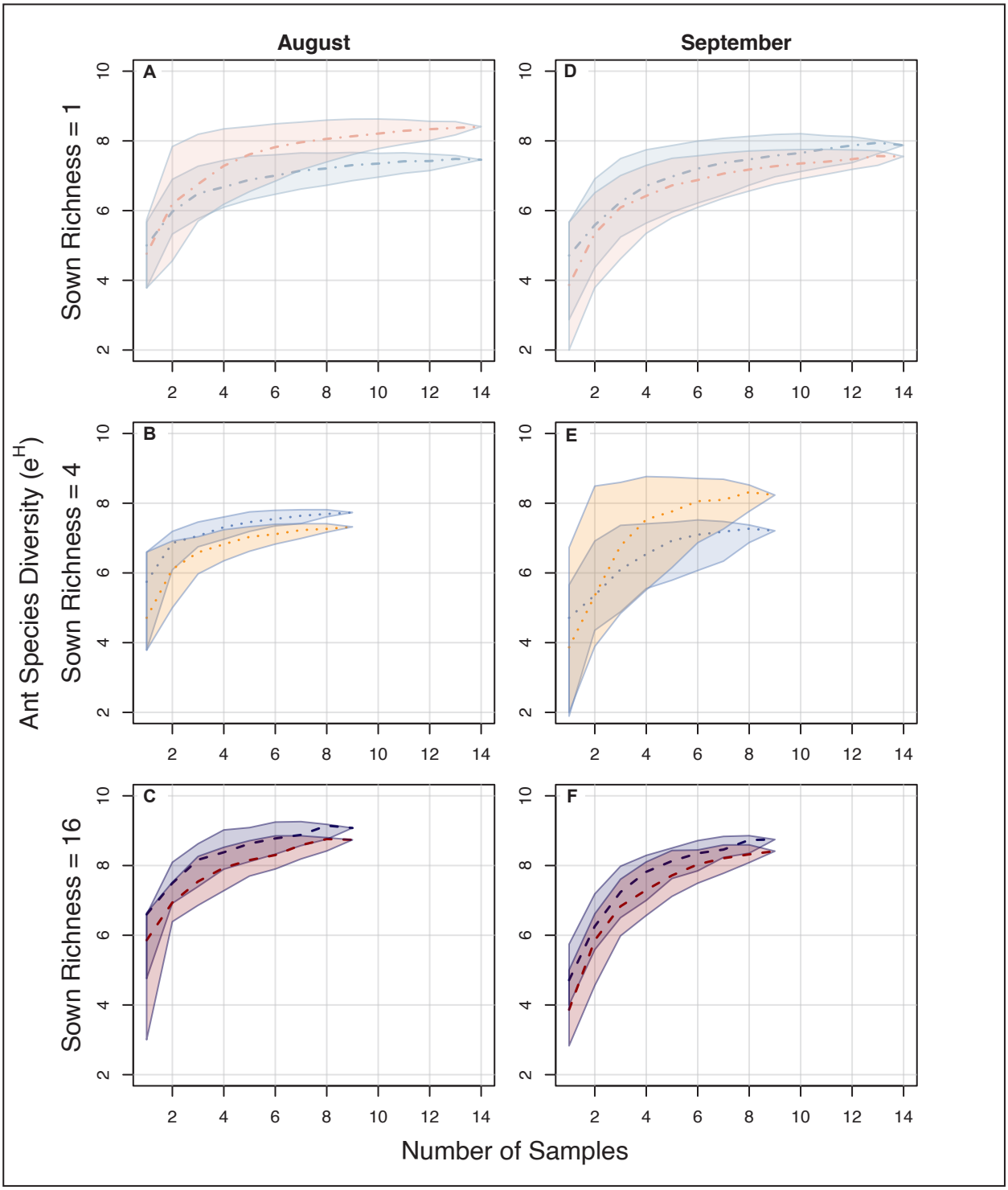

Figure S4A. Rarefaction curves for ant species diversity from pitfall trap samples as a function of the number of samples, measured as exponentiated Shannon diversity. Results are identical to those presented in Fig. 2 in the main text, but are separated by month and planted richness level in order to better show differences between control and heated subplots.

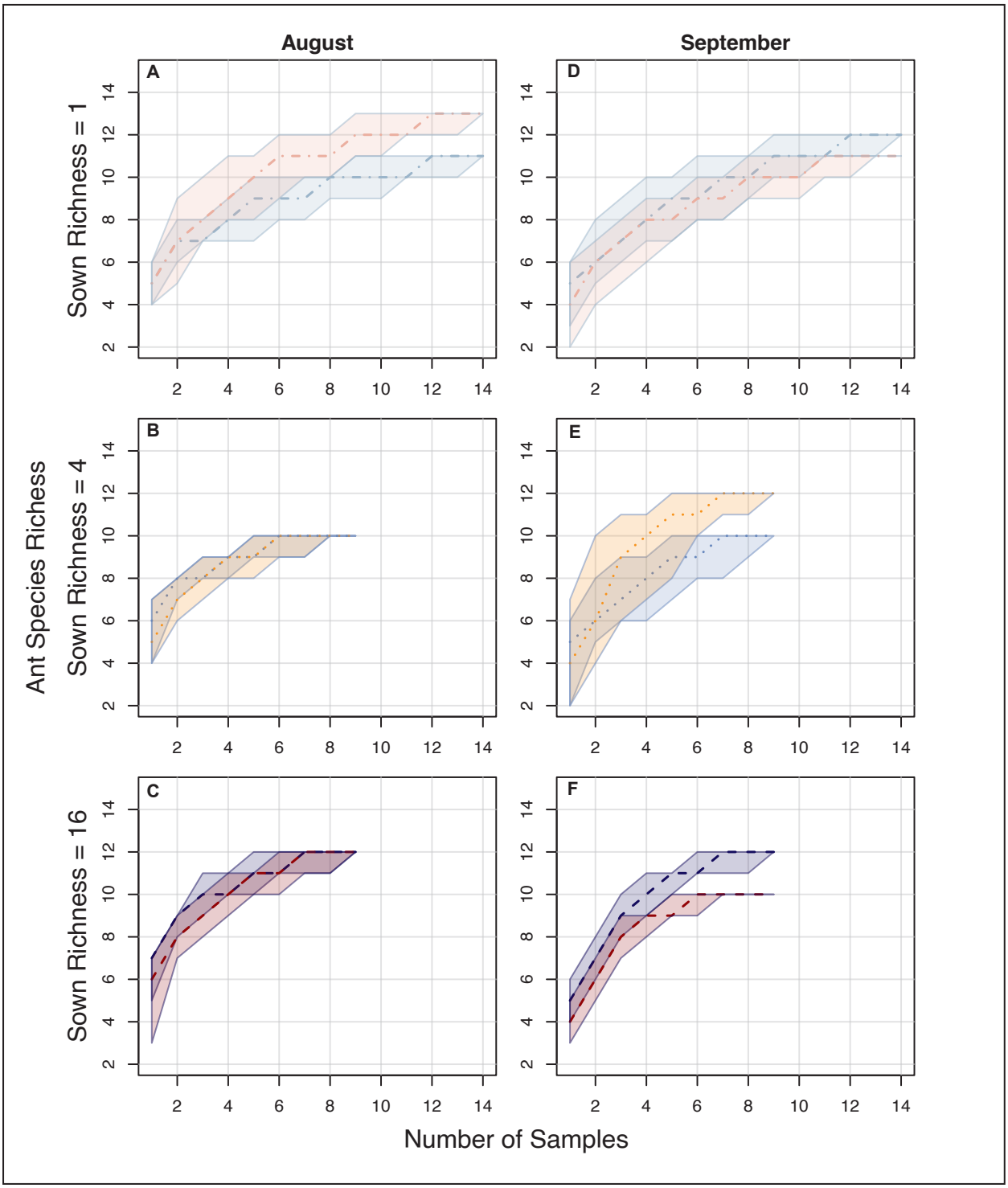

Figure S4B. Rarefaction curves for ant species diversity from pitfall trap samples as a function of the number of samples. Identical to Fig. S4A, except that results are for ant species richness, rather than exponentiated Shannon diversity.

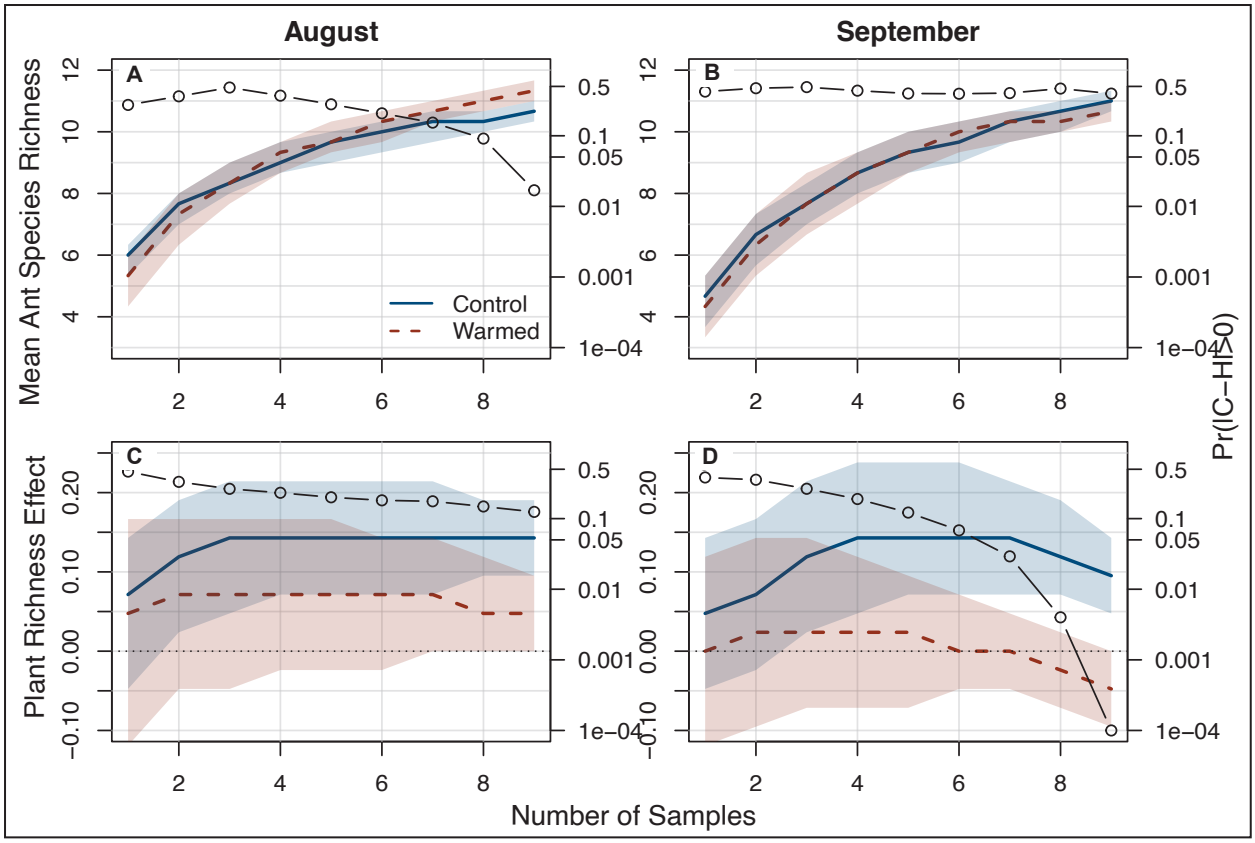

Figure S5. Results from regressions of rarefied ant diversity from pitfall trap samples conducted across sampling intensities. Identical to Fig. 3 in the main text, except that results are for ant species richness, rather than exponentiated Shannon diversity.

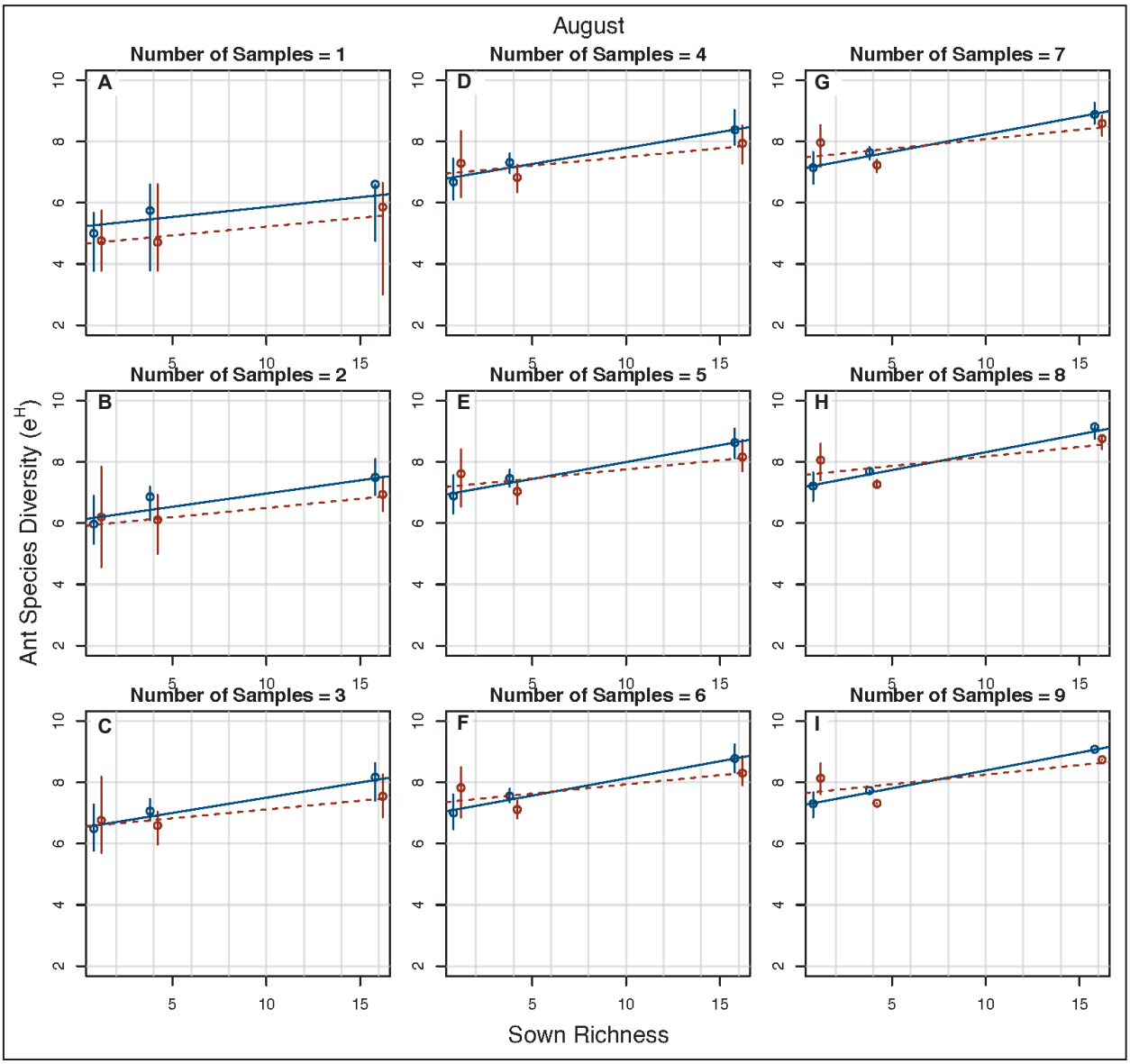

Figure S6A. Relationship between ant exponentiated Shannon diversity from pitfall trap samples and sown plant species richness for August. Number of samples indicates the number of plots across which ant diversity data was aggregated. Solid lines show results for control.... dashed lines show heated subplots. Points and intervals show median ant diversity ± a 68% confidence interval (roughly equivalent to ± one standard deviation), based on the rarefaction curves in Fig. 2 in the main text. Lines show mean regression intercept and slope from Fig. 3 in the main text.

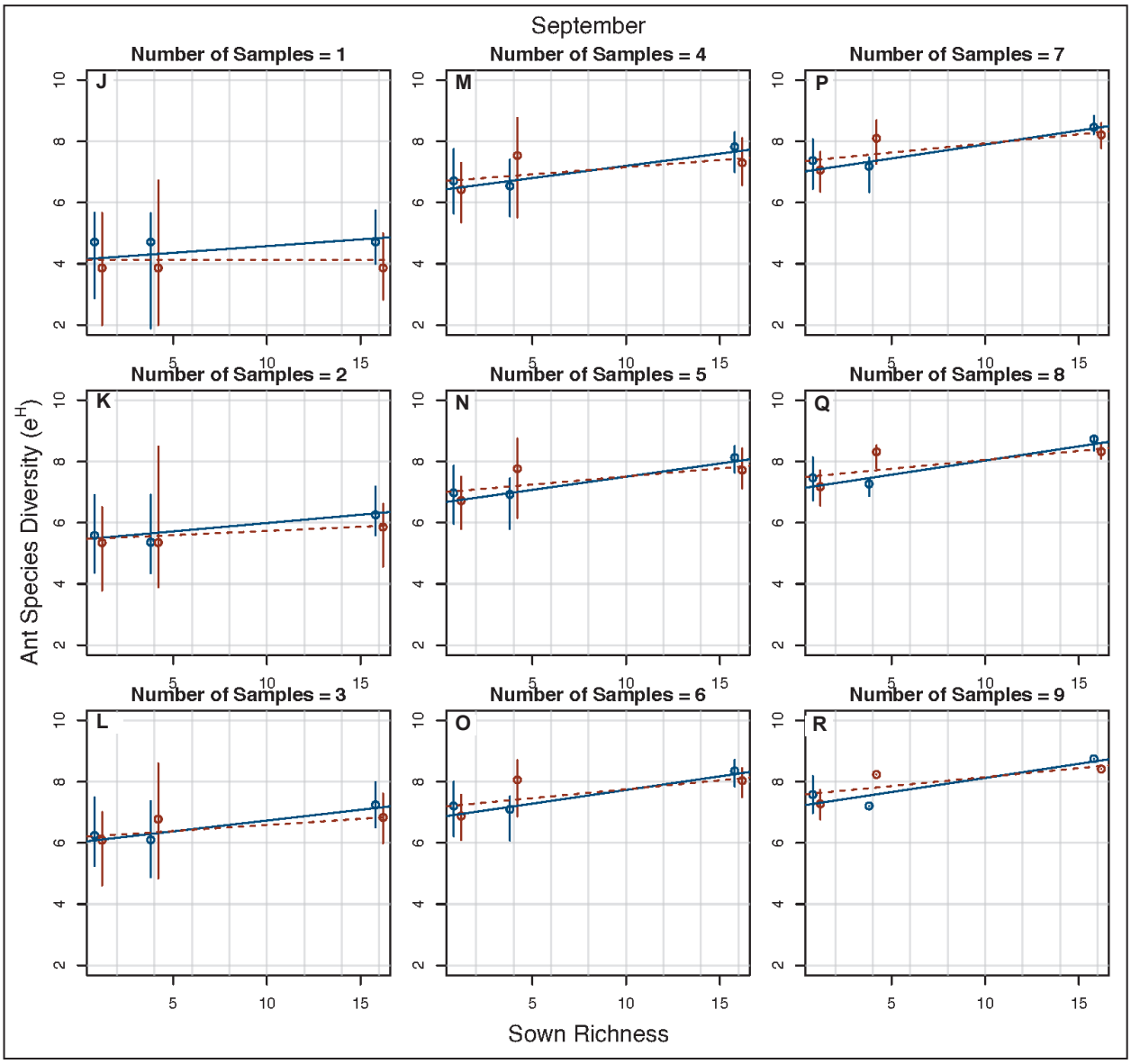

Figure S6B. Same results as shown in Fig. S6a, but reported for samples collected in September.

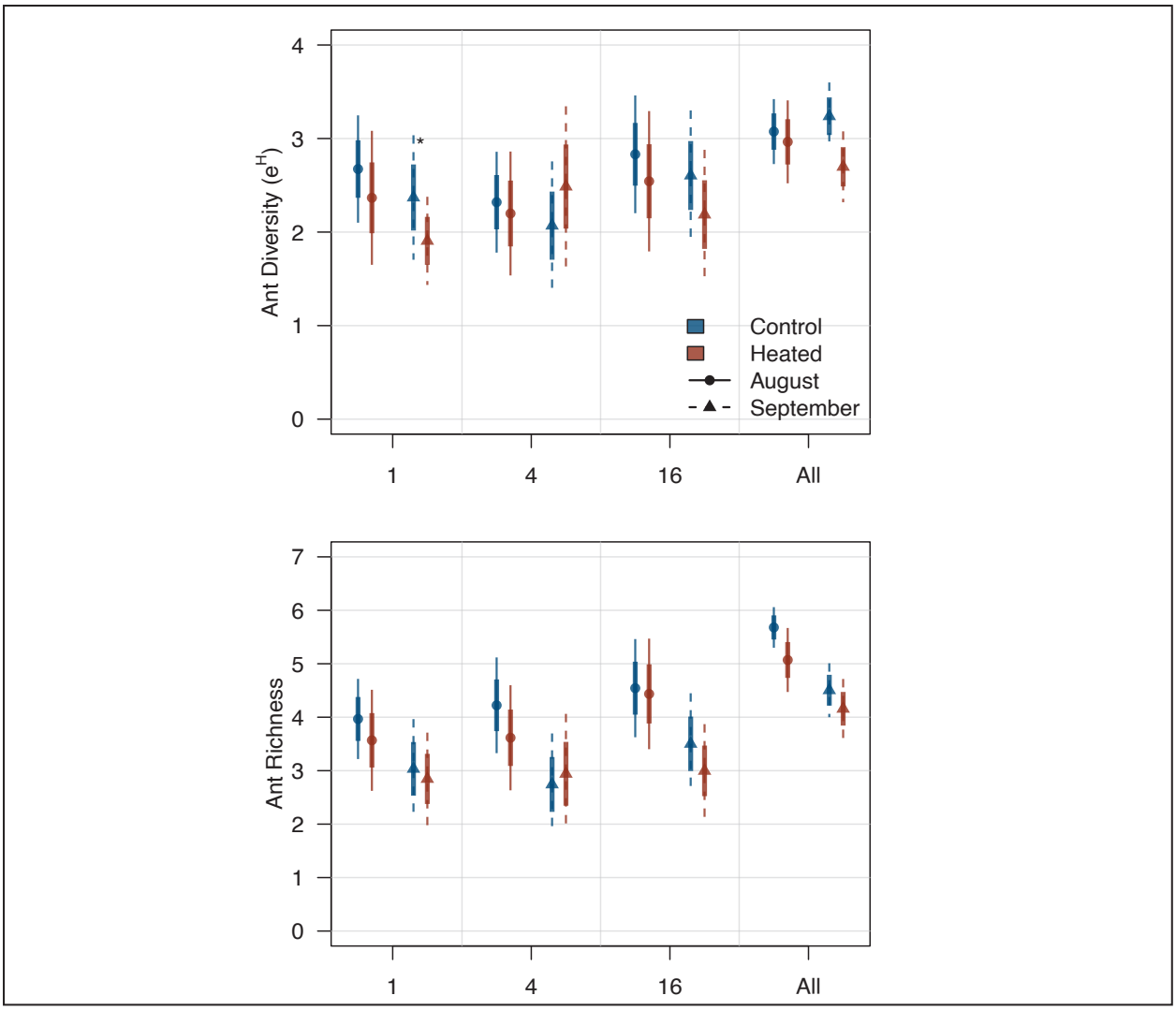

Figure S7. Mean subplot-level ant exponentiated Shannon diversity from pitfall trap samples and ant richness across sown plant richness, heating treatments, and sampling times. 'All' column shows average results across all levels of sown plant richness. The segment on the left in each pair shows control subplots, the segmetn on the right shows heated subplots, circles show August samplings, and triangles show September samplings. Thick vs. thin intervals show mean ± one and two standard deviations, respectively. Significant differences between control vs. heated plots are marked with an asterisk. Differences between sampling months are significant for ant richness across all sown richness levels, and in monocultures at when considered across all sown richness levels for exponentiated Shannon diversity.