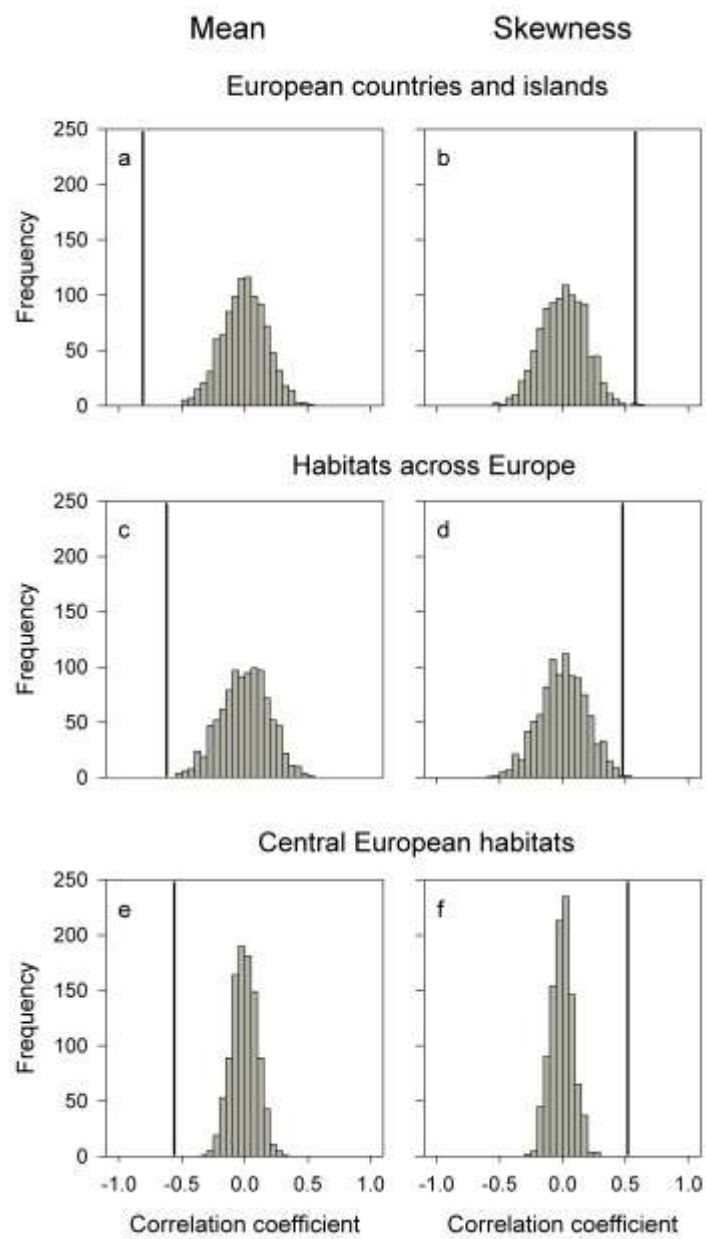1 **Appendix S1** Randomized body size–climate relationships to test for effects of

2 spider species richness on sample means and skewness. Distribution of correlation

3 coefficients between body size mean/skewness and climatic position based on

4 random samples of body sizes from the respective overall species pool. Pearson's

5 correlation coefficients are given for the relationship between mean/skewness and

6 climatic position for **a/b** European countries and islands (dataset 1), **c/d** habitats

7 across Europe (dataset 2), and **e/f** Central European habitats (dataset 3). For this

8 analysis, we randomly extracted body sizes for each sample (country/island, habitat)

9 from its regional species pool corresponding to its species richness. We then

10 calculated the correlation coefficient between mean/skewness to climatic position

11 (Fig. 1). This randomization procedure was repeated 1,000 times. We found that the

12 correlation coefficient expected by chance was around zero for our distribution

13 parameters in all three datasets. All measured correlation coefficients (Fig. 1) lay

14 outside the 95% confidence intervals of the randomized coefficients.

Mean

Skewness

European countries and islands

Habitats across Europe

Central European habitats

15
16