Supplementary Materials

Marine Policy Short Communication

The limitations of diversity metrics in directing global marine conservation

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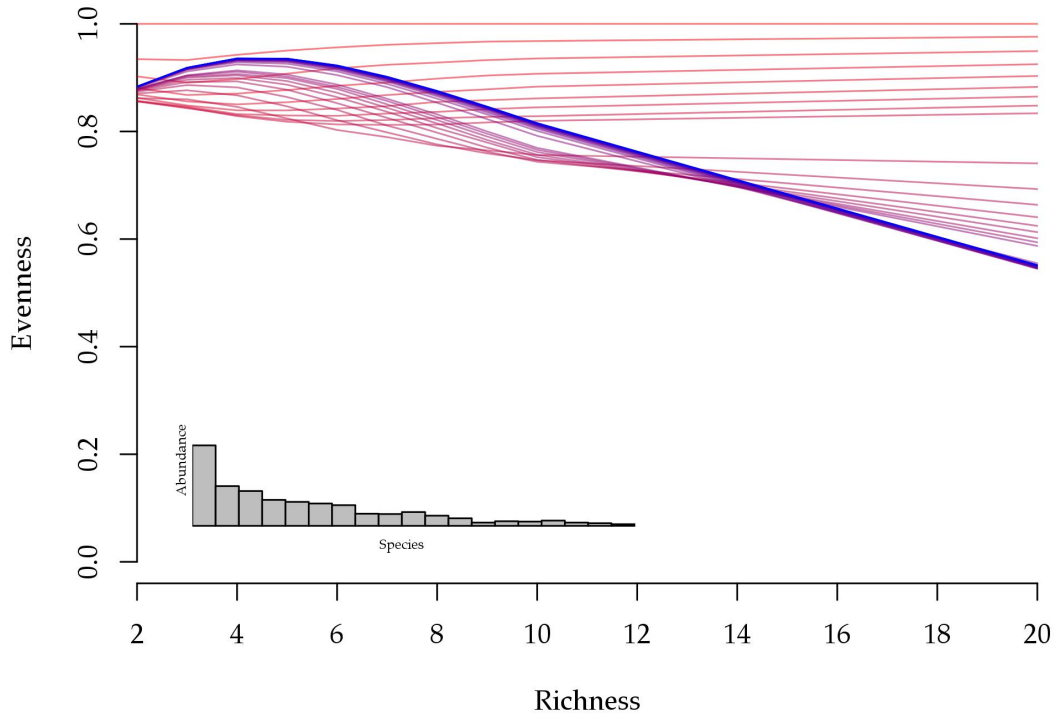
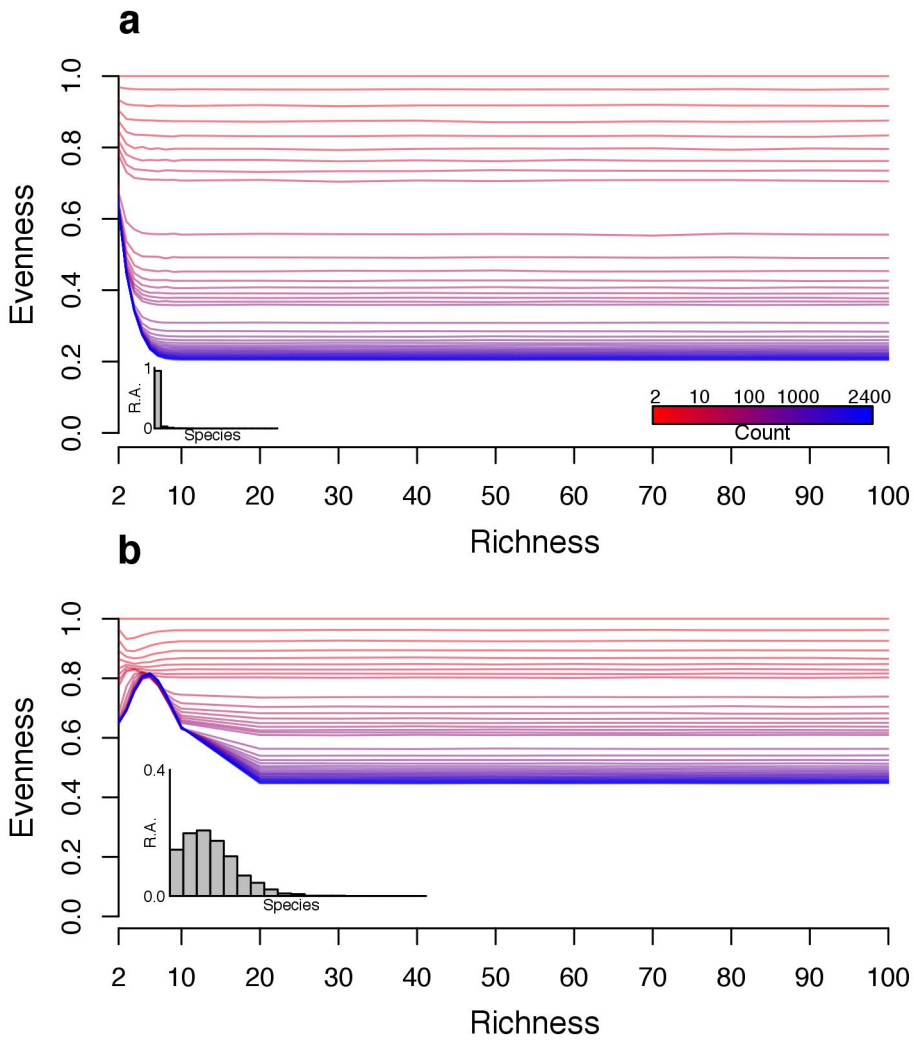
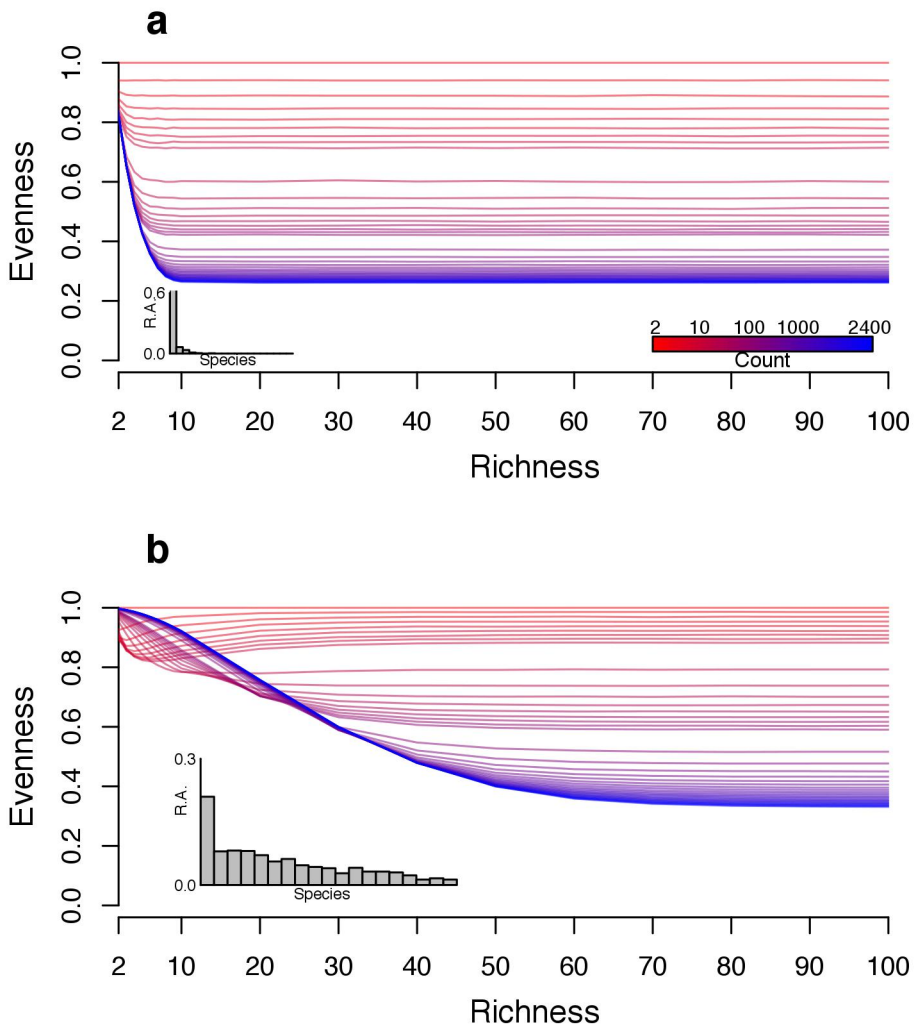
Supplementary figures



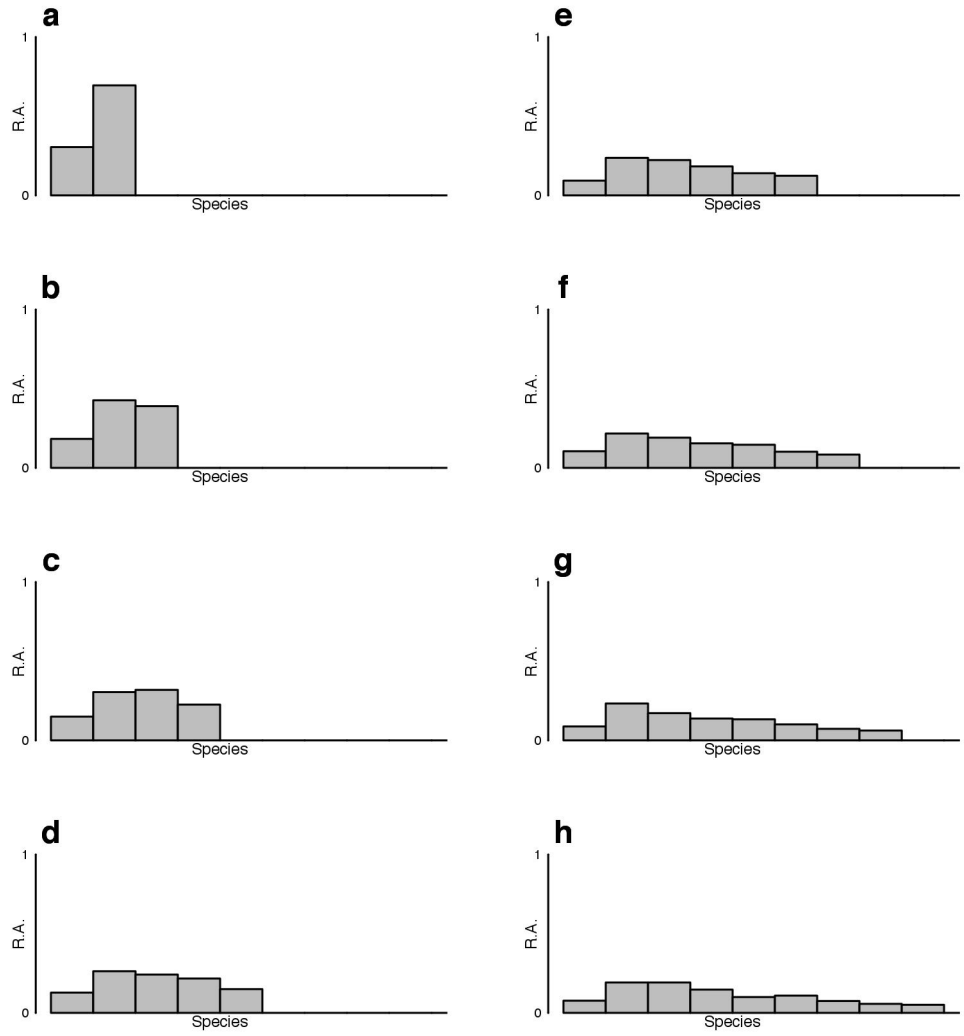
Supplementary Figure S1: Evenness as a function of species richness for communities with a lognormal SAD for an even community (mean = 1.5). Counts (*i.e.* sample sizes) range from 2 to 2400 individuals.



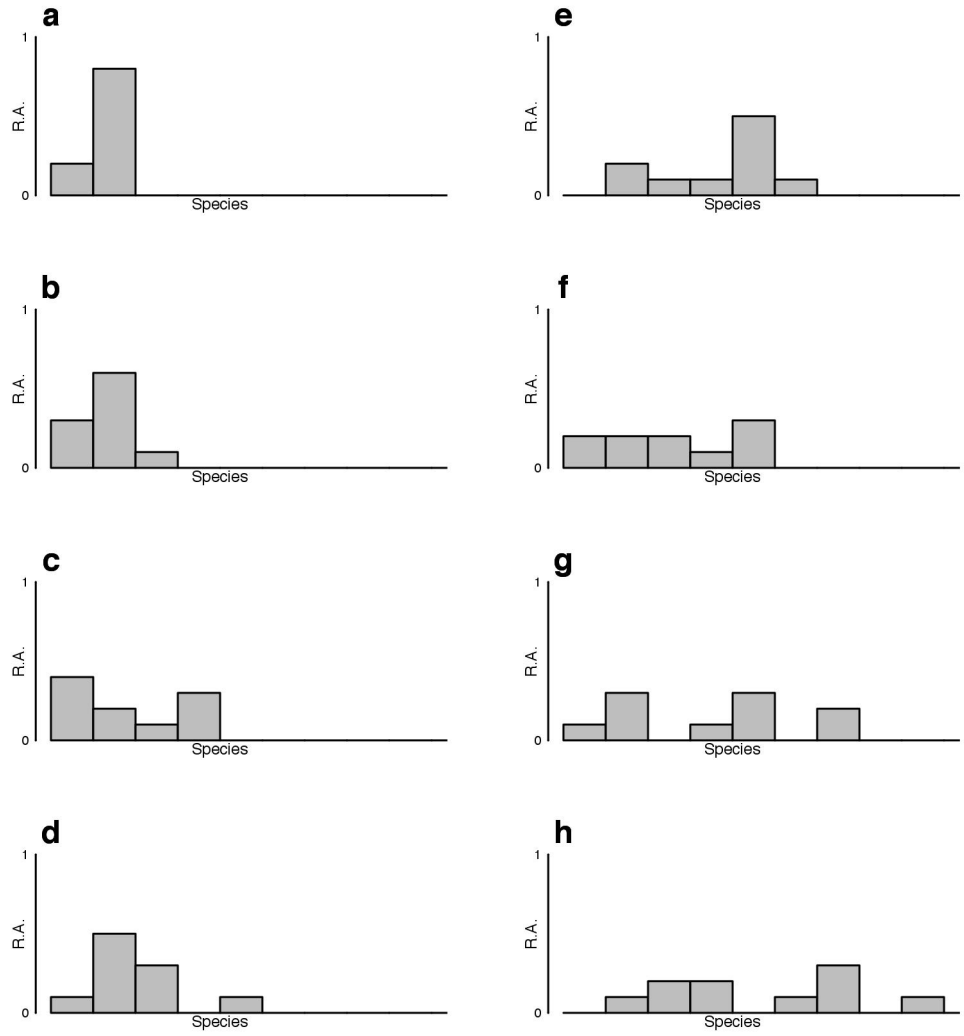
Supplementary Figure S2: Evenness as a function of species richness for communities with a gamma SAD. **a** is a classic uneven hollow curve (shape = 0.5); **b** is a more even distribution (shape = 4). Counts (*i.e.* sample sizes) range from 2 to 2400 individuals. Each line on the plot is the evenness for 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2100, 2200, 2300, 2400 individuals.



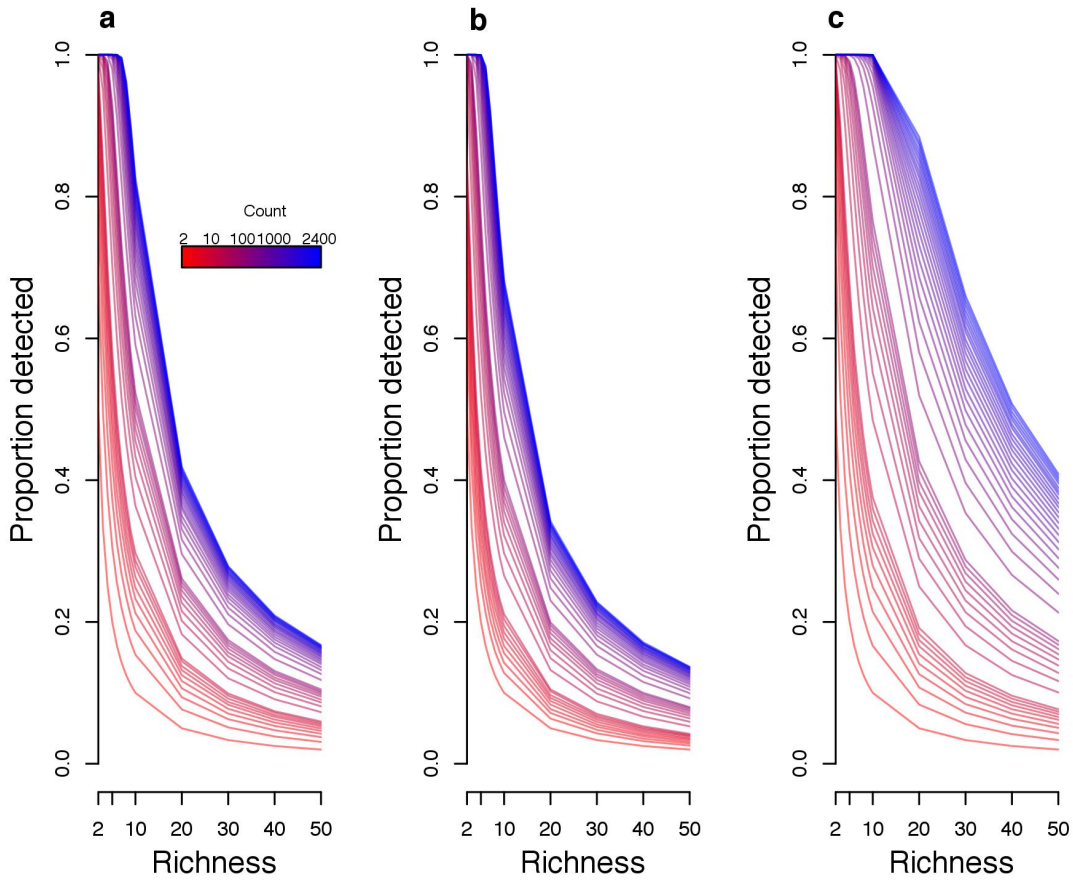
Supplementary Figure S3: Evenness as a function of species richness for communities with a negative exponential SAD. **a** is a classic uneven hollow curve (rate = 0.5); **b** is a more even distribution (rate = 4). Counts (*i.e.* sample sizes) range from 2 to 2400 individuals.



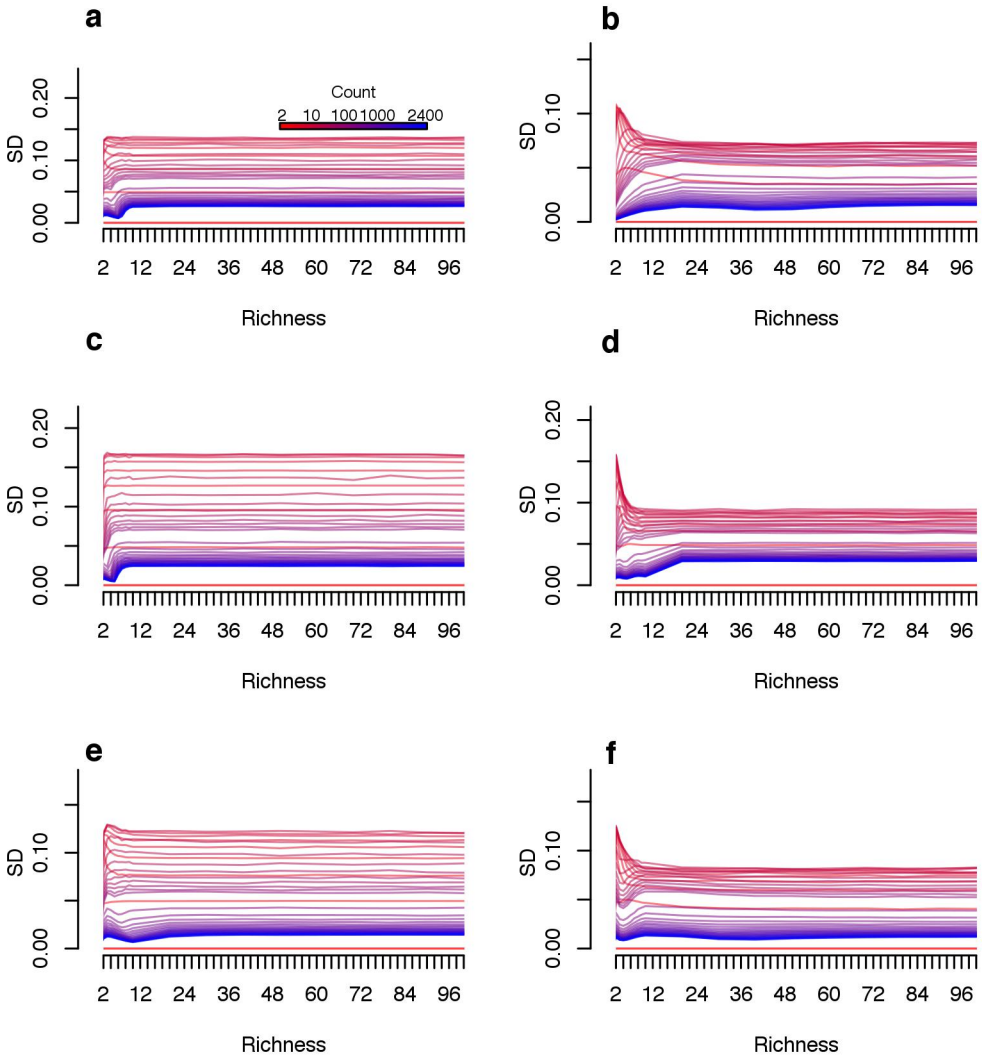
Supplementary Figure S4: Histogram of the relative abundances for 1000 individuals sampled from a lognormal distribution with mean = 1.5 . Each panel shows the SAD for different values of species richness: **a** richness = 2, **b** richness = 3, **c** richness = 4, **d** richness = 5, **e** richness = 6, **f** richness = 7, **g** richness = 8, **h** richness = 9. With a high sample size of 1000 individuals the true underlying distribution is sampled.



Supplementary Figure S5: Histogram of the relative abundances for 10 individuals sampled from a lognormal distribution with mean = 1.5 . Each panel shows the SAD for different values of species richness: **a** richness = 2, **b** richness = 3, **c** richness = 4, **d** richness = 5, **e** richness = 6, **f** richness = 7, **g** richness = 8, **h** richness = 9. With a low sample size of 10 individuals the true underlying distribution is not detected.



Supplementary Figure S6: Species detectability (from the model) as a function of species richness for a community for **a** negative exponential SAD (rate = 1), **b** gamma SAD (shape = 0.5) and **c** lognormal SAD (mean = 0.01). Count represents sample size and ranges from 2 to 2400 individuals.



Supplementary Figure S7: Standard deviation of evenness estimates as a function of species richness for a community under different SADs. The negative exponential is presented with rate = 1 (**a**) and rate = 0.1 (**b**); gamma SAD with shape = 0.5 (**c**) and shape = 4 (**d**); lognormal SAD with mean = 0.01 (**e**) and mean = 1.5 (**f**). Count represents sample size and ranges from 2 to 2400 individuals. Variation around the evenness estimates is higher at low sample sizes for all distribution forms.