

## DIGITAL SUPPLEMENT B<sup>†</sup>

Power vs. sample size curves for hotspot/coldspot tests of occurrence probability.

**Figure B1.** Power vs. sample size curves for hotspot/coldspot tests of occurrence probability (i.e., case 2 described in section 1.2). Curves are presented based on the binomial distribution, assuming that the probability of occurrence remains constant for a given species in a given place over the study period, and that the statistical test used is Fisher's Two-Proportion Exact Test (one-tailed,  $\alpha=0.05$ ). Points show where tests were evaluated; curves are linearly interpolated in between points. Each panel shows curves for a different value of the reference (e.g., regional) prevalence. Each color represents a different multiplicative effect size. For example, the red curve in the lower left panel is for the test of the alternative hypothesis ( $H_a$ ): probability of occurrence = 0.6 versus the null hypothesis ( $H_0$ ): probability of occurrence = 0.2, i.e. a 300% higher prevalence than the reference value.

**Figure B2.** Relationship of sampling effort to expected number of presences observed for different prevalence values. Curves show number of surveys (y axis) need to have a specified probability (color), of observing at least k presences (x axis) under a binomial distribution  $\text{Binomial}(N,p)$ , where N is the total number of surveys and p is the species' prevalence (probability of occurrence). For example, the red curve in the lower left panel shows that when a species' prevalence is 33%, one would have to conduct 44 surveys to have a 95% chance of observing 10 presences. Analysis assumes surveys are independent and prevalences do not change over the time period studied. Each panel shows curves for a different value of prevalence.

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## Number of surveys N needed to detect at least k presences

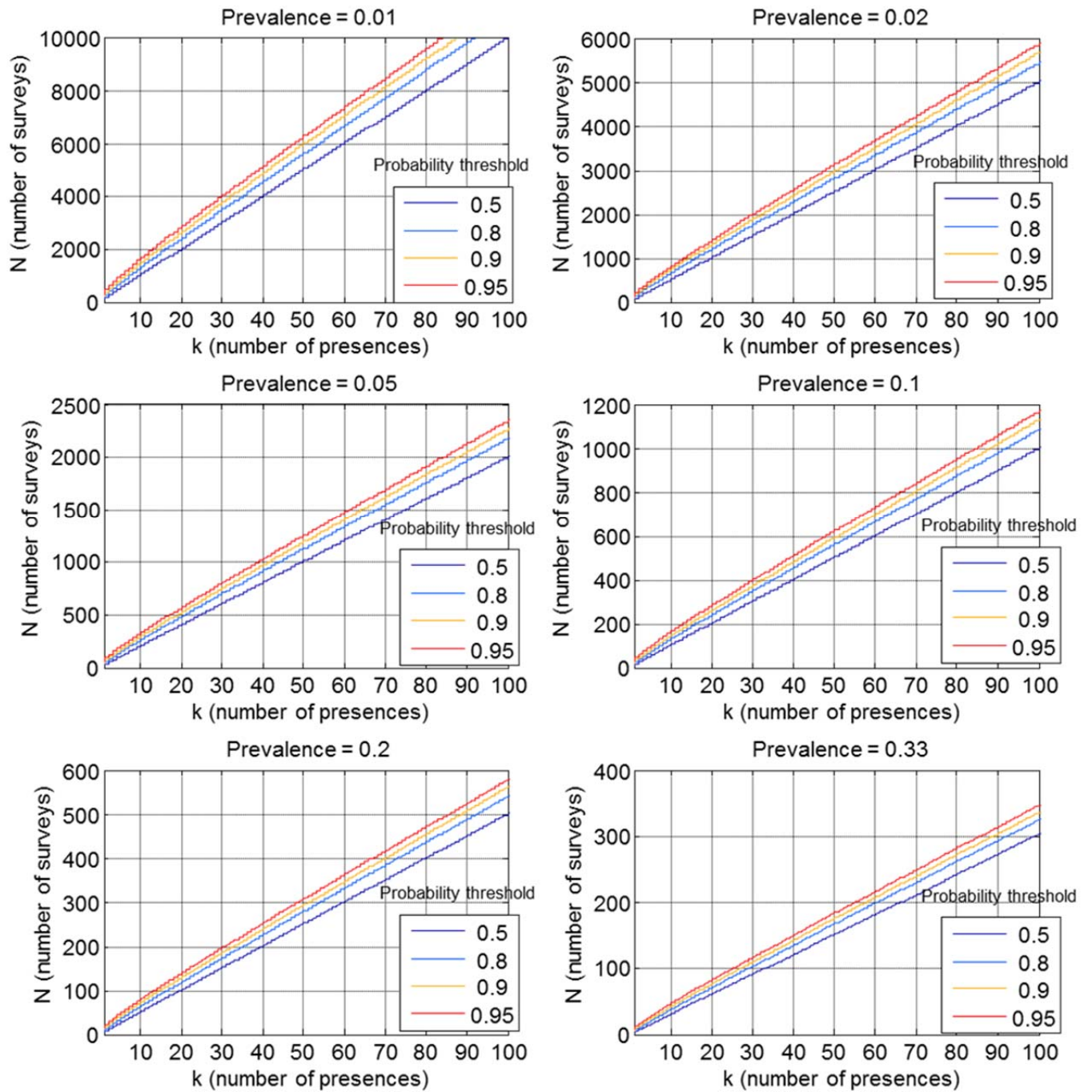


Figure B2.