Supplementary information S1 – modelled population declines

In addition to the results presented in the manuscript (using data from experimental microcosms) we ran identical simulations on population data produced by a mathematical model.

10 different rates of population decline were simulated using the equation

$$n(t) = n_0 \cdot \left(\frac{e^{-B(t-t^*)} - 1}{e^{Bt^*} - 1} \right)$$

Where n_0 is the population at time zero, B describes the rate at which the population declines, and t^* is the time at which the population goes extinct. This model was used to simulate 10 different rates of population decline (values of B from -0.05 to 0.05 in steps of 0.01), with the number of individuals at each time step being rounded to nearest whole number. These data were then treated in exactly the same way as the experimental replicates.

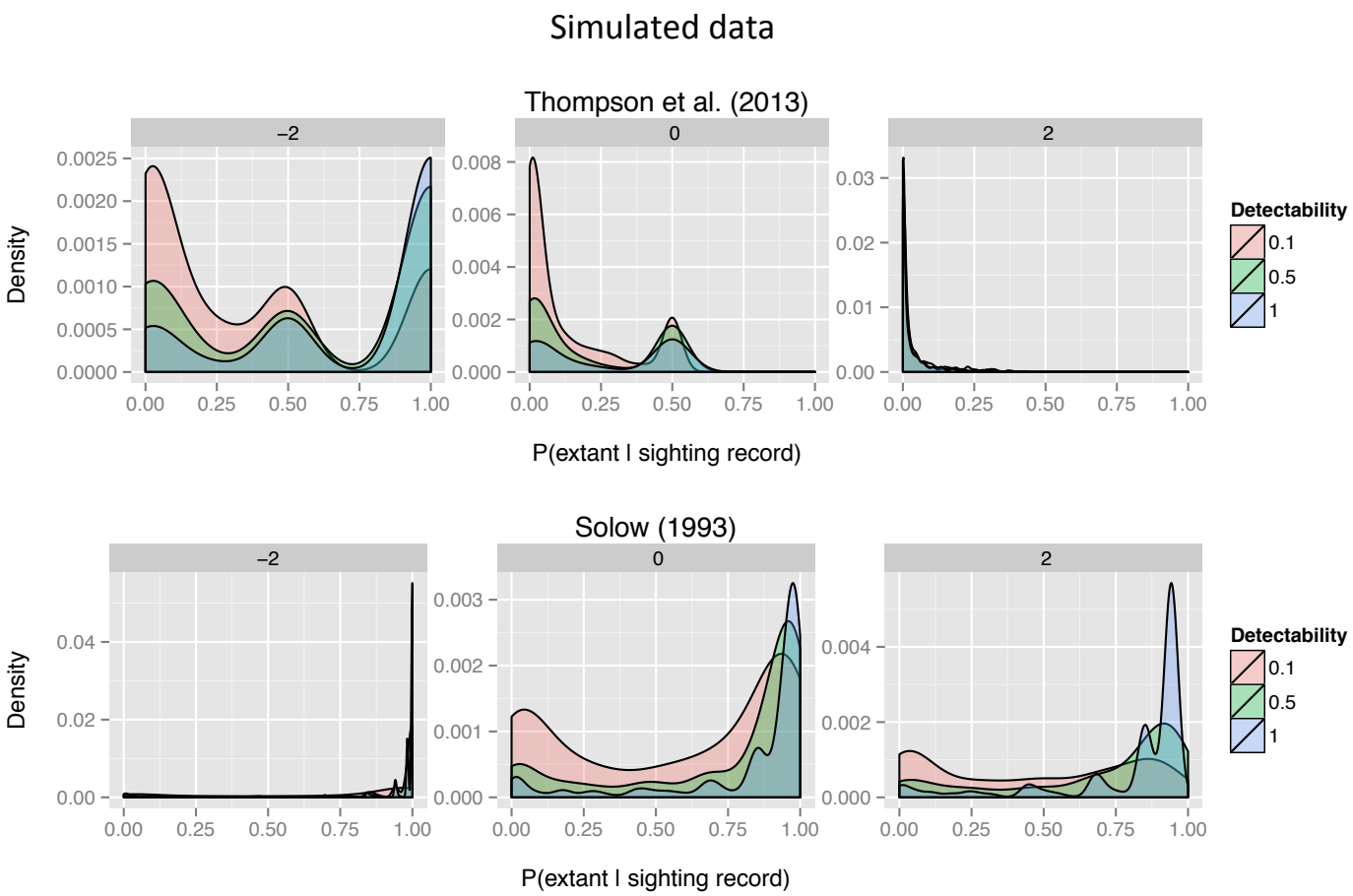

Figure 1. Distribution of probabilities of persistence produced by Thompson et al. (2013)'s method and Solow (1993)'s using data from the 10 simulated population declines, and across the three detectability levels at two days prior to extinction (day -2), the day of extinction (day 0), and two days after extinction (day 2). Data shown is for constant search efforts with a prior of 0.5. P values of 1 indicate a species has been observed as extant.

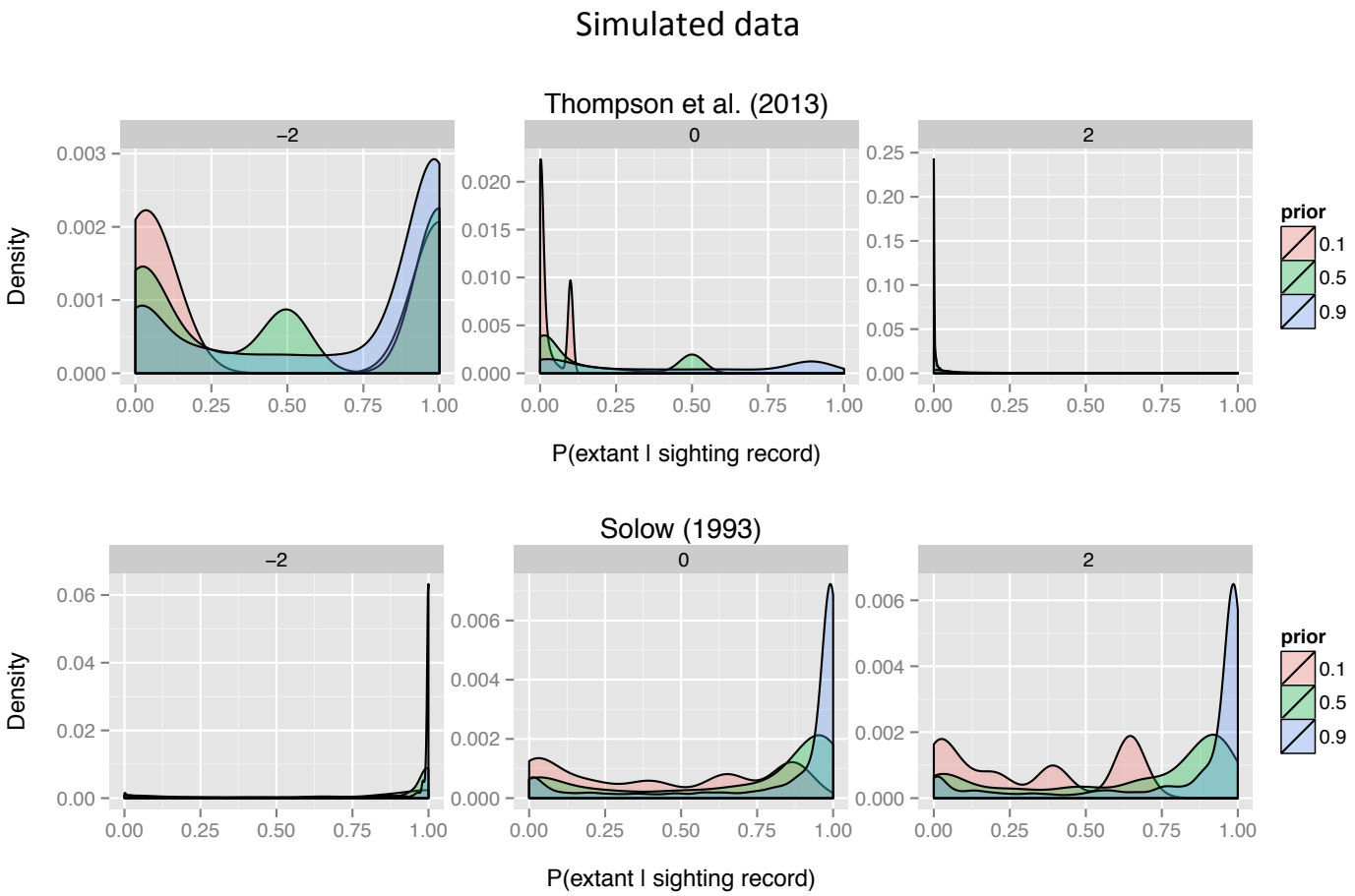

Figure 2. Distribution of probabilities of persistence produced by Thompson et al. (2013)'s method and Solow (1993)'s across the three prior values at two days prior to extinction (day -2), the day of extinction (day 0), and two days after extinction (day 2). Data shown is for constant search effort with all three levels of detectability Included (0.1, 0.5, 1). P values of 1 indicate a species has been observed as extant.

Supplementary information S2 – effect of decreasing, increasing, and random search regimes

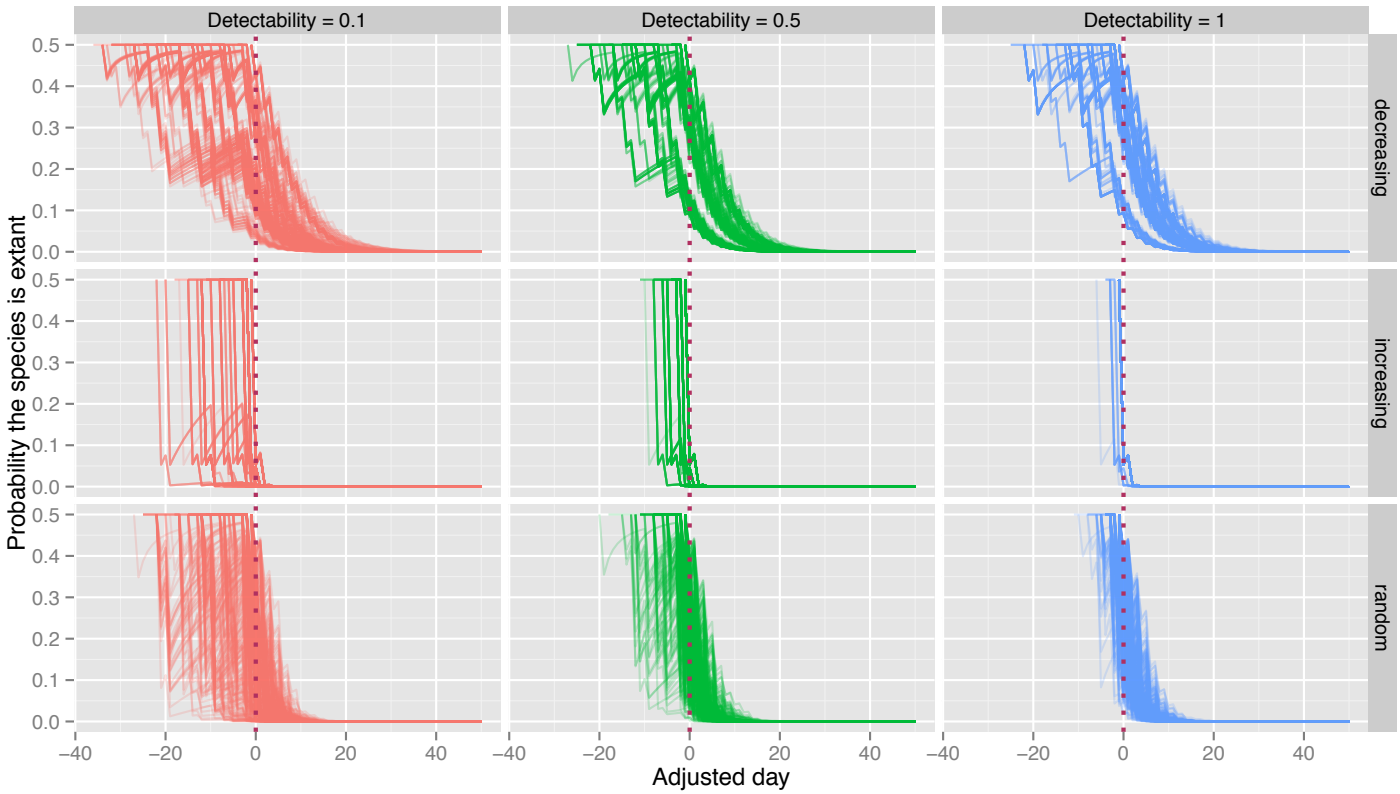

Figure 1. Probabilities of a population persisting across three different search regimes (decreasing, increasing, and constant) and three levels of detectability (0.1, 0.5, and 1). P values may increase because when there is no searching at a given time point, the model assumes the probability of persistence returns to the prior assumption that a species is extant (1-prior).