Supplementary Materials for On the Effects of Selection and Mutation on Species Tree Inference

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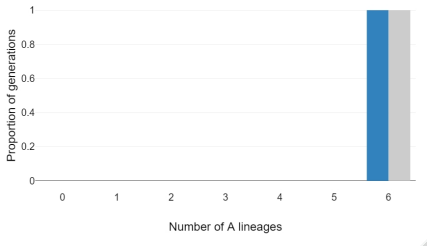
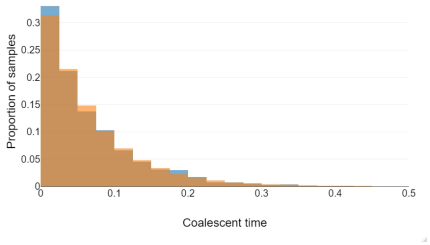
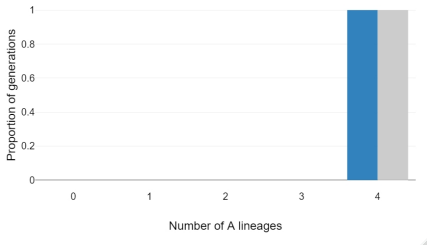


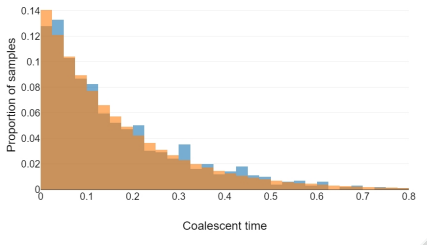
(a) $M = 6, s = 2, p_m = .0001$, h



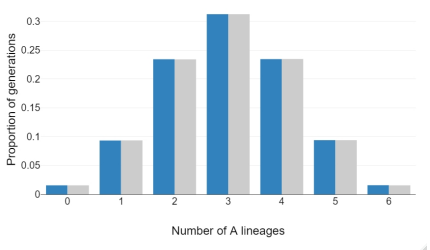
(b) $M = 6, s = 2, p_m = .0001$, time



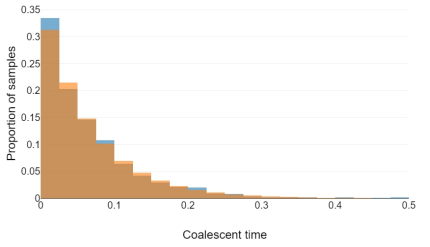
(c) $M = 4, s = 2, p_m = .0001$, h



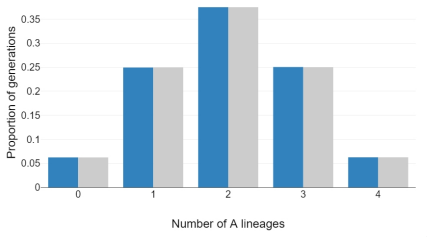
(d) $M = 4, s = 2, p_m = .0001$, time



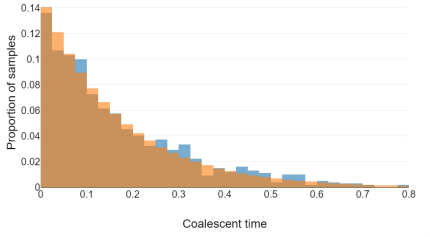
(e) $M = 6, s = 1.0002, p_m = .1$, h



(f) $M = 6, s = 1.0002, p_m = .1$, time

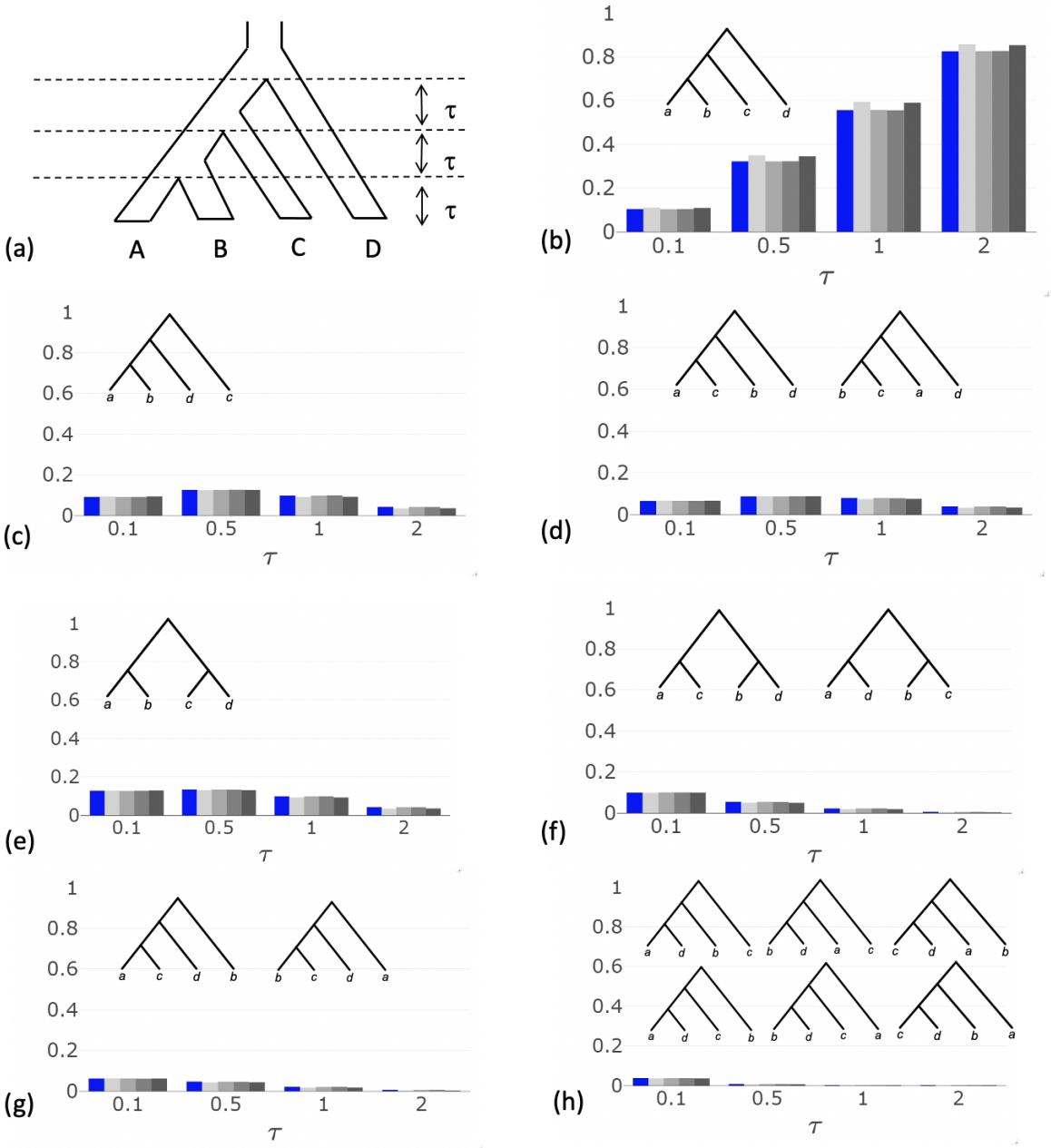


(g) $M = 4, s = 1.0002, p_m = .1$, h

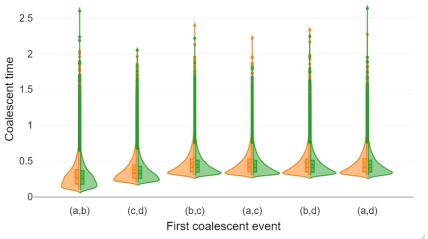


(h) $M = 4, s = 1.0002, p_m = .1$, time

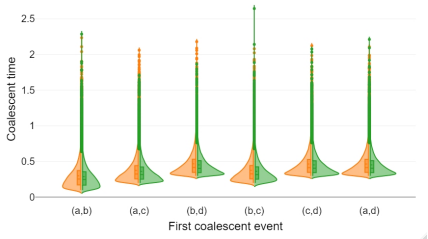
Supplementary Figure 1: Distribution of h (left column; observed values are shown in blue and predicted values are shown in gray) and coalescent times (right column; observed values are shown in blue and predicted values are shown in orange) for various values of s and p_m.



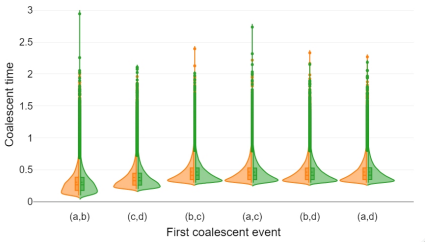
Supplementary Figure 2: Gene tree probabilities for various choices of the selection and mutation parameters. (a) The asymmetric species tree with internal branch lengths given by τ. Panels (b) - (f) give bar charts for which the height of the bars corresponds to the probability of each of the gene trees shown in that panel. Each cluster of bars gives probabilities for a different choice of τ. The blue bar shows probabilities for the neutral coalescent (s = 1). The other bars give probabilities for s = 1.0002, pm = 0.0001 (light gray, left); s = 1.0002, pm = 0.1 (medium-light gray, middle-left); s = 2, pm = 0.0001 (medium-dark gray, middle-right); s = 2, pm = 0.1 (dark gray, right).



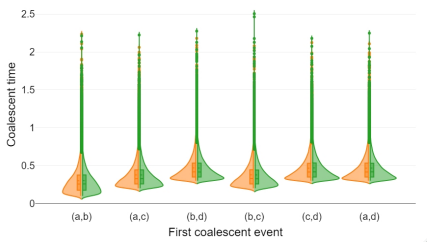
(a) Symmetric case, $\tau = .1, s = 2, p_m = .1$



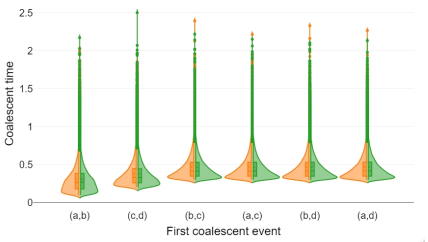
(b) Asymmetric case, $\tau = .1, s = 2, p_m = .1$



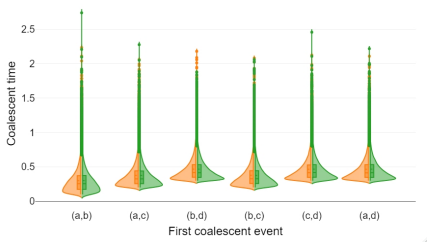
(c) Symmetric case, $\tau = .1, s = 2, p_m = .0001$



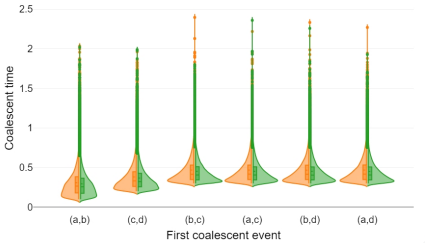
(d) Symmetric case, $\tau = .1, s = 2, p_m = .0001$



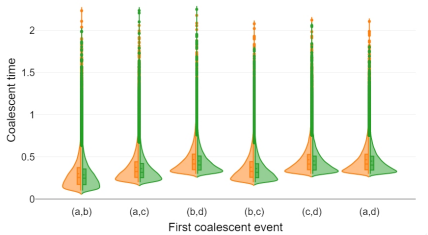
(e) Symmetric case, $\tau = .1, s = 1.0002, p_m = .1$



(f) Asymmetric case, $\tau = .1, s = 1.0002, p_m = .1$

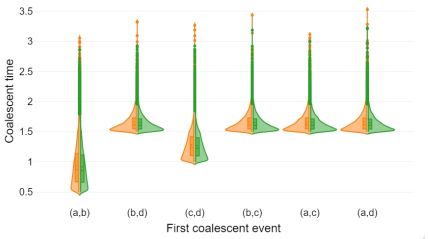


(g) Symmetric case, $\tau = .1, s = 1.0002, p_m = .0001$

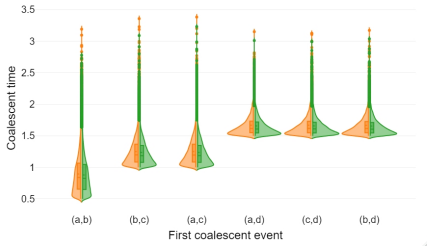


(h) Asymmetric case, $\tau = .1, s = 1.0002, p_m = .0001$

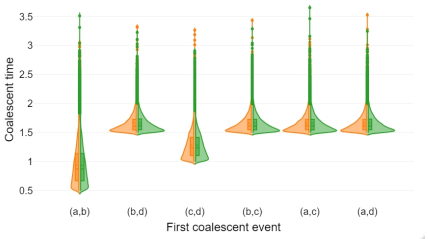
Supplementary Figure 3: Distribution of the first coalescent time when $\tau = .1$ for the symmetric (left column) and asymmetric (right column) topologies for various choices of s and p_m. The distributions shown in orange correspond to the neutral process, while those in green correspond to the process with selection.



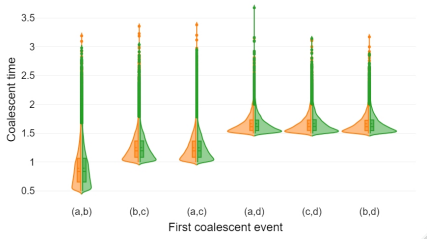
(a) Symmetric case, $\tau = .5, s = 2, p_m = .1$



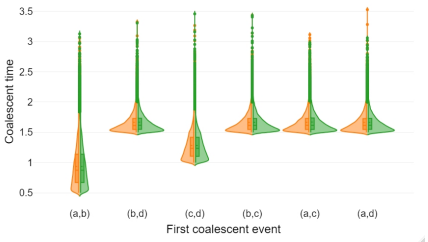
(b) Asymmetric case, $\tau = .5, s = 2, p_m = .1$



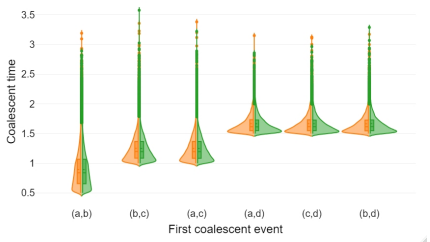
(c) Symmetric case, $\tau = .5, s = 2, p_m = .0001$



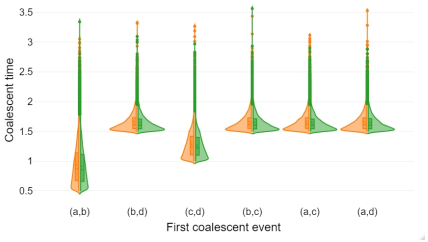
(d) Symmetric case, $\tau = .5, s = 2, p_m = .0001$



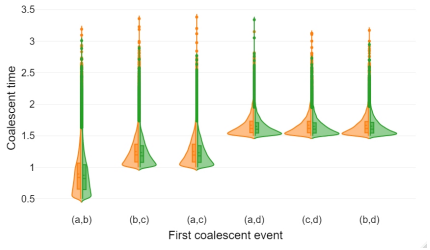
(e) Symmetric case, $\tau = .5, s = 1.0002, p_m = .1$



(f) Asymmetric case, $\tau = .5, s = 1.0002, p_m = .1$

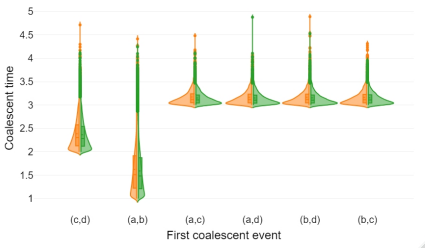


(g) Symmetric case, $\tau = .5, s = 1.0002, p_m = .0001$

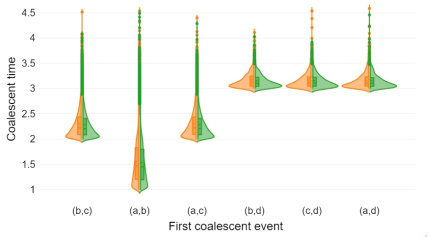


(h) Asymmetric case, $\tau = .5, s = 1.0002, p_m = .0001$

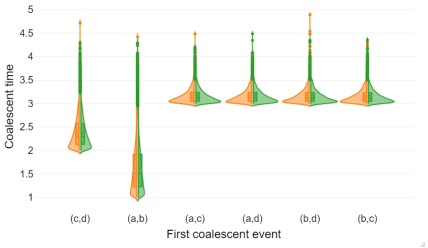
Supplementary Figure 4: Distribution of the first coalescent time when $\tau = .5$ for the symmetric (left column) and asymmetric (right column) topologies for various choices of s and p_m. The distributions shown in orange correspond to the neutral process, while those in green correspond to the process with selection.



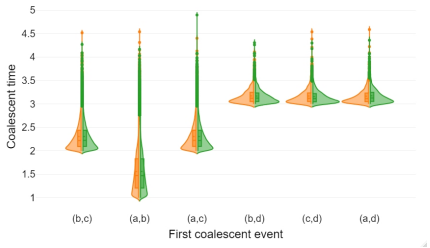
(a) Symmetric case, $\tau = 1.0, s = 2, p_m = .1$



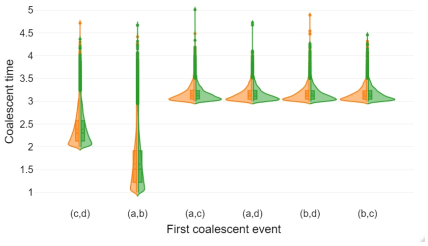
(b) Asymmetric case, $\tau = 1.0, s = 2, p_m = .1$



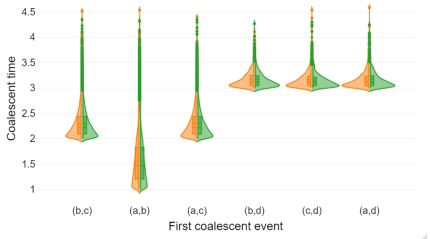
(c) Symmetric case, $\tau = 1.0, s = 2, p_m = .0001$



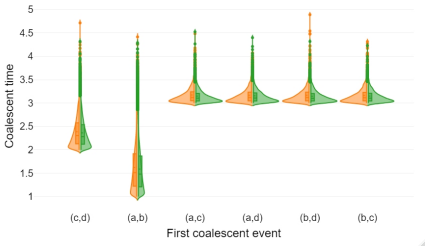
(d) Symmetric case, $\tau = 1.0, s = 2, p_m = .0001$



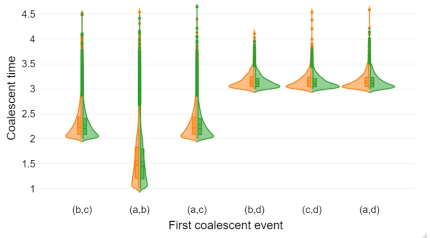
(e) Symmetric case, $\tau = 1.0, s = 1.0002, p_m = .1$



(f) Asymmetric case, $\tau = 1.0, s = 1.0002, p_m = .1$

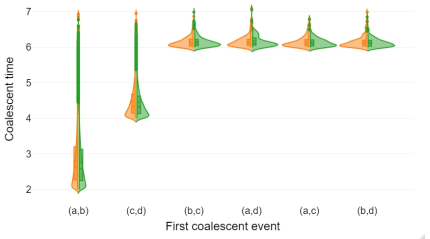


(g) Symmetric case, $\tau = 1.0, s = 1.0002, p_m = .0001$

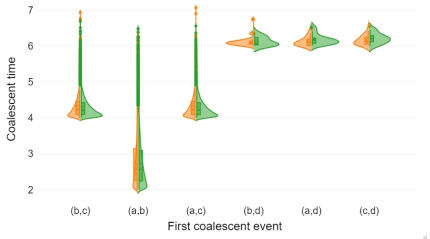


(h) Asymmetric case, $\tau = 1.0, s = 1.0002, p_m = .0001$

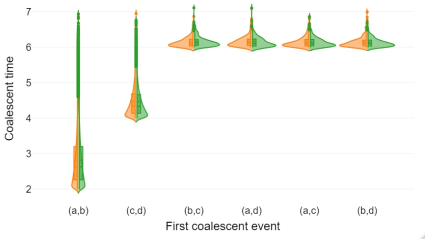
Supplementary Figure 5: Distribution of the first coalescent time when $\tau = 1.0$ for the symmetric (left column) and asymmetric (right column) topologies for various choices of s and p_m. The distributions shown in orange correspond to the neutral process, while those in green correspond to the process with selection.



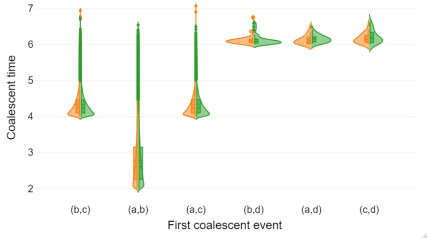
(a) Symmetric case, $\tau = 2.0, s = 2, p_m = .1$



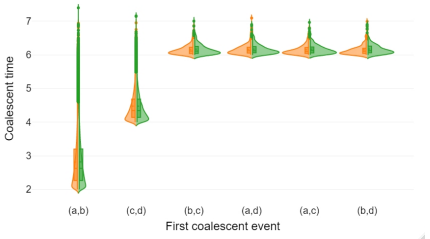
(b) Asymmetric case, $\tau = 2.0, s = 2, p_m = .1$



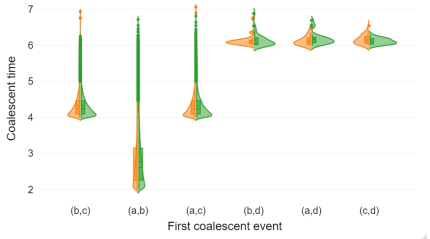
(c) Symmetric case, $\tau = 2.0, s = 2, p_m = .0001$



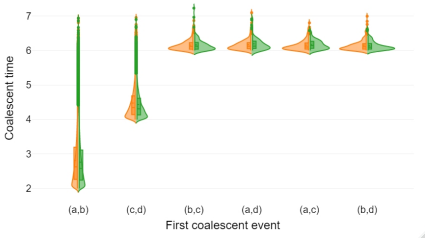
(d) Symmetric case, $\tau = 2.0, s = 2, p_m = .0001$



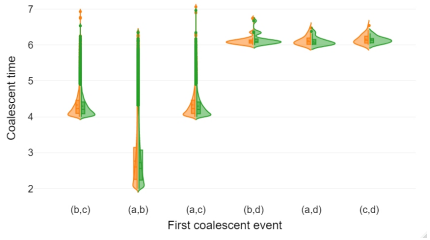
(e) Symmetric case, $\tau = 2.0, s = 1.0002, p_m = .1$



(f) Asymmetric case, $\tau = 2.0, s = 1.0002, p_m = .1$



(g) Symmetric case, $\tau = 2.0, s = 1.0002, p_m = .0001$



(h) Asymmetric case, $\tau = 2.0, s = 1.0002, p_m = .0001$

Supplementary Figure 6: Distribution of the first coalescent time when $\tau = 2.0$ for the symmetric (left column) and asymmetric (right column) topologies for various choices of s and p_m. The distributions shown in orange correspond to the neutral process, while those in green correspond to the process with selection.