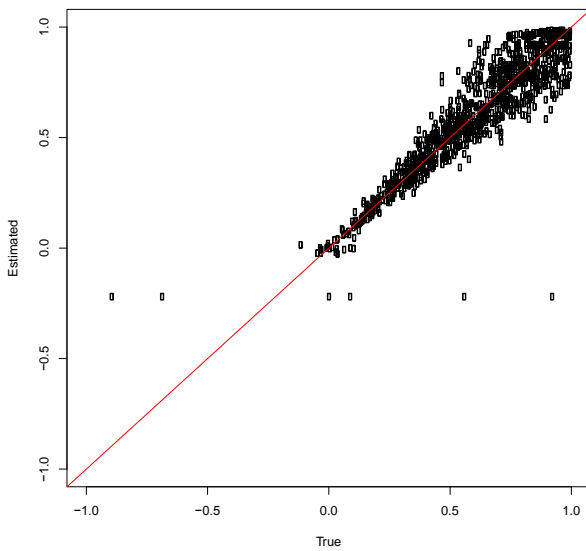


**Figure S4.** ABC model choice parameter estimations for 1000 pseudo-observables with a haploid population of  $N_e=1000$ . Each circle is the mode of the posterior distribution from the 0.1% best simulations.

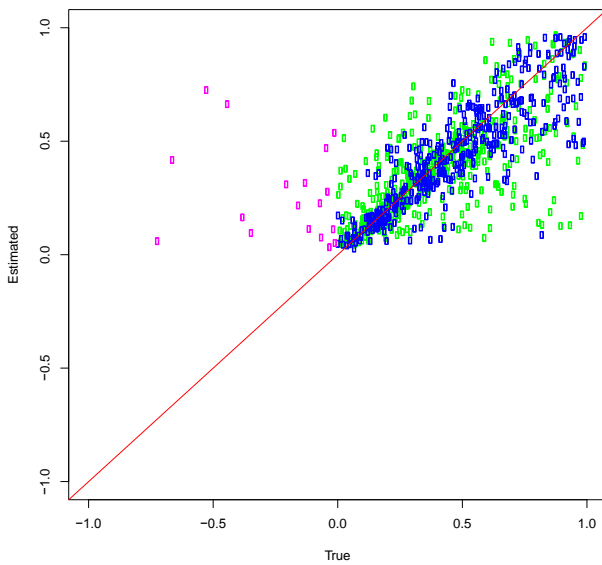
Case 1: Pseudo-observables with constant selection (A)  $M_0$  estimates of  $s$

**A**

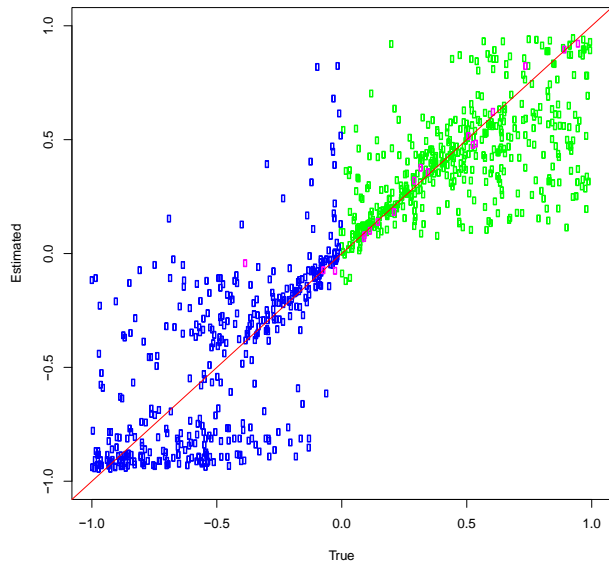


Case 2: Pseudo-observables with changing selection (B)  $M_1$  estimates of  $s_1$  (C)  $M_1$  estimates of  $s_2$  (D)  $M_1$  estimates of  $CP$

**B**



**C**



**D**

