



Figure S20: Confusion matrices comparing classification rates when *SURFDAWave*, *Trendsetter*, diploS/HIC, and evolBoosting are trained and tested using simulations conducted under *Drosophila* population parameters to differentiate between sweeps and neutrality. *SURFDAWave* results shown are using Daubechies' least-asymmetric wavelets to estimate spatial distributions of summary statistics and γ and levels are chosen through cross validation (see *Training the models*). Summary statistics $\hat{\pi}$, H_1 , H_{12} , H_2/H_1 , and frequency of the first, second, third, fourth, and fifth most common haplotypes used by both *Trendsetter* and *SURFDAWave*.