

**Table S7 P-values of obtaining multilocus summary statistic of the data under three different models. P values are not corrected for multiple tests.**

Stat	Split	Split no migration	No split
Mean( $S_{S. schwerinii}$ )	0.72	0.43	0.87
Mean( $\text{singleton}_{S. schwerinii}$ )	0.71	0.47	0.86
Mean( $\pi w_{S. schwerinii}$ )	0.67	0.36	0.87
Mean( $\text{TajD}_{S. schwerinii}$ )	0.85	0.80	0.93
Mean( $\text{FuLiF}^*_{S. schwerinii}$ )	0.72	0.57	0.88
Mean( $\text{FuLiD}^*_{S. schwerinii}$ )	0.61	0.42	0.74
Mean( $\text{num\_haplo}_{S. schwerinii}$ )	0.72	0.40	0.89
Mean( $\text{DandVH}_{S. schwerinii}$ )	0.64	0.31	0.88
Mean( $\text{WallsB}_{S. schwerinii}$ )	0.38	0.23	0.52
Mean( $\text{WallsQ}_{S. schwerinii}$ )	0.39	0.22	0.54
Mean( $S_{S. viminalis}$ )	0.68	0.52	0.87
Mean( $\text{singleton}_{S. viminalis}$ )	0.63	0.57	0.85
Mean( $\pi w_{S. viminalis}$ )	0.65	0.48	0.86
Mean( $\text{TajD}_{S. viminalis}$ )	0.46	0.25	0.79
Mean( $\text{FuLiF}^*_{S. viminalis}$ )	0.59	0.38	0.80
Mean( $\text{FuLiD}^*_{S. viminalis}$ )	0.64	0.46	0.75
Mean( $\text{num\_haplo}_{S. viminalis}$ )	0.59	0.49	0.87
Mean( $\text{DandVH}_{S. viminalis}$ )	0.45	0.32	0.86
Mean( $\text{WallsB}_{S. viminalis}$ )	0.66	0.43	0.81
Mean( $\text{WallsQ}_{S. viminalis}$ )	0.69	0.45	0.85
Mean( $S_{\text{combined}}$ )	0.61	0.44	0.88
Mean( $\text{singleton}_{\text{combined}}$ )	0.73	0.53	0.87
Mean( $\pi w_{\text{combined}}$ )	0.55	0.35	0.88
Mean( $\text{TajD}_{\text{combined}}$ )	0.56	0.68	0.92
Mean( $\text{FuLiF}^*_{\text{combined}}$ )	0.52	0.56	0.89
Mean( $\text{FuLiD}^*_{\text{combined}}$ )	0.49	0.47	0.73
Mean( $\text{num\_haplo}_{\text{combined}}$ )	0.68	0.42	0.91
Mean( $\text{DandVH}_{\text{combined}}$ )	0.52	0.29	0.90

Mean(WallsB <sub>combined</sub> )	0.23	0.18	0.54
Mean(WallsQ <sub>combined</sub> )	0.24	0.19	0.55
Mean(Fst)	0.44	0.57	1.00
Mean(shared)	0.68	0.49	0.81
Mean(fixed)	0.30	0.26	1.00
Mean(private <sub>S. schwerinii</sub> )	0.76	0.46	0.90
Mean(private <sub>S. viminalis</sub> )	0.70	0.58	0.90
Var(S <sub>S. schwerinii</sub> )	0.86	0.78	0.89
Var(singleton <sub>S. schwerinii</sub> )	0.73	0.58	0.87
Var( $\pi$ w <sub>S. schwerinii</sub> )	0.58	0.32	0.87
Var(TajD <sub>S. schwerinii</sub> )	0.77	0.86	0.81
Var(FuLiF* <sub>S. schwerinii</sub> )	0.44	0.57	0.52
Var(FuLiD* <sub>S. schwerinii</sub> )	0.24	0.35	0.46
Var(num_haplo <sub>S. schwerinii</sub> )	0.97	0.93	0.91
Var(DandVH <sub>S. schwerinii</sub> )	0.26	0.52	0.45
Var(WallsB <sub>S. schwerinii</sub> )	0.34	0.40	0.69
Var(WallsQ <sub>S. schwerinii</sub> )	0.34	0.41	0.69
Var(S <sub>S. viminalis</sub> )	0.78	0.65	0.88
Var(singleton <sub>S. viminalis</sub> )	0.70	0.64	0.86
Var( $\pi$ w <sub>S. viminalis</sub> )	0.60	0.42	0.86
Var(TajD <sub>S. viminalis</sub> )	0.91	0.87	0.95
Var(FuLiF* <sub>S. viminalis</sub> )	0.74	0.76	0.77
Var(FuLiD* <sub>S. viminalis</sub> )	0.71	0.76	0.66
Var(num_haplo <sub>S. viminalis</sub> )	0.66	0.62	0.90
Var(DandVH <sub>S. viminalis</sub> )	0.54	0.65	0.82
Var(WallsB <sub>S. viminalis</sub> )	0.48	0.36	0.74
Var(WallsQ <sub>S. viminalis</sub> )	0.43	0.34	0.74
Var(S <sub>combined</sub> )	0.90	0.87	0.89
Var(singleton <sub>combined</sub> )	0.93	0.89	0.89
Var( $\pi$ w <sub>combined</sub> )	0.39	0.23	0.87
Var(TajD <sub>combined</sub> )	0.85	0.91	0.72

Var(FuLiF* <sub>combined</sub> )	0.85	0.88	0.62
Var(FuLiD* <sub>combined</sub> )	0.71	0.74	0.52
Var(num_haplo <sub>combined</sub> )	0.98	0.95	0.92
Var(DandVH <sub>combined</sub> )	0.60	0.73	0.42
Var(WallsB <sub>combined</sub> )	0.31	0.40	0.69
Var(WallsQ <sub>combined</sub> )	0.37	0.46	0.70
Var(Fst)	0.75	0.80	1.00
Var(shared)	0.76	0.61	0.86
Var(fixed)	0.28	0.24	1.00
Var(private <sub>S. schwerinii</sub> )	0.89	0.81	0.90
Var(private <sub>S. viminalis</sub> )	0.77	0.69	0.90

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