

Supplemental Table S1. Theoretical maximum and minimum values for allelic diversity and variance.

Each data set (i.e. pair of populations) has the following properties: ten samples per population; no allelic overlap between each of the two populations, equal AMD (Δ) and equal variance within each population, and with 50% of the total (Δ_T) residing in each population.

Minimum one allele for entire data set (1 marker)
two diploid pops, each with 10 samples

AMDA					
Source of Information	Degrees of Freedom	Diversity Estimate exp(sH)	[0,1] Scaled Diversity D'	Δ	Ω
AP	1	1.00	0.00	0.0	0.00
AI	18	1.00	0.00	0.0	0.00
WI	20	1.00	0.00	1.0	1.00
Total	39	1.00	0.00	1.0	1.00

AMOVA					
Source	df	SS	MS	Est. Var.	%
AP	1	0.00	0.00	0.00	0%
AI	18	0.00	0.00	0.00	0%
WI	20	0.00	0.00	0.00	0%
Total	39	0.00	0.00	0.00	0%

	Stat	Value
one allele for entire data set (10 markers)	Ω_{ST}	0.00
two diploid pops, each with 10 samples	Ω_{IS}	0.00
	Ω_{IT}	0.00

	Stat	Value
	F_{ST}	#N/A
	F_{IS}	#N/A
	F_{IT}	#N/A

Maximum (Δ_{TMAX}) all alleles differ (1 marker)
two diploid pops, each with 10 samples

Source of Information	Degrees of Freedom	Diversity Estimate exp(sH)	[0,1] Scaled Diversity D'	Δ	Ω	Estimated Probability P(rand >= data)
AP	1	2.00	1.00	20.0	0.50	1.00
AI	18	10.00	1.00	18.0	0.45	1.00
WI	20	2.00	1.00	2.0	0.05	1.00
Total	39	40.00	1.00	40.0	1.00	

Source	df	SS	MS	Est. Var.	%
AP	1	0.50	0.50	0.00	0%
AI	18	9.00	0.50	0.00	0%
WI	20	10.00	0.50	0.50	100%
Total	39	19.50		0.50	100%

	Stat	Value	P(rand >= data)	Stat	Value	P(rand >= data)
	Ω_{ST}	0.50	1.00	F_{ST}	0.00	1.00
	Ω_{IS}	0.90	1.00	F_{IS}	0.00	1.00
	Ω_{IT}	0.95	1.00	F_{IT}	0.00	1.00