Figure S1. The "snowball" forms of (A) *V. opulus* (*Opulus*) and (B) *V. plicatum* (*Lutescentia*). Note that the corollas of the flowers in the "snowball" form in *V. plicatum* are radially symmetrical in contrast to the asymmetrical corollas of SMFs in the wild-type form. Photographs by M.J. Donoghue.
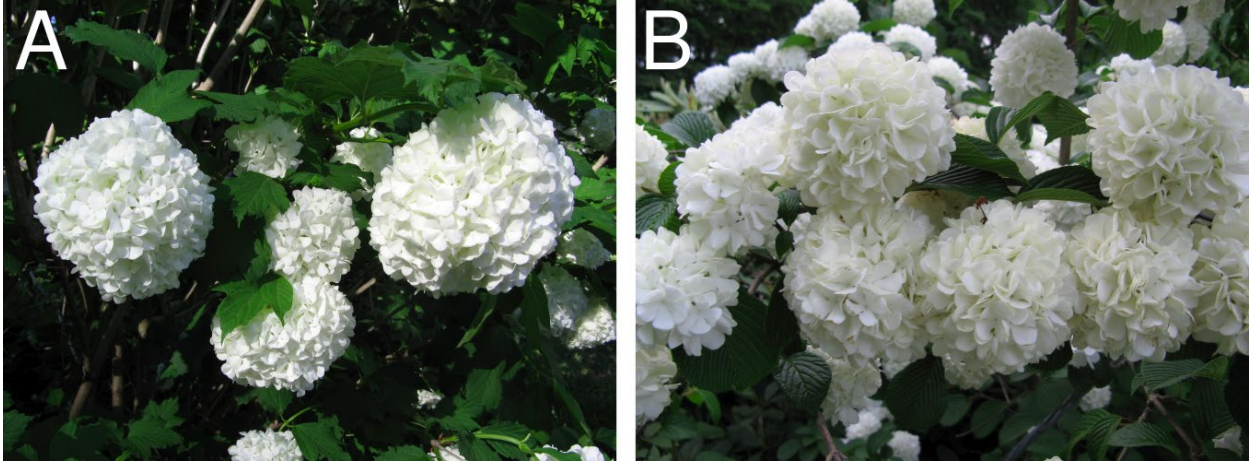
Figure S2: Maximum-likelihood reconstruction of specialized growth patterns on the 145 taxa *Viburnum* phylogeny under an "irreversible" transition model (log-likelihood = -12.1, AICc = 26.2). Analyses under "equal rates" (log-likelihood = -12.6, AICc = 26.9) and "all rates different" (log-likelihood = -12.1, AICc = 28.3) models yielded similar reconstructions (not shown). Pie-charts represent the transition probabilities, with black denoting the presence of a specialized growth pattern. The majority of nodes were resolved with > 0.99 probability so pie-charts are displayed for nodes within the clades where the specialized growth pattern is observed.
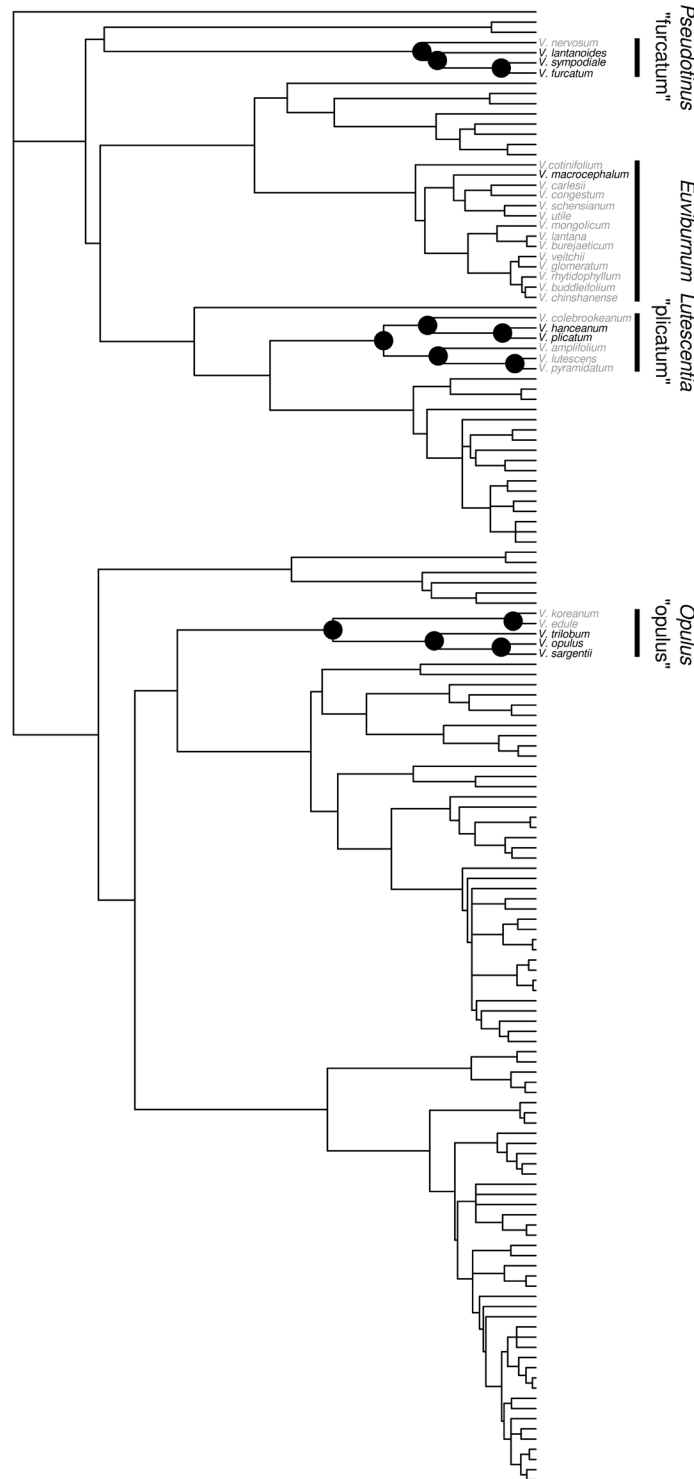
Figure S3. Maximum-likelihood reconstructions of SMF evolution estimated using (A) equal rates, (B) all rates different, and (C) "irreversible" transition models on the 145 taxa *Viburnum* phylogeny. Pie-charts represent the transition probabilities, with black and white denoting the presence or absence of SMFs, respectively. The majority of interior nodes were resolved with > 0.99 probability so pie-charts are displayed for nodes within the SMF clades.
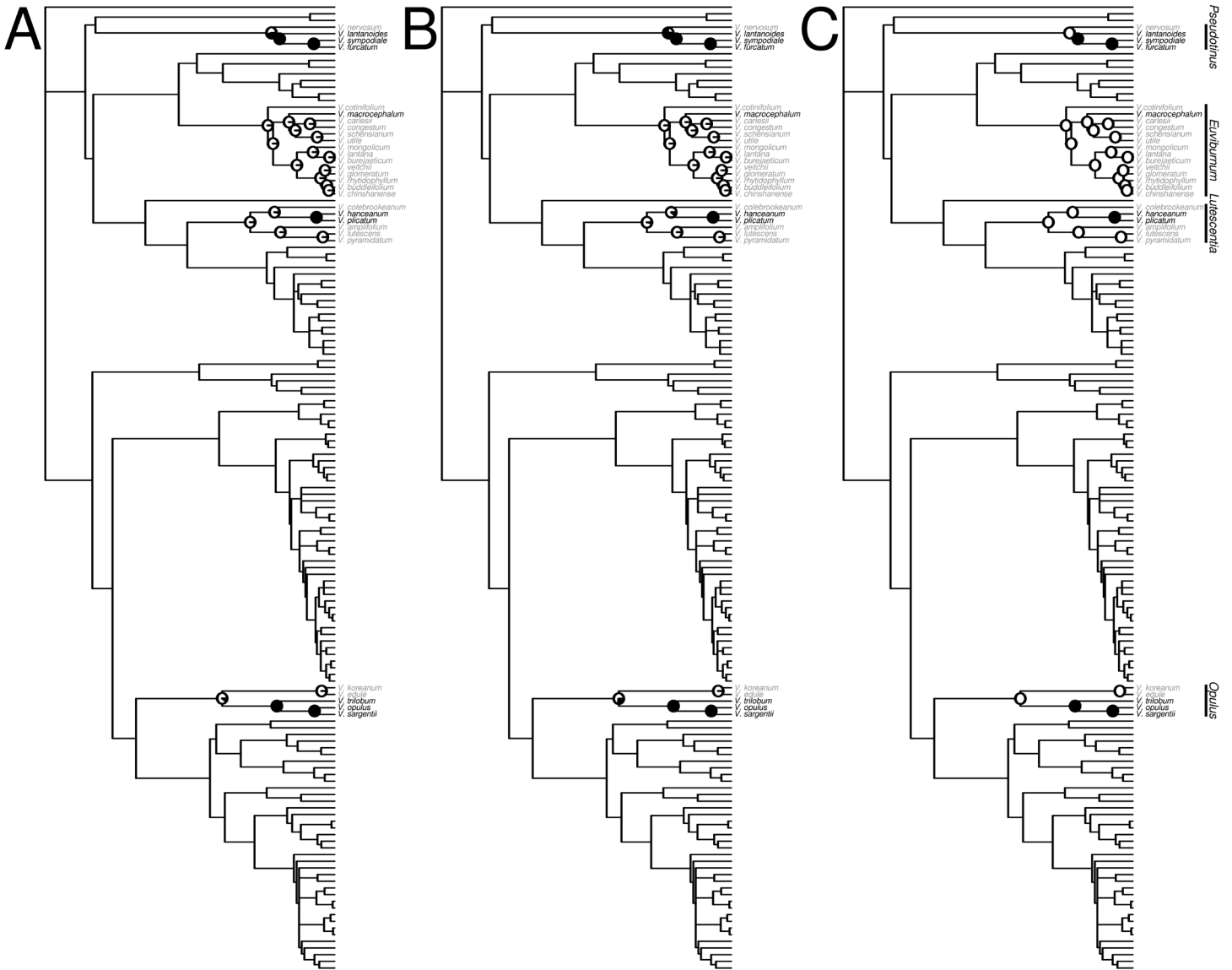
Table S1: Reads sequenced and number of loci recovered per sample analyzed in each dataset. For *Euviburnum,* data are reported for the *min_ingroup_10* dataset.

Clade	Species	Reads (x 10⁶)	Consensus loci	Loci (*min4*)	Loci (*min_ingroup*)
Pseudotinus	V. nervosum	2.28	70,450	18,471	7084
	V. lantanoides	5.41	316,669	14,528	7084
	V. sympodiale	4.30	145,031	22,191	7084
	V. furcatum	4.84	239,078	18,374	7084
Urceolata (outgroup)	V. taiwanianum	6.27	303,954	17,766	3439
	V. urceolatum	2.40	99,753	15,238	2768
Opulus	V. edule	1.98	90285	24579	8551
	V. trilobum	0.987	52223	21598	8551
	V. opulus	2.80	71849	25548	8551
	V. sargentii	1.67	58754	22644	8551
Coriacea (outgroup)	V. cylindricum	6.20	229108	23292	4842
Lobata (outgroup)	V. acerifolium	4.02	126363	25995	5536
Euviburnum	V. cotinifolium	1.47	53151	37375	10667
	V. macrocephalum	3.53	75886	44316	11854
	V. schensianum	2.19	106074	51553	12863
	V. utile	2.55	121693	49989	12550
	V. congestum	7.06	25792	15777	5642
	V. bitchiuense	2.45	94305	35398	10418
	V. carlesii	2.45	89710	59755	13495
	V. lantana	1.58	72833	43158	11534
	V. chinshanense	1.97	68404	46604	12073
	V. buddlefolium	3.02	93941	41535	11464
	V. rhytidophyllum	2.59	69136	46519	11948
	V. veitchii	1.95	75609	45698	11923
	V. glomeratum	2.97	100587	43632	11658
Lentago (outgroup)	V. cassinoides	2.97	116046	29408	7041
Punctata (outgroup)	V. punctatum	3.81	102772	38388	9072
Lutescentia	V. lutescens	3.43	102033	28314	13021
	V. amplifolium	2.02	107023	24838	13021
	V. hanceanum	4.75	205033	27138	13021
	V. plicatum	1.85	70192	24733	13021
Solenotinus (outgroup)	V. farreri	2.25	74711	22212	6908
	V. sieboldii	1.47	47615	17062	5048