

Supplementary Materials

Decadal patterns of forest and pollinator recovery following the eradication of an invasive shrub

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Supplementary Table 1. Pearson correlations between the tree genera basal area and the NMDS axis used in the model of tree growth.

Genus	r
<i>Acer</i>	0.657
<i>Betula</i>	-0.688
<i>Carpinus</i>	0.145
<i>Carya</i>	0.068
<i>Celtis</i>	-0.305
<i>Fraxinus</i>	-0.083
<i>Liquidambar</i>	0.652
<i>Liriodendron</i>	-0.285
<i>Pinus</i>	-0.676
<i>Platanus</i>	0.323
<i>Populus</i>	-0.4
<i>Quercus</i>	-0.121
<i>Ulmus</i>	0.346

Supplementary Table 2. Results from preliminary analysis involving general linear models (F values) or the Kruskal-Wallis one-way analysis of variance (Chi-square values) comparing bee and butterfly abundance, diversity and richness among the four treatments for each year separately. Asterisks indicate significance level: *P<0.05, **P,<0.01, and ***P<0.001. The superscript t indicates when the log-transformation was used. See Supplementary Figure 1 (below) for comparisons among treatments.

Taxon	Response	2006	2007	2011	2012	2019
bees	abundance	F _{2,9} =13.42**	F _{3,11} =21.62** *t	F _{3,11} =13.08** *	F _{3,11} =13.6***	F _{3,10} =3.11
bees	diversity	F _{2,9} =1.56	F _{3,11} =8.29**	χ ² (df=3)=8.45*	χ ² (df=3)=9.24*	F _{3,10} =9.02**
bees	richness	F _{2,9} =18.33** *	F _{3,11} =16.53** *t	F _{3,11} =12.6***	F _{3,11} =12.52** *	F _{3,10} =13.03** *t
butterflies	abundance	na	F _{3,11} =12.67** *	F _{3,11} =3.57	F _{3,11} =4.91*	F _{3,10} =3.57
butterflies	diversity	na	χ ² (df=3)=5.78	F _{3,11} =2.15	F _{3,11} =4.04*	F _{3,10} =12.6***
butterflies	richness	na	F _{3,11} =6*	F _{3,11} =7.81**	F _{3,11} =7.78**	F _{3,10} =13.25** *

Supplementary Table 3. List of tree and woody shrub genera measured in this study, ranked by abundance.

	Botanical Gardens	Scull Shoals	Sandy Creek	Watson Springs	Total
<i>Acer</i>	819	304	225	494	1842
<i>Liquidambar</i>	126	304	166	265	861
<i>Ulmus</i>	23	105	84	327	539
<i>Fraxinus</i>	98	101	25	64	288
<i>Platanus</i>	56	119	14	64	253
<i>Quercus</i>	38	63	24	41	166
<i>Pinus</i>	57	24	12	4	97
<i>Ilex</i>	0	0	24	43	67
<i>Celtis</i>	0	28	0	35	63
<i>Betula</i>	39	3	10	9	61
<i>Carpinus</i>	10	0	37	13	60
<i>Carya</i>	0	9	4	22	35
<i>Liriodendron</i>	7	1	27	0	35
<i>Populus</i>	22	0	0	13	35
<i>Morus</i>	1	5	7	6	19
<i>Ostrya</i>	0	0	0	12	12
<i>Halesia</i>	9	2	0	0	11
<i>Aesculus</i>	0	0	0	9	9
<i>Nyssa</i>	0	1	4	2	7
<i>Melia</i>	2	0	2	1	5
<i>Crataegus</i>	0	1	1	2	4
<i>Cercis</i>	0	0	3	0	3
<i>Cornus</i>	0	0	2	1	3
<i>Cephalanthus</i>	2	0	0	0	2
<i>Poncirus</i>	0	2	0	0	2
<i>Ailanthus</i>	1	0	0	0	1
<i>Albizia</i>	0	0	1	0	1
<i>Eleagnus</i>	0	0	1	0	1
<i>Fagus</i>	0	0	0	1	1
<i>Firmiana</i>	0	0	1	0	1
<i>Gleditsia</i>	0	0	1	0	1
<i>Paulownia</i>	1	0	0	0	1
<i>Prunus</i>	1	0	0	0	1
Total number of stems	1312	1072	675	1428	4487
Total number of genera	18	16	22	21	33

Supplementary Table 4. List of bee and butterfly species and their abundances by treatment and year.

	2006			2007				2011				2012				2019				Total
	CONTROL	CHAINSAW	MULCH	CONTROL	CHAINSAW	MULCH	REFERENCE	CONTROL	CHAINSAW	MULCH	REFERENCE	CONTROL	CHAINSAW	MULCH	REFERENCE	CONTROL	CHAINSAW	MULCH	REFERENCE	
BEES																				
<i>Agapostemon splendens</i> (Lepeletier)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
<i>Agapostemon virescens</i> (Fabricius)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
<i>Andrena arabis</i> Robertson	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Andrena asteroides</i> Mitchell	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Andrena atlantica</i> Mitchell	0	0	0	0	0	0	0	0	0	0	0	0	11	1	0	0	0	0	0	12
<i>Andrena banksi</i> Malloch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	1	6
<i>Andrena barbara/perplexa</i>	0	2	3	1	13	36	12	1	17	23	18	0	9	1	6	0	6	6	37	191
<i>Andrena bradleyi</i> Viereck	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
<i>Andrena confederata</i> Viereck	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4
<i>Andrena crataegi</i> Robertson	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Andrena cressonii</i> Robertson	0	0	4	2	6	5	5	0	0	1	3	0	0	0	0	0	1	1	2	30
<i>Andrena fenningeri</i> Viereck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
<i>Andrena forbesii</i> Robertson	1	2	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	7
<i>Andrena gardineri</i> Cockerell	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
<i>Andrena hippotes</i> Robertson	0	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
<i>Andrena ilicis</i> Mitchell	0	3	5	0	5	2	0	1	0	0	0	0	0	0	0	0	0	0	0	16
<i>Andrena imitatrix</i> Cresson	0	1	10	0	51	47	34	2	11	15	19	0	13	21	5	0	12	14	8	263
<i>Andrena mendica</i> Mitchell	0	1	0	2	0	0	0	0	0	0	0	0	4	23	0	0	0	0	0	30
<i>Andrena miserabilis</i> Cresson	0	1	0	0	2	0	0	0	0	0	0	0	2	0	0	0	1	2	0	8
<i>Andrena nasonii</i> Robertson	0	1	1	0	8	13	9	0	3	3	6	0	5	4	6	0	30	36	12	137
<i>Andrena nida</i> Mitchell	0	0	0	0	0	5	0	0	0	4	0	0	0	0	0	0	0	1	0	10

<i>Andrena nigrae</i> Robertson	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Andrena obscuripennis</i> Smith	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	4
<i>Andrena personata</i> Robertson	0	4	5	3	79	86	30	1	122	102	53	1	32	13	10	5	6	1	10	563
<i>Andrena rubi</i> Mitchell	0	4	4	0	16	17	0	0	0	0	0	1	11	3	1	0	2	2	1	62
<i>Andrena sayi</i> Robertson	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	4
<i>Andrena spiraean</i> a Robertson	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Andrena violae</i> Robertson	37	45	25	26	88	87	26	27	80	92	66	58	63	49	66	4	8	18	21	886
<i>Andrena</i> H2400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
<i>Anthophora abrupta</i> Say	0	0	1	0	0	1	3	0	0	1	0	0	0	1	0	0	1	0	0	8
<i>Apis mellifera</i> L.	0	0	35	0	0	4	1	0	0	1	0	0	0	1	0	0	3	2	2	49
<i>Augochlora pura</i> (Say)	20	159	401	12	185	648	107	12	81	153	47	11	118	126	38	8	90	66	81	2363
<i>Augochlorella aurata</i> (Smith)	14	202	517	18	360	481	98	23	156	199	47	20	122	120	69	45	150	167	112	2920
<i>Augochloropsis metallica</i> (Fabricius)	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	2	6
<i>Bombus bimaculatus</i> Cresson	0	6	4	4	4	5	0	0	4	2	2	0	2	5	1	0	1	1	1	42
<i>Bombus citrinus</i> (Smith)	0	1	2	0	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	10
<i>Bombus griseocollis</i> (De Geer)	0	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	7
<i>Bombus impatiens</i> Cresson	0	8	15	0	8	12	12	0	5	6	1	0	1	1	2	1	7	5	2	86
<i>Bombus pennsylvanicus</i> (De Geer)	0	0	0	0	0	1	0	0	1	1	0	0	1	2	0	0	0	0	0	6
<i>Bombus vagans</i> Smith	0	5	10	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	17
<i>Ceratina calcarata</i> Robertson	23	233	126	32	288	298	35	12	134	144	28	33	93	64	25	1	29	15	9	1622
<i>Ceratina dupla</i> Say	0	2	8	2	21	9	7	7	168	99	43	6	13	23	8	0	1	0	0	417
<i>Ceratina strenua</i> Smith	0	0	0	0	0	2	1	1	5	12	1	0	6	10	8	0	1	1	0	48
<i>Colletes americanus</i> Cresson	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
<i>Colletes howardi</i> Swenk	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
<i>Colletes inaequalis</i> Say	0	0	0	0	2	6	2	0	0	0	1	0	0	0	0	0	0	0	5	16
<i>Dieunomia heteropoda</i> (Say)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Eucera atriventris</i> (Smith)	0	3	4	0	2	5	4	0	3	6	6	0	17	9	6	0	3	1	1	70
<i>Eucera dubitata</i> (Cresson)	1	5	2	0	14	45	14	1	4	11	7	1	24	29	8	1	21	7	27	222
<i>Eucera fulvohirta</i> (Cresson)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
<i>Eucera rosae</i> (Robertson)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
<i>Halictus confusus</i> Smith	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Halictus ligatus</i> Say	0	1	5	0	2	4	1	0	6	6	1	0	1	6	1	0	0	4	0	38
<i>Halictus parallelus</i> Say	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	2

<i>Halictus rubicundus</i> (Christ)	0	5	4	1	2	4	1	0	0	0	0	0	0	0	0	0	1	0	0	18
<i>Heriades</i> H2230	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Hoplitis producta</i> (Cresson)	0	1	3	0	1	1	0	0	0	1	1	0	0	0	1	0	0	0	0	9
<i>Hoplitis simplex</i> (Cresson)	0	1	0	0	1	7	0	0	1	1	0	0	0	0	0	0	0	0	0	11
<i>Hylaeus affinis</i> (Smith)	0	0	0	0	0	0	0	0	4	11	3	0	0	0	1	0	0	0	0	19
<i>Hylaeus fedorica</i> (Cockerell)	0	0	0	0	2	3	2	0	0	0	0	0	0	0	0	0	0	0	0	7
<i>Hylaeus georgicus</i> (Cockerell)	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Hylaeus illinoisensis</i> (Robertson)	0	3	8	0	4	6	2	0	1	2	0	0	0	0	0	0	0	0	0	26
<i>Hylaeus mesillae</i> (Cockerell)	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	3
<i>Hylaeus modestus</i> Say	0	0	4	0	7	9	0	0	4	11	2	0	0	1	1	0	0	0	0	39
<i>Hylaeus sparsus</i> (Cresson)	0	0	2	1	3	9	8	0	2	0	0	0	0	0	0	0	0	0	0	25
<i>Hylaeus</i> H2266	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Lasioglossum apokense</i> (Robertson)	1	7	29	0	9	19	12	0	0	0	0	0	0	0	0	0	0	1	0	78
<i>Lasioglossum birkmanni/macoupinense</i>	9	26	14	9	21	24	30	11	24	27	15	5	14	11	11	5	16	7	10	289
<i>Lasioglossum bruneri</i> (Crawford)	1	38	87	5	73	115	32	9	81	178	46	4	36	71	27	2	32	43	14	894
<i>Lasioglossum callidum</i> (Sandhouse)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	5
<i>Lasioglossum coeruleum</i> (Robertson)	0	0	5	0	6	1	2	0	2	0	0	1	0	0	1	0	2	0	0	20
<i>Lasioglossum cressonii</i> (Robertson)	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	4
<i>Lasioglossum fuscipenne</i> (Smith)	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	1	0	1	7
<i>Lasioglossum hitchensi/weemsi</i>	4	20	38	8	38	47	15	4	86	100	5	5	66	56	10	1	31	35	54	623
<i>Lasioglossum illinoense</i> (Robertson)	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	4
<i>Lasioglossum imitatum</i> (Smith)	2	6	21	0	9	12	4	0	0	1	0	0	0	0	0	0	0	6	13	74
<i>Lasioglossum laevisimum</i> (Smith)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
<i>Lasioglossum lustrans</i> (Cockerell)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Lasioglossum nelumbonis</i> (Robertson)	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	3
<i>Lasioglossum oblongum</i> (Lovell)	1	13	15	1	12	32	10	9	125	128	19	14	164	102	89	0	6	3	0	743
<i>Lasioglossum pectorale</i> (Smith)	0	0	0	0	1	5	0	0	0	1	0	0	0	0	0	0	0	0	0	7
<i>Lasioglossum pilosum</i> (Smith)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
<i>Lasioglossum subviridatum</i> (Cockerell)	0	0	4	0	1	0	0	0	4	3	0	1	2	1	1	0	1	2	1	21
<i>Lasioglossum tegulare</i> (Robertson)	0	0	1	0	5	10	2	0	1	5	1	0	0	2	1	0	2	1	3	34
<i>Lasioglossum versatum</i> (Robertson)	3	5	2	1	3	5	0	0	0	1	0	0	0	0	0	0	0	0	0	20
<i>Lasioglossum</i> H2388	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
<i>Lasioglossum</i> H2401	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1

<i>Nomada</i> H2233A	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
<i>Nomada bidentate</i> sp A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
<i>Osmia atriventris</i> Cresson	0	1	0	0	1	4	3	0	0	0	2	0	1	0	0	1	1	2	0	16
<i>Osmia collinsiae</i> Robertson	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	3	
<i>Osmia conjuncta</i> Cresson	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
<i>Osmia georgica</i> Cresson	0	7	0	0	3	16	13	2	16	21	27	1	6	7	8	0	0	0	2	129
<i>Osmia inspergens</i> Lovell and Cockerell	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
<i>Osmia lignaria</i> Say	0	4	0	0	3	11	9	0	1	3	7	1	1	0	1	0	0	1	3	45
<i>Osmia michiganensis</i> Mitchell	0	1	0	0	3	8	0	0	0	0	0	0	0	0	0	0	0	0	12	
<i>Osmia proxima</i> Cresson	0	0	0	0	0	2	3	0	0	0	0	0	1	0	0	0	0	0	6	
<i>Osmia pumila</i> Cresson	2	3	0	0	5	8	4	0	13	14	25	3	14	17	24	0	0	0	0	132
<i>Osmia sandhouseae</i> Mitchell	0	1	0	0	3	2	7	0	0	0	0	0	0	0	0	0	0	1	0	14
<i>Osmia texana</i> Cresson	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
<i>Panurginus atromontensis</i> Crawford	0	2	1	0	0	3	1	0	0	0	0	0	1	0	0	0	0	0	0	8
<i>Panurginus polytrichus</i> Cockerell	0	0	0	0	4	4	3	0	0	0	1	0	4	0	0	0	0	0	0	16
<i>Paranthidium jugatorium</i> (Say)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
<i>Peponapis pruinosa</i> (Say)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
<i>Ptilothrix bombiformis</i> (Cresson)	0	0	3	0	0	5	1	0	1	2	1	0	1	0	0	0	0	0	0	14
<i>Sphecodes illinoensis</i> (Robertson)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Sphecodes mandibularis</i> Cresson	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
<i>Sphecodes</i> sp1	0	2	0	0	4	2	0	0	2	1	1	2	3	4	1	0	0	2	0	24
<i>Sphecodes</i> sp2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
<i>Trachusa ridingsii</i> (Cresson)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
<i>Xylocopa virginica</i> (Linnaeus)	0	1	1	0	2	16	2	0	0	1	0	0	0	0	1	0	0	1	0	25
BUTTERFLIES																				
<i>Abaeis nicippe</i> (Cramer)	NA	NA	NA	1	2	4	1	0	2	5	2	0	1	2	0	1	4	3	1	29
<i>Achalarus lyciades</i> (Geyer)	NA	NA	NA	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
<i>Agraulis vanilla</i> (Linnaeus)	NA	NA	NA	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
<i>Amblyscirtes aesculapius</i> (Fabricius)	NA	NA	NA	2	5	7	27	6	5	5	21	1	4	2	3	3	15	5	18	129
<i>Amblyscirtes alternata</i> (Grote and Robinson)	NA	NA	NA	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
<i>Amblyscirtes hegon</i> (Scudder)	NA	NA	NA	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	3
<i>Ancyloxypha numitor</i> (Fabricius)	NA	NA	NA	0	0	1	0	0	1	0	0	0	4	3	5	0	0	0	1	15
<i>Anthocharis midea</i> (Hübner)	NA	NA	NA	1	4	1	0	1	2	1	5	5	2	9	45	0	0	1	2	79

<i>Ascia monuste</i> (Linnaeus)	NA	NA	NA	1	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	5
<i>Asterocampa celtis</i> (Boisduval and Le Conte)	NA	NA	NA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
<i>Atalopedes campestris</i> (Boisduval)	NA	NA	NA	0	0	0	0	0	0	1	0	0	1	0	2	0	1	0	1	6
<i>Battus philenor</i> (Linnaeus)	NA	NA	NA	0	0	1	1	0	1	1	1	0	0	0	0	0	0	1	1	7
<i>Calycopis cecrops</i> (Fabricius)	NA	NA	NA	3	1	9	10	0	3	0	2	1	3	7	6	0	0	0	4	49
<i>Celastrina argiolus</i> (Linnaeus)	NA	NA	NA	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Celastrina ladon</i> (Cramer)	NA	NA	NA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
<i>Chlosyne nycteis</i> (Doubleday)	NA	NA	NA	0	26	96	0	0	48	58	1	1	24	19	1	0	1	1	0	276
<i>Colias eurytheme</i> Boisduval	NA	NA	NA	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
<i>Cupido comyntas</i> (Godart)	NA	NA	NA	0	0	0	0	0	1	5	0	0	0	0	0	0	0	0	0	6
<i>Cyllopsis gemma</i> (Hübner)	NA	NA	NA	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	3
<i>Epargyreus clarus</i> (Cramer)	NA	NA	NA	0	1	0	1	0	0	1	0	0	1	0	1	0	1	2	0	8
<i>Erynnis brizo</i> (Boisduval and Le Conte)	NA	NA	NA	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Erynnis horatius</i> (Scudder and Burgess)	NA	NA	NA	0	0	3	3	0	0	2	1	0	3	0	0	0	0	0	0	12
<i>Erynnis juvenalis</i> (Fabricius)	NA	NA	NA	0	2	5	12	0	0	0	0	0	0	1	1	0	0	0	0	21
<i>Euphyes vestris</i> (Boisduval)	NA	NA	NA	0	2	4	9	0	1	1	0	0	0	1	1	0	2	4	0	25
<i>Eurema daira</i> (Godart)	NA	NA	NA	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Eurytides marcellus</i> (Cramer)	NA	NA	NA	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	3
<i>Feniseca tarquinius</i> (Fabricius)	NA	NA	NA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
<i>Glutophrissa drusilla</i> (Cramer)	NA	NA	NA	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
<i>Hermeuptychia sosybius</i> (Fabricius)	NA	NA	NA	3	3	11	41	1	14	55	7	0	66	99	107	0	18	14	30	469
<i>Hylephila phyleus</i> (Drury)	NA	NA	NA	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
<i>Lerema accius</i> (Smith)	NA	NA	NA	58	179	247	162	40	235	155	147	58	236	240	194	42	193	183	114	2483
<i>Libytheana carinenta</i> (Cramer)	NA	NA	NA	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	3
<i>Megisto cymela</i> (Cramer)	NA	NA	NA	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Nastra iherminier</i> (Latrielle)	NA	NA	NA	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
<i>Oligoria maculata</i> (Edwards)	NA	NA	NA	0	1	3	1	0	0	1	0	1	0	1	0	0	0	0	0	8
<i>Panoquina ocola</i> (Edwards)	NA	NA	NA	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2
<i>Papilio glaucus</i> Linnaeus	NA	NA	NA	0	17	28	41	1	6	11	16	4	7	3	12	1	3	3	12	165
<i>Papilio troilus</i> Linnaeus	NA	NA	NA	1	1	3	8	0	0	0	0	0	0	0	0	0	3	0	2	18
<i>Phoebis sennae</i> (Linnaeus)	NA	NA	NA	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	4
<i>Phyciodes tharos</i> (Drury)	NA	NA	NA	0	5	21	4	0	3	6	3	0	2	5	2	0	0	0	2	53
<i>Poanes yehl</i> (Skinner)	NA	NA	NA	0	0	0	0	0	2	0	3	0	2	2	4	0	0	0	0	13

<i>Poanes zabulon</i> (Boisduval and Le Conte)	NA	NA	NA	19	70	75	158	12	45	29	54	30	91	92	142	1	21	27	53	919
<i>Polites origenes</i> (Fabricius)	NA	NA	NA	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
<i>Polites vibex</i> (Geyer)	NA	NA	NA	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	3
<i>Polygonia interrogationis</i> (Fabricius)	NA	NA	NA	0	1	1	2	0	2	4	1	0	0	0	0	0	0	0	0	11
<i>Pompeius verna</i> (Edwards)	NA	NA	NA	0	8	27	20	1	9	13	12	0	5	14	12	0	2	1	4	128
<i>Pyrisitia lisa</i> (Boisduval and Le Conte)	NA	NA	NA	0	0	0	0	0	0	0	1	2	2	3	0	0	0	0	0	8
<i>Satyrium titus</i> (Fabricius)	NA	NA	NA	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
<i>Thorybes bathyllus</i> (Smith)	NA	NA	NA	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	2	5
<i>Thorybes pylades</i> (Scudder)	NA	NA	NA	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	2	6
<i>Urbanus proteus</i> (Linnaeus)	NA	NA	NA	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
<i>Vanessa atalanta</i> (Linnaeus)	NA	NA	NA	0	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	4
<i>Vanessa virginiensis</i> (Drury)	NA	NA	NA	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Wallengrenia egeremet</i> (Scudder)	NA	NA	NA	1	0	2	6	0	2	2	6	0	0	1	2	0	1	0	0	23
<i>Wallengrenia otho</i> (Smith)	NA	NA	NA	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	123	884	1502	220	1809	2931	1118	201	1615	1880	835	287	1370	1366	1005	125	781	755	731	19538

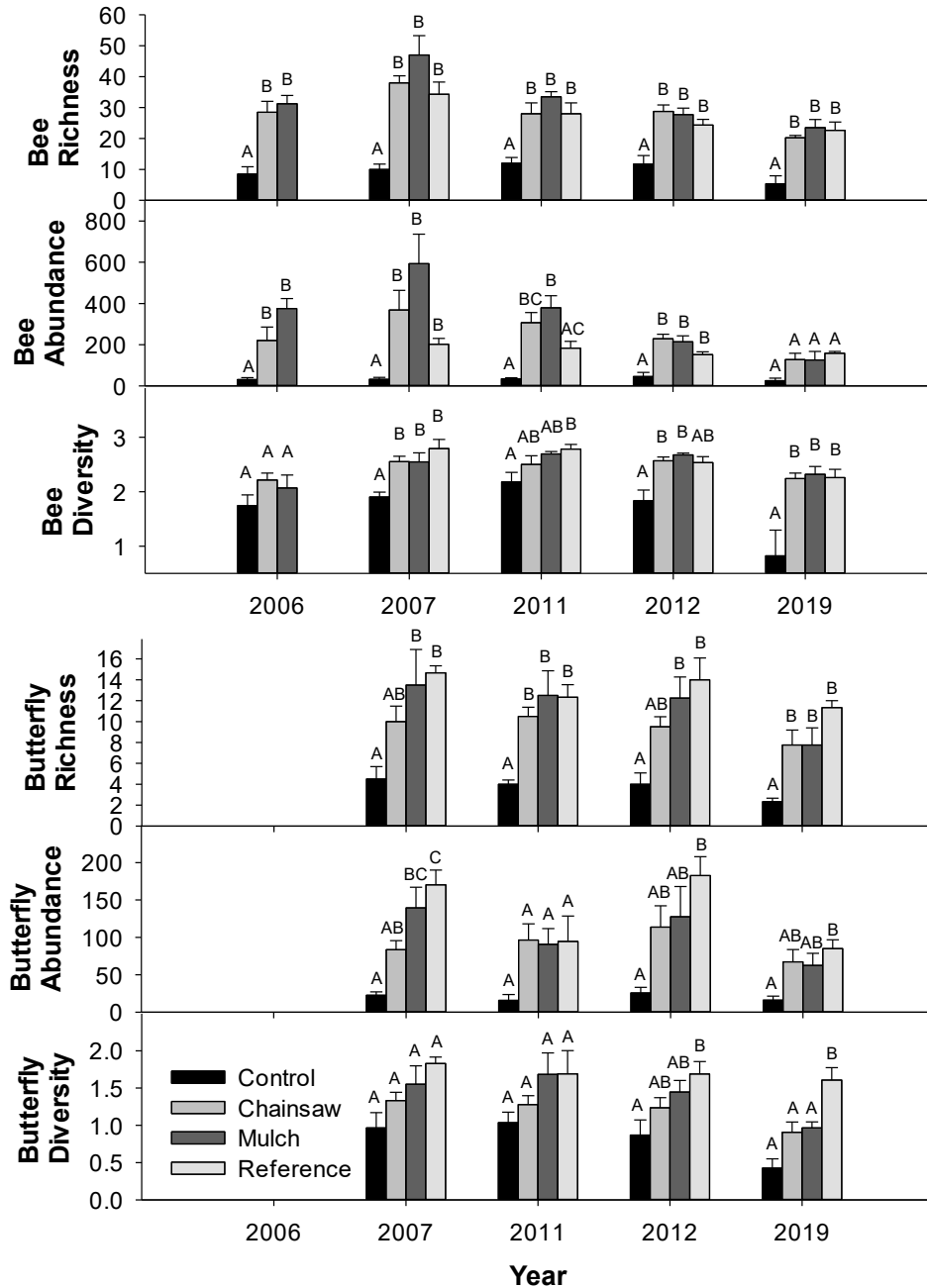
Supplementary Table 5. Results from the Exact Wilcoxon Two-Sample Test (Z values) comparing bee and butterfly abundance, diversity and richness between control and restored plots for 2019 after dropping data from March. Asterisks indicate significance level: *P<0.05, **P,<0.01, and ***P<0.001.

Taxon	Response	2019
bees	richness	Z=-2.36*
bees	diversity	Z=-2.35*
bees	abundance	Z=-1.43
butterflies	richness	Z=-2.40*
butterflies	diversity	Z=-2.14*
butterflies	abundance	Z=-2.36*

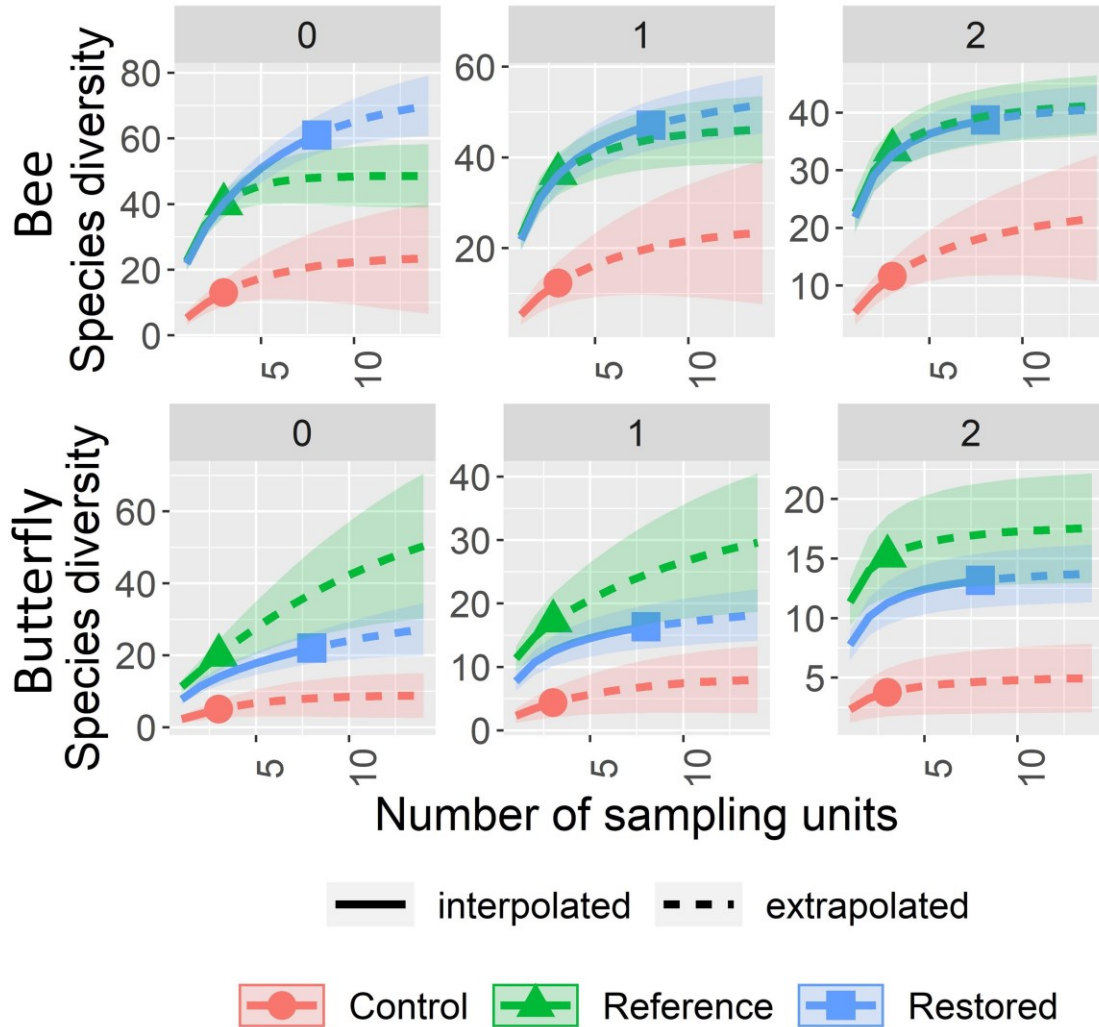
Supplementary Table 6. List of bee species collected from privet flowers.

<i>Andrena perplexa</i> Smith	1
<i>Andrena pruni</i> Robertson	2
<i>Andrena</i> sp.	1
<i>Apis mellifera</i> L.	72
<i>Augochlora pura</i> (Say)	4
<i>Bombus bimaculatus</i> Cresson	17
<i>Bombus griseocollis</i> (De Geer)	10
<i>Bombus impatiens</i> Cresson	5
<i>Ceratina calcarata</i> Robertson	1
<i>Ceratina dupla</i> Say	1
<i>Colletes thoracicus</i> Smith	1
<i>Eucera rosae</i> (Robertson)	1
<i>Hylaeus modestus</i> Say	2
<i>Hylaeus sparsus</i> (Cresson)	1
<i>Lasioglossum bruneri</i> (Crawford)	8
<i>Lasioglossum callidum</i> (Sandhouse)	2
<i>Lasioglossum gotham</i> Gibbs	1
<i>Lasioglossum illinoense</i> (Robertson)	1
<i>Lasioglossum imitatum</i> (Smith)	1
<i>Lasioglossum nelumbonis</i> (Robertson)	2
<i>Lasioglossum puteulanum/tegulare</i>	1
<i>Megachile gemula</i> Cresson	1
<i>Megachile mendica</i> Cresson	1
<i>Nomada</i> sp. 1	1
<i>Nomada</i> sp. 2	1
<i>Nomada</i> sp. 3	1
<i>Panurginus polytrichus</i> Cockerell	2
<i>Xylocopa virginica</i> (Linnaeus)	98
Total	240

Supplementary Figure 1. Mean \pm SE species richness, abundance and diversity of bees (top) and butterflies (bottom) in control (i.e., privet-invaded, n=3-4), chainsaw (n=4), mulch (n=4), and reference (i.e., no history of privet invasion, n=3) plots. For each year, bars with different letters are significantly different based on general linear models or the Kruskal-Wallis one-way analysis of variance (see Supplementary Table 2).



Supplementary Figure 2. Rarefaction (solid lines) and extrapolation (dashed lines) of bee (top) and butterfly (bottom) diversity in the three treatments in 2019. From left to right, separate results are given for Hill numbers 0 (species richness), 1 (Shannon's diversity), and 2 (Simpson's diversity). All curves include 95 percent confidence intervals, and comparisons are made at 8 sampling units.



Supplementary Figure 3. Mean \pm SE richness of bees (top) and butterflies (bottom) in control, reference, and restored plots in 2019 by sampling month.

