

Supplemental Table 1. Phenometric coverage for 18 species, including the number of phenometrics analyzed, their sampling period (historical or contemporary), flowering or foliage state, and sampling source (Hough, NPN, or iNaturalist).

Supplemental Table 1. Phenometric Coverage						
Taxon	Period	State	Timing	Year	Count	Source
<i>Acer rubrum</i>	historical	flowering	early	1852	42	Hough
<i>Acer rubrum</i>	historical	foliage	early	1852	24	Hough
<i>Acer rubrum</i>	historical	flowering	early	1853	26	Hough
<i>Acer rubrum</i>	historical	foliage	early	1853	18	Hough
<i>Acer rubrum</i>	historical	flowering	early	1854	22	Hough
<i>Acer rubrum</i>	historical	foliage	early	1854	18	Hough
<i>Acer rubrum</i>	historical	flowering	early	1855	16	Hough
<i>Acer rubrum</i>	historical	foliage	early	1855	9	Hough
<i>Acer rubrum</i>	historical	flowering	early	1856	50	Hough
<i>Acer rubrum</i>	historical	foliage	early	1856	45	Hough
<i>Acer rubrum</i>	historical	flowering	early	1857	47	Hough
<i>Acer rubrum</i>	historical	foliage	early	1857	36	Hough
<i>Acer rubrum</i>	historical	flowering	early	1858	27	Hough
<i>Acer rubrum</i>	historical	foliage	early	1858	27	Hough
<i>Acer rubrum</i>	historical	flowering	early	1859	14	Hough
<i>Acer rubrum</i>	historical	foliage	early	1859	11	Hough
<i>Acer rubrum</i>	contemporary	flowering	early	2010	5	NPN
<i>Acer rubrum</i>	contemporary	foliage	early	2010	10	NPN
<i>Acer rubrum</i>	contemporary	flowering	early	2012	32	NPN
<i>Acer rubrum</i>	contemporary	foliage	early	2012	25	NPN
<i>Acer rubrum</i>	contemporary	flowering	early	2013	12	NPN
<i>Acer rubrum</i>	contemporary	foliage	early	2013	16	NPN
<i>Acer rubrum</i>	contemporary	flowering	early	2014	4	NPN
<i>Acer rubrum</i>	contemporary	foliage	early	2014	8	NPN
<i>Acer rubrum</i>	contemporary	flowering	early	2015	11	NPN
<i>Acer rubrum</i>	contemporary	foliage	early	2015	18	NPN
<i>Acer rubrum</i>	contemporary	flowering	early	2016	35	NPN
<i>Acer rubrum</i>	contemporary	foliage	early	2016	20	NPN
<i>Acer rubrum</i>	contemporary	flowering	early	2017	19	NPN
<i>Acer rubrum</i>	contemporary	foliage	early	2017	19	NPN
<i>Acer rubrum</i>	contemporary	flowering	early	2018	18	NPN
<i>Acer rubrum</i>	contemporary	foliage	early	2018	10	NPN
<i>Acer rubrum</i>	contemporary	flowering	early	2019	16	NPN
<i>Acer rubrum</i>	contemporary	foliage	early	2019	19	NPN
<i>Acer rubrum</i>	contemporary	flowering	early	2020	35	NPN

<i>Acer rubrum</i>	contemporary	foliage	early	2020	31	NPN
<i>Acer rubrum</i>	contemporary	flowering	early	2021	38	NPN
<i>Acer rubrum</i>	contemporary	foliage	early	2021	45	NPN
<i>Acer rubrum</i>	contemporary	flowering	early	2022	30	NPN
<i>Acer rubrum</i>	contemporary	foliage	early	2022	19	NPN
<i>Acer saccharinum</i>	historical	flowering	early	1852	18	Hough
<i>Acer saccharinum</i>	historical	foliage	mid	1852	24	Hough
<i>Acer saccharinum</i>	historical	flowering	early	1853	21	Hough
<i>Acer saccharinum</i>	historical	foliage	mid	1853	23	Hough
<i>Acer saccharinum</i>	historical	flowering	early	1854	13	Hough
<i>Acer saccharinum</i>	historical	foliage	mid	1854	19	Hough
<i>Acer saccharinum</i>	historical	flowering	early	1855	10	Hough
<i>Acer saccharinum</i>	historical	foliage	mid	1855	9	Hough
<i>Acer saccharinum</i>	historical	flowering	early	1857	15	Hough
<i>Acer saccharinum</i>	historical	foliage	mid	1857	24	Hough
<i>Acer saccharinum</i>	historical	flowering	early	1858	9	Hough
<i>Acer saccharinum</i>	historical	foliage	mid	1858	25	Hough
<i>Acer saccharinum</i>	historical	flowering	early	1859	6	Hough
<i>Acer saccharinum</i>	historical	foliage	mid	1859	11	Hough
<i>Acer saccharinum</i>	contemporary	flowering	early	2016	3	NPN
<i>Acer saccharinum</i>	contemporary	foliage	mid	2016	3	NPN
<i>Acer saccharinum</i>	contemporary	flowering	early	2017	6	NPN
<i>Acer saccharinum</i>	contemporary	foliage	mid	2017	5	NPN
<i>Acer saccharinum</i>	contemporary	flowering	early	2018	7	NPN
<i>Acer saccharinum</i>	contemporary	foliage	mid	2018	6	NPN
<i>Acer saccharinum</i>	contemporary	flowering	early	2019	7	NPN
<i>Acer saccharinum</i>	contemporary	foliage	mid	2019	8	NPN
<i>Acer saccharinum</i>	contemporary	flowering	early	2020	12	NPN
<i>Acer saccharinum</i>	contemporary	foliage	mid	2020	11	NPN
<i>Acer saccharinum</i>	contemporary	flowering	early	2021	17	NPN
<i>Acer saccharinum</i>	contemporary	foliage	mid	2021	22	NPN
<i>Acer saccharinum</i>	contemporary	flowering	early	2022	12	NPN
<i>Acer saccharinum</i>	contemporary	foliage	mid	2022	12	NPN
<i>Carya alba</i>	historical	flowering	late	1854	13	Hough
<i>Carya alba</i>	historical	foliage	mid	1854	19	Hough
<i>Carya alba</i>	historical	flowering	late	1855	6	Hough
<i>Carya alba</i>	historical	foliage	mid	1855	10	Hough
<i>Carya alba</i>	historical	flowering	late	1857	6	Hough
<i>Carya alba</i>	historical	foliage	mid	1857	17	Hough
<i>Carya alba</i>	historical	flowering	late	1858	11	Hough
<i>Carya alba</i>	historical	foliage	mid	1858	25	Hough
<i>Carya alba</i>	historical	flowering	late	1859	7	Hough
<i>Carya alba</i>	historical	foliage	mid	1859	6	Hough

<i>Carya alba</i>	contemporary	flowering	late	2011	5	NPN
<i>Carya alba</i>	contemporary	foliage	mid	2011	5	NPN
<i>Carya alba</i>	contemporary	flowering	late	2015	6	NPN
<i>Carya alba</i>	contemporary	foliage	mid	2015	8	NPN
<i>Carya alba</i>	contemporary	flowering	late	2017	5	NPN
<i>Carya alba</i>	contemporary	foliage	mid	2017	8	NPN
<i>Carya alba</i>	contemporary	flowering	late	2018	5	NPN
<i>Carya alba</i>	contemporary	foliage	mid	2018	8	NPN
<i>Carya alba</i>	contemporary	flowering	late	2019	5	NPN
<i>Carya alba</i>	contemporary	foliage	mid	2019	9	NPN
<i>Carya alba</i>	contemporary	flowering	late	2021	4	NPN
<i>Carya alba</i>	contemporary	foliage	mid	2021	8	NPN
<i>Carya alba</i>	contemporary	flowering	late	2022	6	NPN
<i>Carya alba</i>	contemporary	foliage	mid	2022	12	NPN
<i>Cercis canadensis</i>	historical	flowering	early	1852	14	Hough
<i>Cercis canadensis</i>	historical	foliage	mid	1852	7	Hough
<i>Cercis canadensis</i>	historical	flowering	early	1853	14	Hough
<i>Cercis canadensis</i>	historical	foliage	mid	1853	10	Hough
<i>Cercis canadensis</i>	historical	flowering	early	1854	7	Hough
<i>Cercis canadensis</i>	historical	foliage	mid	1854	5	Hough
<i>Cercis canadensis</i>	historical	flowering	early	1855	5	Hough
<i>Cercis canadensis</i>	historical	foliage	mid	1855	6	Hough
<i>Cercis canadensis</i>	historical	flowering	early	1857	9	Hough
<i>Cercis canadensis</i>	historical	foliage	mid	1857	11	Hough
<i>Cercis canadensis</i>	historical	flowering	early	1858	14	Hough
<i>Cercis canadensis</i>	historical	foliage	mid	1858	11	Hough
<i>Cercis canadensis</i>	contemporary	flowering	early	2010	3	NPN
<i>Cercis canadensis</i>	contemporary	foliage	mid	2010	2	NPN
<i>Cercis canadensis</i>	contemporary	flowering	early	2011	7	NPN
<i>Cercis canadensis</i>	contemporary	foliage	mid	2011	7	NPN
<i>Cercis canadensis</i>	contemporary	flowering	early	2012	4	NPN
<i>Cercis canadensis</i>	contemporary	foliage	mid	2012	6	NPN
<i>Cercis canadensis</i>	contemporary	flowering	early	2013	8	NPN
<i>Cercis canadensis</i>	contemporary	foliage	mid	2013	7	NPN
<i>Cercis canadensis</i>	contemporary	flowering	early	2014	10	NPN
<i>Cercis canadensis</i>	contemporary	foliage	mid	2014	9	NPN
<i>Cercis canadensis</i>	contemporary	flowering	early	2015	13	NPN
<i>Cercis canadensis</i>	contemporary	foliage	mid	2015	12	NPN
<i>Cercis canadensis</i>	contemporary	flowering	early	2016	9	NPN
<i>Cercis canadensis</i>	contemporary	foliage	mid	2016	10	NPN
<i>Cercis canadensis</i>	contemporary	flowering	early	2017	13	NPN
<i>Cercis canadensis</i>	contemporary	foliage	mid	2017	14	NPN
<i>Cercis canadensis</i>	contemporary	flowering	early	2018	11	NPN

<i>Cercis canadensis</i>	contemporary	foliage	mid	2018	11	NPN
<i>Cercis canadensis</i>	contemporary	flowering	early	2019	18	NPN
<i>Cercis canadensis</i>	contemporary	foliage	mid	2019	19	NPN
<i>Cercis canadensis</i>	contemporary	flowering	early	2020	22	NPN
<i>Cercis canadensis</i>	contemporary	foliage	mid	2020	21	NPN
<i>Cercis canadensis</i>	contemporary	flowering	early	2021	40	NPN
<i>Cercis canadensis</i>	contemporary	foliage	mid	2021	39	NPN
<i>Cercis canadensis</i>	contemporary	flowering	early	2022	85	NPN
<i>Cercis canadensis</i>	contemporary	foliage	mid	2022	79	NPN
<i>Cornus florida</i>	historical	flowering	early	1852	25	Hough
<i>Cornus florida</i>	historical	foliage	early	1852	13	Hough
<i>Cornus florida</i>	historical	flowering	early	1853	21	Hough
<i>Cornus florida</i>	historical	foliage	early	1853	15	Hough
<i>Cornus florida</i>	historical	flowering	early	1854	19	Hough
<i>Cornus florida</i>	historical	foliage	early	1854	13	Hough
<i>Cornus florida</i>	historical	flowering	early	1855	11	Hough
<i>Cornus florida</i>	historical	foliage	early	1855	6	Hough
<i>Cornus florida</i>	historical	flowering	early	1856	32	Hough
<i>Cornus florida</i>	historical	foliage	early	1856	13	Hough
<i>Cornus florida</i>	historical	flowering	early	1857	29	Hough
<i>Cornus florida</i>	historical	foliage	early	1857	19	Hough
<i>Cornus florida</i>	historical	flowering	early	1858	18	Hough
<i>Cornus florida</i>	historical	foliage	early	1858	13	Hough
<i>Cornus florida</i>	contemporary	flowering	early	2010	8	NPN
<i>Cornus florida</i>	contemporary	foliage	early	2010	14	NPN
<i>Cornus florida</i>	contemporary	flowering	early	2011	11	NPN
<i>Cornus florida</i>	contemporary	foliage	early	2011	16	NPN
<i>Cornus florida</i>	contemporary	flowering	early	2012	10	NPN
<i>Cornus florida</i>	contemporary	foliage	early	2012	13	NPN
<i>Cornus florida</i>	contemporary	flowering	early	2013	13	NPN
<i>Cornus florida</i>	contemporary	foliage	early	2013	16	NPN
<i>Cornus florida</i>	contemporary	flowering	early	2014	22	NPN
<i>Cornus florida</i>	contemporary	foliage	early	2014	24	NPN
<i>Cornus florida</i>	contemporary	flowering	early	2015	19	NPN
<i>Cornus florida</i>	contemporary	foliage	early	2015	25	NPN
<i>Cornus florida</i>	contemporary	flowering	early	2016	24	NPN
<i>Cornus florida</i>	contemporary	foliage	early	2016	31	NPN
<i>Cornus florida</i>	contemporary	flowering	early	2017	35	NPN
<i>Cornus florida</i>	contemporary	foliage	early	2017	38	NPN
<i>Cornus florida</i>	contemporary	flowering	early	2018	28	NPN
<i>Cornus florida</i>	contemporary	foliage	early	2018	27	NPN
<i>Cornus florida</i>	contemporary	flowering	early	2019	35	NPN
<i>Cornus florida</i>	contemporary	foliage	early	2019	41	NPN

<i>Cornus florida</i>	contemporary	flowering	early	2020	29	NPN
<i>Cornus florida</i>	contemporary	foliage	early	2020	32	NPN
<i>Cornus florida</i>	contemporary	flowering	early	2021	45	NPN
<i>Cornus florida</i>	contemporary	foliage	early	2021	45	NPN
<i>Cornus florida</i>	contemporary	flowering	early	2022	51	NPN
<i>Cornus florida</i>	contemporary	foliage	early	2022	48	NPN
<i>Erythronium americanum</i>	historical	flowering	early	1852	16	Hough
<i>Erythronium americanum</i>	historical	foliage	early	1852	9	Hough
<i>Erythronium americanum</i>	historical	flowering	early	1853	8	Hough
<i>Erythronium americanum</i>	historical	foliage	early	1853	8	Hough
<i>Erythronium americanum</i>	historical	flowering	early	1854	11	Hough
<i>Erythronium americanum</i>	historical	foliage	early	1854	6	Hough
<i>Erythronium americanum</i>	historical	flowering	early	1857	12	Hough
<i>Erythronium americanum</i>	historical	foliage	early	1857	5	Hough
<i>Erythronium americanum</i>	contemporary	flowering	early	2018	10	iNaturalist
<i>Erythronium americanum</i>	contemporary	foliage	early	2018	14	iNaturalist
<i>Erythronium americanum</i>	contemporary	flowering	early	2019	23	iNaturalist
<i>Erythronium americanum</i>	contemporary	foliage	early	2019	27	iNaturalist
<i>Erythronium americanum</i>	contemporary	flowering	early	2020	34	iNaturalist
<i>Erythronium americanum</i>	contemporary	foliage	early	2020	40	iNaturalist
<i>Erythronium americanum</i>	contemporary	flowering	early	2021	40	iNaturalist
<i>Erythronium americanum</i>	contemporary	foliage	early	2021	40	iNaturalist
<i>Erythronium americanum</i>	contemporary	flowering	early	2022	39	iNaturalist
<i>Erythronium americanum</i>	contemporary	foliage	early	2022	45	iNaturalist
<i>Erythronium americanum</i>	contemporary	flowering	early	2023	34	iNaturalist
<i>Erythronium americanum</i>	contemporary	foliage	early	2023	46	iNaturalist
<i>Fraxinus americana</i>	historical	flowering	mid	1855	6	Hough
<i>Fraxinus americana</i>	historical	foliage	mid	1855	8	Hough
<i>Fraxinus americana</i>	historical	flowering	mid	1857	8	Hough
<i>Fraxinus americana</i>	historical	foliage	mid	1857	21	Hough
<i>Fraxinus americana</i>	historical	flowering	mid	1858	8	Hough
<i>Fraxinus americana</i>	historical	foliage	mid	1858	18	Hough
<i>Fraxinus americana</i>	contemporary	flowering	mid	2015	3	NPN
<i>Fraxinus americana</i>	contemporary	foliage	mid	2015	5	NPN
<i>Fraxinus americana</i>	contemporary	flowering	mid	2016	4	NPN
<i>Fraxinus americana</i>	contemporary	foliage	mid	2016	10	NPN
<i>Fraxinus americana</i>	contemporary	flowering	mid	2017	4	NPN
<i>Fraxinus americana</i>	contemporary	foliage	mid	2017	7	NPN
<i>Fraxinus americana</i>	contemporary	flowering	mid	2018	8	NPN
<i>Fraxinus americana</i>	contemporary	foliage	mid	2018	9	NPN
<i>Fraxinus americana</i>	contemporary	flowering	mid	2019	3	NPN
<i>Fraxinus americana</i>	contemporary	foliage	mid	2019	7	NPN
<i>Fraxinus americana</i>	contemporary	flowering	mid	2021	5	NPN

<i>Fraxinus americana</i>	contemporary	foliage	mid	2021	9	NPN
<i>Fraxinus americana</i>	contemporary	flowering	mid	2022	5	NPN
<i>Fraxinus americana</i>	contemporary	foliage	mid	2022	9	NPN
<i>Lindera benzoin</i>	historical	flowering	early	1852	14	Hough
<i>Lindera benzoin</i>	historical	foliage	early	1852	8	Hough
<i>Lindera benzoin</i>	historical	flowering	early	1853	13	Hough
<i>Lindera benzoin</i>	historical	foliage	early	1853	6	Hough
<i>Lindera benzoin</i>	historical	flowering	early	1854	13	Hough
<i>Lindera benzoin</i>	historical	foliage	early	1854	7	Hough
<i>Lindera benzoin</i>	historical	flowering	early	1857	5	Hough
<i>Lindera benzoin</i>	historical	foliage	early	1857	8	Hough
<i>Lindera benzoin</i>	historical	flowering	early	1858	13	Hough
<i>Lindera benzoin</i>	historical	foliage	early	1858	8	Hough
<i>Lindera benzoin</i>	contemporary	flowering	early	2013	4	NPN
<i>Lindera benzoin</i>	contemporary	foliage	early	2013	5	NPN
<i>Lindera benzoin</i>	contemporary	flowering	early	2014	9	NPN
<i>Lindera benzoin</i>	contemporary	foliage	early	2014	8	NPN
<i>Lindera benzoin</i>	contemporary	flowering	early	2015	5	NPN
<i>Lindera benzoin</i>	contemporary	foliage	early	2015	8	NPN
<i>Lindera benzoin</i>	contemporary	flowering	early	2016	13	NPN
<i>Lindera benzoin</i>	contemporary	foliage	early	2016	16	NPN
<i>Lindera benzoin</i>	contemporary	flowering	early	2017	11	NPN
<i>Lindera benzoin</i>	contemporary	foliage	early	2017	13	NPN
<i>Lindera benzoin</i>	contemporary	flowering	early	2018	13	NPN
<i>Lindera benzoin</i>	contemporary	foliage	early	2018	13	NPN
<i>Lindera benzoin</i>	contemporary	flowering	early	2019	14	NPN
<i>Lindera benzoin</i>	contemporary	foliage	early	2019	16	NPN
<i>Lindera benzoin</i>	contemporary	flowering	early	2020	11	NPN
<i>Lindera benzoin</i>	contemporary	foliage	early	2020	16	NPN
<i>Lindera benzoin</i>	contemporary	flowering	early	2021	19	NPN
<i>Lindera benzoin</i>	contemporary	foliage	early	2021	21	NPN
<i>Lindera benzoin</i>	contemporary	flowering	early	2022	19	NPN
<i>Lindera benzoin</i>	contemporary	foliage	early	2022	23	NPN
<i>Liriodendron tulipifera</i>	historical	flowering	late	1852	19	Hough
<i>Liriodendron tulipifera</i>	historical	foliage	early	1852	22	Hough
<i>Liriodendron tulipifera</i>	historical	flowering	late	1853	14	Hough
<i>Liriodendron tulipifera</i>	historical	foliage	early	1853	14	Hough
<i>Liriodendron tulipifera</i>	historical	flowering	late	1854	15	Hough
<i>Liriodendron tulipifera</i>	historical	foliage	early	1854	14	Hough
<i>Liriodendron tulipifera</i>	historical	flowering	late	1855	8	Hough
<i>Liriodendron tulipifera</i>	historical	foliage	early	1855	9	Hough
<i>Liriodendron tulipifera</i>	historical	flowering	late	1857	12	Hough
<i>Liriodendron tulipifera</i>	historical	foliage	early	1857	20	Hough

<i>Liriodendron tulipifera</i>	historical	flowering	late	1858	12	Hough
<i>Liriodendron tulipifera</i>	historical	foliage	early	1858	19	Hough
<i>Liriodendron tulipifera</i>	contemporary	flowering	late	2012	7	NPN
<i>Liriodendron tulipifera</i>	contemporary	foliage	early	2012	10	NPN
<i>Liriodendron tulipifera</i>	contemporary	flowering	late	2013	16	NPN
<i>Liriodendron tulipifera</i>	contemporary	foliage	early	2013	19	NPN
<i>Liriodendron tulipifera</i>	contemporary	flowering	late	2014	11	NPN
<i>Liriodendron tulipifera</i>	contemporary	foliage	early	2014	20	NPN
<i>Liriodendron tulipifera</i>	contemporary	flowering	late	2015	14	NPN
<i>Liriodendron tulipifera</i>	contemporary	foliage	early	2015	20	NPN
<i>Liriodendron tulipifera</i>	contemporary	flowering	late	2016	22	NPN
<i>Liriodendron tulipifera</i>	contemporary	foliage	early	2016	29	NPN
<i>Liriodendron tulipifera</i>	contemporary	flowering	late	2017	21	NPN
<i>Liriodendron tulipifera</i>	contemporary	foliage	early	2017	28	NPN
<i>Liriodendron tulipifera</i>	contemporary	flowering	late	2018	23	NPN
<i>Liriodendron tulipifera</i>	contemporary	foliage	early	2018	28	NPN
<i>Liriodendron tulipifera</i>	contemporary	flowering	late	2019	29	NPN
<i>Liriodendron tulipifera</i>	contemporary	foliage	early	2019	39	NPN
<i>Liriodendron tulipifera</i>	contemporary	flowering	late	2020	16	NPN
<i>Liriodendron tulipifera</i>	contemporary	foliage	early	2020	28	NPN
<i>Liriodendron tulipifera</i>	contemporary	flowering	late	2021	23	NPN
<i>Liriodendron tulipifera</i>	contemporary	foliage	early	2021	31	NPN
<i>Liriodendron tulipifera</i>	contemporary	flowering	late	2022	20	NPN
<i>Liriodendron tulipifera</i>	contemporary	foliage	early	2022	31	NPN
<i>Prunus serotina</i>	historical	flowering	late	1854	11	Hough
<i>Prunus serotina</i>	historical	foliage	early	1854	14	Hough
<i>Prunus serotina</i>	historical	flowering	late	1855	9	Hough
<i>Prunus serotina</i>	historical	foliage	early	1855	11	Hough
<i>Prunus serotina</i>	historical	flowering	late	1857	17	Hough
<i>Prunus serotina</i>	historical	foliage	early	1857	25	Hough
<i>Prunus serotina</i>	historical	flowering	late	1858	19	Hough
<i>Prunus serotina</i>	historical	foliage	early	1858	17	Hough
<i>Prunus serotina</i>	historical	flowering	late	1859	5	Hough
<i>Prunus serotina</i>	historical	foliage	early	1859	6	Hough
<i>Prunus serotina</i>	contemporary	flowering	late	2010	5	NPN
<i>Prunus serotina</i>	contemporary	foliage	early	2010	6	NPN
<i>Prunus serotina</i>	contemporary	flowering	late	2011	8	NPN
<i>Prunus serotina</i>	contemporary	foliage	early	2011	9	NPN
<i>Prunus serotina</i>	contemporary	flowering	late	2012	10	NPN
<i>Prunus serotina</i>	contemporary	foliage	early	2012	9	NPN
<i>Prunus serotina</i>	contemporary	flowering	late	2013	9	NPN
<i>Prunus serotina</i>	contemporary	foliage	early	2013	9	NPN
<i>Prunus serotina</i>	contemporary	flowering	late	2014	7	NPN

<i>Prunus serotina</i>	contemporary	foliage	early	2014	7	NPN
<i>Prunus serotina</i>	contemporary	flowering	late	2015	9	NPN
<i>Prunus serotina</i>	contemporary	foliage	early	2015	10	NPN
<i>Prunus serotina</i>	contemporary	flowering	late	2016	13	NPN
<i>Prunus serotina</i>	contemporary	foliage	early	2016	16	NPN
<i>Prunus serotina</i>	contemporary	flowering	late	2017	10	NPN
<i>Prunus serotina</i>	contemporary	foliage	early	2017	10	NPN
<i>Prunus serotina</i>	contemporary	flowering	late	2018	13	NPN
<i>Prunus serotina</i>	contemporary	foliage	early	2018	13	NPN
<i>Prunus serotina</i>	contemporary	flowering	late	2019	10	NPN
<i>Prunus serotina</i>	contemporary	foliage	early	2019	12	NPN
<i>Prunus serotina</i>	contemporary	flowering	late	2020	7	NPN
<i>Prunus serotina</i>	contemporary	foliage	early	2020	7	NPN
<i>Prunus serotina</i>	contemporary	flowering	late	2021	11	NPN
<i>Prunus serotina</i>	contemporary	foliage	early	2021	16	NPN
<i>Prunus serotina</i>	contemporary	flowering	late	2022	16	NPN
<i>Prunus serotina</i>	contemporary	foliage	early	2022	20	NPN
<i>Quercus alba</i>	historical	flowering	mid	1852	18	Hough
<i>Quercus alba</i>	historical	foliage	mid	1852	28	Hough
<i>Quercus alba</i>	historical	flowering	mid	1853	13	Hough
<i>Quercus alba</i>	historical	foliage	mid	1853	20	Hough
<i>Quercus alba</i>	historical	flowering	mid	1854	13	Hough
<i>Quercus alba</i>	historical	foliage	mid	1854	24	Hough
<i>Quercus alba</i>	historical	flowering	mid	1855	7	Hough
<i>Quercus alba</i>	historical	foliage	mid	1855	9	Hough
<i>Quercus alba</i>	historical	flowering	mid	1857	11	Hough
<i>Quercus alba</i>	historical	foliage	mid	1857	25	Hough
<i>Quercus alba</i>	historical	flowering	mid	1858	7	Hough
<i>Quercus alba</i>	historical	foliage	mid	1858	26	Hough
<i>Quercus alba</i>	contemporary	flowering	mid	2012	6	NPN
<i>Quercus alba</i>	contemporary	foliage	mid	2012	11	NPN
<i>Quercus alba</i>	contemporary	flowering	mid	2013	5	NPN
<i>Quercus alba</i>	contemporary	foliage	mid	2013	13	NPN
<i>Quercus alba</i>	contemporary	flowering	mid	2014	8	NPN
<i>Quercus alba</i>	contemporary	foliage	mid	2014	15	NPN
<i>Quercus alba</i>	contemporary	flowering	mid	2015	13	NPN
<i>Quercus alba</i>	contemporary	foliage	mid	2015	21	NPN
<i>Quercus alba</i>	contemporary	flowering	mid	2016	13	NPN
<i>Quercus alba</i>	contemporary	foliage	mid	2016	22	NPN
<i>Quercus alba</i>	contemporary	flowering	mid	2017	13	NPN
<i>Quercus alba</i>	contemporary	foliage	mid	2017	23	NPN
<i>Quercus alba</i>	contemporary	flowering	mid	2018	16	NPN
<i>Quercus alba</i>	contemporary	foliage	mid	2018	29	NPN

<i>Quercus alba</i>	contemporary	flowering	mid	2019	18	NPN
<i>Quercus alba</i>	contemporary	foliage	mid	2019	25	NPN
<i>Quercus alba</i>	contemporary	flowering	mid	2020	10	NPN
<i>Quercus alba</i>	contemporary	foliage	mid	2020	23	NPN
<i>Quercus alba</i>	contemporary	flowering	mid	2021	14	NPN
<i>Quercus alba</i>	contemporary	foliage	mid	2021	31	NPN
<i>Quercus alba</i>	contemporary	flowering	mid	2022	30	NPN
<i>Quercus alba</i>	contemporary	foliage	mid	2022	52	NPN
<i>Rhododendron periclymenoides</i>	historical	flowering	late	1852	28	Hough
<i>Rhododendron periclymenoides</i>	historical	foliage	mid	1852	10	Hough
<i>Rhododendron periclymenoides</i>	historical	flowering	late	1853	16	Hough
<i>Rhododendron periclymenoides</i>	historical	foliage	mid	1853	7	Hough
<i>Rhododendron periclymenoides</i>	historical	flowering	late	1854	18	Hough
<i>Rhododendron periclymenoides</i>	historical	foliage	mid	1854	9	Hough
<i>Rhododendron periclymenoides</i>	historical	flowering	late	1855	8	Hough
<i>Rhododendron periclymenoides</i>	historical	foliage	mid	1855	9	Hough
<i>Rhododendron periclymenoides</i>	historical	flowering	late	1857	14	Hough
<i>Rhododendron periclymenoides</i>	historical	foliage	mid	1857	13	Hough
<i>Rhododendron periclymenoides</i>	historical	flowering	late	1858	12	Hough
<i>Rhododendron periclymenoides</i>	historical	foliage	mid	1858	14	Hough
<i>Rhododendron periclymenoides</i>	contemporary	flowering	late	2018	5	iNaturalist
<i>Rhododendron periclymenoides</i>	contemporary	foliage	mid	2018	5	iNaturalist
<i>Rhododendron periclymenoides</i>	contemporary	flowering	late	2019	9	iNaturalist
<i>Rhododendron periclymenoides</i>	contemporary	foliage	mid	2019	8	iNaturalist
<i>Rhododendron periclymenoides</i>	contemporary	flowering	late	2020	16	iNaturalist
<i>Rhododendron periclymenoides</i>	contemporary	foliage	mid	2020	16	iNaturalist
<i>Rhododendron periclymenoides</i>	contemporary	flowering	late	2021	19	iNaturalist
<i>Rhododendron periclymenoides</i>	contemporary	foliage	mid	2021	17	iNaturalist
<i>Rhododendron periclymenoides</i>	contemporary	flowering	late	2022	16	iNaturalist
<i>Rhododendron periclymenoides</i>	contemporary	foliage	mid	2022	14	iNaturalist
<i>Rhododendron periclymenoides</i>	contemporary	flowering	late	2023	15	iNaturalist
<i>Rhododendron periclymenoides</i>	contemporary	foliage	mid	2023	16	iNaturalist
<i>Robinia pseudoacacia</i>	historical	flowering	late	1852	32	Hough
<i>Robinia pseudoacacia</i>	historical	foliage	late	1852	25	Hough
<i>Robinia pseudoacacia</i>	historical	flowering	late	1853	19	Hough
<i>Robinia pseudoacacia</i>	historical	foliage	late	1853	20	Hough
<i>Robinia pseudoacacia</i>	historical	flowering	late	1854	27	Hough
<i>Robinia pseudoacacia</i>	historical	foliage	late	1854	23	Hough
<i>Robinia pseudoacacia</i>	historical	flowering	late	1855	12	Hough
<i>Robinia pseudoacacia</i>	historical	foliage	late	1855	11	Hough
<i>Robinia pseudoacacia</i>	historical	flowering	late	1857	19	Hough
<i>Robinia pseudoacacia</i>	historical	foliage	late	1857	24	Hough
<i>Robinia pseudoacacia</i>	historical	flowering	late	1858	14	Hough

<i>Robinia pseudoacacia</i>	historical	foliage	late	1858	26	Hough
<i>Robinia pseudoacacia</i>	historical	flowering	late	1859	7	Hough
<i>Robinia pseudoacacia</i>	historical	foliage	late	1859	7	Hough
<i>Robinia pseudoacacia</i>	contemporary	flowering	late	2018	6	iNaturalist
<i>Robinia pseudoacacia</i>	contemporary	foliage	late	2018	12	iNaturalist
<i>Robinia pseudoacacia</i>	contemporary	flowering	late	2019	7	iNaturalist
<i>Robinia pseudoacacia</i>	contemporary	foliage	late	2019	21	iNaturalist
<i>Robinia pseudoacacia</i>	contemporary	flowering	late	2020	10	iNaturalist
<i>Robinia pseudoacacia</i>	contemporary	foliage	late	2020	20	iNaturalist
<i>Robinia pseudoacacia</i>	contemporary	flowering	late	2021	11	iNaturalist
<i>Robinia pseudoacacia</i>	contemporary	foliage	late	2021	27	iNaturalist
<i>Robinia pseudoacacia</i>	contemporary	flowering	late	2022	12	iNaturalist
<i>Robinia pseudoacacia</i>	contemporary	foliage	late	2022	28	iNaturalist
<i>Robinia pseudoacacia</i>	contemporary	flowering	late	2023	14	iNaturalist
<i>Robinia pseudoacacia</i>	contemporary	foliage	late	2023	28	iNaturalist
<i>Sambucus canadensis</i>	historical	flowering	late	1852	26	Hough
<i>Sambucus canadensis</i>	historical	foliage	mid	1852	25	Hough
<i>Sambucus canadensis</i>	historical	flowering	late	1853	22	Hough
<i>Sambucus canadensis</i>	historical	foliage	mid	1853	19	Hough
<i>Sambucus canadensis</i>	historical	flowering	late	1854	21	Hough
<i>Sambucus canadensis</i>	historical	foliage	mid	1854	14	Hough
<i>Sambucus canadensis</i>	historical	flowering	late	1855	9	Hough
<i>Sambucus canadensis</i>	historical	foliage	mid	1855	8	Hough
<i>Sambucus canadensis</i>	historical	flowering	late	1857	19	Hough
<i>Sambucus canadensis</i>	historical	foliage	mid	1857	22	Hough
<i>Sambucus canadensis</i>	historical	flowering	late	1858	16	Hough
<i>Sambucus canadensis</i>	historical	foliage	mid	1858	18	Hough
<i>Sambucus canadensis</i>	historical	flowering	late	1859	6	Hough
<i>Sambucus canadensis</i>	historical	foliage	mid	1859	5	Hough
<i>Sambucus canadensis</i>	contemporary	flowering	late	2020	10	iNaturalist
<i>Sambucus canadensis</i>	contemporary	foliage	mid	2020	21	iNaturalist
<i>Sambucus canadensis</i>	contemporary	flowering	late	2021	10	iNaturalist
<i>Sambucus canadensis</i>	contemporary	foliage	mid	2021	25	iNaturalist
<i>Sambucus canadensis</i>	contemporary	flowering	late	2022	13	iNaturalist
<i>Sambucus canadensis</i>	contemporary	foliage	mid	2022	28	iNaturalist
<i>Sambucus canadensis</i>	contemporary	flowering	late	2023	11	iNaturalist
<i>Sambucus canadensis</i>	contemporary	foliage	mid	2023	26	iNaturalist
<i>Sanguinaria canadensis</i>	historical	flowering	early	1852	23	Hough
<i>Sanguinaria canadensis</i>	historical	foliage	early	1852	11	Hough
<i>Sanguinaria canadensis</i>	historical	flowering	early	1853	15	Hough
<i>Sanguinaria canadensis</i>	historical	foliage	early	1853	11	Hough
<i>Sanguinaria canadensis</i>	historical	flowering	early	1854	16	Hough
<i>Sanguinaria canadensis</i>	historical	foliage	early	1854	8	Hough

<i>Sanguinaria canadensis</i>	historical	flowering	early	1855	8	Hough
<i>Sanguinaria canadensis</i>	historical	foliage	early	1855	6	Hough
<i>Sanguinaria canadensis</i>	historical	flowering	early	1857	10	Hough
<i>Sanguinaria canadensis</i>	historical	foliage	early	1857	9	Hough
<i>Sanguinaria canadensis</i>	historical	flowering	early	1858	12	Hough
<i>Sanguinaria canadensis</i>	historical	foliage	early	1858	9	Hough
<i>Sanguinaria canadensis</i>	contemporary	flowering	early	2018	7	iNaturalist
<i>Sanguinaria canadensis</i>	contemporary	foliage	early	2018	31	iNaturalist
<i>Sanguinaria canadensis</i>	contemporary	flowering	early	2019	7	iNaturalist
<i>Sanguinaria canadensis</i>	contemporary	foliage	early	2019	42	iNaturalist
<i>Sanguinaria canadensis</i>	contemporary	flowering	early	2020	28	iNaturalist
<i>Sanguinaria canadensis</i>	contemporary	foliage	early	2020	62	iNaturalist
<i>Sanguinaria canadensis</i>	contemporary	flowering	early	2021	17	iNaturalist
<i>Sanguinaria canadensis</i>	contemporary	foliage	early	2021	67	iNaturalist
<i>Sanguinaria canadensis</i>	contemporary	flowering	early	2022	11	iNaturalist
<i>Sanguinaria canadensis</i>	contemporary	foliage	early	2022	63	iNaturalist
<i>Sanguinaria canadensis</i>	contemporary	flowering	early	2023	11	iNaturalist
<i>Sanguinaria canadensis</i>	contemporary	foliage	early	2023	73	iNaturalist
<i>Syringa vulgaris</i>	historical	flowering	late	1852	39	Hough
<i>Syringa vulgaris</i>	historical	foliage	early	1852	31	Hough
<i>Syringa vulgaris</i>	historical	flowering	late	1853	26	Hough
<i>Syringa vulgaris</i>	historical	foliage	early	1853	23	Hough
<i>Syringa vulgaris</i>	historical	flowering	late	1854	30	Hough
<i>Syringa vulgaris</i>	historical	foliage	early	1854	26	Hough
<i>Syringa vulgaris</i>	historical	flowering	late	1855	15	Hough
<i>Syringa vulgaris</i>	historical	foliage	early	1855	14	Hough
<i>Syringa vulgaris</i>	historical	flowering	late	1856	8	Hough
<i>Syringa vulgaris</i>	historical	foliage	early	1856	7	Hough
<i>Syringa vulgaris</i>	historical	flowering	late	1857	31	Hough
<i>Syringa vulgaris</i>	historical	foliage	early	1857	33	Hough
<i>Syringa vulgaris</i>	historical	flowering	late	1858	28	Hough
<i>Syringa vulgaris</i>	historical	foliage	early	1858	34	Hough
<i>Syringa vulgaris</i>	historical	flowering	late	1859	10	Hough
<i>Syringa vulgaris</i>	historical	foliage	early	1859	8	Hough
<i>Syringa vulgaris</i>	contemporary	flowering	late	2010	18	NPN
<i>Syringa vulgaris</i>	contemporary	foliage	early	2010	16	NPN
<i>Syringa vulgaris</i>	contemporary	flowering	late	2011	25	NPN
<i>Syringa vulgaris</i>	contemporary	foliage	early	2011	20	NPN
<i>Syringa vulgaris</i>	contemporary	flowering	late	2012	25	NPN
<i>Syringa vulgaris</i>	contemporary	foliage	early	2012	27	NPN
<i>Syringa vulgaris</i>	contemporary	flowering	late	2013	25	NPN
<i>Syringa vulgaris</i>	contemporary	foliage	early	2013	27	NPN
<i>Syringa vulgaris</i>	contemporary	flowering	late	2014	17	NPN

<i>Syringa vulgaris</i>	contemporary	foliage	early	2014	24	NPN
<i>Syringa vulgaris</i>	contemporary	flowering	late	2015	19	NPN
<i>Syringa vulgaris</i>	contemporary	foliage	early	2015	15	NPN
<i>Syringa vulgaris</i>	contemporary	flowering	late	2016	16	NPN
<i>Syringa vulgaris</i>	contemporary	foliage	early	2016	18	NPN
<i>Syringa vulgaris</i>	contemporary	flowering	late	2017	21	NPN
<i>Syringa vulgaris</i>	contemporary	foliage	early	2017	24	NPN
<i>Syringa vulgaris</i>	contemporary	flowering	late	2018	25	NPN
<i>Syringa vulgaris</i>	contemporary	foliage	early	2018	27	NPN
<i>Syringa vulgaris</i>	contemporary	flowering	late	2019	31	NPN
<i>Syringa vulgaris</i>	contemporary	foliage	early	2019	36	NPN
<i>Syringa vulgaris</i>	contemporary	flowering	late	2020	30	NPN
<i>Syringa vulgaris</i>	contemporary	foliage	early	2020	41	NPN
<i>Syringa vulgaris</i>	contemporary	flowering	late	2021	36	NPN
<i>Syringa vulgaris</i>	contemporary	foliage	early	2021	36	NPN
<i>Syringa vulgaris</i>	contemporary	flowering	late	2022	40	NPN
<i>Syringa vulgaris</i>	contemporary	foliage	early	2022	37	NPN
<i>Tilia americana</i>	historical	flowering	late	1852	13	Hough
<i>Tilia americana</i>	historical	foliage	mid	1852	12	Hough
<i>Tilia americana</i>	historical	flowering	late	1853	8	Hough
<i>Tilia americana</i>	historical	foliage	mid	1853	11	Hough
<i>Tilia americana</i>	historical	flowering	late	1854	12	Hough
<i>Tilia americana</i>	historical	foliage	mid	1854	16	Hough
<i>Tilia americana</i>	historical	flowering	late	1855	6	Hough
<i>Tilia americana</i>	historical	foliage	mid	1855	7	Hough
<i>Tilia americana</i>	historical	flowering	late	1857	8	Hough
<i>Tilia americana</i>	historical	foliage	mid	1857	15	Hough
<i>Tilia americana</i>	historical	flowering	late	1858	7	Hough
<i>Tilia americana</i>	historical	foliage	mid	1858	16	Hough
<i>Tilia americana</i>	contemporary	flowering	late	2016	2	NPN
<i>Tilia americana</i>	contemporary	foliage	mid	2016	6	NPN
<i>Tilia americana</i>	contemporary	flowering	late	2017	5	NPN
<i>Tilia americana</i>	contemporary	foliage	mid	2017	9	NPN
<i>Tilia americana</i>	contemporary	flowering	late	2018	5	NPN
<i>Tilia americana</i>	contemporary	foliage	mid	2018	12	NPN
<i>Tilia americana</i>	contemporary	flowering	late	2019	5	NPN
<i>Tilia americana</i>	contemporary	foliage	mid	2019	11	NPN
<i>Tilia americana</i>	contemporary	flowering	late	2020	5	NPN
<i>Tilia americana</i>	contemporary	foliage	mid	2020	13	NPN
<i>Tilia americana</i>	contemporary	flowering	late	2021	7	NPN
<i>Tilia americana</i>	contemporary	foliage	mid	2021	14	NPN
<i>Tilia americana</i>	contemporary	flowering	late	2022	5	NPN
<i>Tilia americana</i>	contemporary	foliage	mid	2022	12	NPN

<i>Ulmus americana</i>	historical	flowering	early	1852	23	Hough
<i>Ulmus americana</i>	historical	foliage	mid	1852	21	Hough
<i>Ulmus americana</i>	historical	flowering	early	1853	20	Hough
<i>Ulmus americana</i>	historical	foliage	mid	1853	13	Hough
<i>Ulmus americana</i>	historical	flowering	early	1854	16	Hough
<i>Ulmus americana</i>	historical	foliage	mid	1854	23	Hough
<i>Ulmus americana</i>	historical	flowering	early	1855	13	Hough
<i>Ulmus americana</i>	historical	foliage	mid	1855	8	Hough
<i>Ulmus americana</i>	historical	flowering	early	1857	17	Hough
<i>Ulmus americana</i>	historical	foliage	mid	1857	24	Hough
<i>Ulmus americana</i>	historical	flowering	early	1858	21	Hough
<i>Ulmus americana</i>	historical	foliage	mid	1858	27	Hough
<i>Ulmus americana</i>	contemporary	flowering	early	2016	5	NPN
<i>Ulmus americana</i>	contemporary	foliage	mid	2016	6	NPN
<i>Ulmus americana</i>	contemporary	flowering	early	2017	5	NPN
<i>Ulmus americana</i>	contemporary	foliage	mid	2017	6	NPN
<i>Ulmus americana</i>	contemporary	flowering	early	2020	7	NPN
<i>Ulmus americana</i>	contemporary	foliage	mid	2020	6	NPN
<i>Ulmus americana</i>	contemporary	flowering	early	2021	6	NPN
<i>Ulmus americana</i>	contemporary	foliage	mid	2021	8	NPN
<i>Ulmus americana</i>	contemporary	flowering	early	2022	7	NPN
<i>Ulmus americana</i>	contemporary	foliage	mid	2022	8	NPN

Supplemental Table 2. Results from phylogenetic generalized linear mixed effects model (PGLMM) showing fixed effect coefficient estimates and their significance.

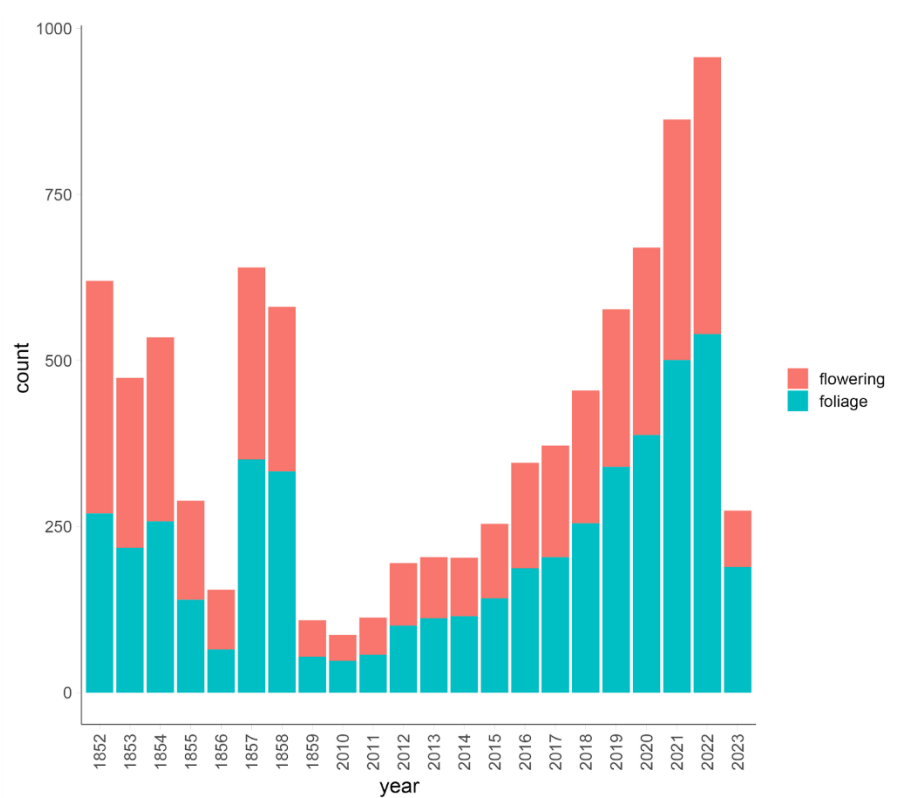
Term	Onset
Intercept	111.122 ± 2.109***
springtemp2_sc	-0.855 ± 0.981
slope2_sc	2.101 ± 0.347***
Periodpresent	-24.396 ± 1.645***
Statefoliage	1.376 ± 0.703
Timinglate	29.887 ± 0.912***
Timingmid	4.133 ± 0.955***
latitude_sc	14.143 ± 123.786
springtemp2_sc:slope2_sc	1.7127 ± 0.213***
springtemp2_sc:periodpresent	-1.757 ± 0.403***
springtemp2_sc:latitude_sc	-0.680 ± 0.2313**
slope2_sc:timinglate	-3.56847 ± 0.55185***
slope2_sc:timingmid	-2.615 ± 0.547***
periodpresent:statefoliage	4.932 ± 0.808***

periodpresent:timinglate	6.263 ± 0.964***
periodpresent:timingmid	5.375 ± 0.952***
periodpresent:latitude_sc	-0.942 ± 0.409*
statefoliage:latitude_sc	-2.536 ± 0.507***
timinglate:latitude_sc	1.203 ± 0.820
timingmid:latitude_sc	3.763 ± 0.917***
timingmid:latitude_sc	3.763 ± 0.917***

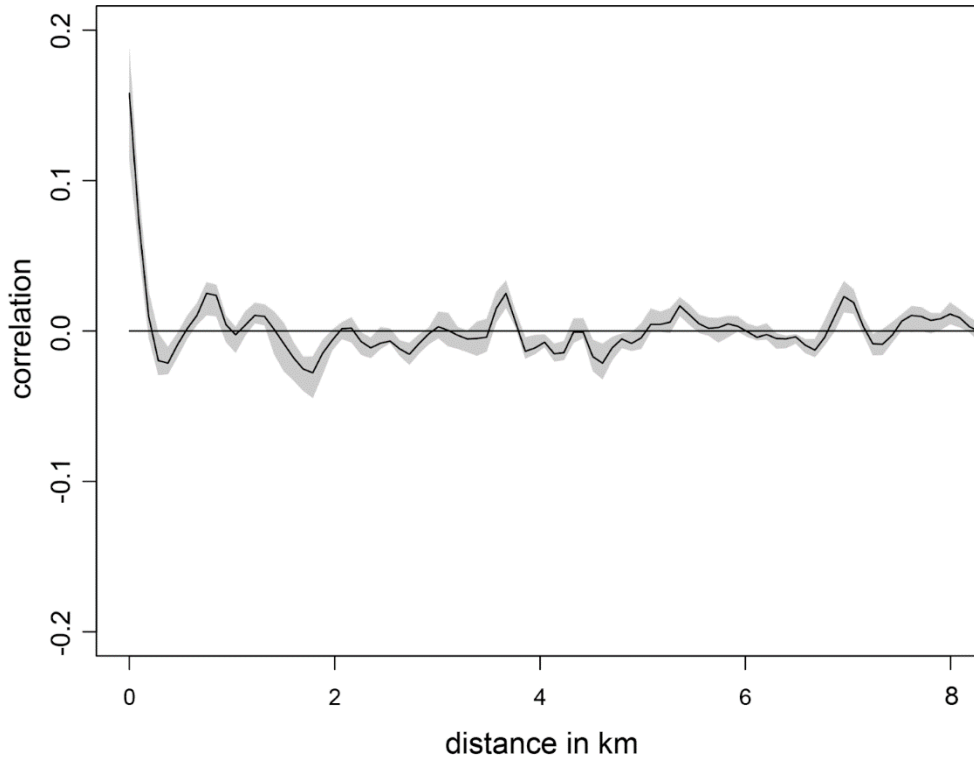
Supplemental Table 3. Results from a reduced model excluding all species where contemporary phenometrics were generated from iNaturalist data (Onset_nolnat below) and a comparison with fits from the main model including all species (Onset_Main, identical to Table 1).

Term	Onset_Main	Onset_nolnat
Intercept	111.03 ± 2.1***	109.16 ± 2.5***
springtemp	-1.25 ± 0.6*	-1.352 ± 0.5**
springvelocity	2.07 ± 0.3***	1.5 ± 0.4***
period-present	-24.37 ± 1.7***	-23.87 ± 2***
state-foliage	1.4 ± 0.7*	6.34 ± 0.8***
timing-late	29.89 ± 0.9***	36.66 ± 1.1***
timing-mid	4.18 ± 1***	0.92 ± 1.1
latitude	14.43 ± 0.7***	14.42 ± 0.9***
springtemp:springvelocity	1.67 ± 0.2***	1.66 ± 0.2***
springtemp:period-present	-1.79 ± 0.4***	-1.79 ± 0.5***
springtemp:latitude	-0.66 ± 0.2**	-0.71 ± 0.3**
springvelocity:timinglate	-3.6 ± 0.6***	-2.51 ± 0.7***
springvelocity:timingmid	-2.61 ± 0.5***	-1.82 ± 0.6**
period-present:state-foliage	4.89 ± 0.8***	1.62 ± 1.0
period-present:timing-late	6.25 ± 1***	-0.32 ± 1.2
period-present:timing-mid	5.4 ± 1***	6.2 ± 1***
period-present:latitude	-0.84 ± 0.4*	-1.13 ± 0.5*
state-foliage:latitude	-2.55 ± 0.5***	-3.25 ± 0.6***
timing-late:latitude	1.0 ± 0.7	-0.16 ± 0.9
timing-mid:latitude	3.19 ± 0.8***	3.66 ± 0.94***
Marginal R ²	0.611	0.585
Conditional R ²	0.693	0.684

Supplemental Fig. 1. Distribution of the number of phenometrics for flowering and foliage across the study period.



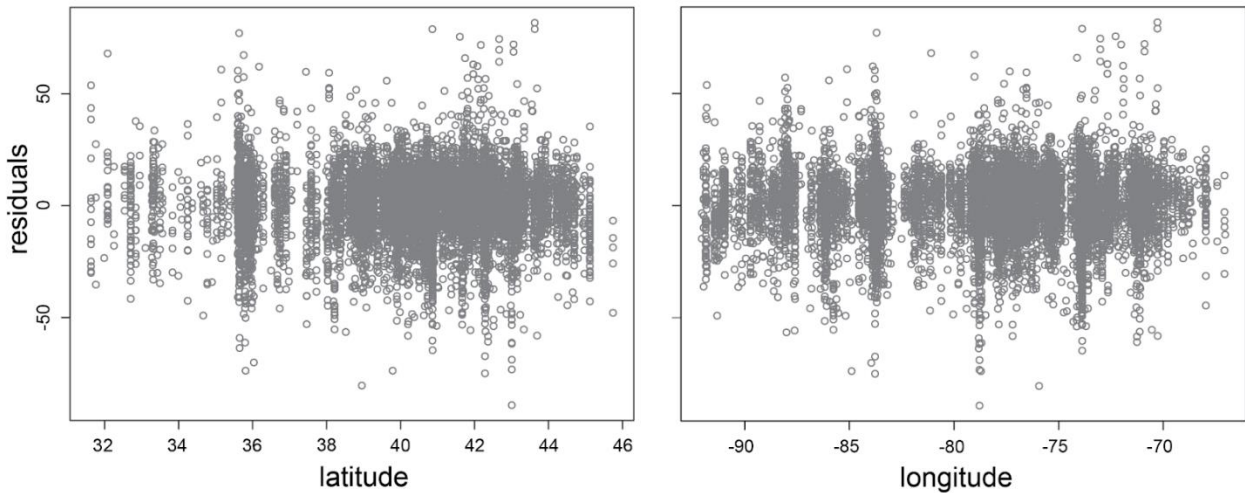
Supplemental Fig. 2. Spline correlogram of model residuals for the “best” LMM showing no strong evidence of spatial autocorrelation; correlation is on the y-axis, distance in km is on the x-axis, and 95% confidence intervals are in gray.



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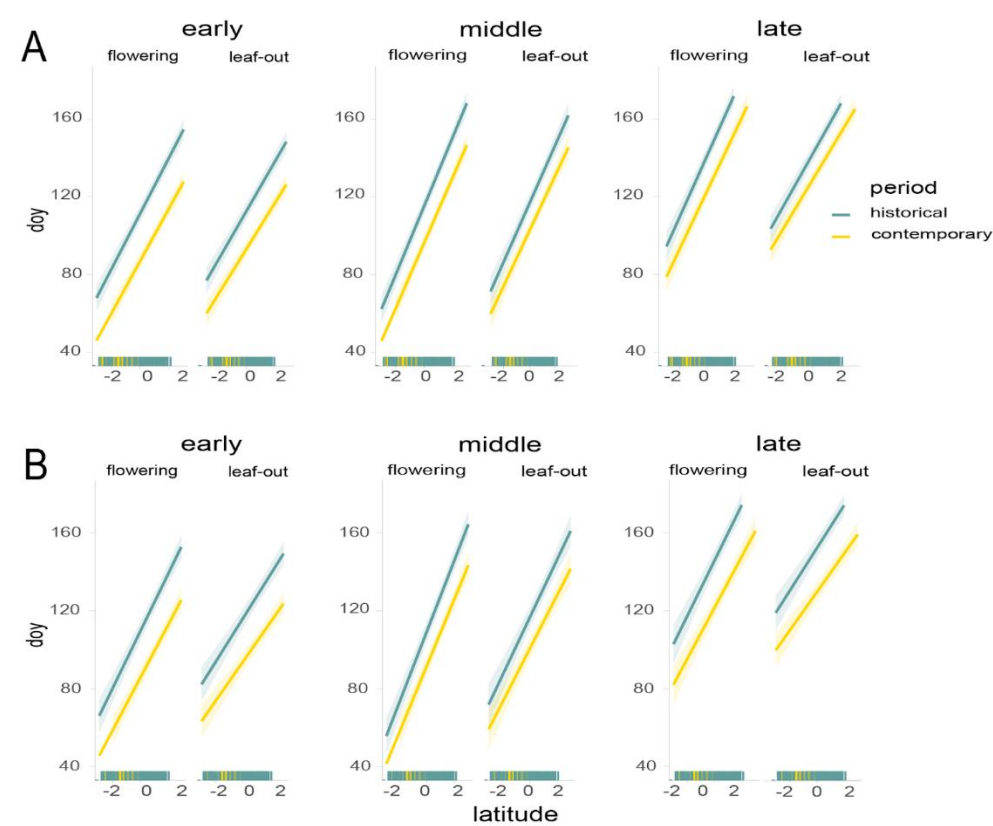
Supplemental Fig. 3. Model residuals of “best” LMM plotted against latitude (left) and longitude (right).



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Supplemental Figure 4. Comparison of effect plots for trends in onset timing over latitude for mixed effects models with all the species included (panel A) and for modes with species with contemporary iNaturalist onset phenometrics excluded (panel B).



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Supplemental Figure 5. Comparison of effect plots for how interactions between spring temperature velocity and spring climate context affect onset timing for plants with early, mid and late onset based on mixed effects model with all the species included (panel A) and for modes with species with contemporary iNaturalist onset phenometrics excluded (panel B).

