

Use of an Arboretum and DNA Barcoding for the Detection and Identification of Leaf-Mining Insects on Alien Woody Plants

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Table S2. Diversity, abundance and trophic associations of leaf-mining insects documented on various woody plants in the Volčji Potok Arboretum (Gorenjska region, Slovenia) in the period 2022–2023.

No.	Field No.	Plant species ¹	Damage level ²	Insect taxon			Sampling date
				Order ³	Family	Species ⁴	
1	Slo-188-1	<i>Acer campestre</i>	1	Lep.	Gracillariidae	<i>Caloptilia</i> sp.1	9.VIII.2022
2	Slo-188-2	<i>Acer campestre</i>	1	Lep.	Nepticulidae	<i>Stigmella aceris</i>	9.VIII.2022
3	Slo-184-1	<i>Acer palmatum</i>	1	Lep.	Gracillariidae	<i>Caloptilia</i> sp.4	9.VIII.2022
4	Slo-186-1	<i>Acer pseudoplatanus</i> 'Simon-Louis Freres'	1	Lep.	Gracillariidae	<i>Caloptilia</i> sp.2	9.VIII.2022
5	Slo-187-1	<i>Acer pseudoplatanus</i> 'Simon-Louis Freres'	1	Lep.	Gracillariidae	<i>Caloptilia</i> sp.2	9.VIII.2022
6	Slo-189-1	<i>Acer saccharinum</i>	1	Lep.	Gracillariidae	<i>Caloptilia</i> sp.3	9.VIII.2022
7	Slo-151-1	<i>Aesculus glabra</i>	1	Lep.	Gracillariidae	<i>Cameraria ohridella</i> *	6.VIII.2022
8	Slo-152-1	<i>Aesculus glabra</i> var. <i>arguta</i>	2	Lep.	Gracillariidae	<i>Cameraria ohridella</i>	6.VIII.2022
9	Slo-152-2	<i>Aesculus glabra</i> var. <i>arguta</i>	1	Lep.	Nepticulidae	<i>Stigmella</i> sp. 1	6.VIII.2022
10	Slo-153-1	<i>Aesculus glabra</i> var. <i>arguta</i>	3	Lep.	Gracillariidae	<i>Cameraria ohridella</i> *	6.VIII.2022
11	Slo-197-1	<i>Betula pendula</i>	1	Lep.	Gracillariidae	<i>Phyllonorycter ulmifoliella</i>	9.VIII.2022
12	Slo-197-2	<i>Betula pendula</i>	1	Lep.	Gracillariidae	<i>Phyllonorycter</i> <i>corylifoliella</i>	9.VIII.2022
13	Slo-197-3	<i>Betula pendula</i>	1	Lep.	Nepticulidae	<i>Stigmella lapponica</i>	9.VIII.2022
14	Slo-198-1	<i>Betula utilis</i>	1	Lep.	Nepticulidae	<i>Stigmella lapponica</i>	9.VIII.2022
15	Slo-198-2	<i>Betula utilis</i>	1	Lep.	Gracillariidae	<i>Parornix betulae</i>	9.VIII.2022
16	Slo-199-1	<i>Betula utilis</i> 'Doorenbos'	1	Lep.	Gracillariidae	<i>Parornix betulae</i>	9.VIII.2022
17	Slo-199-2	<i>Betula utilis</i> 'Doorenbos'	1	Lep.	Gracillariidae	<i>Caloptilia betulicola</i>	9.VIII.2022
18	Slo-199-3	<i>Betula utilis</i> 'Doorenbos'	1	Lep.	Gracillariidae	<i>Phyllonorycter ulmifoliella</i>	9.VIII.2022
19	Slo-199-4	<i>Betula utilis</i> 'Doorenbos'	1	Lep.	Nepticulidae	<i>Stigmella lapponica</i>	9.VIII.2022
20	Slo-182-1	<i>Celtis julianae</i>	1	Lep.	Gracillariidae	<i>Phyllonorycter millierella</i>	9.VIII.2022
21	Slo-182-2	<i>Celtis julianae</i>	1	Lep.	Gracillariidae	<i>Caloptilia fidella</i>	9.VIII.2022
22	Slo-175-1	<i>Carpinus betulus</i>	1	Lep.	Nepticulidae	<i>Stigmella microtheriella</i>	9.VIII.2022
23	Slo-175-2	<i>Carpinus betulus</i>	1	Lep.	Gracillariidae	<i>Parornix carpinella</i>	9.VIII.2022
24	Slo-175-3	<i>Carpinus betulus</i>	1	Lep.	Gracillariidae	<i>Phyllonorycter esperella</i>	9.VIII.2022
25	Slo-175-4	<i>Carpinus betulus</i>	1	Lep.	Gracillariidae	<i>Phyllonorycter tenerella</i>	9.VIII.2022
26	Slo-175-5	<i>Carpinus betulus</i>	1	Lep.	Nepticulidae	<i>Stigmella flosclactiella</i>	9.VIII.2022
27	Slo-201-1	<i>Cotinus coggygria</i>	2	Lep.	Nepticulidae	<i>Simplimorpha promissa</i>	9.VIII.2022
28	Slo-154-1	<i>Crataegus persimilis</i>	1	Lep.	Lyonetiidae	<i>Lyonetia clerkella</i>	6.VIII.2022
29	Slo-190-1	<i>Fagus sylvatica</i> 'Asplenifolia'	1	Lep.	Gracillariidae	<i>Phyllonorycter</i> <i>maestingella</i>	9.VIII.2022
30	Slo-156-1	<i>Fagus sylvatica</i> 'Cuprea'	1	Lep.	Gracillariidae	<i>Phyllonorycter</i> <i>maestingella</i>	6.VIII.2022

No.	Field No.	Plant species ¹	Damage level ²	Insect taxon			Sampling date
				Order ³	Family	Species ⁴	
31	Slo-156-2	<i>Fagus sylvatica</i> 'Cuprea'	1	Col.	Curculionidae	<i>Orchestes fagi</i>	6.VIII.2022
32	Slo-156-3	<i>Fagus sylvatica</i> 'Cuprea'	2	Lep.	Nepticulidae	<i>Stigmella tityrella</i>	6.VIII.2022
33	Slo-160-1	<i>Fraxinus excelsior</i>	2	Lep.	Gracillariidae	<i>Caloptilia cuculipennella</i>	6.VIII.2022
34	Slo-150-1	<i>Juglans regia</i>	2	Lep.	Gracillariidae	<i>Caloptilia roscipennella</i>	6.VIII.2022
35	Slo-161-1	<i>Juglans regia</i>	1	Lep.	Gracillariidae	<i>Caloptilia roscipennella</i>	6.VIII.2022
36	Slo-158-1	<i>Malus floribunda</i>	1	Lep.	Gracillariidae	<i>Phyllonorycter</i> sp. 1	6.VIII.2022
37	Slo-158-2	<i>Malus floribunda</i>	1	Lep.	Gracillariidae	<i>Callisto denticulella</i>	6.VIII.2022
38	Slo-158-3	<i>Malus floribunda</i>	1	Lep.	Lyonetiidae	<i>Lyonetia clerkella</i>	6.VIII.2022
39	Slo-157-1	<i>Malus floribunda</i> 'Atropurpurea'	1	Lep.	Gracillariidae	<i>Callisto denticulella</i>	6.VIII.2022
40	Slo-157-2	<i>Malus floribunda</i> 'Atropurpurea'	1	Lep.	Lyonetiidae	<i>Leucoptera malifoliella</i>	6.VIII.2022
41	Slo-164-1	<i>Malus × scheideckeri</i> 'Red Jade'	1	Lep.	Gracillariidae	<i>Callisto denticulella</i>	6.VIII.2022
42	Slo-164-2	<i>Malus × scheideckeri</i> 'Red Jade'	1	Lep.	Lyonetiidae	<i>Leucoptera malifoliella</i>	6.VIII.2022
43	Slo-164-3	<i>Malus × scheideckeri</i> 'Red Jade'	1	Lep.	Lyonetiidae	<i>Lyonetia clerkella</i>	6.VIII.2022
44	Slo-164-4	<i>Malus × scheideckeri</i> 'Red Jade'	1	Lep.	Gracillariidae	<i>Phyllonorycter</i> sp. 1	6.VIII.2022
45	Slo-164-5	<i>Malus × scheideckeri</i> 'Red Jade'	1	Lep.	Nepticulidae	<i>Stigmella incognitella</i>	6.VIII.2022
46	Slo-165-1	<i>Malus tschonoskii</i>	1	Lep.	Gracillariidae	<i>Phyllonorycter</i> sp. 1	6.VIII.2022
47	Slo-165-2	<i>Malus tschonoskii</i>	1	Lep.	Lyonetiidae	<i>Lyonetia clerkella</i>	6.VIII.2022
48	Slo-149-1	<i>Phyllostachys</i> <i>viridiglaucescens</i>	1	Dip.	Agromyzidae	<i>Cerodontha unisetiorbita</i>	9.VIII.2022
49	Slo-194-1	<i>Phyllostachys</i> <i>viridiglaucescens</i>	1	Dip.	Agromyzidae	<i>Cerodontha unisetiorbita</i>	9.VIII.2022
50	Slo-149- bis	<i>Platanus × acerifolia</i>	2	Lep.	Gracillariidae	<i>Phyllonorycter platani</i>	6.VIII.2022
51	Slo-172-1	<i>Platanus orientalis</i>	2	Lep.	Gracillariidae	<i>Phyllonorycter platani</i>	9.VIII.2022
52	Slo-206-1	<i>Populus alba</i>	3	Lep.	Gracillariidae	<i>Phyllonorycter comparella</i>	9.VIII.2022
53	Slo-206-2	<i>Populus alba</i>	2	Lep.	Gracillariidae	<i>Phyllocnistis xenia</i>	9.VIII.2022
54	Slo-206-3	<i>Populus alba</i>	1	Lep.	Gracillariidae	<i>Caloptilia stigmatella</i>	9.VIII.2022
55	Slo-196-1	<i>Populus nigra</i>	1	Lep.	Gracillariidae	<i>Phyllocnistis unipunctella</i>	9.VIII.2022
56	Slo-196-2	<i>Populus nigra</i>	1	Lep.	Nepticulidae	<i>Stigmella trimaculella</i>	9.VIII.2022
57	Slo-183-2	<i>Prunus cerasifera</i> 'Nigra'	1	Lep.	Gracillariidae	<i>Parornix finitimella</i>	9.VIII.2022
58	Slo-183-1	<i>Prunus cerasifera</i> 'Nigra'	1	Lep.	Nepticulidae	<i>Stigmella plagiolella</i>	9.VIII.2022
59	Slo-159-1	<i>Prunus incisa</i> 'February Pink'	1	Lep.	Lyonetiidae	<i>Lyonetia clerkella</i>	6.VIII.2022
60	Slo-267-1	<i>Prunus laurocerasus</i>	1	Lep.	Lyonetiidae	<i>Lyonetia clerkella</i>	5.I.2023
61	Slo-148-2	<i>Pterocarya</i> <i>fraxinifolia</i>	2	Lep.	Gracillariidae	<i>Caloptilia roscipennella</i>	5.VIII.2022
62	Slo-148-1a	<i>Pterocarya</i> <i>fraxinifolia</i>	2	Lep.	Heliozelidae	<i>Coptodisca lucifluella</i> *	5.VIII.2022

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				Order ³	Family	Species ⁴	
63	Slo-195-2	<i>Pterocarya fraxinifolia</i>	1	Lep.	Gracillariidae	<i>Caloptilia roscipennella</i>	9.VIII.2022
64	Slo-148-1b	<i>Pterocarya fraxinifolia</i>	2	Lep.	Heliozelidae	<i>Coptodisca lucifluella</i> *	5.VIII.2022
65	Slo-171-1	<i>Pterocarya sp.</i>	1	Lep.	Heliozelidae	<i>Coptodisca lucifluella</i>	9.VIII.2022
66	Slo-195-1	<i>Pterocarya fraxinifolia</i>	1	Lep.	Heliozelidae	<i>Coptodisca lucifluella</i>	9.VIII.2022
67	Slo-181-1	<i>Quercus ilex</i>	1	Lep.	Bucculatricidae	<i>Bucculatrix sp.</i>	9.VIII.2022
68	Slo-180-1	<i>Quercus libani</i>	1	Lep.	Gracillariidae	<i>Phyllonorycter distentella</i> *	9.VIII.2022
69	Slo-180-2	<i>Quercus libani</i>	1	Lep.	Gracillariidae	<i>Caloptilia alchimiella</i>	9.VIII.2022
70	Slo-180-3	<i>Quercus libani</i>	1	Lep.	Gracillariidae	<i>Acrocercops brongniardella</i>	9.VIII.2022
71	Slo-179-1	<i>Quercus robur</i> 'Strypemonde'	1	Lep.	Gracillariidae	<i>Phyllonorycter distentella</i>	9.VIII.2022
72	Slo-179-2	<i>Quercus robur</i> 'Strypemonde'	1	Col.	Curculionidae	<i>Orchestes quercus</i>	9.VIII.2022
73	Slo-179-3	<i>Quercus robur</i> 'Strypemonde'	1	Lep.	Bucculatricidae	<i>Bucculatrix sp.</i>	9.VIII.2022
74	Slo-255-1	<i>Rhododendron sp.</i>	2	Lep.	Gracillariidae	<i>Caloptilia azaleella</i> *	5.I.2023
75	Slo-192-1	<i>Robinia pseudoacacia</i> 'Frisia'	1	Lep.	Gracillariidae	<i>Parectopa robinella</i>	9.VIII.2022
76	Slo-155-1	<i>Robinia pseudoacacia</i> 'Umbraculifera'	1	Lep.	Gracillariidae	<i>Parectopa robinella</i>	6.VIII.2022
77	Slo-155-2	<i>Robinia pseudoacacia</i> 'Umbraculifera'	1	Lep.	Gracillariidae	<i>Macrosaccus robinella</i>	6.VIII.2022
78	Slo-162-1	<i>Robinia pseudoacacia</i> 'Umbraculifera'	1	Lep.	Gracillariidae	<i>Macrosaccus robinella</i>	6.VIII.2022
79	Slo-192-2	<i>Robinia pseudoacacia</i> 'Frisia'	1	Lep.	Gracillariidae	<i>Macrosaccus robinella</i>	9.VIII.2022
80	Slo-191-1	<i>Robinia pseudoacacia</i> 'Tortuosa'	1	Lep.	Gracillariidae	<i>Parectopa robinella</i>	9.VIII.2022
81	Slo-191-2	<i>Robinia pseudoacacia</i> 'Tortuosa'	1	Lep.	Gracillariidae	<i>Macrosaccus robinella</i>	9.VIII.2022
82	Slo-203-1	<i>Salix acutifolia</i>	1	Lep.	Gracillariidae	<i>Phyllocnistis valentinensis</i>	9.VIII.2022
83	Slo-203-2	<i>Salix acutifolia</i>	2	Lep.	Gracillariidae	<i>Phyllocnistis ramulicola</i>	9.VIII.2022
84	Slo-203-3	<i>Salix acutifolia</i>	1	Lep.	Gracillariidae	<i>Phyllonorycter pastorella</i>	9.VIII.2022
85	Slo-168-1	<i>Salix alba</i> 'Aurea'	2	Lep.	Gracillariidae	<i>Phyllocnistis ramulicola</i> *	6.VIII.2022
86	Slo-168-2	<i>Salix alba</i> 'Aurea'	2	Lep.	Gracillariidae	<i>Phyllonorycter pastorella</i>	6.VIII.2022
87	Slo-169-1	<i>Salix alba</i> 'Aurea'	3	Lep.	Gracillariidae	<i>Phyllocnistis ramulicola</i>	6.VIII.2022
88	Slo-169-2	<i>Salix alba</i> 'Aurea'	1	Lep.	Nepticulidae	<i>Stigmella salicis</i>	6.VIII.2022
89	Slo-169-3	<i>Salix alba</i> 'Aurea'	2	Lep.	Gracillariidae	<i>Caloptilia stigmatella</i>	6.VIII.2022
90	Slo-200-1	<i>Salix alba</i> 'Fantasia'	2	Lep.	Gracillariidae	<i>Phyllocnistis ramulicola</i>	9.VIII.2022
91	Slo-200-2	<i>Salix alba</i> 'Fantasia'	1	Lep.	Gracillariidae	<i>Phyllocnistis valentinensis</i> *	9.VIII.2022
92	Slo-200-3	<i>Salix alba</i> 'Fantasia'	1	Lep.	Gracillariidae	<i>Phyllocnistis saligna</i>	9.VIII.2022

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93	Slo-207-2	<i>Salix alba</i> 'Strachowo'	1	Lep.	Gracillariidae	<i>Phyllocnistis valentinensis</i>	9.VIII.2022
94	Slo-207-3	<i>Salix alba</i> 'Strachowo'	1	Lep.	Gracillariidae	<i>Phyllonorycter pastorella</i>	9.VIII.2022
95	Slo-205-1	<i>Salix cinerea</i> 'Veitshöchheim'	1	Lep.	Gracillariidae	<i>Caloptilia stigmatella</i> *	9.VIII.2022
96	Slo-202-3	<i>Salix cinerea</i> 'Veitshöchheim'	1	Lep.	Gracillariidae	<i>Phyllonorycter salicicolella</i>	9.VIII.2022
97	Slo-202-4	<i>Salix cinerea</i> 'Veitshöchheim'	1	Lep.	Gracillariidae	<u>Phyllocnistis ramulicola</u>	9.VIII.2022
98	Slo-167-1	<i>Salix × fragilis</i>	2	Lep.	Gracillariidae	<i>Phyllocnistis valentinensis</i> *	6.VIII.2022
99	Slo-167-3	<i>Salix × fragilis</i>	2	Lep.	Gracillariidae	<i>Phyllonorycter pastorella</i>	6.VIII.2022
100	Slo-202-1	<i>Salix × fragilis</i>	1	Lep.	Gracillariidae	<i>Phyllocnistis valentinensis</i>	9.VIII.2022
101	Slo-202-2	<i>Salix × fragilis</i>	1	Lep.	Gracillariidae	<u>Phyllocnistis ramulicola</u>	9.VIII.2022
102	Slo-202-4	<i>Salix × fragilis</i>	1	Dip.	Agromyzidae	<i>Agromyza albitarsis</i>	9.VIII.2022
103	Slo-170-1	<i>Salix magnifica</i>	1	Lep.	Gracillariidae	<i>Phyllonorycter salicicolella</i>	6.VIII.2022
105	Slo-204-2	<i>Salix pentandra</i>	1	Lep.	Nepticulidae	<i>Stigmella salicis</i>	9.VIII.2022
106	Slo-204-3	<i>Salix pentandra</i>	1	Hym.	Tenthredinidae	<i>Heterarthrus sp.</i>	9.VIII.2022
107	Slo-176-1	<i>Tilia americana</i>	3	Lep.	Gracillariidae	<u>Phyllonorycter issikii</u>	9.VIII.2022
104	Slo-163-2	<i>Tilia cordata</i>	1	Col.	Buprestidae	<i>Trachys minutus</i>	9.VIII.2022
108	Slo-163-1	<i>Tilia cordata</i>	1	Lep.	Gracillariidae	<u>Phyllonorycter issikii</u> *	6.VIII.2022
109	Slo-174-1	<i>Tilia cordata</i>	1	Lep.	Gracillariidae	<u>Phyllonorycter issikii</u>	9.VIII.2022
110	Slo-178-1	<i>Tilia cordata</i>	4	Lep.	Gracillariidae	<u>Phyllonorycter issikii</u> *	9.VIII.2022
111	Slo-173-1	<i>Tilia cordata</i> 'Firecracker'	1	Lep.	Gracillariidae	<u>Phyllonorycter issikii</u>	9.VIII.2022
112	Slo-177-1	<i>Viburnum opulus</i>	1	Lep.	Gracillariidae	<i>Phyllonorycter lantanella</i>	9.VIII.2022
113	Slo-193-1	<i>Viburnum rhytidophyllum</i>	1	Lep.	Tortricidae	<i>Acleris schalleriana</i>	9.VIII.2022

¹Plant species: the lines with novel trophic associations are shaded in green color; ²Damage level: 1 – low (1–24% of leaves with mines per 100 leaves), 2 – moderate (25–49%), 3 – high (50–75%), and 4 – severe infestation (> 75%). ³Orders: Lep. – Lepidoptera, Col. – Coleoptera, Hym. – Hymenoptera, Dip. – Diptera. ⁴Insect species: the species whose larvae or pupae were used for DNA barcoding are indicated by asterisk (*); alien insect species for Slovenia are provided in bold in orange color (novel alien species are underlined); native species novel for Slovenia are given in black and bold and underlined.