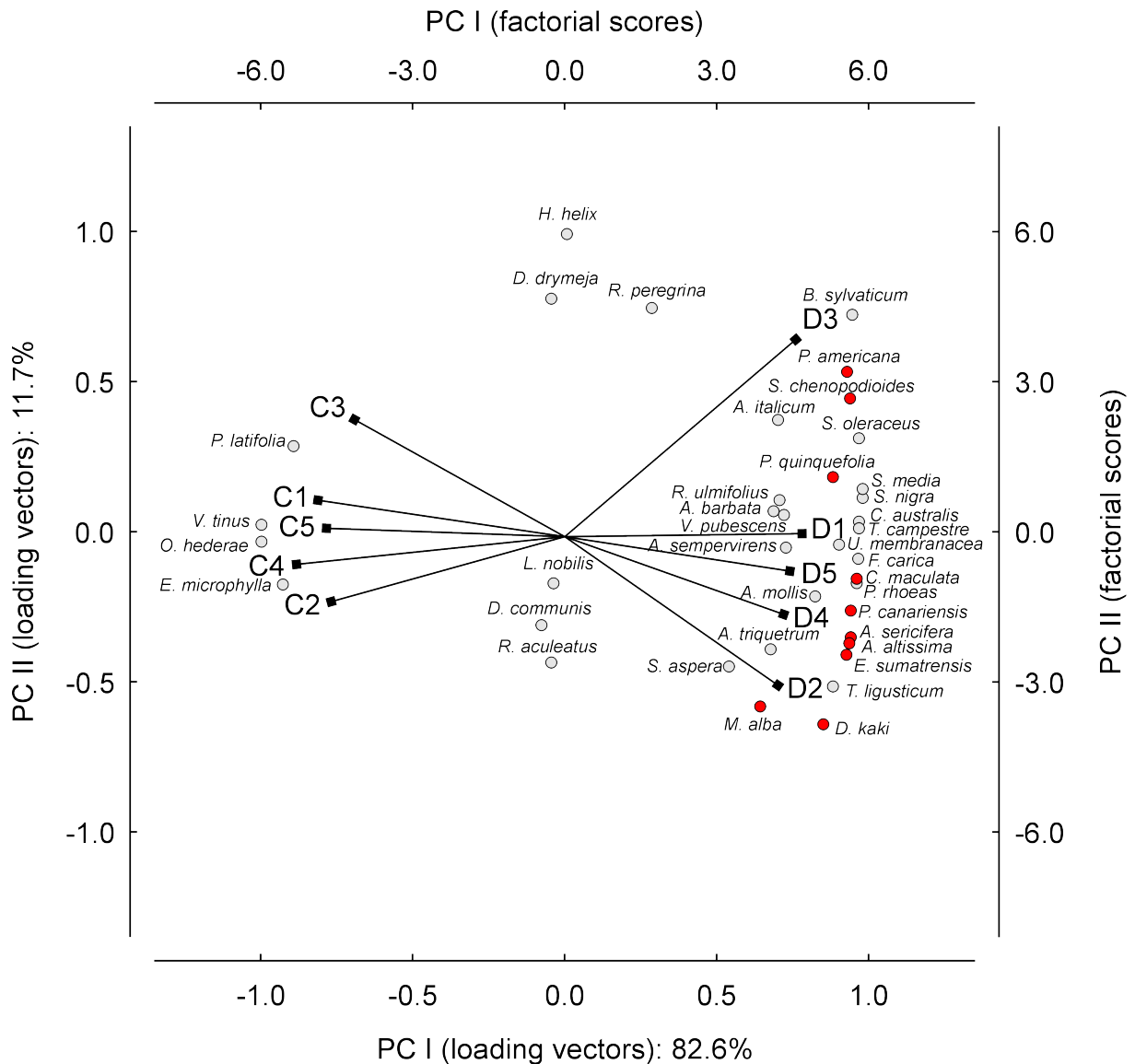


**Supplementary material**

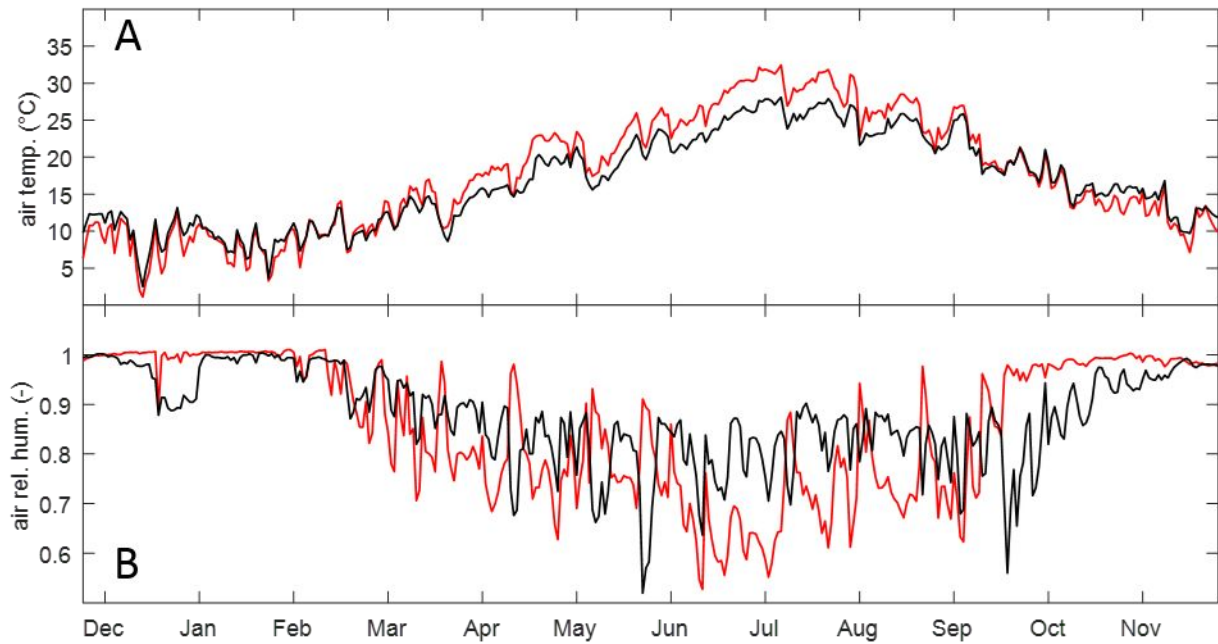
**Fig. S1** – PCA biplot of species and plots. Data refer to loading vectors (left and bottom axis) of sampling plots (arrows) labelled according to disturbance occurrence (D1 to D5: disturbed areas, C1 to C5: undisturbed control areas), and factorial scores of plant species (top and right axis). Native and invasive plant species are symbolized with grey and red dots, respectively.



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**Fig. S2** - Canopy effects on above-ground microclimate assessed by monitoring air temperature and relative humidity from December 9 2014 to December 9 2015 in disturbed (red line) and control (black line) areas. Data refer to daily air temperature(A) and relative humidity (B) recorded 10 cm above the soil surface.



**Tab. S1** - Gap-size distribution in the study forest following the windstorm of 16 June 2014.

<b>Gap-size (m<sup>2</sup>)</b>	<b>Frequency of occurrence (%)</b>
≤200	85
201 – 400	10
401 – 600	3
601 – 800	2
801 – 1000	0
1001 – 1200	0
1201 – 1400	1
1401 – 1600	1
1601 – 1800	1

**Tab. S2** - Forest stand attributes before and after (June 2015) the windstorm. Values refer to the census of all uprooted and snapped trees occurring in the disturbed areas selected for the vegetation analysis (total area of ~1,318 m<sup>2</sup>).

Forest attribute	Before storm	After storm		
	Standing	Standing	Uprooted	Snapped
Density (n. ha <sup>-1</sup> )	395	0	258	137
Above-ground dry biomass (t ha <sup>-1</sup> )	275.1	0	239.8	42.5
Basal area (m <sup>2</sup> ha <sup>-1</sup> )	34.0	0	23.8	10.2
Quadratic mean diameter (cm)	33.1	-	34.3	30.8

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**Tab. S3** – Results of two-way factorial ANOVA (F statistics and associated *P*-value) testing for effects of the sampling area (two levels, either disturbed and control), plant species and their interaction on plant cover (SS: sum of squares, df: degrees of freedom, MS: mean squares).

<b>Factor</b>	<b>SS</b>	<b>df</b>	<b>MS</b>	<b><i>F</i></b>	<b><i>P</i></b>
Area (A)	363.2	1	363.2	149.94	< 0.001
Species (S)	17637.4	37	476.7	196.82	< 0.001
S × A	3799.3	37	102.7	42.44	< 0.001
Error	736.3	304	2.4		

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**Tab. S4** - List of plant species recorded in the disturbed and control areas.

Taxon	Family	Life form	Native / Alien	Chorotype	Natural / synanthropic environments	Disturbed	Control
<i>Acanthus mollis</i> L. subsp. <i>mollis</i>	Acanthaceae	Hemicryptophyta scaposa	Alien doubtful	Doubtful alien in Italy (Mediterranean)	Synanthropic	Present	Present
<i>Ailanthus altissima</i> (Mill.) Swingle	Simaroubaceae	Macro-Phanerophyta	Alien	Invasive alien (China)	Synanthropic	Present	Absent
<i>Allium triquetrum</i> L.	Amaryllidaceae	Geophyta bulbosa	Native	W-Mediterranean (Steno-)	Natural	Present	Absent
<i>Araujia sericifera</i> Brot.	Apocynaceae	Phanerophyta lianosa	Alien	Invasive alien (S-America)	Synanthropic	Present	Absent
<i>Aristolochia sempervirens</i> L.	Aristolochiaceae	Phanerophyta lianosa	Native	S-Mediterranean	Natural	Present	Present
<i>Arum italicum</i> Mill. subsp. <i>italicum</i>	Araceae	Geophyta radicitubera	Native	Steno-Mediterranean	Natural	Present	Absent
<i>Avena barbata</i> Pott ex Link	Poaceae	Terophyta scaposa	Native	Euri-Mediterranean-Turanian	Synanthropic	Present	Absent
<i>Brachypodium sylvaticum</i> (Huds.) P. Beauv. subsp. <i>sylvaticum</i>	Poaceae	Hemicryptophyta caespitosa	Native	Palaeotemperate	Natural	Present	Absent
<i>Celtis australis</i> L. subsp. <i>australis</i>	Cannabaceae	Macro-Phanerophyta	Native	Euri-Mediterranean	Natural	Present	Absent
<i>Chamaesyce maculata</i> (L.) Small	Euphorbiaceae	Terophyta reptantia	Alien	Invasive alien (N-America)	Synanthropic	Present	Absent
<i>Dioscorea communis</i> (L.) Caddick et Wilkin	Dioscoreaceae	Geophyta radicitubera	Native	Euri-Mediterranean	Natural	Present	Present
<i>Diospyros kaki</i> L.	Ebenaceae	Macro-Phanerophyta	Alien	Casual alien (E-Asia)	Synanthropic	Present	Absent
<i>Drymochloa drymeja</i> (Mert. et Koch) Holub subsp. <i>exaltata</i> (C. Presl) Foggi et Signorini	Poaceae	Geophyta rhizomatosa	Native	Mediterranean-Mountain	Natural	Present	Present
<i>Epipactis microphylla</i> (Ehrh.) Sw.	Orchidaceae	Geophyta radicitubera	Native	European-Caucasian	Natural	Absent	Present
<i>Erigeron sumatrensis</i> Retz.	Asteraceae	Terophyta scaposa	Alien	Invasive alien (uncertain origin)	Synanthropic	Present	Absent
<i>Ficus carica</i> L.	Moraceae	Macro-Phanerophyta	Native	Mediterranean-Turanian	Natural	Present	Absent

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Taxon	Family	Life form	Native / Alien	Chorotype	Natural / synanthropic environments	Disturbed	Control
<i>Hedera helix</i> L. subsp. <i>helix</i>	Araliaceae	Phanerophyta lianosa	Native	Submediterranean-Subatlantic	Natural	Present	Present
<i>Laurus nobilis</i> L.	Lauraceae	Macro-Phanerophyta	Native	Steno-Mediterranean	Synanthropic	Present	Present
<i>Morus alba</i> L.	Moraceae	Macro-Phanerophyta	Alien	Casual alien (S-Asia)	Synanthropic	Present	Absent
<i>Orobanche hederæ</i> Duby	Orobanchaceae	Terophyta parasitica	Native	Euri-Mediterranean	Natural	Absent	Present
<i>Papaver rhoeas</i> L. subsp. <i>rhoeas</i>	Papaveraceae	Terophyta scaposa	Alien doubtful	Doubtful alien in Italy (probably E-Mediterranean)	Synanthropic	Present	Absent
<i>Parthenocissus quinquefolia</i> (L.) Planch.	Vitaceae	Phanerophyta lianosa	Alien	Naturalized alien (N-America)	Synanthropic	Present	Absent
<i>Phillyrea latifolia</i> L.	Oleaceae	Nano-Phanerophyta	Native	Steno-Mediterranean	Natural	Absent	Present
<i>Phoenix canariensis</i> Hort. ex Chabaud.	Arecaceae	Macro-Phanerophyta	Alien	Naturalized alien (Canary Islands)	Synanthropic	Present	Absent
<i>Phytolacca americana</i> L.	Phytolaccaceae	Geophyta rhizomatosa	Alien	Invasive alien (N-America)	Synanthropic	Present	Absent
<i>Quercus ilex</i> L. subsp. <i>ilex</i>	Fagaceae	Macro-Phanerophyta	Native	Steno-Mediterranean	Natural	Present	Present
<i>Rubia peregrina</i> L. subsp. <i>peregrina</i>	Rubiaceae	Hemicryptophyta reptantia	Native	SE-Mediterranean (Steno-)	Natural	Present	Present
<i>Rubus ulmifolius</i> Schott	Rosaceae	Nano-Phanerophyta	Native	Euri-Mediterranean	Synanthropic	Present	Absent
<i>Ruscus aculeatus</i> L.	Asparagaceae	Chamaephyta suffrutescens	Native	Euri-Mediterranean	Natural	Present	Present
<i>Sambucus nigra</i> L.	Adoxaceae	Macro-Phanerophyta	Native	European-Caucasian	Natural	Present	Absent
<i>Smilax aspera</i> L.	Smilacaceae	Phanerophyta lianosa	Native	Palaeosubtropical	Natural	Present	Present
<i>Solanum chenopodioides</i> Lam.	Solanaceae	Chamaephyta suffrutescens	Alien	Naturalized alien (S-America)	Synanthropic	Present	Absent
<i>Sonchus oleraceus</i> L.	Asteraceae	Terophyta scaposa	Native	Subcosmopolitan	Synanthropic	Present	Absent
<i>Stellaria media</i> (L.) Vill. subsp. <i>media</i>	Caryophyllaceae	Terophyta reptantia	Native	Cosmopolitan	Synanthropic	Present	Absent
<i>Trifolium campestre</i> Schreb.	Fabaceae	Terophyta scaposa	Native	(W)-Palaeotemperate	Synanthropic	Present	Absent
<i>Trifolium ligusticum</i> Loisel.	Fabaceae	Terophyta scaposa	Native	Steno-Mediterranean	Natural environments	Present	Absent

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<b>Taxon</b>	<b>Family</b>	<b>Life form</b>	<b>Native / Alien</b>	<b>Chorotype</b>	<b>Natural / synanthropic environments</b>	<b>Disturbed</b>	<b>Control</b>
<i>Urtica membranacea</i> Poir. ex Savigny	Urticaceae	Terophyta scaposa	Native	S-Mediterranean (Euri-)	Synanthropic	Present	Absent
<i>Viburnum tinus</i> L. subsp. <i>tinus</i>	Adoxaceae	Nano-Phanerophyta	Native	Steno-Mediterranean	Natural	Absent	Present
<i>Vicia pubescens</i> (DC.) Link	Fabaceae	Terophyta scandentia	Native	Euri-Mediterranean	Synanthropic	Present	Absent



**Tab. S5** – Results of the GLMM testing for effects of the sampling area (two levels, either disturbed and control) and location (random effect, five levels) and their interaction on the amount of litter collected at the sampling site (SS: sum of squares, df: degrees of freedom, MS: mean squares).

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	<b>Effect type</b>	<b>SS</b>	<b>df</b>	<b>MS</b>	<b><i>F</i></b>	<b><i>P</i></b>
Area (A)	Fixed	2821883	1	2821883	21.72	0.0096
Location (L)	Random	1690469	4	422617	3.25	0.1399
A × L	Random	519719	4	129930	0.68	0.6239
Error		1922266	10	192227		

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**Tab. S6** – Results of the GLMM testing for the effects of sampling area (two levels, either disturbed and control), location (random effect, five levels) and collection season on  $\text{NO}_3^-$  and  $\text{NH}_4^+$  content in soil samples collected at the sampling site (SS: sum of squares, df: degrees of freedom, MS: mean squares). Significant *P*-values are reported in italic font.

	Effect type	SS	df	MS	<i>F</i>	<i>P</i>
<i>NO<sub>3</sub><sup>-</sup> content</i>						
Area (A)	Fixed	501.33	1	501.33	138.01	<i>0.0003</i>
Location (L)	Random	14.92	4	3.73	1.04	0.5643
Season (S)	Fixed	6.06	1	6.06	2.01	0.2287
A × L	Random	14.53	4	3.63	1.19	0.4353
A × S	Fixed	50.69	1	50.69	16.60	<i>0.0152</i>
L × S	Random	12.03	4	3.01	0.98	0.5058
A × L × S	Random	12.22	4	3.05	0.92	0.4709
Error		66.28	20	3.31		
<i>NH<sub>4</sub><sup>+</sup> content</i>						
Area (A)	Fixed	48.80	1	48.80	676.52	< <i>0.0001</i>
Location (L)	Random	0.60	4	0.15	0.72	0.6182
Season (S)	Fixed	0.20	1	0.20	1.10	0.3530
A × L	Random	0.29	4	0.07	1.69	0.3114
A × S	Fixed	0.36	1	0.36	8.47	<i>0.0437</i>
L × S	Random	0.72	4	0.18	4.23	0.0957
A × L × S	Random	0.17	4	0.04	0.55	0.7028
Error		1.56	20	0.08		