Table 1 Expected associations and rationale for predictors (other than stream distance) that can affect arthropods in non-riparian chestnut forests. Predictors with asterisks (*) are those at which natural resource agencies can manage.

Predictors and covariates	Expected associations with arthropods and rationales
Litter moisture	(+) Moisture promotes the activity of microbial decomposers and hence dependent arthropods
Litter biomass*	(+) Litter biomass is a major source of energy and high levels should promote biodiversity if leaves are a good resource
	(–) Pitfall traps may be less effective sampling in dense litter layers
Litter C:N ratio*	(+) Litter in late stages of the decomposition process becomes enriched in C in relation to N
	(–) There is more labile material for decomposers in leaves with a low than with high C:N ratio.
Tree richness*	(+) The higher the tree richness, then the more diverse are the resources available to arthropods
	(–) Tree species other than chestnuts are often less nutritious for native arthropods (e.g. *Pinus*, *Eucalyptus*)
Tree density*	(+) High tree density should help to maintain microclimatically stable, forest-interior conditions regardless of the surrounding habitat
	(+) Tree density increases when chestnut forests are allowed to regenerate and are not thinned (i.e. low perturbation)
	(–) Shadow from high tree density may reduce understory growth and hence resources for arthropods
Understory height*	(+) The higher the height, the more resources are available to arthropods, and forest-interior conditions are better maintained
	(–) The soil is more complex and it is more difficult to find and to capture prey (i.e. reduced abundance)
Understory cover*	(+) The greater the understory cover, the more resources are available to arthropods, and the microclimate is more stable
	(–) The soil is more structurally complex and may reduce the efficacy of pitfall traps
Patch size	(+) The carrying capacity of the ecosystem increases with ecosystem size (i.e. the ecosystem-productivity hypothesis)
	(–) The larger the patch, the less likely is that migrants from neighbouring habitats reach the trap in the centre of the forest patch
Patch shape	(+) Immigration of arthropods from neighbouring habitats is more likely owing to greater patch perimeter
	(–) Forest-interior conditions are less likely to be maintained in irregular patches
Surrounding habitats	(+) Shrublands and secondary roads with very low traffic may act as corridors or ecotones to facilitate dispersal of forest arthropods
	(–) Human settlements perturb patch conditions (e.g. inputs of fertilizers, herbicides and pesticides used in orchards)
UTM-X distance to centroid	Covariate to account for the effects of the spatial distribution of sampling sites
UTM-Y distance to centroid	Covariate to further account for the effects of the spatial distribution of sampling sites

Table 2 Median, interquartile range (IQR = Q3–Q1) and minimum and maximum values of abundance, observed and Chao estimated richness of arthropod captures in ground and aerial traps in the 32 sampling sites in northwestern Spain. Captures were assigned to the trophic guild of the adult arthropods.

	Median ± IQR	Range
Ground traps		
Taxonomic approach		
Abundance	44±48	5-169
Observed richness	14±7	4-22
Chao estimated richness	21±10	6-63
Abundance of trophic guilds		
Predators	14±13	2-41
Omnivores	11±14	1-76
Phytophages	1±2	0-7
Decomposers	6±9	0-38
Aerial traps		
Taxonomic approach		
Abundance	94±104	10-329
Observed richness	14±6	5-31
Chao estimated richness	19±10	5-77
Abundance of trophic guilds		
Predators	3±3	0-9
Parasitoids	1±2	0-7
Omnivores[1]	90±105	9-321

[1]Allocations were based on personal observations of the authors in many cases because there is little detailed information on the diets of dipterans and many species have diverse trophic strategies (e.g. feeding on carrion, floral liquids, fermented fruits).

Table 3 Statistics and predictors of the most parsimonious generalized linear models based on the *dredge* function analyses (GLMs) that explained variation in the abundance, observed richness and Chao estimated richness of (a) ground-trapped and (b) aerial-trapped arthropod captures in chestnut-forest patches. Only indicators of vegetation structure are plotted in Fig. 3 and the interactions between arthropods and litter or vegetation structure are shown in Figs. 4 and 5. Predictors are ranked by the magnitude of the regression standardized coefficients. The independent contributions of each predictor to the overall explained variance of models (R^2) were calculated using the R function *hier.part* (HP %). Significance (*) was assessed based on the upper 95% confidence interval using the randomized permutation test (R function *rand.hp*).

(a) Ground traps

Abundance (R^2 = 0.51)	Estimates	S.E.	HP %
Tree richness	-0.45	0.11	49.4*
Litter moisture	0.23	0.12	16.2
Tree density	0.23	0.11	11.3
Litter quality	0.19	0.12	6.1
UTMy	0.19	0.11	10.3
Other land uses	-0.18	0.10	6.6

Observed richness (R^2 = 0.47)	Estimates	S.E.	HP %
Tree richness	-0.19	0.06	28.7*
Litter quality	0.19	0.06	17.7
Understory height	0.11	0.06	5.5
Litter moisture	0.10	0.05	16.9
Tree density	0.09	0.05	12.4
UTMx	0.09	0.05	18.6*

Chao estimated richness (R^2 = 0.62)	Estimates	S.E.	HP %
Tree richness	-0.34	0.05	44.5*
Tree density	0.18	0.05	12.1*
Litter biomass : Stream distance	0.18	0.05	<< 1
Patch size	0.13	0.05	11.1
Litter quality	0.13	0.05	2.3
Other land uses	-0.12	0.04	7.4
Shrubland	0.12	0.04	10.5
Litter biomass	-0.10	0.04	3.8
Understory cover : Stream distance	0.10	0.05	<< 1
Stream distance	-0.09	0.04	1.6
Understory cover	0.09	0.06	6.6

(b) Aerial traps

Abundance (R^2 = 0.43)	Estimates	S.E.	HP %
UTMy	0.40	0.15	27.9*
Litter biomass : Stream distance	-0.35	0.15	<< 1
Litter biomass	0.33	0.15	26.7*
Litter moisture	-0.29	0.15	3.5
Understory height	0.26	0.15	29.2*
Patch size	0.26	0.13	10.6
Stream distance	-0.20	0.13	2.4

Observed richness (R^2 = 0.49)	Estimates	S.E.	HP %
UTMy	0.20	0.05	52.8*
Understory height	0.18	0.05	14.8*
Understory height : Stream distance	0.13	0.07	<< 1
Stream distance	-0.10	0.04	12.5
Litter biomass	0.09	0.05	5.9
Other land uses	-0.08	0.05	14.1*

Chao estimated richness (R^2 = 0.73)	Estimates	S.E.	HP %
UTMy	0.43	0.04	48.8*
Stream distance	-0.34	0.05	21*
Understory height	0.28	0.06	2.4
Understory height : Stream distance	0.22	0.07	<< 1
Other land uses	-0.21	0.04	14.5*
Litter biomass	0.20	0.05	6.4
Tree richness	-0.18	0.05	1.5
Litter moisture	-0.10	0.05	1.4
Urban areas	-0.10	0.06	1.8
Secondary roads	0.08	0.05	2.2

Table 4 Statistics and predictors of the most parsimonious generalized linear models (GLMs) that explained variation in the abundance of arthropods shown by trap method (ground and aerial traps) and trophic guild (Pred, predator; Para, parasitoid; Omn, omnivore, Phyto, phytophage, and Deco, decomposers). The direction of effects is based on the signs of estimates of GLMs and 'ns' indicates that this predictor was not included in the best models as assessed by the Akaike Information Criterion. The independent contributions of each predictor to the overall explanatory power of GLMs (R^2) were calculated using the R function *hier.part* (HP %). Significance (**in bold**) is assessed using the upper 95% confidence interval based on a randomized permutation test (R function *rsand.hp*).

	Ground Pred		Aerial Pred*		Aerial Para		Ground Omn		Ground phyto**		Aerial Omn***		Ground Decom	
	R^2 = 0.59		R^2 = 0.38		R^2 = 0.24		R^2 = 0.44		R^2 = 0.68		R^2 = 0.13		R^2 = 0.32	
	Effect	% HP	Effect	% HP	Effect	% HP	Effect	% HP	Effect	% HP	Effect	% HP	Effect	% HP
Leaf litter moisture	+	**18**	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	+	**84**
Litter biomass	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	+	40	ns	<< 1
Litter C:N ratio	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1
Tree species richness	-	**23**	ns	<< 1	ns	<< 1	-	**28**	ns	<< 1	ns	<< 1	ns	<< 1
Tree density	ns	<< 1	ns	<< 1	ns	<< 1	+	**29**	-	3	ns	<< 1	ns	<< 1
Understory height	ns	<< 1	+	1	+	**74**	ns	<< 1	-	9	ns	<< 1	ns	<< 1
Understory cover	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	+	**32**	ns	<< 1	ns	<< 1
Stream distance	ns	<< 1	-	**41**	ns	<< 1	ns	<< 1	-	9	-	60	ns	<< 1
Forest property size	ns	<< 1	ns	<< 1	ns	<< 1	-	15	ns	<< 1	ns	<< 1	ns	<< 1
Forest property shape	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1
UTM-X distance	ns	<< 1	-	**58**	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1
UTM-Y distance	+	6	ns	<< 1	ns	<< 1	+	**28**	+	**47**	ns	<< 1	ns	<< 1
Shrubland	-	13	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	+	16
Urban area	ns	<< 1	ns	<< 1	+	26	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1
Secondary roads	+	**24**	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1
Other land uses	-	16	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1	ns	<< 1

*GLM from Appendix S7 includes a statistically significant positive association between stream distance and understory height

**GLM from Appendix S7 includes a statistically significant positive association between stream distance and understory height and a statistically significant negative association between stream distance and tree density

***GLM from Appendix S7 includes a statistically significant negative association between stream distance and litter biomass

Appendix S1. Median, interquartile range (IQR = Q3–Q1) and minimum and maximum values of the reduced set of 16 predictors used to explore the factors affecting arthropod assemblages in chestnut forests in northwestern Spain (n = 32). Omitted predictors from the 27 listed in Appendix S2 had high collinearity based on variance-inflation factors (*vif* within the package *usdm* at a threshold of ≤ 3, Zuur et al., 2010).

Predictors and covariates	VIF	Median ± IQR	Range
Litter moisture (%)	1.67	8.2±2.5	4.92-16.35
Litter biomass (g/m^2)	1.71	644.4±327.7	150.0-1666.7
Litter C:N ratio	2.81	6.9±3.7	3.9-21.9
Tree richness	1.72	2±2	1-5
Tree density (individuals/100 m^2)	1.44	12±12	2-47
Understory height (cm)	2.19	21.5±24.5	4-105
Understory cover (score)	1.75	2±2	1-3
Stream distance (m)	2.09	212.8±359.9	2.2-619.7
Patch size (m^2)	1.45	475.2±425	119-12450
Shape index	1.60	0.09±0.88	-5.04
Surrounding shrubland (%)	1.26	0±0	0-50
Surrounding urban area (%)	2.31	0±0	0-75
Surrounding secondary roads (%)	2.09	25±25	0-25
Surrounding other land uses (%)	1.47	0±0	0-25
UTM-X distance to centroid (m)	1.37	0±1349.6	-1339.9-3703.6
UTM-Y distance to centroid (m)	2.09	0±1055.3	-1467.2-2358.4

Appendix S2 List of the 26 potential predictors and description of the methodology used to quantify them in the forest patches

1. Tree density (individuals/100 m^2)**.** The number of trees was recorded in a focal area of 100 m^2 in which the arthropod trap was located in the centre.

2. Tree size (cm)**.** The median value of the circumferences of all standing trees within the focal area of 100 m^2 (at 1.5 m above the ground).

3. Tree species. Count of tree species within the focal area of 100 m^2.

4. Snags. The number of standing dead trees in the focal area of 100 m^2.

5. Lux. Five measures of light intensity at 1.5 m above the ground spaced 30 cm in each of the four cardinal points around the arthropod trap.

6. Air temperature (ºC)**.** Five measures of air temperature (digital thermometer) at 1.5 m above the ground spaced 30 cm in each of the four cardinal points around the arthropod trap.

7. Understory cover (%)**.** The percentage of ground covered by understory in 100 m^2.

8. Understory richness. The number of species of ferns, herbs and bushes within the focal area of 100 m^2.

9. Understory height (cm). The median of five measures of understory height were recorded in the four cardinal points 30 cm from the arthropod trap.

10. Litter biomass (g/m^2). The median value of samples in four cardinal directions 50 cm from litter-arthropod traps.

11. Litter moisture (%). Litter biomass was dried under the sun until constant weight. Differences in litter weight before and after drying is the percentage of moisture.

12. Litter quality (ratio). The quality of leaf litter was estimated from C and N stable isotope ratios. We randomly took 17 g of leaf litter from the pool used to calculate litter biomass, crushed it to fine powder and placed 1 mg of this powder in tin capsules for C and N stable isotope signatures at the Laboratory of Stable Isotopes EBD-CSIC. Samples were combusted at 1020 °C using a continuous flow isotope-ratio mass spectrometry system (Thermo Electron) by means of a Flash HT Plus elemental analyser interfaced with a Delta V Advantage mass spectrometer.

13. Deadwood cover (%). The percentage of ground covered by fallen trees within the focal area of 100 m^2.

14. Stream-distance (m). The distance from each arthropod trap to the nearest stream measured using Google Earth®.

15. Elevation (m.a.s.l.). Elevation was recorded using UTM-X and UTM-Y spatial coordinates and Google Earth®.

16. Slope (%). An angle-measuring device was placed on the ground and the median of five measurements at each of the four cardinal points around the arthropod trap was computed.

17. Patch size (ha). The official record of forest private properties in Spain (the ‘Sigpac’ visor) was used to record the total surface area of the chestnut forest patch for each property.

18. Patch shape was calculated using the shape index = $p/2*(\pi \cdot a)$, where p is the perimeter and a is the area of each private property.

19. Percentage of surrounding chestnut forests. The percentage of the perimeter of the private property surrounded by chestnut forests.

20. Percentage of surrounding other forests. The percentage of the perimeter of the private property surrounded by other forests types.

21. Percentage of surrounding urban areas. The percentage of the perimeter of the private property surrounded by urban areas.

22. Percentage of surrounding grasslands. The percentage of the perimeter of the private property surrounded by grasslands.

23. Percentage of surrounding shrublands. The percentage of the perimeter of the private property surrounded by shrublands.

24. Percentage of surrounding secondary roads. The percentage of the perimeter of the private property surrounded by secondary-road forests.

25. UTM-X. Spatial coordinate GPS

26. UTM-Y. Spatial coordinate GPS

Appendix S3 Spearman rank correlation coefficients between arthropod measures and landscape variables at buffers of 100, 500 and 1000 m from the traps. The buffer of 500 m was selected for analyses because it has the largest mean correlation coefficients with the landscape attributed within each buffer (e.g. % of scrublands, % of orchards) and the least standard deviations.

	Abundance	Estimated richness	Observed richness
Buffer 100			
Mean	-0.04	-0.05	-0.05
Standard deviation	0.15	0.18	0.14
Minimum	-0.23	-0.19	-0.28
Maximum	0.15	0.29	0.08
Buffer 500			
Mean	**-0.26**	**-0.18**	**-0.30**
Standard deviation	**0.09**	**0.06**	**0.04**
Minimum	-0.15	-0.11	-0.27
Maximum	-0.32	-0.22	-0.34
Buffer 1000			
Mean	-0.18	-0.08	-0.18
Standard deviation	0.05	0.13	0.13
Minimum	-0.12	-0.001	-0.03
Maximum	-0.21	-0.24	-0.28

Appendix S4 Results (mean, standard deviation and minimum-maximum values) of the pilot survey setting three pitfall traps in four of the studied sampling sites instead of the one used for the large-scale study.

	Richness		Abundance	
	Mean ± SD	Range	Mean ± SD	Range
Site 1	14 ± 2	12-17	65 ± 9	55-74
Site 2	19 ± 3	17-22	117 ± 46	77-169
Site 3	16 ± 3	13-19	40 ± 16	27-59
Site 4	20 ± 2	18-21	77 ± 29	59-111

Appendix S5 List of arthropods captured by pitfall (above) and aerial traps (below) indicating the trophic guild (TG), the total number of captures (total), the relative abundance (A) and the frequency of capture (F) of each taxon in relation to the 32 chestnut forest patches surveyed in northwestern Spain. Moths were also captured in the aerial traps but were omitted in the analyses due to bad preservation.

PITFALL TRAPS	**Family**	**Species**	**TG**	**Total**	**A**	**F**
Subphylum Chelicerata						
Clase Arachnida						
Subclase Acari			Predator	295	17.71	0.78
Pseudoscorpionida			Predator	4	0.24	0.09
Opiliones			Predator	80	4.80	0.75
Araneae	Agelenidae		Predator	50	3.00	0.63
Araneae	Agelenidae	*Eratigena montigena*	Predator	1	0.06	0.03
Araneae	Agelenidae	*Tegenaria ramblae*	Predator	2	0.12	0.06
Araneae	Agelenidae	*Malthonica lusitanica*	Predator	5	0.30	0.16
Araneae	Amaurobiidae	*Amaurobius occidentalis*	Predator	1	0.06	0.03
Araneae	Cybaeidae		Predator	3	0.18	0.03
Araneae	Dysderidae	*Rhode scutiventris*	Predator	42	2.52	0.56
Araneae	Dysderidae	*Dysdera* sp.	Predator	1	0.06	0.03
Araneae	Gnaphosidae		Predator	1	0.06	0.03
Araneae	Linyphiidae		Predator	1	0.06	0.03
Araneae	Linyphiidae	*Lepthyphantes* sp.	Predator	1	0.06	0.03
Araneae	Linyphiidae	*Sintula iberica*	Predator	1	0.06	0.03
Araneae	Liocranidae		Predator	2	0.12	0.06
Araneae	Liocranidae	*Agroeca inopina*	Predator	2	0.12	0.06
Araneae	Liocranidae	*Liocranum rupicola*	Predator	3	0.18	0.09
Araneae	Lycosidae		Predator	3	0.18	0.06
Araneae	Lycosidae	*Hogna radiata*	Predator	1	0.06	0.03
Araneae	Mimetidae	*Ero* sp.	Predator	1	0.06	0.03
Araneae	Mimetidae	*Ero furcata*	Predator	1	0.06	0.03
Araneae	Miturgidae	*Zora* sp.	Predator	1	0.06	0.03
Araneae	Thomisidae	*Xysticus* sp.	Predator	1	0.06	0.03
Araneae	Trachelidae	*Paratrachelas validus*	Predator	1	0.06	0.03
Geophilomorpha			Predator	2	0.12	0.06
Scolopendromorpha			Predator	1	0.06	0.03
Lithobiomorpha	Lithobiidae	*Lithobius* sp.	Predator	67	4.02	0.81
Clase Diplopoda						
Glomerida			Decomposer	1	0.06	0.03
Polyxenida			Decomposer	1	0.06	0.03
Subphylum Crustacea						
Clase Malacostraca						
Isopoda			Decomposer	141	8.46	0.75
Subphylum Hexapoda						
Clase Collembola			Omnivorous	37	2.22	0.25
Clase Insecta						
Mycrocoryphia			Decomposer	19	1.14	0.19
Orthoptera	Gryllidae	*Nemobius sylvestris*	Omnivorous	294	17.65	0.78

	Family	Species	TG	Total	A	F
Heteroptera			Phytophagous	14	0.84	0.22
Homoptera			Phytophagous	1	0.06	0.03
Dyctioptera			Omnivorous	3	0.18	0.09
Hymenoptera	Formicidae	*Formica fusca*	Omnivorous	2	0.12	0.03
Hymenoptera	Formicidae	*Lasius flavus*	Omnivorous	9	0.54	0.13
Hymenoptera	Formicidae	*Lasius fuliginosus*	Omnivorous	37	2.22	0.06
Hymenoptera	Formicidae	*Lasius brunneus*	Omnivorous	5	0.30	0.06
Hymenoptera	Formicidae	*Lasius platythorax*	Omnivorous	2	0.12	0.06
Hymenoptera	Formicidae	*Myrmica sabuleti*	Omnivorous	15	0.90	0.13
Hymenoptera	Formicidae	*Myrmica ruginodis*	Omnivorous	18	1.08	0.31
Hymenoptera	Formicidae	*Myrmica rubra*	Omnivorous	5	0.30	0.03
Hymenoptera	Formicidae	*Myrmica aloba*	Omnivorous	1	0.06	0.03
Hymenoptera	Formicidae	*Temnothorax nylanderi*	Omnivorous	3	0.18	0.09
Hymenoptera	Formicidae	*Tetramorium* sp.	Omnivorous	20	1.20	0.13
Coleoptera	Carabidae	*Carabus deyrollei*	Predator	88	5.28	0.56
Coleoptera	Carabidae	*Laemostenus terricola*	Omnivorous	5	0.30	0.16
Coleoptera	Carabidae	*Pterostichus cristatus*	Predator	56	3.36	0.50
Coleoptera	Carabidae	*Steropus gallega*	Predator	18	1.08	0.31
Coleoptera	Carabidae	*Calathus rotundicollis*	Omnivorous	14	0.84	0.28
Coleoptera	Carabidae	*Carabus steuarti*	Predator	3	0.18	0.09
Coleoptera	Carabidae	*Platyderus lusitanicus*	Omnivorous	2	0.12	0.06
Coleoptera	Carabidae	*Carabus lineatus*	Predator	37	2.22	0.34
Coleoptera	Carabidae	*Poecilus kugelanni*	Predator	1	0.06	0.03
Coleoptera	Carabidae	*Carabus lusitanicus*	Predator	1	0.06	0.03
Coleoptera	Carabidae	*Platyderus gallaecus*	Omnivorous	1	0.06	0.03
Coleoptera	Carabidae	*Harpalus dispar*	Phytophagous	1	0.06	0.03
Coleoptera	Carabidae	*Calathus minutus*	Predator	1	0.06	0.03
Coleoptera	Curculionidae		Phytophagous	23	1.38	0.34
Coleoptera	Geotrupidae		Decomposer	3	0.18	0.06
Coleoptera	Leiodidae		Decomposer	60	3.60	0.28
Coleoptera	Lucanidae		Phytophagous	1	0.06	0.03
Coleoptera	Scydmaenidae		Decomposer	9	0.54	0.09
Coleoptera	Silphidae	*Nicrophorus vespillo*	Decomposer	10	0.60	0.16
Coleoptera	Silphidae	*Nicrophorus vespilloides*	Decomposer	69	4.14	0.31
Coleoptera	Staphylinidae		Predator	25	1.50	0.38
Coleoptera	Tenebronidae		Decomposer	17	1.02	0.34

AERIAL TRAPS	Species	TG	Total	A	F
Subphylum Hexapoda					
Clase Insecta					
Diptera					
Anisopodidae	*Sylvicola cinctus*	Omnivorous	54	1.41	0.48
Anisopodidae	*Sylvicola punctatus*	Omnivorous	2	0.05	0.06
Anthomyiidae		Omnivorous	241	6.30	0.91
Aulacigastridae	*Aulacigaster leucopeza*	Omnivorous	7	0.18	0.12
Calliphoridae		Omnivorous	64	1.67	0.67
Chamaemyiidae	*Leucopis* sp.	Predator	1	0.03	0.03
Chloropidae		Omnivorous	13	0.34	0.18
Drosophilidae	*Drosophila suzukii*	Omnivorous	456	11.92	0.91
Drosophilidae	*Leucophenga maculata*	Omnivorous	1	0.03	0.03
Drosophilidae	*Phortica semivirgo*	Omnivorous	8	0.21	0.12
Drosophilidae	*Phortica oldenbergi*	Omnivorous	0	0.00	0.00
Drosophilidae		Omnivorous	1311	34.28	0.94
Dryomyzidae	*Dryope flaveola*	Omnivorous	2	0.05	0.06
Dryomyzidae	*Dryomyza anilis*	Omnivorous	4	0.10	0.12
Fanniidae	*Fannia aequilineata*	Omnivorous	16	0.42	0.21
Fanniidae	*Fannia canicularis*	Omnivorous	3	0.08	0.06
Fanniidae	*Fannia clara*	Omnivorous	1	0.03	0.03
Fanniidae	*Fannia difficilis*	Omnivorous	5	0.13	0.09
Fanniidae	*Piezura pardalina*	Omnivorous	19	0.50	0.21
Heleomyzidae	*Suillia affinis*	Omnivorous	166	4.34	0.79
Heleomyzidae	*Suillia flagripes*	Omnivorous	1	0.03	0.03
Heleomyzidae	*Suillia bicolor*	Omnivorous	1	0.03	0.03
Heleomyzidae	*Suillia similis*	Omnivorous	2	0.05	0.06
Heleomyzidae	*Suillia variegata*	Omnivorous	12	0.31	0.18
Heleomyzidae	*Suillia bistrigata*	Omnivorous	1	0.03	0.03
Heleomyzidae	*Suillia fuscicornis*	Omnivorous	1	0.03	0.03
Lauxaniidae	*Minettia inusta*	Omnivorous	8	0.21	0.12
Lauxaniidae	*Minettia longipennis*	Omnivorous	2	0.05	0.03
Lauxaniidae	*Minettia fasciata*	Omnivorous	6	0.16	0.09
Lauxaniidae	*Minettia pseudoinusta*	Omnivorous	2	0.05	0.06
Lauxaniidae	*Sapromyza opaca*	Omnivorous	1	0.03	0.03
Lauxaniidae	*Sapromyza bisigillata*	Omnivorous	1	0.03	0.03
Lauxaniidae	*Pseudolyciella pallidiventris*	Omnivorous	3	0.08	0.09
Lauxaniidae	*Peplomyza litura*	Omnivorous	1	0.03	0.03
Lauxaniidae	*Tricholauxania praeusta*	Omnivorous	1	0.03	0.03
Lonchaeidae	*Setisquamalonchaea fumosa*	Omnivorous	1	0.03	0.03
Lonchaeidae	*Lonchaea* sp.	Omnivorous	3	0.08	0.03
Muscidae	*Phaonia pallida*	Omnivorous	783	20.48	0.97
Muscidae		Omnivorous	256	6.69	0.94
Odiniidae	*Odinia boletina*	Omnivorous	1	0.03	0.03
Periscelididae	*Periscelis fugax*	Omnivorous	4	0.10	0.09

	Species	TG	Total	A	F
Periscelididae	*Periscelis piricercus*	Omnivorous	4	0.10	0.12
Periscelididae	*Periscelis winnertzii*	Omnivorous	1	0.03	0.03
Phoridae		Omnivorous	16	0.42	0.24
Sarcophagidae	*Sarcophaga lehmanni*	Omnivorous	8	0.21	0.21
Sarcophagidae	*Sarcophaga rosellei*	Predator	1	0.03	0.03
Sarcophagidae	*Sarcophaga* sp.	Omnivorous	53	1.39	0.67
Scathophagidae	*Scatophaga inquinata*	Predator	1	0.03	0.03
Scatopsidae		Omnivorous	35	0.92	0.27
Sciomyzidae	*Euthycera chaerophylli*	Omnivorous	4	0.10	0.12
Syrphidae	*Ferdinandea cuprea*	Omnivorous	1	0.03	0.03
Ulidiidae	*Myennis octopunctata*	Omnivorous	2	0.05	0.06
Hymenoptera					
Braconidae		Parasitoids	15	0.39	0.21
Crabronidae		Predator	7	0.18	0.15
Diapriidae		Parasitoids	3	0.08	0.06
Encyrtidae		Parasitoids	1	0.03	0.03
Eulophidae		Parasitoids	2	0.05	0.03
Figitidae		Parasitoids	1	0.03	0.03
Ichneumonidae		Parasitoids	3	0.08	0.09
Platygastridae		Parasitoids	1	0.03	0.03
Proctotrupidae		Parasitoids	4	0.10	0.06
Pteromalidae		Parasitoids	1	0.03	0.03
Tiphiidae		Parasitoids	1	0.03	0.03
Vespidae	*Dolichovespula media*	Predator	13	0.34	0.24
Vespidae	*Vespa crabro*	Predator	6	0.16	0.15
Vespidae	*Vespa velutina nigrithorax*	Predator	1	0.03	0.03
Vespidae	*Vespula vulgaris*	Predator	68	1.78	0.76
Blattodea		Omnivorous	15	0,39	0.30
Neuroptera					
Chrysopidae		Predator	8	0.21	0.15
Myrmeleontidae		Predator	1	0.03	0.03
Coleoptera					
Staphylinidae		Predator	51	1.33	0.48
Nitidulidae	_	Omnivorous	23	0.60	0.42

Some technical considerations for flying insect captures:

All insects were adults and they may be itinerants or sedentary, characteristics we do not know for many species, but we are confident that all captured taxa were affected by the microclimatic conditions in the focal forests. There appeared to be a direct effect of microclimate on insects and an indirect effect through the fermentation of the liquid in the trap, so that our bait trap reflected the local insect communities and the stages in fermentation (this began in all sampling sites at the same time). The process of organic matter decomposition (of which fermentation is part) is sensitive to changes in environmental conditions, and so, forest-microclimatic conditions, which may be the main direct effect that stream-distance may have on non-riparian chestnut forests. The adequacy of our bait traps for sampling the target insect community is similar to using carrion or dung to study assemblages of decomposers. Dung, carrion and fermented fruits all are ephemeral resources with patchy distributions.

The composition of our bait traps indicates that all captured flying insects are involved in organic-matter decomposition. However, some of these insects may have other ecological functions, including pollination (e.g. Calliphoridae, Muscidae, Vespidae) (authors' observations).

Parasitic wasps may have not been attracted by the fermented liquid per se but by the captured insects. We could not identify parasitic wasps to species level but there are, for instance, species of braconid wasps that are parasitoids of muscids.

Appendix S6 Spearman rank correlation coefficients among the 16 predictors (in rows) used in the models and the 10 excluded variables (in columns) because the function *vif* within the package *usdm* at a threshold of ≤ 3 indicated that there may collinearity problems (Zuur et al., 2010).

	Surrounded by other tree species	Elevation	Dead trunk	Slope	Lux	Tree perimeter	Air temperature	Surrounding grassland	Richness of understory cover	Number of snags
Litter moisture	0.25	-0.16	0.00	0.09	-0.31	-0.11	-0.25	-0.39	0.47	0.43
Litter biomass	0.23	-0.25	0.14	0.41	-0.32	-0.02	0.06	-0.31	0.25	0.12
Litter C:N ratio	-0.38	0.43	-0.06	-0.14	0.34	0.14	0.04	0.63	-0.60	-0.17
Tree richness	0.03	0.06	0.08	-0.22	0.28	-0.37	0.09	0.08	-0.28	-0.01
Tree density	0.28	-0.25	0.21	0.00	0.16	-0.60	0.13	-0.32	-0.09	0.012
Understory height	0.31	-0.52	0.17	0.06	-0.15	-0.31	-0.05	-0.41	0.41	0.19
Understory cover	-0.18	0.23	-0.42	0.18	0.13	0.20	-0.16	0.16	0.15	-0.10
Stream distance	-0.05	0.18	-0.44	0.31	-0.03	-0.08	-0.15	-0.08	0.36	-0.27
Patch size	-0.16	0.28	-0.11	0.21	-0.15	-0.22	-0.30	-0.10	-0.07	-0.26
Patch shape	0.31	-0.23	-0.09	0.38	-0.25	-0.10	-0.31	-0.31	0.54	0.31
UTM-X distance	-0.17	0.41	-0.40	0.32	-0.22	0.43	-0.61	0.23	0.27	-0.14
UTM-Y distance	-0.60	0.77	-0.54	0.08	0.18	0.04	-0.33	0.61	-0.17	-0.32
Surrounding shrubland	-0.29	0.22	-0.19	0.23	0.39	0.06	-0.12	0.03	0.17	-0.11
Surrounding urban area	-0.55	0.49	-0.34	-0.25	0.40	0.17	0.32	0.47	-0.45	-0.26
Surrounding secondary roads	-0.07	-0.01	-0.34	0.35	-0.23	-0.22	0.09	-0.38	0.22	-0.12
Surrounding other land uses	-0.27	-0.004	-0.06	0.31	-0.21	0.18	-0.24	-0.004	0.17	-0.09

Appendix S7 Standardized regression estimates (± Standard Error) of general linear models exploring variation in the abundance of adult trophic guilds of arthropods (Pred, predators; Paras, parasitoids; Omni, omnivores; Phyto, phytophages; and Decom, decomposers) orted by trap method (aerial and ground traps). These are the most simple and informative model for each arthropod group based on the Akaike Information Criterion and the function *dredge*. Predictors with 'ns' are not statistically significant.

	Ground Pred	Aerial Pred	Aerial Paras	Ground Omni	Ground Phyto	Aerial Omni	Ground Decom
Model fits	R^2=0.59	R^2=0.38	R^2=0.24	R^2=0.44	R^2=0.68	R^2=0.13	R^2=0.32
Leaf litter moisture	0.22±0.08	ns	ns	ns	ns	ns	0.33±0.17
Litter biomass	ns	ns	ns	ns	ns	0.07±0.14	ns
Litter C:N ratio	ns	ns	ns	ns	ns	ns	ns
Tree species richness	-0.23±0.09	ns	ns	-0.43±0.14	ns	ns	ns
Tree density	ns	ns	ns	0.39±0.13	-0.10±0.09	ns	ns
Understory height	ns	0.10±0.10	0.35±0.11	ns	-0.07±0.09	ns	ns
Understory cover	ns	ns	ns	ns	0.37±0.08	ns	ns
Stream distance	ns	-0.17±0.09	ns	ns	-0.13±0.08	-0.09±0.14	ns
Forest property size	ns	ns	ns	-0.33±0.14	ns	ns	ns
Forest property shape	ns	ns	ns	ns	ns	ns	ns
UTM-X distance	ns	-0.22±0.09	ns	ns	ns	ns	ns
UTM-Y distance	0.17±0.09	ns	ns	0.44±0.14	0.29±0.08	ns	ns
Shrubland	-0.22±0.09	ns	ns	ns	ns	ns	ns
Urban area	ns	ns	0.29±0.14	ns	ns	ns	0.73±0.20
Secondary roads	0.23±0.08	ns	ns	ns	ns	ns	ns
Other land uses	-0.26±0.08	ns	ns	ns	ns	ns	ns
Stream distance : Understory height	ns	0.29±0.12	ns	ns	0.28±0.11	ns	ns
Stream distance : Tree density	ns	ns	ns	ns	-0.30±0.11	ns	ns
Stream distance : Litter biomass	ns	ns	ns	ns	ns	-0.32±0.16	ns