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# Forest management intensity measures as alternative to stand properties for quantifying effects on biodiversity

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**Abstract.** While land use is known to be a major driver of biodiversity loss, it is generally difficult to quantify land-use intensity. As a consequence, studies often use a qualitative approach and contrast different land-use categories, or use structural ecosystem attributes as a proxy for land-use intensity. In this paper we compared these different approaches with two quantitative approaches using forest management as an example. We carried out detailed biodiversity assessments of ten different groups of organisms, ranging from fungi and plants to arthropods and birds; in 12 different forest stands of four forest types in three regions of Southern Germany. We compared the explanatory power of the categorical approach to the explanatory power of (1) stand structural attributes, (2) stand structural complexity indices, (3) measures of forest 'naturalness', and (4) a recently developed quantitative descriptors of land-use intensity in forests, Silvicultural Management Intensity (SMI).

The diversities of many taxa differed between the different land-use categories but the explanatory power of the categorical approach strongly decreased when using jackknifing. Single structural attributes explained differences in biodiversity for some taxa which were illustrative for proximate mechanisms underlying biodiversity changes. Stand structural complexity indices i.e., combinations of single structural attributes, showed higher explanatory power than single structural attributes but explained less variation in biodiversity among stands than land-use intensity measures. SMI was negatively correlated with forest 'naturalness', and, for many groups of organisms, increasing SMI decreased biodiversity, but trophic guilds responded differently. Some guilds, such as wood- and bark living fungi, saprophytic arthropods, herbivores, canopy predators and breeding birds showed a clear negative response to increasing land-use intensity, while for others such as plants there was no relationship. Some guilds, such as mosses and ground dwelling predators appeared to even benefit from increased land-use intensity. Using a quantitative measure of land-use intensity can thus help to understand even more subtle relationships between human impact and the diversity of organisms. Measures such as SMI seem to be useful tools for quantifying land-use intensity in forests and may be applied to biodiversity data of different forest ecosystems worldwide.

**Key words:** forest management; land-use intensity; multi taxa approach; naturalness; silvicultural management intensity; trophic guilds.

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## Introduction

Changes in land-use systems and increasing land-use intensity have been identified as the main drivers of biodiversity loss in all types of terrestrial habitats, including forests (Sala et al. 2000). In tropical forest ecosystems, large-scale habitat destruction by extensive logging (Maass 1995, Castano-Meneses and Palacios-Vargas 2003), often followed by deforestation (Asner et al. 2005, Asner et al. 2006, Sodhi et al. 2009) or conversion to short-rotation plantations of single species (Maass 1995, Castano-Meneses and Palacios-Vargas 2003) is the main cause of biodiversity loss. In temperate North-America land-use history was found to be the most important driver of species richness and/or composition (Motzkin et al. 1999, Bellemare et al. 2002, Rhemtulla et al. 2009, Baeten et al. 2010, Brudvig and Damschen 2011). Even centuries after agricultural land use has ceased, plant species composition of secondary forest on such sites remained significantly different from uncleared forests (Motzkin et al. 1999, Dupouey et al. 2002, Flinn and Marks 2007, Josefsson et al. 2010). Most European temperate forests have been managed for several hundred years, often using elaborated management regimes such as single tree selection (Pommerening and Murphy 2004, Puettmann et al. 2009). Nevertheless, even low-input management of temperate forests can have detrimental effects on biodiversity. For example, old "habitat" trees or dead wood are often missing in managed forests. Consequently some of the specific fauna typical of pristine forests such as many saproxylic Coleoptera species is rare in managed forests (Speight 1989, Nilsson and Baranowski 1993, Müller et al. 2005*a*).

While overall effects of land use and land-use history on biodiversity may be evident, the specific impacts of the different components of land use which drive an observed decline in biodiversity are mostly not well known. One reason for this gap of knowledge is that studies investigating the effect of land use on biodiversity often contrast extremes, e.g., 'intensive' vs. 'extensive' management, or collapse various management regimes into discrete land-use intensity categories (e.g., 'organic' vs. 'conventional' in the case of agriculture) (Bengtsson et al. 2005, Tylianakis et al. 2006, da Silva et al. 2008, Flynn et al. 2009). For forest habitats, a multitude of different forest management regimes are conventionally lumped into a category "managed (or logged) forests" or assigned into a few management categories (e. g. Schowalter et al. 1981, Müller et al. 2007*a*, Müller et al. 2007*b*). Such classifications of land-use intensity ignore the variability of approaches within a given land-use category. For example, in a meta-analysis Paillet et al. (2010) reviewed studies on management effects on biodiversity in forests. While the overall finding suggested that unmanaged forests generally harbored a higher diversity of organisms than managed woodlands, no information was given whether or not all management types/silvicultural treatments showed differences to unmanaged forests. A more recent meta-analysis on the impact of timber harvesting on understory plant diversity across temperate North-American forests confirmed that comparisons based on classifications such as "harvested stands" versus "unharvested controls" may hide important information (Duguid and Ashton 2013). In that study no clear influence of management on understory plant species richness was found. However, differences between managed and unmanaged stands were revealed if the harvesting regime was taken into account. Understory plant species richness of stands characterized by intensive harvesting methods (e.g., clearcuts, shelterwoods) were separated from stands where less intensive measures (e.g., single tree selection) had been applied (Duguid and Ashton 2013). A comparable example was reported by Lindenmayer et al. (2010) who examined the response of small terrestrial mammal abundance to different levels of partial stand retention and clearcutting. While no differences were found in animal abundance between the controls and the various types of retention islands, significantly lower animal numbers were found on clearfelled areas (Lindenmayer et al. 2010). For agricultural landscapes a number of attempts to quantify land-use intensity have been made (Dormann et al. 2007, Geiger et al. 2010, Blüthgen et al. 2012). However, studies using continuous land-use variables in forest ecosystems are relatively rare.

In forests, measures of current forest structure are often used as surrogates of human land-use intensity to analyze the effects of forest management on biodiversity (Müller and Brandl 2009, Gossner et al. 2013). Such attributes include (1) stand structural attributes based on stand density, wood volume, variation in tree dimension and their spatial variation (McElhinny et al. 2005), or (2) stand structural complexity indices, which may be defined as combinations of stand structural attributes (McElhinny et al. 2005). However, while these measures are affected by forest management and thus may mediate management effects on biodiversity, they are not themselves measures of land-use intensity. As a proxy for forest management they are, therefore, unsatisfactory as the effect of management regimes is not restricted to a single structural attribute. In addition, because stand inventory metrics and indices only represent the present structural stage, past management effects on biodiversity might be masked. The great advantage of using such variables is, however, that many of them are available from forest inventory data or can even be derived by remote sensing. In addition, they may give information about the proximate causes of changes in biodiversity, e.g., when the lack of a certain structure is correlated to the absence of a particular group of organism.

An alternative of using structural attributes as proxies for forest management are quantitative measures of land-use intensity. There are two general approaches to the quantification of land-use intensity in forests (for review see Schall and Ammer 2013). The first approach is quantifying descriptors of silvicultural activities such as planting, tending, thinning, or harvest as well as other anthropogenic disturbances (e.g., soil disturbances, forest tracks, ditches). Because various kinds of anthropogenic activities are considered, the single components may be aggregated into an index (Kohv and Liira 2005, Liira et al. 2007). One particular forest management activity that has been used in several studies is tree harvest, which focuses on the logging (or harvesting) component of forest management (Sippola et al. 2004, Storaunet et al. 2005, Zenner et al. 2006, Aguilar-Amuchastegui and Henebry 2007). Several measures of logging intensity have been suggested, taking into account the harvested basal area, stem number, volume, or the respective attributes of residual trees. It has been shown in many studies that harvest intensity has a strong impact on the diversity of organisms (Sippola et al. 2004, Zenner et al. 2006, Aguilar-Amuchastegui and Henebry 2007). However, harvesting is just one, though important component of forest management intensity.

A second approach to quantifying forest management is to compare the current state of the ecosystem to a reference state and quantify the deviation as a measure of 'naturalness'. This approach is often applied to temperate forests, where a number of indicators of 'naturalness' have been suggested, based mostly on tree species composition, quantity and decay status of dead wood, and other structural characteristics (e.g., Mrosek 2001, Bartha 2004, Winter et al. 2010). In addition, some indicators include measures of biodiversity into the index, e.g., the composition of the herb layer, making it difficult to use such indicators as an independent variable in a study of biodiversity. Other severe limitations of 'naturalness' approach are the uncertainty about the spatial scale to be chosen for comparisons and the fact that only very few forests exist around the world free of legacies from former human influence that could serve as reference points for a pristine forest state.

Recently, Schall and Ammer (2013) developed a Silvicultural Management Intensity indicator (SMI) which combines tree species, stand age and aboveground living and dead wood biomass as three main characteristics of a given stand to provide a quantitative measure of forest management intensity. The indicator consists of a risk component, which is a function of stand age and tree species identity, and a density component, which is a function of the silvicultural regime, stand age and tree species.

In this paper we compare the different approaches of quantifying land-use intensity in their ability to explain differences in biodiversity and community composition between forest stands. We use the categorical approach as a benchmark and compare it to (1) several ecological meaningful continuous stand structural attributes obtained from forest inventory, (2) stand structural complexity indices (SSCI) composed of these attributes, (3) a quantitative measure of forest land-use intensity SMI, and (4) an index of 'naturalness'.

## Material and Methods

### Study area

The study was conducted at three study regions in southern Germany (Bavaria) comprising 12 mature forest stands (average tree age >80 years): Ottobeuren (10°21′ E, 48°6′ N; four stands), Krumbach (10°23′ E, 48°23′ N; four stands), and Hienheim (10°47′ E, 48°54′ N; four stands). Stand size ranged from 4.8 to 23.5 ha (see Appendix A: Tables A1–A4 for a detailed description of all stands). Without human impact all three regions would be dominated by European beech *Fagus sylvatica* (Walentowski et al. 2006). In all regions Norway spruce (*Picea abies*) has been cultivated over at least three centuries. Within each region we included stands of different management regimes: deciduous forest nature reserves (forest management abandoned 20 years ago), deciduous forest stands (both European beech and oak [*Quercus petraea/robur*]), mixed Norway spruce–European beech stands and Norway spruce plantations. Stand data were measured on subplots (500 $m^2$ in size, five per grid) arranged in a grid of $100 \times 100$ $m^2$. A forest inventory (Appendix A) and surveys of mosses, higher plants, fungi and birds were carried out on these grid plots. Arthropods were sampled along a 200 m long transect by passive trapping. Stand inventory and biodiversity assessments took place in different years, 1993–1996 at Hienheim and 1999–2000 at Krumbach and Ottobeuren (see Appendix A).

### Measures of forest land-use intensity

We analyzed the relationships between forest land-use intensity and the diversity of different groups of species based on four approaches. We (1) contrasted forest types representing increasing land-use intensity; unmanaged Forest Nature Reserves, managed deciduous forests, mixed beech-spruce forests, pure spruce forests, and compared the explanatory power of these categories with (2) stand structural attributes, (3) stand structural complexity indices (SSCI) and (4) quantitative other measures of land-use intensity, i.e., silvicultural management intensity (SMI), and 'naturalness'. The approaches outlined below are described in more detail in the Appendices B and C.

*Single stand structural attributes*.—We used 14 variables to characterize forest stand properties and forest stand structure which are commonly assessed in forest studies and often used as explanatory variables for predicting forest biodiversity (e.g., Müller et al. 2005*b*, Müller and Brandl 2009, Gossner et al. 2013) (Table 1 and Appendix A: Table A2). We further referred to these variables as stand structural attributes. Data for the oldest trees of a stand (maxAge) and average age (avgAge) were extracted from records of forest administrations. Values for dead wood volume (DWV) were obtained from Ammer et al. (2002) (Krumbach and Ottobeuren) and Detsch (1999) (Hienheim). All other variables were calculated based on tree-level information of forest inventories of species identity and dbh using circular subplots of size 500 $m^2$ ($r = 12.62$ m). At Hienheim the original subplot size was 1000 $m^2$; in order to make data comparable between the three regions we resampled data by only considering trees located within a distance of 12.62 m to the subplot center. Calliper limit of dbh measurements was $\geq$7 cm.

*Stand structural complexity indices*.—We calculated 12 stand structural complexity indices SSCI as additive combinations of stand structural attributes (Appendix A: Table A3). The most general index included the seven forest structural properties which were causally and largely empirically independent (Appendix D: Tables D1 and D2), i.e., DWV, SD, Con, WV, HS,

Table 1. Overview of stand structural attributes included in our study.

| Abbreviation | Description and unit |
|---|---|
| maxAge | age of the oldest trees of the stand (years) |
| avgAge | average age of the stand (years) |
| DWV | total standing or downed dead wood volume across all decay stages ($m^3$ $ha^{-1}$) |
| WV | wood volume including bark of living trees of a stand ($m^3$ $ha^{-1}$) |
| G | basal area of the stand ($m^2$ $ha^{-1}$) |
| N | stand density (no. trees $ha^{-1}$) |
| Dg | quadratic mean diameter at breast height (dbh, measured at height 1.3 m) (cm) |
| Dm | arithmetic mean dbh (cm) |
| SR | tree species richness of trees (no. tree species) |
| SD | Shannon species diversity of trees (abundance measured as basal area of each tree species) |
| Con | fraction of conifers among the trees in the stand (based on basal area) |
| OBL | fraction of broadleaved species other than *Fagus sylvatica* (based on basal area) |
| VS | measure of vertical forest structure based on the coefficient of variation of dbh |
| HS | measure of the horizontal structure measured as the standard deviation of *G* between subplots as proxy ($m^2$ $ha^{-1}$) |

avgAge, and VS. The other indices were composed to cover all two-, three- and fourfold combinations of the four best explanatory forest structure attributes (one fourfold, four threefold, and six twofold combinations). Stand structural complexity index was defined as a weighted additive combination of stand structural attributes, which scored relative to the observed range within studied stands (cf. McElhinny et al. 2005):

$$\mathrm{SSCI}_{\mathrm{plot}} = \sum \frac{X_{i\mathrm{plot}} - X_{i\mathrm{min}}}{X_{i\mathrm{max}} - X_{i\mathrm{min}}} \cdot \mathrm{CV}_i$$

where $X_i$ is the observed value of the $i$th attribute for single stands, and $X_{i\mathrm{min}}$ and $X_{i\mathrm{max}}$ are the lowest and highest values of the $i$th attribute observed within all stands. For attributes negatively related to stand structural complexity (i.e., Con), min and max values were swapped. We used the coefficient of variation of attributes $\mathrm{CV}_i$ as weighting factor, to take differing variability of attributes within our study into account (Appendix A: Table A3). The attributes Con and DWV entered calculation after transformation described below (data analysis).

*Silvicultural management intensity.*—Schall and Ammer (2013) suggested that silvicultural management intensity (SMI) of forests managed under close-to-nature objectives can be characterized by two continuous components, risk of stand loss due to natural hazards (disturbance by, e.g., wind throw or bark beetle attack) $\mathrm{SMI}_\mathrm{r}$ and relative stand density $\mathrm{SMI}_\mathrm{d}$. Both components represent management decisions: the choice of tree species and the intensity and frequency of tree harvests. The risk component describes the effect of tree species selection and stand age on the probability of a forest to reach an old growth stage. The density component quantifies the relative deviance between biomass carrying capacity of the site and actual stand biomass. Thus, it reflects the overlapping effects of removals through thinnings and harvests and biomass accumulation through tree growth.

We calculated SMI as mean of the two components, with $\mathrm{SMI}_\mathrm{r}$ being tree species specific and $\mathrm{SMI}_\mathrm{d}$ being tree species and site specific. As proxy for stand biomass we used basal area G, wood volume including bark of living trees WV, and the sum of wood volume of living and dead trees (WV + DWV). Thus, SMI was expressed in three versions, SMIG, SMIV, and SMIVD, respectively. For details see Appendix B.

*Bartha's (2004) concept of 'naturalness'.*—While all the above measures represent objective descriptions of the forest state, we also include, for comparative purposes, a scoring system as it is commonly used for concepts of 'naturalness' or the related concept of 'hemeroby' (Dierschke 1984, Grabherr et al. 1998, Schirmer 1999, Reif 2000).We use Bartha's (2004) concept of 'naturalness' that combines information on a number of forest attributes where 'naturalness' ranges from 0 (most intensive land use, 0% 'naturalness') to 25 (natural forest, 100% 'naturalness') based on points attributed to a stand depending on how similar stand structure is to the structure of a reference pristine forest, based on five groups of attributes (for details see Appendix C: Table C1): tree composition and structure of the canopy layer, composition of the shrub layer, composition of the herb layer, site characteristics and other structural characteristics (old trees, dead wood amount, regrowth). We assessed each forest stand based on the forest inventory data.

### *Biodiversity assessment*

We aimed at comparing effects of land-use intensity for different taxa. Most taxa (mosses and higher plants, fungi, birds) were sampled on grid plots within each forest stand. For sampling arthropods a transect approach was applied. Table 2 gives an overview of the taxa surveyed and the methods used. A full description of sampling methodology can be found in Appendix E.

For statistical analyses, arthropods were classified into trophic levels. The following target taxa were selected: Herbivores (excl. xylophages) (chewing Coleoptera, sucking Heteroptera), Carnivores (Araneae, Opiliones, predatory Coleoptera, predatory Heteroptera, Neuropterida), and Decomposers (selected species of Coleoptera, Isopoda). Among the decomposers we singled out (dead) wood-feeding Coleoptera as Xylophages, decomposers of plant detritus as Saprophages (Coleopters in partim, Isopoda) and fungus-feeding Coleoptera as Mycetophages. We further classified all plant, spider and beetle species that exclusively occur in forests as forest specialists.

We used community attributes, i.e., abundance (A), species richness (S), bias corrected Shannon's entropy (eHc) (Chao and Shen 2003), and reciprocal Simpson Index (invSimp) (the latter two are transformations to true diversities according to Jost [2006]), and community composition as response variables. As the sequence from S over eHc to invSimp increasingly weights abundant species higher, community attributes measure different characteristics of the communities.

### *Data analysis*

Linear regression or ANOVA was used to test for significance ($p < 0.05$) and to rank the explanatory power (see below) of quantitative and categorical variables, respectively. Because single observations might strongly affect the outcome of regression analysis in small datasets, we complemented the approach using the jackknife method. Thus, we recalculated the regression models omitting each observation once. Only when all 12 jackknifed regression models signaled significance we considered a relationship as strongly supported by empirical evidence. Similarly, to assess the robustness of ANOVA models we used the jackknife method. We therefore re-calculated the models by omitting (1) each forest type once and (2) each managed forest type once in order to contrast managed and unmanaged forests. Only when all four (three, respectively, if unmanaged forests were kept) models signaled significance we considered an effect as not dependent on a single forest type. The effects of the different predictor variables on community composition were analyzed using partial constrained correspondence analysis (pCCA) (R-package 'vegan 2.0–10'). Thereby effects of predictor variables are cleaned of regional differences in community composition. Significance of pCCA was tested using an ANOVA like permutation test allowing up to 2000 permutations.

Explanatory power of predictor variables across trophic groups was measured as (1) number of significant ($p < 0.05$) cases (total and jackknifed), (2) number of cases with $R^2$ values $>0.3$ (in pCCA percentage of explained variance was calculated by dividing the inertia of the constrained axis by total inertia minus the conditional inertia), and (3) number of cases in which a model was among the best models based on Akaike information criterion (delta AIC, henceforth "dAICc"; Burnham and Anderson 2002, Aho et al. 2014), that is with substantial (dAICc $\leq 2$) and less substantial support (dAICc $\leq 4$). The maximum number of cases was 140 regarding abundance and diversity measures and 35 regarding community measures. Results remained consistent when changing the $R^2$ threshold (results not shown).

All analyses were performed in R version 3.0.2 (R Development Core Team 2013). To factor out differences in community attributes among regions and sampling periods, we standardized (z-transformed) the response variables A, S, eHc, and invSimp within regions. Predictor variables, i.e., measures of stand properties and structure, indices of stand structural complexity and measures of land-use intensity, were standardized across regions to ensure a common scale without losing inter-regional generality. Abun-

Table 2. Overview over the taxa surveyed, the methods used for diversity assessment, species richness and number of individuals or fungi fruit bodies (in parentheses) in the 12 stands of three different regions. See Appendix E for a full description of methodology.

| Taxon | Species richness: Ottobeuren | Krumbach | Hienheim | Total | Method |
|---|---|---|---|---|---|
| Mosses* | 11 | 7 | 87 | 88 | Modified Braun-Blanquet method |
| Vascular plants† | 37 | 62 | 72 | 98 | |
| Fungi | | | | | |
| All | 282 (1910) | 284 (1595) | 213 (930) | 445 (4435) | Fruit body survey three times a year, standardized by time; Hienheim: whole stand, Krumbach/Ottobeuren: 4-ha core area |
| Decomposers | | | | | |
| Wood and bark living | 146 (1105) | 128 (748) | 137 (741) | 221 (2594) | |
| Soil saprophytes | 50 (296) | 64 (374) | 30 (82) | 83 (752) | |
| Symbionts | | | | | |
| Mycorrhiza | 63 (431) | 69 (374) | 21 (41) | 98 (846) | |
| Myxomycete‡ | 6 (25) | 8 (23) | 14 (43) | 18 (91) | |
| Fungi living‡ | 11 (26) | 9 (41) | 8 (18) | 17 (85) | |
| Cone and fruit living‡ | 4 (21) | 4 (14) | 2 (3) | 6 (38) | |
| Obligate moss living‡ | 1 (5) | 1 (20) | 1 (2) | 1 (27) | |
| Insect parasites‡ | 1 (1) | 1 (1) | 0 (0) | 1 (2) | |
| Coleoptera | | | | | |
| All | 322 (12732) | 412 (14918) | 600 (22196) | 767 (49846) | |
| Decomposers | | | | | |
| Saprophagous | 14 (1951) | 15 (662) | 15 (1015) | 22 (3628) | Pitfall traps |
| Mycetophagous | 35 (858) | 59 (1407) | 100 (4034) | 116 (6299) | Arboreal photo eclectors; composite flight interception traps understorey/canopy |
| Xylophagous | 51 (365) | 66 (695) | 102 (1649) | 124 (2709) | Arboreal photo eclectors; composite flight interception traps understorey/canopy |
| Herbivores (chewer) | 46 (2169) | 74 (4347) | 99 (4757) | 137 (11273) | Ground photo eclectors, arboreal photo eclectors, composite flight interception traps understorey/canopy |
| Predators small (chewer) | 176 (7389) | 198 (7807) | 284 (10741) | 368 (25937) | Pifall traps; arboreal photo eclectors; composite flight interception traps understorey/canopy |
| Heteroptera | | | | | |
| All | 33 (223) | 42 (567) | 51 (469) | 80 (1259) | |
| Herbivores (sucker) | 22 (170) | 31 (475) | 30 (263) | 50 (908) | Arboreal photo eclectors, composite flight interception traps understorey/canopy |
| Predators small (sucker) | 11 (53) | 11 (92) | 21 (206) | 30 (351) | Arboreal photo eclectors; composite flight interception traps understorey/canopy |
| Araneae | | | | | |
| Predators small | 82 (2496) | 110 (3516) | 99 (3503) | 163 (9515) | Arboreal photo eclectors |
| Opiliones | | | | | |
| Predators small | 7 (231) | 9 (760) | 16 (1245) | 17 (2236) | Pitfall traps; arboreal photo eclectors |
| Isopoda | | | | | |
| Decomposers | | | | | |
| Saprophagous | 5 (341) | 6 (3444) | 7 (1009) | 10 (4794) | Pitfall traps |
| Neuropterida | | | | | |
| Predators small | 23 (1635) | 28 (1712) | 33 (385) | 42 (3732) | Arboreal photo eclectors; composite flight interception traps understorey/canopy |
| Birds | | | | | |
| All | ***32 (7144)*** | ***30 (2744)*** | ***40 (1008)*** | ***44 (10896)*** | Monthly survey, 5 min point counts per grid unit |
| Breeding birds | 30 (4384) | 28 (1776) | 38 (683) | 42 (6843) | |
| Overwintering birds | 18 (2760) | 18 (968) | 19 (325) | 25 (4053) | |

† Abundance was measured as coverage. Thus no data on individuals are available.
‡ These functional guilds are not further analyzed due to low sample size.

dance was square root transformed and DWV log-transformed beforehand to reduce skewness. The proportions Con and OBL were arcsine square root transformed.

## Results

We observed a total of 88 moss, 98 vascular plant, 445 (4435 fruit bodies) fungal, 767 beetle (49846 individuals), 80 true bug (1259), 163 spider (9515), 17 (2236) harvestman, 10 (4794) woodlouse, 42 (3732) lacewing, and 44 (10896) bird species. Table 2 lists the number of species and the number of individuals separately for all taxa/trophic levels/feeding guilds and regions. As different subgroups within each trophic level showed different responses to land-use intensity (for example see principal component analyses of small predators and wood decomposers; Appendix F: Fig. F1), all subgroups were analyzed separately.

### *Forest land-use intensity of the stands studied*

Land-use intensity (SMI) varied largely among the stands studied, ranging from 0.023 to 0.524 (SMIG 0.060–0.524, SMIV 0.070–0.52, SMIVD 0.023–0.510) (Appendix B: Table B1). SMI indicated the highest land-use intensity for the managed spruce forests of Krumbach and Hienheim and the lowest for the forest nature reserves of Krumbach and Ottobeuren. Values of 'naturalness' ranged from 3 (=12% 'naturalness') in the managed spruce forests of the three regions up to 16 (=64% 'naturalness') in the forest nature reserve at Krumbach (Appendix C: Table C2).

The different specifications of our land-use intensity measure were highly correlated (Pearson correlation coefficient: SMIG vs. SMIV: 0.993, SMIG vs. SMIVD 0.989, SMIVD vs. SMIV 0.997). Correlations between 'naturalness' and land-use intensity was negative and strong (−0.91 to −0.94). While 'naturalness' was positively correlated with stand age, vertical structure and tree species diversity and negatively correlated with fraction of conifers and basal area, SMI land-use intensity showed a negative relationship with stand age, vertical structure and tree species diversity and a positive relationship with fraction of conifers and basal area (Appendix D: Tables D1 and D2).

Stand structural complexity indices were strongly negatively correlated with SMI land-use intensity (Pearson correlation coefficient: less than −0.9 in 47%, less than −0.8 in 78% of 36 possible cases), but strongly positively correlated with 'naturalness' (>0.9 in 50%, >0.8 in 83% of 12 possible cases; Appendix D: Table D3).

### *Overview of different measures for land use and stand structural attributes for explaining biodiversity*

The land-use intensity measure SMI, and 'naturalness', were most successful in explaining the variability in organismic community attributes as well as community composition (Figs. 1–3 and Appendices G and H). The significance rates reached values between 51% and 54% of all studied trophic guilds and between 23% and 26% (jackknife 13–14%) of all community attributes (abundance, species richness, diversity, entropy) times trophic guild analyzed. This was confirmed when using $R^2$ or dAICc with substantial (dAICc $\leq 2$) and less substantial support (dAICc $\leq 4$) as measure describing the strength of relationships. SMI was also a good predictor of community composition although single forest structure attributes (e.g., OBL) and structural complexity indices showed similar proportion of explained variance (Fig. 3). The variants of SMI explained observed variation similarly.

The categorical approach showed similar explanatory power (54% of all trophic guilds/ 21% of all community attribute), but this was mainly due to significantly higher or lower values of single forest types, which varied by trophic guilds (Fig. 4). When using jackknifing, the explanatory power decreased substantially (4%).

Single structural attributes assessed by forest inventory showed generally low power in explaining the variability among plant and animal communities (Figs. 1–3 and Appendices G and H). Only the attributes proportion of conifers, tree age (avgAge), tree species diversity and dead wood volume were successful in explaining the variance in some biodiversity attributes. In contrast, some of the stand structural complexity indices nearly reached the performance of SMI. These were the threefold combinations of Con, avgAge and DW or Con, SD and DWV. Also the twofold combinations of proportion of conifers

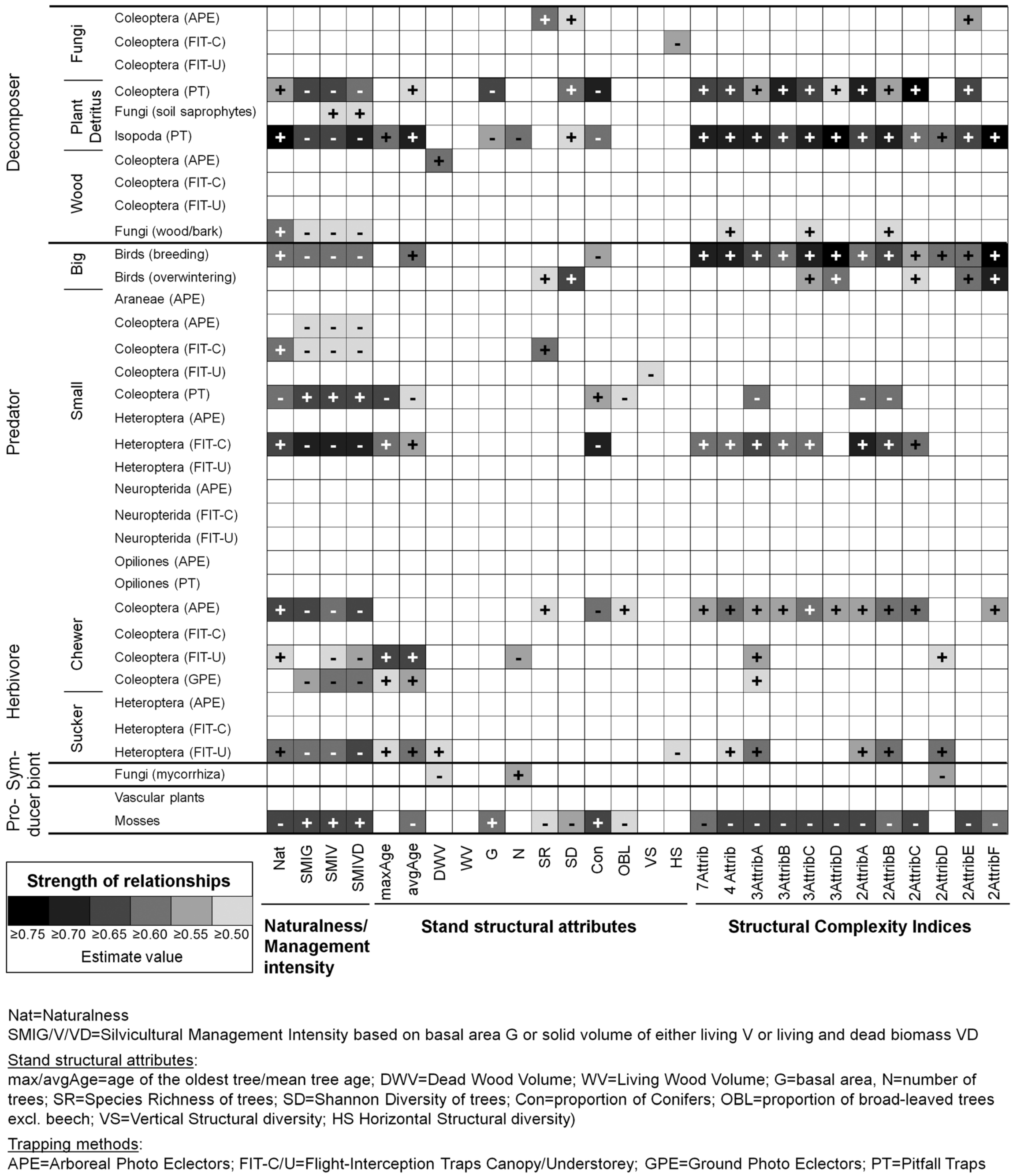
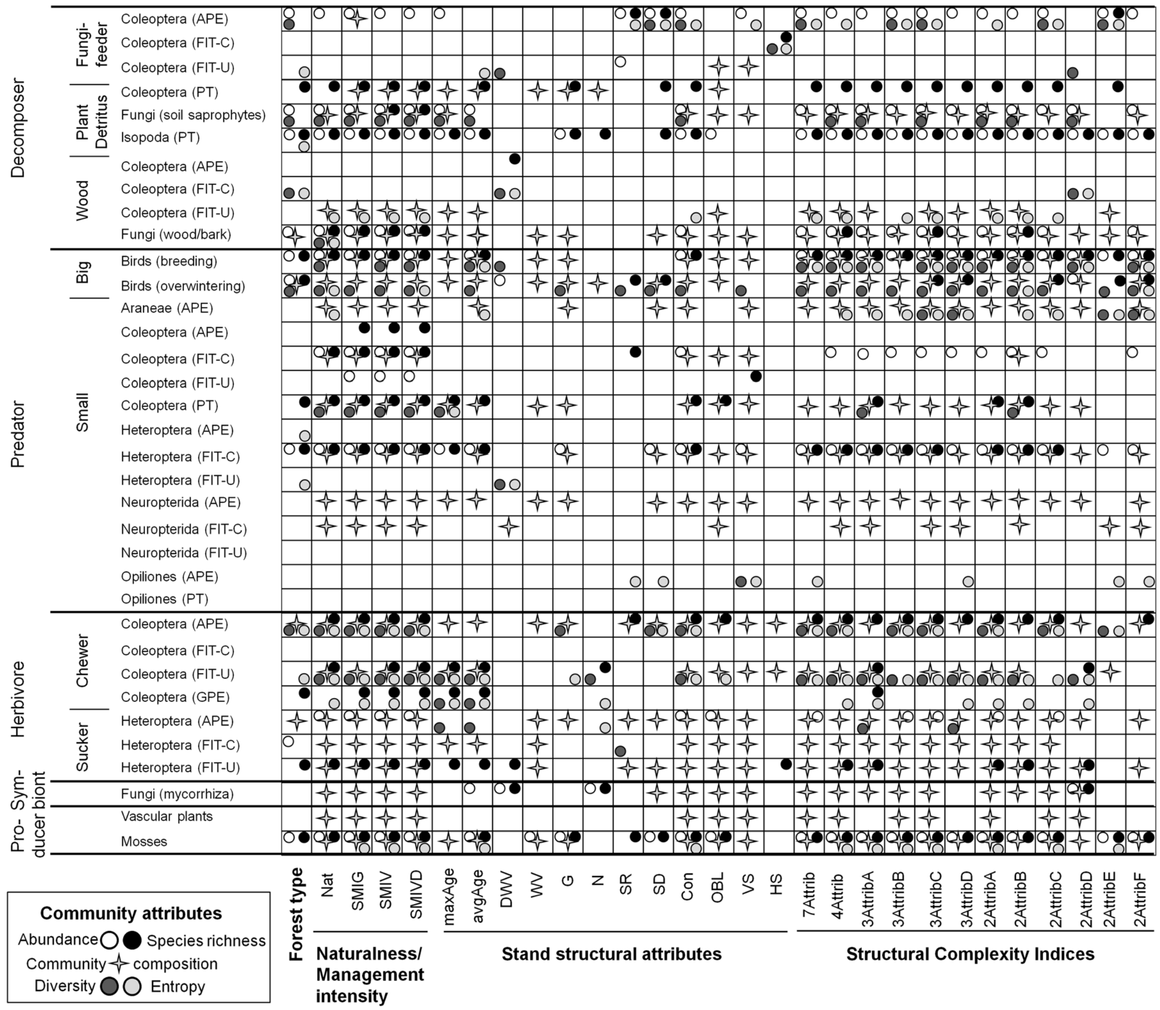



Fig. 1. Effects of 'naturalness' and different measures of land-use intensity, stand structural attributes and Stand Structural Complexity Indices (see Table 1 and Appendix A: Table A3) on the species richness of various groups of organisms (df = 12 forest sites). Arthropods were sampled by different trapping methods. The sign (+ or −) indicates the direction and the grey scale the strength (based on estimate values of the statistical model) of the relationship. White signs on grey background indicate that by using jackknife method all resampled subsets were significant. Statistical details and results regarding abundance, diversity and entropy are shown in Appendices G and H. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the figure.

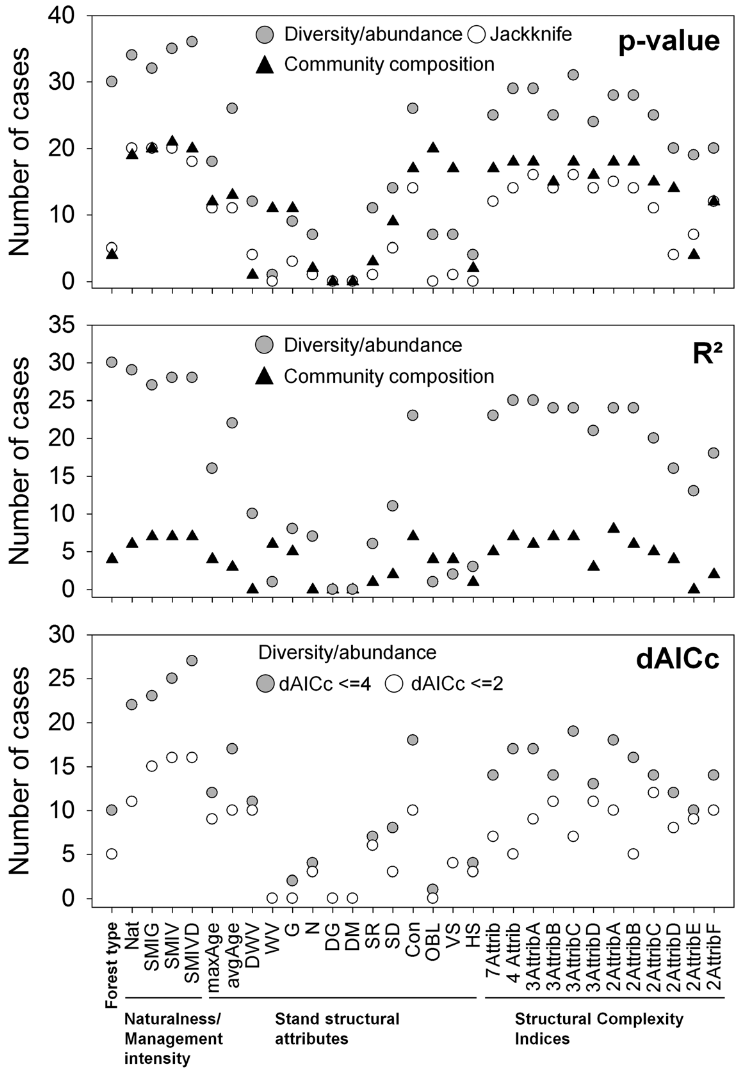



Nat=Naturalness
SMIG/V/VD=Silvicultural Management Intensity based on basal area G or solid volume of either living V or living and dead biomass VD

Stand structural attributes:
max/avgAge=age of the oldest tree/mean tree age; DWV=Dead Wood Volume; WV=Living Wood Volume; G=basal area, N=number of trees; SR=Species Richness of trees; SD=Shannon Diversity of trees; Con=proportion of Conifers; OBL=proportion of broad-leaved trees excl. beech; VS=Vertical Structural diversity; HS Horizontal Structural diversity)

Trapping methods:
APE=Arboreal Photo Eclectors; FIT-C/U=Flight-Interception Traps Canopy/Understorey; GPE=Ground Photo Eclectors; PT=Pitfall Traps

Fig. 2. Effects of forest type, 'naturalness' and different measures of land-use intensity, stand structural attributes and stand structural complexity indices (see Table 1 and Appendix A: Table A3) on the abundance, species richness, diversity (reciprocal Simpson index 1/D), entropy (bias corrected exponential Shannon's entropy eHbc) and community composition (based on a partial constrained correspondence analysis (pCCA) by removing effect of region) of various groups of organisms (df = 12 forest sites). Significant relationships are indicated by circle/star and respective grey value indicates different community attribute. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the figure.

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Stand structural attributes:
max/avgAge=age of the oldest tree/mean tree age; DWV=Dead Wood Volume; WV=Living Wood Volume; G=basal area, N=number of trees; SR=Species Richness of trees; SD=Shannon Diversity of trees; Con=proportion of Conifers; OBL=proportion of broad-leaved trees excl. beech; VS=Vertical Structural diversity; HS Horizontal Structural diversity)

Trapping methods:
APE=Arboreal Photo Eclectors; FIT-C/U=Flight-Interception Traps Canopy/Understorey; GPE=Ground Photo Eclectors; PT=Pitfall Traps

Fig. 3. Comparison of forest type, 'naturalness' and different measures of land-use intensity, stand structural attributes and stand structural complexity indices (see Table 1 and Appendix A: Table A3) in terms of their performance in predicting abundance and diversity measures (reciprocal Simpson index 1/D, bias corrected exponential Shannon's entropy eHbc) and community composition (based on a partial constrained correspondence analysis (pCCA) by removing effect of region). Explanatory power was measured as (a) number of significant ($p < 0.05$) cases (total and jackknifed) (b) number of significant ($p < 0.05$) cases with $R^2$ values $>0.3$, and (c) number of cases with substantial (dAICc $\leq 2$) and less substantial support (dAICc $\leq 4$) according to Burnham and Anderson (2002) across trophic groups (maximum: abundance/diversity 140, community composition 35). Significant results based on jackknife analyses were only counted when all 4/3 (if unmanaged forests were kept) resamplings regarding forest type and 12 resamplings regarding the other measures were significant.

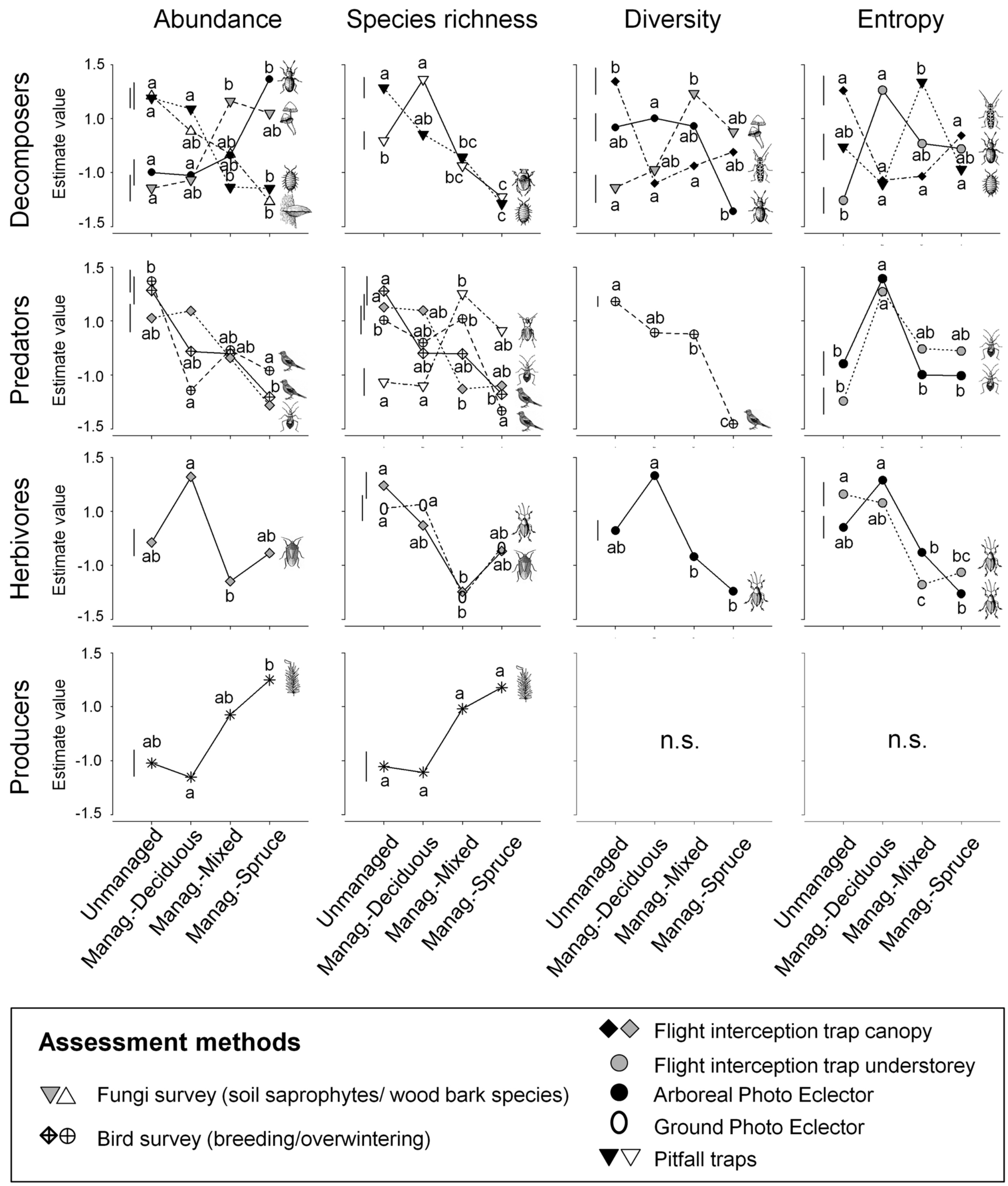


Fig. 4. Effects of forest type on community attributes of different trophic levels and subgroups within these trophic levels (df = 12 forest sites). Estimates (symbols) and standard errors based on multiple comparisons (vertical lines at the left side of the plot) for all significant relationships are given. Letters indicate significant differences between forest types based on a Tukey post-hoc test. Different taxa are indicated by the drawings right of each line and different assessment methods are indicated by different symbols (for details see Appendix E). Please note that in two cases of significant ANOVA post hoc comparisons were not significant.

and tree age (avgAge) and combinations of proportion of conifers and dead wood volume showed high explanatory power (trophic guild: 43–49% significant results, community attribute: 20–22% significant results/jackknife 10–11% significant results) (Fig. 3 and Appendix G: Table G17).

Land-use measures (SMI, 'naturalness') and stand structural metrics (stand structural attributes and complexity indices) explained in particular differences among plots in terms of species richness (182 significant results out of 1050 possibilities; significance rate 17.3%), followed by abundances (significance rate 16.1%), entropy (bias-corrected exponential Shannon's entropy; significance rate 11.3%) and diversity when abundant species were more strongly weighted (reciprocal Simpson; significance rate 10.7%) (Appendix H: Figs. H1–H8).

### *Differences among trophic guilds*

The variance explained by different land-use measures compared to stand structural attributes was similar when focusing on the diversity and community composition of single trophic levels (Figs. 1 and 2). Only in a few cases other stand structural attributes performed better than SMI, e.g., tree diversity and proportion of conifers in explaining the diversity of tree stem dwelling fungi-feeders among Coleoptera, and dead wood amount and forest type in explaining xylophagous beetles in the canopy (Fig. 2).

## Discussion

In this study we compared the ability of quantitative forest management indicators to explain differences in biodiversity in differently managed forest stands with the explanatory power of a categorical approach and with a number of commonly used quantitative descriptors of forest structure. These descriptors of forest structure are themselves affected by forest management and have in the past often served as proxies for measuring land-use intensity in forests. However, how such structural attributes are affected by land-use practice is not well defined.

### *Explaining biodiversity by different measures*

One main result of our study is that for many groups of organisms, there was a significant relationship between land-use intensity, as measured by a quantitative index, and organismic diversity. This relationship was not detected when land use was reflected by single structural attributes assessed by forest inventories. Stand structure complexity indices performed better than single structural attributes, but not as good as the measure of forest management intensity (SMI). Only in a few cases structural attributes were related to biodiversity while land-use intensity was not or explanatory power was much lower.

In many studies forest structure properties were used as proxies for forest management intensity and related to data on species richness and/or composition. Frequently used structural attributes are the amount of deadwood which was shown to be related to fungi (Müller et al. 2007*a*, Brazee et al. 2014), saproxylic beetles (Müller et al. 2008, Gossner et al. 2013) and snail species richness (Müller et al. 2005*b*) and measures such as coverage of herbaceous layer, growing stock, mean diameter at breast height of the three largest trees, stand age, dead wood log or snag identity and density, density of large trees, etc. (Goebel and Hix 1996) that can be easily compiled from forest inventories or remote sensing data (e.g., Müller and Brandl 2009, Vierling et al. 2011). While the relationship of single structural measures to the presence and/or abundance of single species or specific groups of species which rely on these special structural attributes as habitat or food source is apparent (Ulyshen and Hanula 2009, Bouget et al. 2013, Gossner et al. 2013), the approach of using structural measures as proxies for land-use intensity can be questioned. Single structural measures may differ between extremes such as unmanaged control and clear-felled area, but may not sufficiently distinguish between medium treatments of harvesting intensities and ignores differences in site productivity. Irrespective of forest management stands on fertile sites show other structural attributes than stands of low productivity sites even if they are composed by the same species (Goebel and Hix 1996, Hart et al. 2012). Moreover, forest management might decrease or increase tree species diversity and biodiversity might be affected rather by tree species identity than by tree species diversity (e.g., Werner and Raffa 2000). Another crucial point is land-use history which may have determined today's soil properties affecting for example understory herb diversity. Therefore this is not a consequence of present forest management (Motzkin et al. 1999, Dupouey et al. 2002, Flinn and Marks 2007).

These constrains may explain why many studies did not find differences in species richness if treatments were compared which did not differ sufficiently in one or more single structural attribute. For example Müller et al. (2008) found that species richness of saproxylic beetles was better explained by plot factors, such as dead wood or the presence of fungi, than by management intensity, which was classified based on expert's opinion. A comparable finding was reported by Küffer and Senn-Irlet (2005). While differences in the quality of dead wood, including volume, age, degree of decomposition and host tree species, were the most important factors influencing diversity of wood-inhabiting aphyllophoroid basidiomycetes, no clear relationship to forest management intensity was found. This result was most likely caused by the fact that structures important for the fungi such as fine woody debris were present also in intensively managed forests and served as important refuge for many species (Küffer and Senn-Irlet 2005). Accordingly Purahong et al. (2014) found a significant correlation of the abundances of common, wood-inhabiting fungal OTUs between three forest types (unmanaged, selection cutting and age-class forest). OTU richness was however significantly reduced in age-class forests, indicating a loss of less common species which might depend on bigger logs. As single structural attributes are important only for a limited number of species it was not surprising that they had a much lower explanatory power than SMI in our study. In fact only in few cases single structural attributes performed better than the SMI or Bartha's index of 'naturalness'. Examples were xylophagous beetles in the canopy which were better explained by dead wood amount and fungi-feeding stem dwelling Coleoptera which were closely related to tree species diversity. The overall inferior explanatory power of single structural attributes is partly compensated through complementarity between structural attributes, in that the one or the other attribute is related to biodiversity.

The explanatory power of stand structural complexity indices was lower than SMI but higher than single structural attributes. This suggests that the diversity of organisms is rather affected by a combination of structural attributes and management intensity than by single structural attributes. Interestingly, the complexity index composed of average stand age (avgAge) and share of conifers (Con), which resemble input data of SMI, did not perform better than its constituents. This finding suggests that the design of SMI in fact considers meaningful stand structural characteristics in terms of management intensity as well as in terms of biodiversity, and that, however, a purely additive combination of relevant single stand structural characteristics is not effective. Hence SMI was more often found among the best explanatory variables than stand structural complexity indices as indicated by dAICc (Fig. 3).

A second main result of our study was that the categorical approach, i.e., defining forest types, revealed overall high explanatory power. The categorical approach has some limitations. First, significant differences between forest types were observed which were not correlated with the management intensity gradient (that is, not conifer and unmanaged beech forests, but mixed forests or managed beech forests showed significantly highest/lowest diversity). Second explaining diversity was less stable when the jackknife approach was applied. This was due to the high importance of a particular forest type, which, however, differed among trophic guilds. Third forest types could only rarely be found among the best explanatory variables (Fig. 3).

### *Correlations between measures of land-use intensity, 'naturalness' and stand structure*

As for SMI, the abundance and diversity of many species correlated well with Bartha's measure of 'naturalness'. This finding reflects the strong negative relationship between SMI and 'naturalness'. Though reasonable, the high negative correlation between SMI and 'naturalness' was somehow unexpected, because the two measures are based on different criteria and calculations. One might argue that the close relationship between Bartha's measure of 'naturalness' and the land-use intensity measure SMI was caused by including unmanaged or intensively managed spruce forest stands. However, even if excluding these extremes, the correlation was still significant. This suggests that management decisions, as for example the replacement of stable deciduous forests by conifer plantations of lower survival rate and/or heavy and repeated reductions in stand volume, appear to be correlated with changes in structural attributes that are crucial for the assessment of 'naturalness'. Both measures inherently combine a wide range of characteristics which were found to be crucial for species diversity. These are, for example, stand volume which in turn corresponds to the presence or absence of large (old) trees including snags and /or canopy layering and closure, and stand composition, reflecting the high importance of tree identity on species richness. The importance of these structural characteristics have been shown for e.g., ground-dwelling Coleoptera in northern hardwood and eastern hemlock-dominated sites (Werner and Raffa 2000), for snails in European beech forests (Müller et al. 2005*b*), for lichens in European temperate deciduous forests (Nascimbene et al. 2013), and for small mammals in oak forests of southern Indiana (Urban and Swihart 2011). Despite the close correlation between 'naturalness' and SMI, a major difference remains: the definition of 'naturalness' is based on many assumptions concerning the state of a pristine forest. It also includes measures of biodiversity rendering correlations with forest biodiversity measures potentially tautological. In contrast, an index such as the SMI is a more independent quantitative measure. Another reason why a 'naturalness' measure seems to be questionable for scientific studies lies not least in the difficulty to identify a correct reference state. While the assumptions concerning the reference state in our study region may not be completely wrong, this is difficult to prove. In those parts of the world, where land-use history may have everlastingly changed forest composition (Dupouey et al. 2002, Josefsson et al. 2010, Brudvig and Damschen 2011) a 'natural' reference tree species composition makes even less sense and ignores long-term dynamics due to anthropogenic legacies or different successional trajectories (McLachlan et al. 2000, Schweitzer and Dey 2011). However, we included a comparison with Bartha's index for 'naturalness' in our analysis because such indicators are frequently used in conservation debates.

### *Application of SMI in a global perspective*

The third main result of our study was that different taxa responded differently to land-use intensity, but the variation was generally not better explained for single trophic guilds by different land-use measures. Some guilds, such as wood- and bark living fungi, xylophagous beetles, insect herbivores, canopy dwelling insect predators and breeding birds showed a clear negative response to increasing land-use intensity, while for plants the variability observed was not explained by the different measures of land-use intensity (SMI, 'naturalness'). Interestingly, some taxa, such as mosses and ground-dwelling predators, appeared to have benefitted from increased land-use intensity. Thus, a quantitative measure of land-use intensity may help to understand the opposing effects of land use on the diversity of different taxa.

SMI was developed to quantify silvicultural land-use intensity based on the two most influential management decisions on the strategic and the operational level. While the former is related to tree species selection and stand age (rotation period), the latter reflects the site productivity, the control of stand density by thinnings and harvests and thus biomass removal relative to carrying capacity. These characteristics were combined into the risk and density components of SMI. However, while SMI performed better than single structural attributes or combinations of such attributes there was a lot of unexplained variability. One reason may be the strong effect of land-use history on biodiversity which is not represented in the index (Motzkin et al. 1999, Bellemare et al. 2002, Rhemtulla et al. 2009, Baeten et al. 2010, Brudvig and Damschen 2011). Though the recent management history is captured in SMI by all of the three management components considered, i.e., time since stand establishment, species composition which may have changed, and former biomass removals, impacts of former land use cannot be addressed. Another source of unexplained variability may be forest fragmentation which was shown to also strongly determine species richness (Brunet et al.

2011).

Schall and Ammer (2013) showed that SMI can be applied to development stages and whole silvicultural regimes of beech, oak, spruce, and pine forests based on yield tables and to actual stands, using the 30 so-called very intensive plots studied within the German Biodiversity Exploratories (Fischer et al. 2010). Thus, the concept should be robust for Central Europe. The concept of SMI may also work for forest biomes outside Central Europe where the natural disturbance regime does not prevent climax (or old growth) forests to develop (Wirth et al. 2009). However, it might be difficult do get reliable data for the risk of tree loss due to natural hazards in diverse hardwood stands. Additionally, SMI cannot capture historical changes of tree species composition. Thus, at a given site various stand types may be classified as not intensively managed if they had built up high biomass, although some of them may be secondary forests which do, for example, not contain late successional species. SMI most likely does not work if fires belong to the natural disturbance regime. In this case the density component would indicate high management intensity due to the loss of live or dead wooden biomass.

### *Conclusions*

Our findings suggest that measures such as the SMI are promising to explore effects of forest management on organismic diversity. Alternatively, a combination of forest age related variables, tree species identity and diversity, and dead wood amount might be successfully used for evaluating the effects of forest management on organismic diversity.

Such intensity measures show higher independency and higher power in explaining organismic communities. Single structural variables and structural complexity indices seem to do fine in explaining the performance of specific species but should not be used for explaining management effects on the diversity of different organisms. This is, because these structural attributes might be used as both, a proxy for land-use intensity as well as mechanistic explanation of why land use has certain effects on a particular group of organisms. The management intensity index SMI showed to be a reliable measure of forest management intensity, because it well reflects structural changes expected from forest management e.g., by being negatively correlated with stand age and 'naturalness' and positively with the proportion of conifers. Actually, reduced stand age by final cuttings and increased percentage of conifers are the most obvious measures of an intense forest management in many parts of the world (Schall and Ammer 2013). Moreover, SMI revealed to have higher power in explaining management caused changes in biodiversity. We believe that this approach to quantify forest management intensity based on forest management practices can be adjusted for other parts of the world. Our results show, that such indices should include the identity of the dominant tree species, which is, in managed forests, the most crucial and momentous management decision affecting overall biodiversity. Zenner et al. (2013) recently stated that we need to better understand "how far management can deviate from the natural range of variability before comprising ecological integrity and resilience". Measures such as the SMI may help to get more information to answer that question.

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## Supplemental Material

## Appendix A

### *Stand characteristics*

Detailed descriptions of the study regions and stands are given in Detsch (1999), Schubert (1998), Ammer et al. (2002) and Gossner (2004). Briefly, the altitude of the stands ranged from 620 to 645 m a.s.l. at Ottobeuren, 520 to 535 m a.s.l. at Krumbach and 400 to 475 m a.s.l. at Hienheim. Mean annual precipitation is higher at Ottobeuren (900–1000 mm) than at Krumbach (750–800 mm) and Hienheim (650–730 mm). The mean annual temperature is 7–8°C in all regions (data from the nearest climate stations, i.e., Memmingen, Neuburg/Kammel-Naichen and forest climate station Riedenburg). Studied stands at Ottobeuren and Krumbach were located in a landscape called 'Schotterriedel' with soils originating from Tertiary and diluvial material overlaid by Loess. The soils are very fertile, resulting in a favourable and rapid growth of trees. Consequently the forests around Ottobeuren and Krumbach have been intensively managed by cultivating Norway spruce (*Picea abies*) over at least three centuries. The Hienheim site is located in the forest area 'Hienheimer Forst', close to Kelheim, and covers around 2000 ha. The Hienheim stands are located on a mountain ridge between the rivers Altmühl and Danube. The forest area is characterized by a long tradition of

Table A1. Overview over the forest stands used in this study.

| Stand | Description |
|---|---|
| Ottobeuren | |
| OFI | Managed stand of Norway spruce, 100 years old |
| OMI | Managed mixed Norway spruce–beech stand, 100 years old |
| OLB | Managed stand of beech, 130 years old |
| ONW | Forest nature reserve (beech, Norway spruce), 110 years old, no management for the last 20 years |
| Krumbach | |
| KFI | Managed stand of Norway spruce, 95 years old |
| KMI | Managed mixed Norway spruce–beech stand, 85 years old |
| KLB | Managed stand of beech and oak, 90–145 years old |
| KNW | Forest nature reserve (oak), 155 years old, no management for the last 20 years |
| Hienheim | |
| BSL | Managed stand of Norway spruce, 80 years old |
| STA | Managed mixed Norway spruce–beech stand, 105 years old |
| BBG | Managed stand of beech and oak, 105 years old |
| PLA | Forest nature reserve (beech, oak), 125–145 years old, no management for the last 20 years |

Table A2. Results from forest inventory. Stand structural attributes appear in italic. See Appendix A: Table A1 for short descriptions of the forest stands and Table 1 for explanations of attribute abbreviations.

| | Ottobeuren | | | | Krumbach | | | | Hienheim | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Attribute | OFI | OMI | OLB | ONW | KFI | KMI | KLB | KNW | BSL | STA | BBG | PLA |
| Stand area (ha) | 9.3 | 23.5 | 9.2 | 11.5 | 9.7 | 7.0 | 4.8 | 7.1 | 6.0 | 13.7 | 20.3 | 20.7 |
| No. circular subplots | 20 | 20 | 20 | 20 | 17† | 20 | 20 | 18 | 8 | 15 | 20 | 19 |
| *maxAge* (years) | 105 | 116 | 134 | 118 | 111 | 94 | 148 | 171 | 114 | 111 | 115 | 157 |
| *avgAge* (years) | 89 | 94 | 114 | 113 | 96 | 79 | 119 | 145 | 82 | 106 | 103 | 132 |
| *WV* ($m^3$ $ha^{-1}$) | 1094 | 951 | 708 | 877 | 850 | 758 | 542 | 515 | 716 | 541 | 516 | 601 |
| *DWV* ($m^3$ $ha^{-1}$) | 12.4 | 8 | 7.7 | 53.1 | 23.7 | 10 | 10.5 | 83 | 12.5 | 9.4 | 6.6 | 31.4 |
| *N* (trees $ha^{-1}$) | 547 | 452 | 250 | 368 | 411 | 469 | 451 | 203 | 671 | 473 | 638 | 437 |
| *G* ($m^2$ $ha^{-1}$) | 65.4 | 56.4 | 39.4 | 48.5 | 50.8 | 45.9 | 34.4 | 33.7 | 51.8 | 37.2 | 35.1 | 37.1 |
| *HS* ($m^2$ $ha^{-1}$) | 8.0 | 13.5 | 9.4 | 10.1 | 13.7 | 10.3 | 10.5 | 6.8 | 7.6 | 8.3 | 8.1 | 4.3 |
| CV of basal area between subplots (%) | 12.3 | 24.0 | 23.9 | 20.8 | 26.9 | 22.4 | 30.5 | 20.1 | 14.5 | 22.3 | 23.2 | 11.6 |
| *Dg* (cm) | 39.0 | 39.9 | 44.8 | 41.0 | 39.7 | 35.3 | 31.2 | 45.9 | 31.3 | 31.6 | 26.5 | 32.9 |
| *Dm* (cm) | 38.0 | 37.7 | 42.7 | 39.1 | 38.8 | 33.3 | 27.3 | 41.0 | 29.8 | 29.9 | 23.7 | 29.7 |
| Stdev of dbh (cm) | 10.3 | 12.9 | 13.4 | 10.8 | 8.3 | 11.8 | 15.1 | 22.0 | 9.6 | 10.5 | 11.8 | 14.1 |
| CV of dbh *VS* (%) | 27.0 | 34.3 | 31.4 | 27.6 | 21.5 | 35.5 | 55.3 | 53.8 | 32.1 | 35.1 | 49.9 | 47.6 |
| Mean height (m) | 36.1 | 37.2 | 40.3 | 38.8 | 37.9 | 30.2 | 29.4 | 31.2 | 32.0 | 32.3 | 35.5 | 36.7 |
| *SR* | 4 | 5 | 6 | 4 | 2 | 7 | 6 | 7 | 4 | 5 | 7 | 5 |
| *SD* (based on G) | 0.312 | 0.852 | 0.857 | 0.739 | 0.011 | 0.605 | 0.850 | 0.755 | 0.240 | 1.012 | 1.066 | 0.780 |
| *Con* (%, based on G) | 95.5 | 86.1 | 31.7 | 34.4 | 99.8 | 85.9 | 0.0 | 7.8 | 95.2 | 64.4 | 8.8 | 4.8 |
| *OBL* (%, based on G) | 0.0 | 0.0 | 4.1 | 2.0 | 0.0 | 2.7 | 64.4 | 88.2 | 2.3 | 0.6 | 35.0 | 24.7 |
| Tree species composition based on G (%) | | | | | | | | | | | | |
| Pa | 93 | 74 | 31 | 34 | 100 | 84 | 0 | 8 | 95 | 52 | 5 | 1 |
| Fs | 4 | 14 | 64 | 64 | 0 | 11 | 36 | 4 | 3 | 35 | 56 | 70 |
| Qs | 0 | 0 | 1 | 0 | 0 | 0 | 60 | 81 | 1 | 1 | 33 | 24 |
| OC | 3 | 12 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 12 | 4 | 4 |
| OB | 0 | 0 | 3 | 2 | 0 | 2 | 4 | 7 | 2 | 0 | 2 | 0 |

*Notes:* Tree species abbreviations: Fs, *Fagus sylvatica*; Pa, *Picea abies*; Qs, *Quercus robur* and *Quercus petraea*; OB, other broad-leaved tree species; OC, other coniferous tree species. Stand management in OFI, OMI, and OLB in Ottobeuren, KFI, KMI, and KLB in Krumbach, and BSL, STA, and BBG in Hienheim consisted of final thinning; ONW in Ottobeuren, KNW in Krumbach, and PLA in Hienheim were protected forest nature reserves and no forestry operations took place in those stands since 1978. The natural forest communities of the Ottobeuren and Krumbach sites consisted of Luzulo-Fagetum, of Hienheim, Asperulo-Fagetum. The potential natural forest communities were beech forests with local admixture of silver fir and oak in the Ottobeuren and Krumbach stands and beech forests in the Hienheim stands. Stdev, standard deviation; CV, coefficient of variation.

† Three subplots unstocked due to hurricane "Lothar" in winter 1999/2000 were excluded.

Table A3. Stand structural complexity index (SSCI) values for forest stands. SSCI was defined as a weighted additive combination of stand structural attributes (Attrib), which scored relative to the observed range within studied stands. Single attributes were weighted using their coefficient of variation (for details see text). Weighting factors were: avgAge, 18.7%; Con, 65.3%; DWV, 29.8%; HS, 28.9%; SD, 48.0%; VS, 29.9%; and WV, 26.3%.

| SSCI | Structural attributes contributing | Ottobeuren | | | | Krumbach | | | | Hienheim | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OFI | OMI | OLB | ONW | KFI | KMI | KLB | KNW | BSL | STA | BBG | PLA |
| 7Attrib | Con avgAge SD DWV VS HS WV | 0.74 | 1.19 | 1.24 | 1.46 | 0.64 | 0.89 | 1.70 | 1.72 | 0.55 | 1.09 | 1.45 | 1.52 |
| 4Attrib | Con avgAge SD DWV | 0.31 | 0.60 | 0.91 | 1.06 | 0.20 | 0.47 | 1.20 | 1.36 | 0.27 | 0.83 | 1.08 | 1.25 |
| 3AttribA | Con avgAge SD | 0.24 | 0.57 | 0.89 | 0.82 | 0.05 | 0.42 | 1.15 | 1.06 | 0.19 | 0.79 | 1.08 | 1.07 |
| 3AttribB | Con avgAge DWV | 0.18 | 0.21 | 0.52 | 0.73 | 0.20 | 0.20 | 0.82 | 1.02 | 0.16 | 0.38 | 0.60 | 0.90 |
| 3AttribC | Con SD DWV | 0.29 | 0.55 | 0.81 | 0.97 | 0.15 | 0.47 | 1.09 | 1.18 | 0.26 | 0.76 | 1.01 | 1.10 |
| 3AttribD | avgAge SD DWV | 0.24 | 0.45 | 0.50 | 0.67 | 0.20 | 0.32 | 0.55 | 0.82 | 0.19 | 0.57 | 0.55 | 0.68 |
| 2AttribA | Con avgAge | 0.10 | 0.19 | 0.50 | 0.49 | 0.05 | 0.15 | 0.77 | 0.73 | 0.09 | 0.34 | 0.60 | 0.72 |
| 2AttribB | Con SD | 0.21 | 0.53 | 0.79 | 0.72 | 0.00 | 0.42 | 1.04 | 0.88 | 0.18 | 0.71 | 1.01 | 0.92 |
| 2AttribC | Con DWV | 0.15 | 0.17 | 0.42 | 0.64 | 0.15 | 0.20 | 0.71 | 0.84 | 0.15 | 0.30 | 0.53 | 0.75 |
| 2AttribD | avgAge SD | 0.17 | 0.43 | 0.48 | 0.43 | 0.05 | 0.27 | 0.50 | 0.53 | 0.11 | 0.53 | 0.55 | 0.50 |
| 2AttribE | avgAge DWV | 0.10 | 0.07 | 0.12 | 0.34 | 0.20 | 0.05 | 0.17 | 0.48 | 0.08 | 0.12 | 0.07 | 0.33 |
| 2AttribF | SD DWV | 0.21 | 0.41 | 0.40 | 0.58 | 0.15 | 0.32 | 0.44 | 0.64 | 0.18 | 0.50 | 0.48 | 0.53 |

oak forestry. Even though coniferous trees were established at an increasing rate in the 19th century, presently 50% of the forest area is still covered with broadleaved trees. Appendix A: Table A1 provides a list of the forest stands.

### *Forest inventory*

A forest inventory was carried out in one circular sample plot of r = 17.84m (1000 $m^2$, 1 per ha) in the center of each 100 × 100 m grid at Hienheim, and in five circular sample plots of r = 12.62 m (500 $m^2$, 5 per ha) per grid of a core area of 4 ha at Krumbach and Ottobeuren, to obtain stand information for the calculation of naturalness measures and as the target state of the forest simulator model. Depending on stand area this resulted in different numbers of circular sample plots at region Hienheim, ranging from 4 to 27. At Krumbach and Ottobeuren in all stands 20 circular sample plots were assessed. Of each tree, species name, dbh, tree height and affiliation to the IUFRO-category (overstorey, mid-storey, understorey) was noted. Additionally an inventory of dead wood, special structures such as uprooted stocks and forest regeneration was performed. The methodology followed the recommendations given by Albrecht (1990) for forest ecology research in forest nature reserves. An overview of the stand characteristics including soil parameters is given in Appendix A: Tables A2–A4.

## Appendix B

### *Silvicultural management intensity SMI*

Silvicultural management intensity SMI of

Table A4. Soil chemical parameters of the organic matter (OM) and mineral soil layer (0–5 cm; MS) of studies stands based on three mixed samples per stand (Ottobeuren, Krumbach) and average of 40 samples per stand (Hienheim). pH was measured with KCl solution. Note that not all data were available for all stands.

| Parameter | Layer | Ottobeuren | | | | Krumbach | | | | Hienheim | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OFI | OMI | OLB | ONW | KFI | KMI | KLB | KNW | BSL | STA | BBG | PLA |
| pH | OM | 3.51 | 3.56 | 4.02 | 3.77 | 3.96 | 3.82 | 4.00 | 4.50 | ... | 3.77 | 4.78 | 4.67 |
| pH | MS | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2.99 | 3.97 | 4.11 |
| Base saturation (%) | OM | 69 | 67 | 76 | 63 | 78 | 74 | 70 | 76 | ... | ... | ... | ... |
| Cation exchange capacity Ca | OM | 147 | 142 | 209 | 173 | 161 | 228 | 200 | 167 | ... | ... | ... | ... |
| C/N | OM | 23.4 | 22.7 | 21.4 | 23.6 | 22.2 | 22.1 | 20.0 | 17.5 | ... | 31.3 | 24.4 | 27.9 |
| C/N | MS | ... | ... | ... | ... | ... | ... | ... | ... | ... | 21.9 | 15.6 | 16.9 |

Schall and Ammer (2013) consists of two continuous components, risk of stand loss due to natural hazards $SMI_r$ and relative stand density $SMI_d$. $SMI_r$ quantifies the probability of stand loss at or before a reference age. $SMI_d$ relates actual stand biomass to biomass carrying capacity of the site.

We used the survival function $S(t) = \exp(-(t/\beta)^{\alpha})$ where $t$ is stand age (years) and $\alpha$ and $\beta$ are parameters to calculate $SMI_r = 1 - S(180)/S(t_0)$ where 180 years is the reference age and $t_0$ is stand age (Schall and Ammer 2013). Stand age $t_0$ was quantified based on forest inventory data as the mean of the oldest trees cohort maxAge and the average stand avgAge (Appendix A: Table A2**)**. For the dominant tree species in our study stands, *Fagus sylvatica*, *Quercus robur* and *Quercus petraea*, and *Picea abies*, we adopted values for α and β given by Staupendahl and Zuicchini (2011). Other broadleaved species were appended to *Fagus sylvatica*, and other coniferous species to *Picea abies*. In mixed stands species specific results of $SMI_r$ were averaged using the share of basal area as weighting factor if the admixed species comprised a lower risk than the main tree species (e.g., BSL, KFI, KMI, OFI, OMI, STA). In case admixed species comprised a higher risk than the main tree species we followed the reasoning of Schall and Ammer (2013) who sugested that failing of admixed species does not negatively affect total stand survival probability. Hence, in these cases the risk of stand loss was defined only by the main tree species.

We used basal area G, wood volume over bark WV and the sum of living and dead wood volume WV + DWV (Appendix A: Table A2**)** as proxy for biomass to calculate $SMI_d = 1 - B/B_{max}$ where $B$ is actual stand biomass and $B_{max}$ is biomass carrying capacity of the site. Species specific carrying capacities for basal area and wood volume (reference for wood volume irrespective of stage living or dead) were estimated based on site index (*Picea abies*; yield table of Assmann and Franz [1965]) and site class (*Fagus sylvatica*, *Quercus robur* and *Quercus petraea*; yield tables compiled by Schober [1987]). The following carrying capacities were used: *Picea abies* 75 $m^2$ $ha^{-1}$ and 1239 $m^3$ $ha^{-1}$ for Krumbach and Ottobeuren (site index: 38) and 60 $m^2$ $ha^{-1}$ and 970 $m^3$ $ha^{-1}$ for Hienheim (site index: 34); *Fagus sylvatica* 45.3 $m^2$ $ha^{-1}$ and 868 $m^3$ $ha^{-1}$ for Krumbach and Ottobeuren (site class: 0.5) and 42.3 $m^2$ $ha^{-1}$ and 717 $m^3$ $ha^{-1}$ for Hienheim (site class: 2.0); *Quercus robur* and *Quercus petraea* 33.8 $m^2$ $ha^{-1}$ and 556 $m^3$ $ha^{-1}$ for all regions (site class: 2.0). Other broadleaved species were appended to *Fagus sylvatica*, and other coniferous species to *Picea abies*. In mixed stands species specific values for $SMI_d$ were summed up.

Table B1. Silvicultural management intensity (SMI) values of the forest stands. Values were calculated based on forest inventory data (Appendix A: Table A2). See text for definitions of intensities and intensity components.

| Silvicultural management intensity | Ottobeuren | | | | Krumbach | | | | Hienheim | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OFI | OMI | OLB | ONW | KFI | KMI | KLB | KNW | BSL | STA | BBG | PLA |
| $SMI_dG$ | 0.102 | 0.187 | 0.240 | 0.075 | 0.323 | 0.334 | 0.081 | 0.075 | 0.118 | 0.284 | 0.121 | 0.082 |
| $SMI_dV$ | 0.100 | 0.195 | 0.255 | 0.090 | 0.314 | 0.354 | 0.165 | 0.132 | 0.248 | 0.363 | 0.224 | 0.113 |
| $SMI_dVD$ | 0.091 | 0.187 | 0.249 | 0.049 | 0.295 | 0.347 | 0.153 | 0.003 | 0.235 | 0.356 | 0.215 | 0.080 |
| $SMI_r$ | 0.710 | 0.605 | 0.045 | 0.050 | 0.725 | 0.662 | 0.061 | 0.044 | 0.706 | 0.476 | 0.073 | 0.039 |
| SMIG | 0.406 | 0.396 | 0.142 | 0.063 | 0.524 | 0.498 | 0.071 | 0.060 | 0.412 | 0.380 | 0.097 | 0.061 |
| SMIV | 0.405 | 0.400 | 0.150 | 0.070 | 0.520 | 0.508 | 0.113 | 0.088 | 0.477 | 0.420 | 0.148 | 0.076 |
| SMIVD | 0.401 | 0.396 | 0.147 | 0.050 | 0.510 | 0.504 | 0.107 | 0.023 | 0.470 | 0.416 | 0.144 | 0.060 |

# Appendix C

## *Details on Bartha's (1994) index of naturalness*

Table C1. The evaluation of the naturalness of forests on stand level based on five groups of criteria. Details on criteria and evaluation scales are given.

| Group of criteria | Evaluation scale | Considered criteria |
|---|---|---|
| Tree layer | 0–5 | indigenousness |
| | | site tolerance |
| | | mixedness |
| | | character of crown-closure |
| | | species distribution |
| | | age structure |
| | | stratification |
| Shrub-layer and | 0–2 | species composition |
| | | character of cover |
| Herb-layer | 0–4 | species composition |
| | | character of cover |
| Site characteristics | 0–4 | humus development |
| | | biological activity |
| | | water balance |
| | | erosion and soil wounding |
| | | soil compaction and intermixture of soil layers |
| Others | 0–10 | occurrence of single or groups of old trees |
| | | amount of dead wood |
| | | occurrence and quality of regrowth |
| Total | 0–25 | |

Table C2. Naturalness values of studied stands.

| Stand | Naturalness value | Percentage of naturalness |
|---|---|---|
| Ottobeuren | | |
| OFI | 3 | 12 |
| OMI | 5 | 20 |
| OLB | 10 | 40 |
| ONW | 13 | 52 |
| Krumbach | | |
| KFI | 3 | 12 |
| KMI | 7 | 28 |
| KLB | 12 | 48 |
| KNW | 16 | 64 |
| Hienheim | | |
| BSL | 3 | 12 |
| STA | 5 | 20 |
| BBG | 10 | 40 |
| PLA | 13 | 52 |

# APPENDIX D

## *Correlations among explaining variables used in analyses to explain biodiversity*

Table D1. Pairwise correlations among land-use intensity measures and stand structural attributes (Pearson correlation coefficient). Values between 0.8 and 0.9 are presented in boldface italic, those between 0.9 and 1.0 in boldface.

| Attribute | Nat | SMIG | SMIV | SMIVD | maxAge | avgAge | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Nat | 1.000 | **−0.909** | **−0.918** | **−0.935** | 0.783 | ***0.858*** | 0.544 | −0.553 |
| SMIG | **−0.909** | 1.000 | **0.993** | **0.989** | −0.757 | ***−0.822*** | −0.369 | 0.526 |
| SMIV | **−0.918** | **0.993** | 1.000 | **0.997** | −0.755 | ***−0.834*** | −0.401 | 0.455 |
| SMIVD | **−0.935** | **0.989** | **0.997** | 1.000 | −0.783 | ***−0.861*** | −0.459 | 0.461 |
| maxAge | 0.783 | −0.757 | −0.755 | −0.783 | 1.000 | **0.928** | 0.539 | −0.549 |
| avgAge | ***0.858*** | ***−0.822*** | ***−0.834*** | ***−0.861*** | **0.928** | 1.000 | 0.610 | −0.558 |
| DWV | 0.544 | −0.369 | −0.401 | −0.459 | 0.539 | 0.610 | 1.000 | −0.053 |
| WV | −0.553 | 0.526 | 0.455 | 0.461 | −0.549 | −0.558 | −0.053 | 1.000 |
| G | −0.707 | 0.650 | 0.607 | 0.610 | −0.615 | −0.680 | −0.124 | **0.953** |
| N | −0.576 | 0.372 | 0.439 | 0.473 | −0.568 | −0.666 | −0.533 | 0.107 |
| Dg | 0.189 | −0.029 | −0.110 | −0.150 | 0.245 | 0.284 | 0.485 | 0.403 |
| Dm | 0.025 | 0.112 | 0.028 | −0.006 | 0.079 | 0.127 | 0.406 | 0.531 |
| SR | 0.563 | −0.452 | −0.422 | −0.425 | 0.317 | 0.309 | −0.174 | −0.580 |
| SD | 0.564 | −0.612 | −0.592 | −0.570 | 0.311 | 0.452 | −0.208 | −0.553 |
| Con | ***−0.896*** | **0.937** | **0.918** | **0.911** | −0.760 | ***−0.806*** | −0.222 | 0.708 |
| OBL | 0.785 | −0.714 | −0.679 | −0.709 | ***0.812*** | 0.750 | 0.382 | −0.715 |
| VS | 0.694 | −0.670 | −0.622 | −0.631 | 0.699 | 0.626 | 0.098 | −0.770 |
| HS | −0.420 | 0.485 | 0.446 | 0.457 | −0.467 | −0.453 | −0.274 | 0.459 |

*Note:* Abbreviations are: Nat = naturalness (Bartha 2004), SMI = silvicultural management intensity based on basal area G or solid volume of either living V or living and dead biomass VD (Schall and Ammer 2013), maxAge = age of the oldest trees in the stand (years), avgAge = average age of the stand (years), DWV = total standing or downed dead wood volume across all decay stages ($m^3$ $ha^{-1}$), WV = wood volume including bark of living trees ($m^3$ $ha^{-1}$), G = basal area ($m^2$ $ha^{-1}$), N = stand density (trees $ha^{-1}$), Dg = quadratic mean diameter at breast height (dbh, measured at height 1.3 m) (cm), Dm = arithmetic mean dbh (cm), SR = species richness of trees (number of tree species), SD = Shannon species diversity of trees (calculated as pseudo-diversity based on basal area proportion of tree species), Con = share of conifers (ratio based on basal area), OBL = share of other broadleaved species other than *Fagus sylvatica* (ratio based on basal area), VS = vertical structure using standard deviation of diameter at breast height (dbh, measured at height 1.3 m) as proxy (cm), and HS = horizontal structure using the standard deviation of G between subplots as proxy ($m^2$ $ha^{-1}$).

Table D2. Pairwise correlations among land-use intensity measures and stand structural attributes (Pearson correlation coefficient)—continued. Values between 0.8 and 0.9 are presented in boldface italic, those between 0.9 and 1.0 in boldface.

| Attribute | G | N | Dg | Dm | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|---|---|
| Nat | −0.707 | −0.576 | 0.189 | 0.025 | 0.563 | 0.564 | ***−0.896*** | 0.785 | 0.694 | −0.420 |
| SMIG | 0.650 | 0.372 | −0.029 | 0.112 | −0.452 | −0.612 | **0.937** | −0.714 | −0.670 | 0.485 |
| SMIV | 0.607 | 0.439 | −0.110 | 0.028 | −0.422 | −0.592 | **0.918** | −0.679 | −0.622 | 0.446 |
| SMIVD | 0.610 | 0.473 | −0.150 | −0.006 | −0.425 | −0.570 | **0.911** | −0.709 | −0.631 | 0.457 |
| maxAge | −0.615 | −0.568 | 0.245 | 0.079 | 0.317 | 0.311 | −0.760 | ***0.812*** | 0.699 | −0.467 |
| avgAge | −0.680 | −0.666 | 0.284 | 0.127 | 0.309 | 0.452 | ***−0.806*** | 0.750 | 0.626 | −0.453 |
| DWV | −0.124 | −0.533 | 0.485 | 0.406 | −0.174 | −0.208 | −0.222 | 0.382 | 0.098 | −0.274 |
| WV | **0.953** | 0.107 | 0.403 | 0.531 | −0.580 | −0.553 | 0.708 | −0.715 | −0.770 | 0.459 |
| G | 1.000 | 0.327 | 0.234 | 0.371 | −0.612 | −0.642 | ***0.812*** | −0.724 | −0.749 | 0.383 |
| N | 0.327 | 1.000 | ***−0.814*** | −0.723 | −0.171 | −0.181 | 0.324 | −0.319 | −0.085 | −0.069 |
| Dg | 0.234 | −0.814 | 1.000 | **0.981** | −0.122 | −0.207 | 0.146 | −0.039 | −0.329 | 0.234 |
| Dm | 0.371 | −0.723 | **0.981** | 1.000 | −0.253 | −0.309 | 0.306 | −0.222 | −0.503 | 0.310 |
| SR | −0.612 | −0.171 | −0.122 | −0.253 | 1.000 | 0.716 | −0.613 | 0.619 | 0.734 | −0.335 |
| SD | −0.642 | −0.181 | −0.207 | −0.309 | 0.716 | 1.000 | −0.713 | 0.391 | 0.603 | −0.241 |
| Con | ***0.812*** | 0.324 | 0.146 | 0.306 | −0.613 | −0.713 | 1.000 | ***−0.812*** | ***−0.841*** | 0.469 |
| OBL | −0.724 | −0.319 | −0.039 | −0.222 | 0.619 | 0.391 | ***−0.812*** | 1.000 | **0.908** | −0.424 |
| VS | −0.749 | −0.085 | −0.329 | −0.503 | 0.734 | 0.603 | ***−0.841*** | **0.908** | 1.000 | −0.471 |
| HS | 0.383 | −0.069 | 0.234 | 0.310 | −0.335 | −0.241 | 0.469 | −0.424 | −0.471 | 1.000 |

*Note:* Abbreviations are: Nat = naturalness (Bartha 2004), SMI = silvicultural management intensity based on basal area G or solid volume of either living V or living and dead biomass VD (Schall and Ammer 2013), maxAge = age of the oldest trees in the stand (years), avgAge = average age of the stand (years), DWV = total standing or downed dead wood volume across all decay stages ($m^3$ $ha^{-1}$), WV = wood volume including bark of living trees ($m^3$ $ha^{-1}$), G = basal area ($m^2$ $ha^{-1}$), N = stand density (trees $ha^{-1}$), Dg = quadratic mean diameter at breast height (dbh, measured at height 1.3 m) (cm), Dm = arithmetic mean dbh (cm), SR = species richness of trees (number of tree species), SD = Shannon species diversity of trees (calculated as pseudo-diversity based on basal area proportion of tree species), Con = share of conifers (ratio based on basal area), OBL = share of other broadleaved species other than *Fagus sylvatica* (ratio based on basal area), VS = vertical structure using standard deviation of diameter at breast height (dbh, measured at height 1.3 m) as proxy (cm), and HS = horizontal structure using the standard deviation of G between subplots as proxy ($m^2$ $ha^{-1}$).

Table D3. Pairwise correlations between land-use intensity measures and indices of stand structural complexity (SSCI; Pearson correlation coefficient). Abbreviations are explained in Appendix D: Table D1. Values between 0.8 and 0.9 are presented in boldface italic, those between 0.9 and 1.0 in boldface.

| SSCI | Structural attributes contributing | Nat | SMIG | SMIV | SMIVD |
|---|---|---|---|---|---|
| 7Attrib | Con avgAge SD DWV VS HS WV | **0.917** | ***−0.898*** | **−0.900** | **−0.904** |
| 4Attrib | Con avgAge SD DWV | **0.934** | **−0.928** | **−0.919** | **−0.925** |
| 3AttribA | Con avgAge SD | ***0.858*** | ***−0.895*** | ***−0.878*** | ***−0.869*** |
| 3AttribB | Con avgAge DWV | **0.957** | **−0.927** | **−0.925** | **−0.943** |
| 3AttribC | Con SD DWV | **0.926** | **−0.924** | **−0.913** | **−0.915** |
| 3AttribD | avgAge SD DWV | ***0.893*** | ***−0.836*** | ***−0.840*** | ***−0.858*** |
| 2AttribA | Con avgAge | **0.917** | **−0.944** | **−0.930** | **−0.930** |
| 2AttribB | Con SD | ***0.823*** | ***−0.871*** | ***−0.850*** | ***−0.836*** |
| 2AttribC | Con DWV | **0.963** | **−0.935** | **−0.930** | **−0.945** |
| 2AttribD | avgAge SD | 0.730 | −0.758 | −0.746 | −0.736 |
| 2AttribE | avgAge DWV | 0.729 | −0.593 | −0.620 | −0.672 |
| 2AttribF | SD DWV | ***0.855*** | −0.794 | −0.795 | ***−0.810*** |

## Appendix E

### *Biodiversity assessment*

*Mosses and higher plants*.—A survey of plants and mosses was performed in the year 1995 in Hienheim and in the year 2000 in Krumbach and Ottobeuren using a modified Braun-Blanquet method (Braun-Blanquet 1964, Albrecht 1990). Circular sampling plots of r = 10 m were installed, in Hienheim in the center of each grid plot, resulting in different numbers of sampling plots (4–27) depending on stand area; in Krumbach and Ottobeuren five circular sampling plots per stand were used, four in the center of the grid

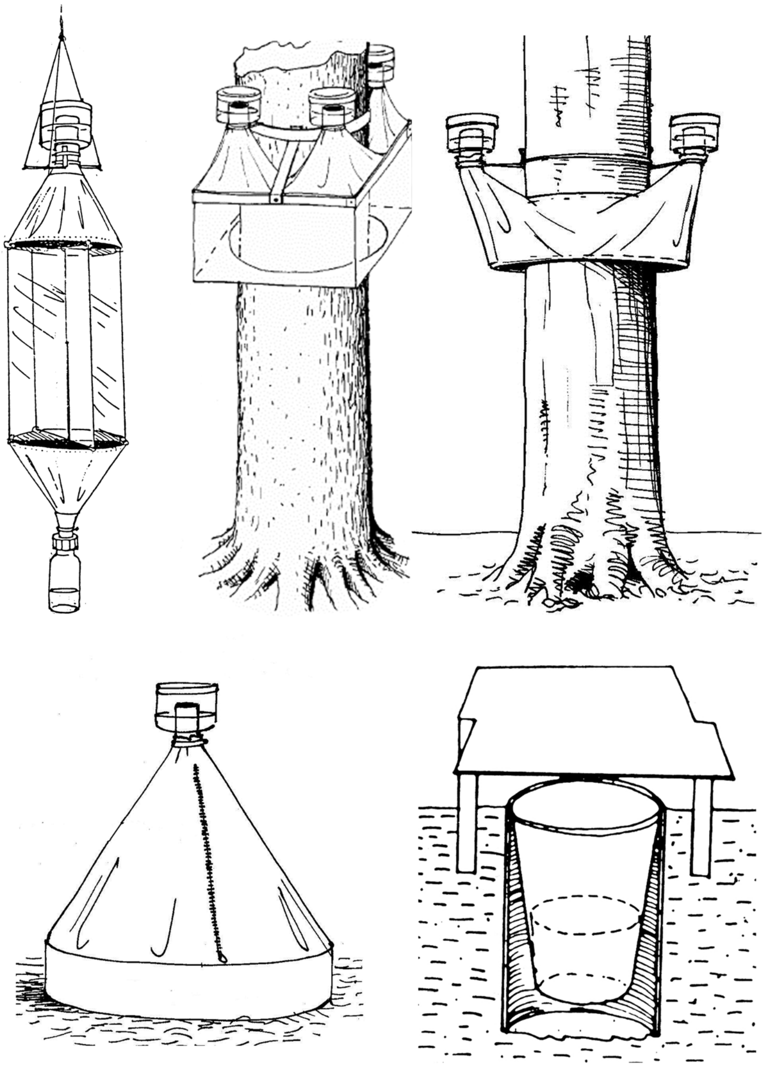


Fig. E1. Trap systems used in present study for sampling arthropods (from left to right and top to bottom): composite flight-interception trap installed in the canopy and understorey, arboreal photo eclector type "Hienheim", arboreal photo eclector type "Krumbach and Ottobeuren", ground photo eclector and pitfall trap. Illustrations were made by Ulrich Kern, Freising.

plots of the 4-ha core area plus one in another grid plot that was randomly selected. For each species of the moss and herb layer occurring inside the sampling plot, percentage coverage was determined and averaged across plots.

*Fungi.*—A fruit body survey of fungi was conducted in 1997 in Hienheim and 1999/2000 in Krumbach and Ottobeuren based on the 100 × 100 m grid plots. In Hienheim the entire stands and in Krumbach/Ottobeuren the 4-ha core area of each stand was surveyed by counting and collecting visible fruit bodies three times per year (August, September, October) and stand, standardized by time (2 h per stand). Abundance of fungi was measured as pooled class frequencies (1 = 1–3 fruit bodies; 2 = 4–9 fruit bodies; 3 = 10–99 fruit bodies; 4 = >100 fruit bodies) based on six (Ottobeuren, Krumbach) and three (Hienheim) surveys, respectively (Utschick and Helfer 2003).

Fungi were classified into ecological guilds for further analysis: (1) wood- and bark living species, (2) mycorrhiza species; (3) soil saprophytes, (4) cone and fruit living species, (5) obligate moss living species, (6) fungi living species, (7) insect parasites, and (8) myxomycete species.

*Arthropods*.—Because arthropod numbers exhibit high seasonal and annual variation (e.g., Southwood et al. 2004, Gossner 2006, 2008), we sampled arthropod communities over the entire vegetation period for at least two consecutive years, using a restricted number of stands and regions. Arthropods were sampled from 1993 to 1996 at the Hienheim region and 1999 to 2000 at the Krumbach and Ottobeuren region using five different trap types/methods (see Appendix E: Fig. E1).

(1) Pitfall traps (abbreviation: PT) (adapted from Barber 1931) consisted of a cup of 7 cm diameter and 10 cm depth inserted in a 12 cm long plastic tube, protected against rain and litter fall by a 18 × 18 cm metal sheet roof.
(2) Ground photo eclectors (abbreviation: GPE) of 1 $m^2$ ground area consisted of a plastic ring (perimeter: 3.14 m, height: 30 cm) buried half in the ground to prevent endogaeic movement of soil arthropods in or out of the trap area. At the plastic ring a black cotton tent was fixed and stabilized by bent metal rail. Arthropods were sampled by a cup trap buried in the ground inside the tent and a sampling jar with a transparent lid at top of the tent (for details see Engel 1999).
(3) Arboreal photo eclectors (abbreviation: APE) were of two different types. In Hienheim this was a box of tight plastic (see Schubert 1998), whereas in Krumbach and Ottobeuren black cotton material (see Gossner and Ammer 2006) was fixed with metal wire and brackets on tree stems at 2 m height (mean diameter: 56.2 ± 9.9 cm). Four (Hienheim) and two (Krumbach, Ottobeuren) sampling jars with a transparent lid were installed at the top of reversed funnels at opposite sides of each trap. Funnels of both trap types were erected with pieces of metal wire and traps were sealed against the stem by polyurethane foam.
(4) Composite flight interception traps (FIT) consisted of crossed transparent plastic shields (40 × 60 cm) with funnels of smooth plastic cloth attached to the bottom and to the top; at the end of both funnels, sampling jars were mounted (Gossner and Ammer 2006). They were installed at 1.5 m height (henceforth 'understorey'; abbreviation: FIT-U) and in the canopy (abbreviation: FIT-C). Canopy traps were installed by single-rope tree climbing in the estimated center of the tree crowns. The exact height of the canopy traps was measured afterwards and ranged between 16 and 33 m, depending on stand height.

To minimize tree species effect, only canopy flight-interception traps and arboreal photo eclectors that were installed in the center of beech crowns and at beech stems, respectively, were considered in the present study. Traps were installed along diagonal transects in each stand. Details on the sampling design are given in Table 1.

All four trap types were filled with 1.5% copper sulphate solution in Ottobeuren and Krumbach region and Formalin (4%) at the Hienheim region. A few drops of detergent were added to reduce the surface tension. Traps were emptied monthly from March to October. Arthropods were transferred into alcohol (70% ethanol) in the field. In the laboratory, samples were sorted into taxonomic orders. Species identification of target taxa was carried out by taxonomic specialists recruited for the project.

Yearly sums of individuals were used in the analyses.

*Birds*.—Birds were surveyed monthly from March 1999 to February 2000 in Ottobeuren and Krumbach region and from March 1997 to February 1998 at Hienheim region. Birds surveyed during the breeding season (March–June) were classified as breeding species, and birds surveyed during winter season (November–February) as overwintering species. Because several species that breed in studied forests also overwinter there, these guilds are not mutually exclusive. Birds surveyed between July and October were not assigned to a specific guild. During each survey we performed 5min point counts per grid unit (grid size of 1 ha). Abundances of birds were assessed by slightly different methods in Ottobeuren/Krumbach and Hienheim: in Ottobeuren/Krumbach as total number of individuals observed during four months and in Hienheim as pooled number of occupied grid plots during the four months (grid frequency).

## Appendix F

*Principal component analyses of different guilds within trophic level*

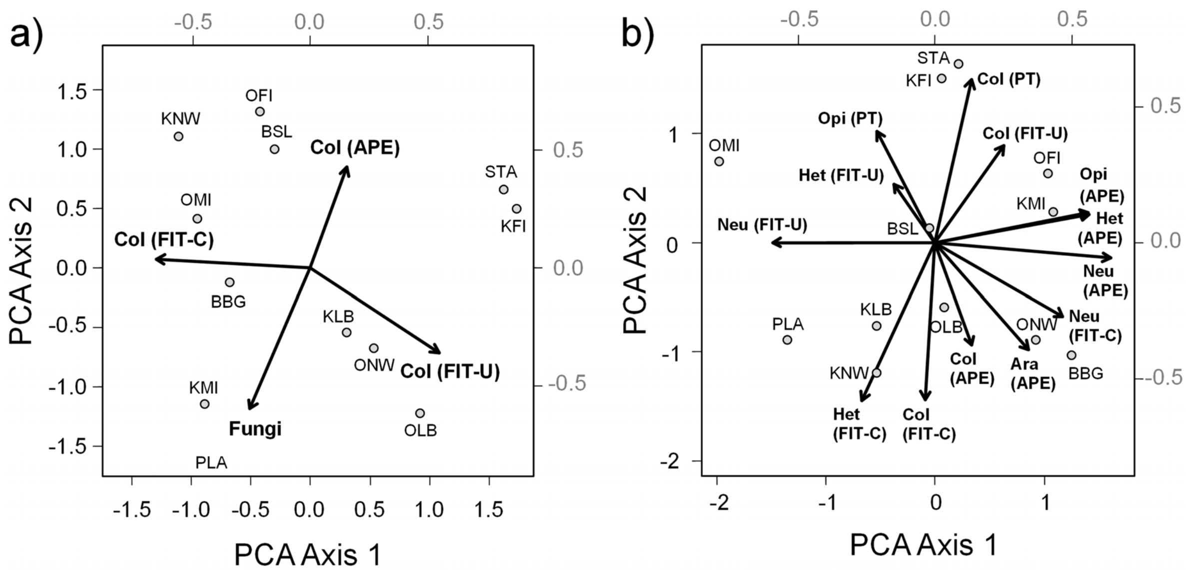



Fig. F1. Principal component analyses (PCA) of wood decomposers (a) and small predators (b). The first two PCA-axes are shown. In decomposers 71% and in small predators 55% of total variation was explained by these two axes. The position of the 12 studied forest stands in the three regions Ottobeuren (OFI, OMI, OLB, ONW), Krumbach (KFI, KMI, KLB, KNW) and Hienheim (BSL, STA, BBG, PLA) are shown. Taxa: Col = Coleoptera, Het = Heteroptera, Ara = Araneae, Opi = Opiliones, Neu = Neuropterida; Sampling method: FIT = flight-interception traps understory (U)/canopy (C), APE = arboreal photo eclectors, PT = pit fall traps.

# APPENDIX G

Table G1. Effects of naturalness, measures of management intensity, and stand structural attributes regarding dead and living wood volume (see Table 1) on the abundance of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates (Est), p-values, and $R^2$ of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.614 | 0.580 | 0.584 | 0.576 | −0.536 | −0.510 | <0.001 | 0.391 |
| p | 0.015 | 0.025 | 0.023 | 0.026 | 0.042 | 0.056 | 0.999 | 0.161 |
| $R^2$ | 0.407 | 0.352 | 0.359 | 0.345 | 0.286 | 0.249 | −0.100 | 0.106 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.093 | 0.162 | 0.190 | 0.169 | −0.153 | −0.256 | 0.178 | 0.213 |
| p | 0.751 | 0.578 | 0.513 | 0.561 | 0.600 | 0.372 | 0.540 | 0.462 |
| $R^2$ | −0.088 | −0.065 | −0.052 | −0.062 | −0.069 | −0.012 | −0.057 | −0.039 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.108 | 0.131 | 0.079 | 0.065 | 0.002 | 0.119 | 0.46 | 0.296 |
| p | 0.713 | 0.653 | 0.788 | 0.826 | 0.995 | 0.682 | 0.091 | 0.298 |
| $R^2$ | −0.084 | −0.077 | −0.092 | −0.094 | −0.100 | −0.081 | 0.185 | 0.018 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.362 | −0.455 | −0.401 | −0.404 | 0.286 | 0.238 | 0.064 | −0.382 |
| p | 0.197 | 0.095 | 0.149 | 0.146 | 0.316 | 0.409 | 0.826 | 0.172 |
| $R^2$ | 0.076 | 0.179 | 0.116 | 0.119 | 0.010 | −0.024 | −0.094 | 0.096 |
| Fungi (soil saprophytes) | | | | | | | | |
| Est | −0.646 | 0.732 | 0.752 | 0.739 | −0.569 | −0.703 | −0.347 | 0.363 |
| p | 0.009 | 0.001 | 0.001 | 0.001 | 0.028 | 0.003 | 0.219 | 0.196 |
| $R^2$ | 0.461 | 0.621 | 0.66 | 0.635 | 0.335 | 0.564 | 0.062 | 0.077 |
| Isopoda (PT) | | | | | | | | |
| Est | 0.773 | −0.770 | −0.778 | −0.789 | 0.676 | 0.712 | 0.357 | −0.461 |
| p | <0.001 | <0.001 | <0.001 | <0.001 | 0.005 | 0.002 | 0.204 | 0.091 |
| $R^2$ | 0.704 | 0.697 | 0.714 | 0.738 | 0.514 | 0.582 | 0.071 | 0.185 |
| Xylophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.156 | −0.189 | −0.159 | −0.196 | 0.203 | 0.196 | 0.504 | −0.066 |
| p | 0.593 | 0.514 | 0.585 | 0.499 | 0.483 | 0.498 | 0.060 | 0.821 |
| $R^2$ | −0.067 | −0.052 | −0.066 | −0.049 | −0.045 | −0.048 | 0.241 | −0.094 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.007 | 0.112 | 0.090 | 0.088 | 0.020 | −0.110 | −0.078 | 0.179 |
| p | 0.982 | 0.702 | 0.758 | 0.764 | 0.945 | 0.707 | 0.790 | 0.538 |
| $R^2$ | −0.100 | −0.083 | −0.089 | −0.090 | −0.099 | −0.084 | −0.092 | −0.057 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.142 | 0.196 | 0.158 | 0.156 | −0.092 | 0.035 | 0.230 | 0.091 |
| p | 0.627 | 0.499 | 0.587 | 0.591 | 0.752 | 0.905 | 0.426 | 0.755 |
| $R^2$ | −0.073 | −0.048 | −0.066 | −0.067 | −0.089 | −0.098 | −0.029 | −0.089 |
| Fungi (wood/bark species) | | | | | | | | |
| Est | 0.707 | −0.604 | −0.615 | −0.608 | 0.394 | 0.413 | 0.272 | −0.302 |
| p | 0.003 | 0.018 | 0.015 | 0.017 | 0.158 | 0.136 | 0.342 | 0.288 |
| $R^2$ | 0.573 | 0.390 | 0.409 | 0.397 | 0.108 | 0.129 | −0.001 | 0.023 |
| Predator | | | | | | | | |
| Big | | | | | | | | |
| Birds (breeding) | | | | | | | | |
| Est | 0.660 | −0.584 | −0.596 | −0.620 | 0.358 | 0.584 | 0.515 | −0.300 |
| p | 0.007 | 0.023 | 0.020 | 0.014 | 0.202 | 0.023 | 0.054 | 0.292 |
| $R^2$ | 0.486 | 0.358 | 0.377 | 0.417 | 0.073 | 0.359 | 0.256 | 0.021 |
| Birds (overwintering) | | | | | | | | |
| Est | 0.475 | −0.331 | −0.336 | −0.374 | 0.412 | 0.451 | 0.695 | −0.125 |
| p | 0.080 | 0.242 | 0.235 | 0.182 | 0.137 | 0.099 | 0.003 | 0.669 |
| $R^2$ | 0.203 | 0.047 | 0.051 | 0.088 | 0.128 | 0.174 | 0.550 | −0.079 |

Table G1. Continued.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | −0.168 | 0.103 | 0.132 | 0.095 | −0.018 | −0.084 | 0.162 | 0.158 |
| p | 0.563 | 0.724 | 0.650 | 0.746 | 0.951 | 0.774 | 0.579 | 0.587 |
| $R^2$ | −0.062 | −0.086 | −0.076 | −0.088 | −0.100 | −0.091 | −0.065 | −0.066 |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.016 | −0.167 | −0.142 | −0.124 | −0.075 | 0.068 | −0.028 | −0.169 |
| p | 0.957 | 0.565 | 0.625 | 0.671 | 0.797 | 0.815 | 0.924 | 0.561 |
| $R^2$ | −0.100 | −0.062 | −0.073 | −0.079 | −0.092 | −0.094 | −0.099 | −0.062 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.661 | −0.545 | −0.569 | −0.577 | 0.285 | 0.472 | 0.341 | −0.307 |
| p | 0.007 | 0.038 | 0.028 | 0.026 | 0.318 | 0.082 | 0.228 | 0.281 |
| $R^2$ | 0.488 | 0.299 | 0.336 | 0.347 | 0.009 | 0.200 | 0.056 | 0.026 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.471 | 0.579 | 0.537 | 0.523 | −0.211 | −0.188 | −0.045 | 0.311 |
| p | 0.083 | 0.025 | 0.042 | 0.049 | 0.465 | 0.518 | 0.878 | 0.274 |
| $R^2$ | 0.198 | 0.351 | 0.287 | 0.268 | −0.040 | −0.053 | −0.097 | 0.030 |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.029 | −0.113 | −0.077 | −0.051 | 0.101 | −0.026 | −0.186 | −0.190 |
| p | 0.920 | 0.698 | 0.794 | 0.862 | 0.729 | 0.929 | 0.523 | 0.513 |
| $R^2$ | −0.099 | −0.083 | −0.092 | −0.097 | −0.086 | −0.099 | −0.054 | −0.052 |
| Heteroptera (APE) | | | | | | | | |
| Est | −0.243 | 0.251 | 0.256 | 0.241 | −0.480 | −0.346 | 0.170 | 0.227 |
| p | 0.399 | 0.383 | 0.373 | 0.403 | 0.076 | 0.220 | 0.558 | 0.432 |
| $R^2$ | −0.021 | −0.016 | −0.012 | −0.022 | 0.210 | 0.061 | −0.061 | −0.031 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | 0.634 | −0.655 | −0.665 | −0.647 | 0.660 | 0.642 | 0.081 | −0.444 |
| p | 0.011 | 0.008 | 0.006 | 0.009 | 0.007 | 0.010 | 0.783 | 0.105 |
| $R^2$ | 0.440 | 0.476 | 0.494 | 0.463 | 0.485 | 0.453 | −0.091 | 0.165 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | −0.094 | 0.046 | 0.061 | 0.037 | 0.120 | 0.145 | −0.149 | −0.131 |
| p | 0.748 | 0.876 | 0.836 | 0.898 | 0.681 | 0.620 | 0.609 | 0.652 |
| $R^2$ | −0.088 | −0.097 | −0.095 | −0.098 | −0.081 | −0.072 | −0.070 | −0.077 |
| Neuropterida (APE) | | | | | | | | |
| Est | −0.334 | 0.249 | 0.245 | 0.258 | −0.509 | −0.368 | −0.153 | 0.194 |
| p | 0.237 | 0.386 | 0.394 | 0.369 | 0.057 | 0.190 | 0.600 | 0.504 |
| $R^2$ | 0.050 | −0.016 | −0.019 | −0.011 | 0.249 | 0.082 | −0.069 | −0.050 |
| Neuropterida (FIT-C) | | | | | | | | |
| Est | 0.369 | −0.356 | −0.32 | −0.323 | 0.015 | 0.158 | 0.033 | −0.359 |
| p | 0.187 | 0.206 | 0.259 | 0.255 | 0.961 | 0.586 | 0.911 | 0.202 |
| $R^2$ | 0.084 | 0.070 | 0.038 | 0.040 | −0.100 | −0.066 | −0.099 | 0.073 |
| Neuropterida (FIT-U) | | | | | | | | |
| Est | 0.097 | −0.025 | −0.026 | −0.043 | 0.349 | 0.280 | −0.06 | −0.172 |
| p | 0.741 | 0.933 | 0.929 | 0.884 | 0.215 | 0.328 | 0.839 | 0.555 |
| $R^2$ | −0.087 | −0.099 | −0.099 | −0.098 | 0.064 | 0.005 | −0.095 | −0.06 |
| Opiliones (APE) | | | | | | | | |
| Est | 0.131 | −0.093 | −0.065 | −0.095 | 0.031 | 0.118 | 0.195 | −0.219 |
| p | 0.652 | 0.752 | 0.826 | 0.745 | 0.915 | 0.686 | 0.501 | 0.449 |
| $R^2$ | −0.077 | −0.088 | −0.094 | −0.088 | −0.099 | −0.081 | −0.049 | −0.036 |
| Opiliones (PT) | | | | | | | | |
| Est | −0.350 | 0.359 | 0.373 | 0.358 | −0.139 | −0.239 | −0.094 | 0.058 |
| p | 0.215 | 0.202 | 0.182 | 0.203 | 0.634 | 0.407 | 0.748 | 0.843 |
| $R^2$ | 0.064 | 0.073 | 0.087 | 0.072 | −0.074 | −0.023 | −0.088 | −0.095 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.142 | 0.071 | 0.087 | 0.063 | −0.101 | 0.001 | 0.135 | −0.018 |
| p | 0.627 | 0.807 | 0.767 | 0.830 | 0.729 | 0.996 | 0.644 | 0.950 |
| $R^2$ | −0.073 | −0.093 | −0.090 | −0.095 | −0.086 | −0.100 | −0.076 | −0.100 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.498 | −0.413 | −0.427 | −0.41 | 0.096 | 0.127 | 0.099 | −0.171 |
| p | 0.064 | 0.135 | 0.121 | 0.139 | 0.744 | 0.662 | 0.735 | 0.556 |
| $R^2$ | 0.234 | 0.130 | 0.146 | 0.126 | −0.088 | −0.078 | −0.087 | −0.061 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.102 | 0.243 | 0.230 | 0.215 | −0.173 | −0.021 | 0.027 | −0.115 |
| p | 0.727 | 0.399 | 0.425 | 0.457 | 0.551 | 0.944 | 0.927 | 0.693 |
| $R^2$ | −0.086 | −0.021 | −0.029 | −0.038 | −0.06 | −0.099 | −0.099 | −0.082 |

Table G1. Continued.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Coleoptera (GPE) | | | | | | | | |
| Est | −0.152 | 0.182 | 0.193 | 0.223 | −0.431 | −0.414 | −0.490 | −0.089 |
| p | 0.617 | 0.549 | 0.523 | 0.460 | 0.133 | 0.151 | 0.081 | 0.770 |
| $R^2$ | −0.079 | −0.065 | −0.059 | −0.042 | 0.147 | 0.127 | 0.222 | −0.100 |
| Sucker | | | | | | | | |
| Heteroptera (APE) | | | | | | | | |
| Est | 0.526 | −0.603 | −0.563 | −0.563 | 0.403 | 0.359 | 0.061 | −0.425 |
| p | 0.047 | 0.018 | 0.031 | 0.031 | 0.146 | 0.201 | 0.835 | 0.124 |
| $R^2$ | 0.272 | 0.388 | 0.326 | 0.326 | 0.119 | 0.074 | −0.095 | 0.143 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | 0.359 | −0.507 | −0.490 | −0.455 | 0.098 | 0.130 | −0.172 | −0.231 |
| p | 0.202 | 0.058 | 0.069 | 0.096 | 0.737 | 0.656 | 0.554 | 0.424 |
| $R^2$ | 0.073 | 0.246 | 0.223 | 0.178 | −0.087 | −0.077 | −0.060 | −0.028 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | 0.422 | −0.368 | −0.386 | −0.408 | 0.509 | 0.490 | 0.175 | −0.236 |
| p | 0.126 | 0.189 | 0.167 | 0.141 | 0.057 | 0.069 | 0.547 | 0.412 |
| $R^2$ | 0.140 | 0.082 | 0.100 | 0.124 | 0.248 | 0.222 | −0.059 | −0.025 |
| Symbiont | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | |
| Est | −0.412 | 0.309 | 0.337 | 0.369 | −0.423 | −0.568 | −0.569 | 0.215 |
| p | 0.137 | 0.278 | 0.233 | 0.188 | 0.126 | 0.029 | 0.029 | 0.457 |
| $R^2$ | 0.128 | 0.028 | 0.052 | 0.083 | 0.140 | 0.334 | 0.335 | −0.038 |
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | 0.291 | −0.361 | −0.347 | −0.357 | 0.284 | 0.317 | 0.074 | −0.326 |
| p | 0.308 | 0.198 | 0.219 | 0.204 | 0.321 | 0.264 | 0.800 | 0.250 |
| $R^2$ | 0.014 | 0.075 | 0.062 | 0.071 | 0.008 | 0.035 | −0.093 | 0.043 |
| Mosses | | | | | | | | |
| Est | −0.663 | 0.692 | 0.688 | 0.693 | −0.506 | −0.675 | −0.197 | 0.549 |
| p | 0.007 | 0.004 | 0.004 | 0.004 | 0.058 | 0.005 | 0.496 | 0.036 |
| $R^2$ | 0.491 | 0.543 | 0.537 | 0.546 | 0.245 | 0.512 | −0.048 | 0.305 |

Table G2. Effects of stand structural attributes except wood volume (see Table 1) on the abundance of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates (Est), p-values, and $R^2$ of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.494 | 0.275 | −0.582 | −0.683 | 0.671 | −0.503 | −0.660 | 0.133 |
| p | 0.066 | 0.337 | 0.024 | 0.005 | 0.006 | 0.061 | 0.007 | 0.649 |
| $R^2$ | 0.228 | 0.002 | 0.355 | 0.527 | 0.505 | 0.240 | 0.486 | −0.076 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.335 | 0.276 | 0.046 | −0.239 | 0.205 | −0.019 | −0.027 | −0.281 |
| p | 0.236 | 0.335 | 0.875 | 0.407 | 0.479 | 0.948 | 0.927 | 0.326 |
| $R^2$ | 0.051 | 0.002 | −0.097 | −0.023 | −0.044 | −0.100 | −0.099 | 0.006 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.254 | −0.101 | −0.591 | −0.445 | 0.216 | −0.232 | −0.349 | −0.151 |
| p | 0.376 | 0.729 | 0.021 | 0.105 | 0.454 | 0.420 | 0.215 | 0.604 |
| $R^2$ | −0.013 | −0.086 | 0.369 | 0.166 | −0.037 | −0.027 | 0.064 | −0.069 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.363 | −0.131 | 0.286 | 0.223 | −0.380 | 0.397 | 0.262 | −0.116 |
| p | 0.195 | 0.653 | 0.317 | 0.440 | 0.174 | 0.153 | 0.361 | 0.692 |
| $R^2$ | 0.078 | −0.077 | 0.01 | −0.033 | 0.094 | 0.112 | −0.008 | −0.082 |
| Fungi (soil saprophytes) | | | | | | | | |
| Est | 0.521 | 0.402 | −0.055 | −0.347 | 0.698 | −0.426 | −0.346 | 0.277 |
| p | 0.05 | 0.148 | 0.852 | 0.219 | 0.003 | 0.122 | 0.219 | 0.334 |
| $R^2$ | 0.264 | 0.117 | −0.096 | 0.061 | 0.555 | 0.144 | 0.061 | 0.003 |
| Isopoda (PT) | | | | | | | | |
| Est | −0.587 | −0.498 | 0.446 | 0.424 | −0.700 | 0.605 | 0.496 | −0.369 |
| p | 0.022 | 0.063 | 0.103 | 0.125 | 0.003 | 0.017 | 0.065 | 0.188 |
| $R^2$ | 0.363 | 0.234 | 0.167 | 0.141 | 0.559 | 0.392 | 0.231 | 0.083 |
| Xylophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.003 | −0.147 | −0.174 | −0.277 | <0.001 | 0.187 | −0.096 | −0.249 |
| p | 0.991 | 0.614 | 0.549 | 0.334 | 0.999 | 0.519 | 0.743 | 0.387 |
| $R^2$ | −0.100 | −0.071 | −0.059 | 0.003 | −0.100 | −0.053 | −0.088 | −0.017 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.196 | 0.151 | 0.288 | 0.031 | 0.027 | 0.027 | 0.216 | −0.222 |
| p | 0.499 | 0.603 | 0.314 | 0.915 | 0.926 | 0.926 | 0.456 | 0.443 |
| $R^2$ | −0.048 | −0.069 | 0.011 | −0.099 | −0.099 | −0.099 | −0.038 | −0.034 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.017 | −0.304 | −0.473 | −0.328 | 0.253 | −0.38 | −0.513 | −0.024 |
| p | 0.954 | 0.286 | 0.081 | 0.247 | 0.378 | 0.174 | 0.054 | 0.936 |
| $R^2$ | −0.100 | 0.024 | 0.200 | 0.044 | −0.014 | 0.094 | 0.254 | −0.099 |
| Fungi (wood/bark species) | | | | | | | | |
| Est | −0.435 | −0.286 | 0.472 | 0.435 | −0.598 | 0.362 | 0.412 | −0.349 |
| p | 0.114 | 0.317 | 0.082 | 0.113 | 0.019 | 0.197 | 0.137 | 0.215 |
| $R^2$ | 0.154 | 0.010 | 0.200 | 0.155 | 0.381 | 0.076 | 0.128 | 0.064 |
| Predator | | | | | | | | |
| Big | | | | | | | | |
| Birds (breeding) | | | | | | | | |
| Est | −0.404 | −0.348 | 0.334 | 0.510 | −0.535 | 0.450 | 0.389 | −0.259 |
| p | 0.146 | 0.216 | 0.238 | 0.056 | 0.043 | 0.100 | 0.163 | 0.367 |
| $R^2$ | 0.119 | 0.063 | 0.050 | 0.250 | 0.285 | 0.172 | 0.103 | −0.010 |
| Birds (overwintering) | | | | | | | | |
| Est | −0.156 | −0.382 | 0.039 | 0.092 | −0.234 | 0.233 | 0.134 | −0.381 |
| p | 0.592 | 0.171 | 0.894 | 0.752 | 0.418 | 0.418 | 0.645 | 0.173 |
| $R^2$ | −0.067 | 0.097 | −0.098 | −0.089 | −0.027 | −0.027 | −0.076 | 0.095 |

Table G2. Continued.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | 0.305 | 0.245 | −0.072 | −0.260 | 0.202 | 0.170 | 0.042 | −0.036 |
| p | 0.284 | 0.395 | 0.806 | 0.365 | 0.486 | 0.558 | 0.885 | 0.903 |
| $R^2$ | 0.025 | −0.020 | −0.093 | −0.009 | −0.045 | −0.061 | −0.098 | −0.098 |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.191 | −0.010 | −0.219 | 0.066 | −0.135 | 0.001 | −0.111 | 0.158 |
| p | 0.511 | 0.973 | 0.448 | 0.821 | 0.642 | 0.998 | 0.704 | 0.588 |
| $R^2$ | −0.051 | −0.100 | −0.035 | −0.094 | −0.075 | −0.100 | −0.083 | −0.067 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.451 | −0.385 | 0.506 | 0.449 | −0.531 | 0.352 | 0.316 | −0.491 |
| p | 0.099 | 0.168 | 0.058 | 0.100 | 0.045 | 0.211 | 0.265 | 0.069 |
| $R^2$ | 0.173 | 0.099 | 0.245 | 0.171 | 0.28 | 0.067 | 0.035 | 0.224 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.330 | −0.051 | −0.357 | −0.252 | 0.514 | −0.440 | −0.361 | 0.195 |
| p | 0.244 | 0.863 | 0.204 | 0.381 | 0.054 | 0.109 | 0.199 | 0.500 |
| $R^2$ | 0.046 | −0.097 | 0.072 | −0.015 | 0.255 | 0.160 | 0.075 | −0.049 |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.184 | −0.038 | −0.048 | 0.024 | −0.122 | −0.013 | −0.013 | 0.105 |
| p | 0.526 | 0.897 | 0.869 | 0.936 | 0.676 | 0.966 | 0.964 | 0.721 |
| $R^2$ | −0.055 | −0.098 | −0.097 | −0.099 | −0.080 | −0.100 | −0.100 | −0.085 |
| Heteroptera (APE) | | | | | | | | |
| Est | 0.269 | 0.209 | −0.298 | −0.387 | 0.391 | −0.269 | −0.453 | 0.151 |
| p | 0.349 | 0.469 | 0.296 | 0.165 | 0.161 | 0.348 | 0.097 | 0.604 |
| $R^2$ | −0.003 | −0.041 | 0.019 | 0.101 | 0.105 | −0.003 | 0.176 | −0.069 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | −0.582 | −0.427 | 0.341 | 0.565 | −0.717 | 0.452 | 0.536 | −0.166 |
| p | 0.024 | 0.122 | 0.228 | 0.030 | 0.002 | 0.098 | 0.043 | 0.569 |
| $R^2$ | 0.355 | 0.145 | 0.056 | 0.328 | 0.592 | 0.175 | 0.286 | −0.063 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | −0.068 | −0.080 | 0.208 | 0.223 | −0.003 | 0.218 | 0.207 | 0.067 |
| p | 0.816 | 0.783 | 0.473 | 0.439 | 0.991 | 0.451 | 0.474 | 0.819 |
| $R^2$ | −0.094 | −0.091 | −0.042 | −0.033 | −0.1 | −0.036 | −0.042 | −0.094 |
| Neuropterida (APE) | | | | | | | | |
| Est | 0.200 | 0.264 | −0.28 | −0.326 | 0.308 | −0.296 | −0.415 | 0.176 |
| p | 0.490 | 0.357 | 0.327 | 0.250 | 0.278 | 0.299 | 0.134 | 0.544 |
| $R^2$ | −0.046 | −0.006 | 0.006 | 0.043 | 0.028 | 0.018 | 0.132 | −0.058 |
| Neuropterida (FIT-C) | | | | | | | | |
| Est | −0.384 | −0.134 | 0.487 | 0.447 | −0.351 | 0.284 | 0.224 | −0.199 |
| p | 0.169 | 0.645 | 0.071 | 0.103 | 0.212 | 0.320 | 0.438 | 0.491 |
| $R^2$ | 0.098 | −0.076 | 0.218 | 0.168 | 0.066 | 0.009 | −0.033 | −0.047 |
| Neuropterida (FIT-U) | | | | | | | | |
| Est | −0.154 | −0.289 | 0.366 | 0.287 | −0.142 | 0.207 | 0.302 | −0.338 |
| p | 0.598 | 0.312 | 0.191 | 0.315 | 0.625 | 0.474 | 0.288 | 0.232 |
| $R^2$ | −0.068 | 0.012 | 0.081 | 0.011 | −0.073 | −0.042 | 0.023 | 0.053 |
| Opiliones (APE) | | | | | | | | |
| Est | −0.191 | −0.259 | 0.207 | 0.043 | −0.005 | 0.133 | −0.072 | −0.231 |
| p | 0.510 | 0.366 | 0.475 | 0.884 | 0.986 | 0.650 | 0.807 | 0.423 |
| $R^2$ | −0.051 | −0.010 | −0.043 | −0.098 | −0.100 | −0.076 | −0.093 | −0.028 |
| Opiliones (PT) | | | | | | | | |
| Est | 0.123 | −0.072 | −0.254 | −0.336 | 0.432 | −0.264 | −0.383 | 0.335 |
| p | 0.673 | 0.807 | 0.376 | 0.235 | 0.116 | 0.358 | 0.170 | 0.236 |
| $R^2$ | −0.080 | −0.093 | −0.013 | 0.052 | 0.151 | −0.007 | 0.097 | 0.051 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.030 | −0.073 | −0.167 | −0.248 | 0.185 | −0.006 | −0.254 | −0.062 |
| p | 0.917 | 0.802 | 0.565 | 0.389 | 0.525 | 0.984 | 0.377 | 0.834 |
| $R^2$ | −0.099 | −0.093 | −0.062 | −0.017 | −0.054 | −0.100 | −0.014 | −0.095 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.292 | −0.105 | 0.415 | 0.236 | −0.396 | 0.176 | 0.202 | −0.300 |
| p | 0.307 | 0.721 | 0.133 | 0.413 | 0.154 | 0.545 | 0.485 | 0.292 |
| $R^2$ | 0.014 | −0.085 | 0.132 | −0.025 | 0.111 | −0.059 | −0.045 | 0.021 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.165 | −0.387 | −0.03 | 0.075 | 0.245 | −0.292 | −0.361 | 0.185 |
| p | 0.570 | 0.166 | 0.918 | 0.798 | 0.395 | 0.307 | 0.199 | 0.523 |
| $R^2$ | −0.063 | 0.101 | −0.099 | −0.092 | −0.02 | 0.014 | 0.075 | −0.054 |

Table G2. Continued.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Coleoptera (GPE) | | | | | | | | |
| Est | −0.136 | 0.081 | 0.283 | 0.13 | 0.131 | −0.245 | −0.198 | 0.248 |
| p | 0.656 | 0.790 | 0.343 | 0.670 | 0.666 | 0.416 | 0.512 | 0.409 |
| $R^2$ | −0.086 | −0.102 | <0.001 | −0.088 | −0.087 | −0.028 | −0.057 | −0.026 |
| Sucker | | | | | | | | |
| Heteroptera (APE) | | | | | | | | |
| Est | −0.451 | −0.145 | 0.419 | 0.424 | −0.550 | 0.529 | 0.470 | −0.008 |
| p | 0.099 | 0.619 | 0.129 | 0.124 | 0.036 | 0.046 | 0.083 | 0.980 |
| $R^2$ | 0.174 | −0.072 | 0.136 | 0.142 | 0.307 | 0.276 | 0.197 | −0.100 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | −0.293 | 0.138 | 0.334 | 0.26 | −0.518 | 0.344 | 0.343 | −0.217 |
| p | 0.304 | 0.637 | 0.237 | 0.364 | 0.052 | 0.223 | 0.224 | 0.452 |
| $R^2$ | 0.016 | −0.075 | 0.050 | −0.009 | 0.260 | 0.059 | 0.058 | −0.037 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | −0.291 | −0.320 | 0.381 | 0.387 | −0.379 | 0.437 | 0.467 | −0.108 |
| p | 0.308 | 0.259 | 0.172 | 0.165 | 0.176 | 0.112 | 0.085 | 0.711 |
| $R^2$ | 0.014 | 0.038 | 0.095 | 0.101 | 0.093 | 0.156 | 0.194 | −0.084 |
| Symbiont | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | |
| Est | 0.306 | 0.604 | −0.034 | −0.082 | 0.232 | −0.187 | −0.012 | 0.475 |
| p | 0.282 | 0.018 | 0.907 | 0.779 | 0.421 | 0.518 | 0.967 | 0.079 |
| $R^2$ | 0.026 | 0.390 | −0.098 | −0.091 | −0.028 | −0.053 | −0.100 | 0.204 |
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | −0.367 | −0.274 | 0.167 | 0.184 | −0.274 | 0.313 | 0.153 | 0.086 |
| p | 0.190 | 0.338 | 0.566 | 0.527 | 0.339 | 0.271 | 0.600 | 0.768 |
| $R^2$ | 0.081 | 0.001 | −0.062 | −0.055 | 0.001 | 0.032 | −0.069 | −0.090 |
| Mosses | | | | | | | | |
| Est | 0.677 | 0.501 | −0.426 | −0.635 | 0.681 | −0.525 | −0.444 | 0.149 |
| p | 0.005 | 0.062 | 0.122 | 0.011 | 0.005 | 0.048 | 0.105 | 0.610 |
| $R^2$ | 0.516 | 0.237 | 0.144 | 0.441 | 0.523 | 0.271 | 0.165 | −0.07 |

Table G3. Effects of stand structural complexity indices (see Appendix A: Table A3) on the abundance of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates (Est), p-values, and $R^2$ of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | | | | | |
| Mycetophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | −0.742 | −0.679 | −0.569 | −0.722 | −0.691 | −0.628 | −0.660 | −0.573 | −0.727 | −0.208 | −0.719 | −0.635 |
| p | 0.001 | 0.005 | 0.028 | 0.002 | 0.004 | 0.012 | 0.007 | 0.027 | 0.002 | 0.473 | 0.002 | 0.011 |
| $R^2$ | 0.641 | 0.520 | 0.336 | 0.601 | 0.542 | 0.430 | 0.485 | 0.341 | 0.611 | −0.042 | 0.594 | 0.442 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | −0.212 | −0.190 | −0.138 | −0.246 | −0.176 | −0.158 | −0.222 | −0.110 | −0.235 | 0.019 | −0.276 | −0.114 |
| p | 0.464 | 0.511 | 0.637 | 0.392 | 0.544 | 0.588 | 0.442 | 0.706 | 0.415 | 0.947 | 0.336 | 0.697 |
| $R^2$ | −0.040 | −0.051 | −0.075 | −0.018 | −0.058 | −0.067 | −0.034 | −0.084 | −0.026 | −0.099 | 0.002 | −0.083 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.209 | −0.153 | 0.007 | −0.277 | −0.192 | −0.070 | −0.154 | −0.017 | −0.330 | 0.370 | −0.327 | −0.134 |
| p | 0.471 | 0.599 | 0.981 | 0.334 | 0.508 | 0.811 | 0.596 | 0.954 | 0.244 | 0.187 | 0.249 | 0.647 |
| $R^2$ | −0.041 | −0.069 | −0.100 | 0.003 | −0.051 | −0.093 | −0.068 | −0.100 | 0.046 | 0.084 | 0.043 | −0.076 |
| Saprophage | | | | | | | | | | | | |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | 0.300 | 0.334 | 0.333 | 0.339 | 0.342 | 0.255 | 0.363 | 0.348 | 0.342 | 0.142 | 0.257 | 0.246 |
| p | 0.293 | 0.237 | 0.239 | 0.229 | 0.226 | 0.376 | 0.196 | 0.217 | 0.225 | 0.627 | 0.371 | 0.392 |
| $R^2$ | 0.021 | 0.050 | 0.049 | 0.055 | 0.057 | −0.013 | 0.077 | 0.063 | 0.057 | −0.073 | −0.011 | −0.018 |
| Fungi (soil saprophytes) | | | | | | | | | | | | |
| Est | −0.644 | −0.681 | −0.728 | −0.638 | −0.663 | −0.603 | −0.722 | −0.722 | −0.602 | −0.528 | −0.504 | −0.533 |
| p | 0.009 | 0.005 | 0.002 | 0.010 | 0.007 | 0.018 | 0.002 | 0.002 | 0.018 | 0.046 | 0.060 | 0.044 |
| $R^2$ | 0.458 | 0.524 | 0.613 | 0.447 | 0.491 | 0.388 | 0.600 | 0.601 | 0.387 | 0.275 | 0.241 | 0.282 |
| Isopoda (PT) | | | | | | | | | | | | |
| Est | 0.675 | 0.714 | 0.735 | 0.670 | 0.699 | 0.665 | 0.725 | 0.728 | 0.636 | 0.539 | 0.570 | 0.611 |
| p | 0.005 | 0.002 | 0.001 | 0.006 | 0.003 | 0.006 | 0.002 | 0.002 | 0.011 | 0.041 | 0.028 | 0.016 |
| $R^2$ | 0.512 | 0.584 | 0.626 | 0.503 | 0.556 | 0.495 | 0.608 | 0.613 | 0.444 | 0.291 | 0.336 | 0.402 |
| Xylophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | −0.042 | 0.045 | 0.188 | −0.077 | 0.021 | 0.092 | 0.040 | 0.183 | −0.118 | 0.432 | −0.165 | 0.049 |
| p | 0.887 | 0.877 | 0.517 | 0.793 | 0.943 | 0.754 | 0.891 | 0.527 | 0.686 | 0.117 | 0.570 | 0.867 |
| $R^2$ | −0.098 | −0.097 | −0.052 | −0.092 | −0.099 | −0.089 | −0.098 | −0.055 | −0.081 | 0.150 | −0.063 | −0.097 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.009 | −0.037 | −0.063 | −0.020 | −0.025 | −0.044 | −0.045 | −0.052 | −0.004 | −0.099 | −0.009 | −0.018 |
| p | 0.976 | 0.900 | 0.830 | 0.946 | 0.933 | 0.881 | 0.878 | 0.860 | 0.988 | 0.734 | 0.977 | 0.950 |
| $R^2$ | −0.100 | −0.098 | −0.095 | −0.099 | −0.099 | −0.097 | −0.097 | −0.096 | −0.100 | −0.087 | −0.100 | −0.100 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.311 | −0.197 | −0.104 | −0.266 | −0.228 | −0.117 | −0.202 | −0.132 | −0.304 | 0.175 | −0.257 | −0.165 |
| p | 0.274 | 0.497 | 0.721 | 0.353 | 0.429 | 0.688 | 0.485 | 0.650 | 0.285 | 0.548 | 0.370 | 0.570 |
| $R^2$ | 0.030 | −0.048 | −0.085 | −0.005 | −0.030 | −0.081 | −0.045 | −0.076 | 0.025 | −0.059 | −0.011 | −0.063 |
| Fungi (wood/ bark species) | | | | | | | | | | | | |
| Est | 0.578 | 0.601 | 0.583 | 0.572 | 0.618 | 0.552 | 0.579 | 0.610 | 0.575 | 0.358 | 0.486 | 0.570 |
| p | 0.025 | 0.018 | 0.024 | 0.027 | 0.014 | 0.035 | 0.025 | 0.016 | 0.026 | 0.203 | 0.072 | 0.028 |
| $R^2$ | 0.349 | 0.386 | 0.356 | 0.340 | 0.413 | 0.309 | 0.351 | 0.400 | 0.344 | 0.072 | 0.217 | 0.337 |
| Predator | | | | | | | | | | | | |
| Big Birds (breeding) | | | | | | | | | | | | |
| Est | 0.664 | 0.674 | 0.643 | 0.589 | 0.673 | 0.766 | 0.563 | 0.645 | 0.566 | 0.597 | 0.601 | 0.787 |
| p | 0.007 | 0.005 | 0.010 | 0.022 | 0.006 | 0.001 | 0.031 | 0.009 | 0.030 | 0.019 | 0.019 | 0.000 |
| $R^2$ | 0.493 | 0.510 | 0.455 | 0.366 | 0.509 | 0.688 | 0.326 | 0.459 | 0.330 | 0.380 | 0.385 | 0.734 |

Table G3. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Birds (overwintering) | | | | | | | | | | | | |
| Est | 0.320 | 0.384 | 0.459 | 0.236 | 0.365 | 0.515 | 0.286 | 0.453 | 0.191 | 0.669 | 0.217 | 0.509 |
| p | 0.259 | 0.169 | 0.093 | 0.413 | 0.193 | 0.053 | 0.317 | 0.097 | 0.509 | 0.006 | 0.453 | 0.057 |
| $R^2$ | 0.038 | 0.098 | 0.183 | −0.025 | 0.079 | 0.256 | 0.010 | 0.176 | −0.051 | 0.502 | −0.037 | 0.248 |
| Small | | | | | | | | | | | | |
| Araneae (APE) | | | | | | | | | | | | |
| Est | −0.143 | −0.177 | −0.110 | −0.228 | −0.187 | −0.133 | −0.184 | −0.114 | −0.242 | 0.078 | −0.239 | −0.144 |
| p | 0.624 | 0.543 | 0.707 | 0.430 | 0.519 | 0.647 | 0.526 | 0.698 | 0.400 | 0.789 | 0.406 | 0.622 |
| $R^2$ | −0.073 | −0.058 | −0.084 | −0.030 | −0.053 | −0.076 | −0.054 | −0.083 | −0.021 | −0.092 | −0.023 | −0.072 |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.071 | 0.100 | 0.100 | 0.114 | 0.103 | 0.053 | 0.126 | 0.105 | 0.116 | 0.008 | 0.076 | 0.045 |
| p | 0.809 | 0.731 | 0.732 | 0.697 | 0.724 | 0.856 | 0.666 | 0.718 | 0.690 | 0.977 | 0.796 | 0.878 |
| $R^2$ | −0.093 | −0.086 | −0.086 | −0.083 | −0.086 | −0.096 | −0.079 | −0.085 | −0.082 | −0.100 | −0.092 | −0.097 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.517 | 0.594 | 0.567 | 0.547 | 0.600 | 0.610 | 0.536 | 0.578 | 0.537 | 0.430 | 0.516 | 0.625 |
| p | 0.052 | 0.020 | 0.029 | 0.037 | 0.019 | 0.016 | 0.042 | 0.025 | 0.042 | 0.118 | 0.053 | 0.013 |
| $R^2$ | 0.260 | 0.374 | 0.332 | 0.302 | 0.384 | 0.400 | 0.287 | 0.349 | 0.288 | 0.149 | 0.257 | 0.425 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.396 | −0.406 | −0.413 | −0.421 | −0.431 | −0.253 | −0.463 | −0.455 | −0.442 | −0.108 | −0.265 | −0.262 |
| p | 0.155 | 0.143 | 0.135 | 0.128 | 0.117 | 0.379 | 0.089 | 0.096 | 0.107 | 0.712 | 0.356 | 0.362 |
| $R^2$ | 0.111 | 0.122 | 0.130 | 0.138 | 0.150 | −0.014 | 0.188 | 0.178 | 0.162 | −0.084 | −0.006 | −0.008 |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | 0.006 | 0.028 | 0.026 | 0.076 | 0.036 | −0.077 | 0.095 | 0.036 | 0.089 | −0.140 | 0.011 | −0.091 |
| p | 0.983 | 0.923 | 0.930 | 0.795 | 0.902 | 0.792 | 0.745 | 0.901 | 0.760 | 0.631 | 0.970 | 0.756 |
| $R^2$ | −0.100 | −0.099 | −0.099 | −0.092 | −0.098 | −0.092 | −0.088 | −0.098 | −0.089 | −0.074 | −0.100 | −0.089 |
| Heteroptera (APE) | | | | | | | | | | | | |
| Est | −0.397 | −0.359 | −0.288 | −0.424 | −0.353 | −0.292 | −0.394 | −0.272 | −0.419 | −0.022 | −0.425 | −0.256 |
| p | 0.153 | 0.202 | 0.312 | 0.125 | 0.210 | 0.306 | 0.157 | 0.343 | 0.129 | 0.940 | 0.123 | 0.372 |
| $R^2$ | 0.112 | 0.073 | 0.012 | 0.141 | 0.068 | 0.015 | 0.109 | −0.001 | 0.136 | −0.099 | 0.143 | −0.012 |
| Heteroptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.714 | 0.699 | 0.650 | 0.723 | 0.693 | 0.617 | 0.725 | 0.642 | 0.707 | 0.318 | 0.663 | 0.574 |
| p | 0.002 | 0.003 | 0.008 | 0.002 | 0.004 | 0.014 | 0.002 | 0.010 | 0.003 | 0.263 | 0.007 | 0.027 |
| $R^2$ | 0.586 | 0.557 | 0.469 | 0.603 | 0.546 | 0.412 | 0.607 | 0.454 | 0.572 | 0.036 | 0.491 | 0.343 |
| Heteroptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.104 | 0.066 | −0.017 | 0.107 | 0.053 | 0.130 | 0.032 | −0.052 | 0.097 | −0.045 | 0.228 | 0.117 |
| p | 0.723 | 0.821 | 0.953 | 0.713 | 0.857 | 0.657 | 0.912 | 0.860 | 0.740 | 0.878 | 0.429 | 0.688 |
| $R^2$ | −0.086 | −0.094 | −0.100 | −0.084 | −0.096 | −0.077 | −0.099 | −0.096 | −0.087 | −0.097 | −0.030 | −0.082 |
| Neuropterida (APE) | | | | | | | | | | | | |
| Est | −0.402 | −0.370 | −0.332 | −0.356 | −0.363 | −0.405 | −0.331 | −0.319 | −0.340 | −0.256 | −0.382 | −0.396 |
| p | 0.148 | 0.186 | 0.241 | 0.206 | 0.196 | 0.144 | 0.242 | 0.261 | 0.229 | 0.372 | 0.171 | 0.154 |
| $R^2$ | 0.117 | 0.084 | 0.048 | 0.070 | 0.077 | 0.121 | 0.047 | 0.037 | 0.055 | −0.012 | 0.096 | 0.111 |
| Neuropterida (FIT-C) | | | | | | | | | | | | |
| Est | 0.325 | 0.380 | 0.289 | 0.396 | 0.407 | 0.378 | 0.323 | 0.312 | 0.419 | 0.087 | 0.415 | 0.436 |
| p | 0.251 | 0.173 | 0.312 | 0.154 | 0.143 | 0.176 | 0.254 | 0.272 | 0.130 | 0.765 | 0.133 | 0.113 |
| $R^2$ | 0.042 | 0.094 | 0.012 | 0.111 | 0.122 | 0.093 | 0.040 | 0.031 | 0.136 | −0.090 | 0.132 | 0.155 |
| Neuropterida (FIT-U) | | | | | | | | | | | | |
| Est | 0.177 | 0.204 | 0.133 | 0.232 | 0.188 | 0.254 | 0.175 | 0.100 | 0.215 | 0.072 | 0.322 | 0.231 |
| p | 0.542 | 0.481 | 0.648 | 0.422 | 0.517 | 0.377 | 0.546 | 0.733 | 0.458 | 0.805 | 0.256 | 0.424 |
| $R^2$ | −0.058 | −0.044 | −0.076 | −0.028 | −0.052 | −0.013 | −0.059 | −0.087 | −0.038 | −0.093 | 0.040 | −0.029 |
| Opiliones (APE) | | | | | | | | | | | | |
| Est | −0.030 | 0.080 | 0.084 | 0.036 | 0.072 | 0.154 | 0.029 | 0.076 | 0.022 | 0.184 | 0.072 | 0.158 |
| p | 0.919 | 0.786 | 0.774 | 0.901 | 0.806 | 0.596 | 0.922 | 0.796 | 0.941 | 0.525 | 0.806 | 0.586 |
| $R^2$ | −0.099 | −0.091 | −0.090 | −0.098 | −0.093 | −0.068 | −0.099 | −0.092 | −0.099 | −0.054 | −0.093 | −0.066 |

Table G3. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Opiliones (PT) | | | | | | | | | | | | |
| Est | −0.431 | −0.410 | −0.380 | −0.413 | −0.428 | −0.350 | −0.407 | −0.403 | −0.424 | −0.163 | −0.350 | −0.369 |
| p | 0.117 | 0.139 | 0.174 | 0.136 | 0.120 | 0.215 | 0.143 | 0.146 | 0.124 | 0.575 | 0.214 | 0.187 |
| $R^2$ | 0.150 | 0.126 | 0.094 | 0.129 | 0.146 | 0.064 | 0.122 | 0.119 | 0.142 | −0.064 | 0.064 | 0.084 |
| Herbivore | | | | | | | | | | | | |
| Chewer | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | −0.239 | −0.158 | −0.090 | −0.201 | −0.179 | −0.114 | −0.152 | −0.108 | −0.226 | 0.095 | −0.203 | −0.149 |
| p | 0.407 | 0.588 | 0.757 | 0.488 | 0.538 | 0.696 | 0.601 | 0.710 | 0.434 | 0.746 | 0.484 | 0.610 |
| $R^2$ | −0.023 | −0.067 | −0.089 | −0.046 | −0.057 | −0.083 | −0.069 | −0.084 | −0.032 | −0.088 | −0.045 | −0.070 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.299 | 0.341 | 0.335 | 0.338 | 0.366 | 0.250 | 0.354 | 0.374 | 0.358 | 0.121 | 0.233 | 0.280 |
| p | 0.294 | 0.227 | 0.235 | 0.232 | 0.191 | 0.385 | 0.209 | 0.181 | 0.202 | 0.679 | 0.419 | 0.328 |
| $R^2$ | 0.020 | 0.056 | 0.051 | 0.053 | 0.081 | −0.016 | 0.068 | 0.088 | 0.073 | −0.080 | −0.027 | 0.005 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.181 | −0.103 | −0.170 | −0.116 | −0.114 | 0.061 | −0.206 | −0.199 | −0.127 | 0.010 | 0.055 | 0.086 |
| p | 0.534 | 0.724 | 0.559 | 0.690 | 0.697 | 0.836 | 0.476 | 0.492 | 0.662 | 0.972 | 0.851 | 0.769 |
| $R^2$ | −0.056 | −0.086 | −0.061 | −0.082 | −0.083 | −0.095 | −0.043 | −0.047 | −0.078 | −0.100 | −0.096 | −0.090 |
| Coleoptera (GPE) | | | | | | | | | | | | |
| Est | −0.244 | −0.209 | −0.323 | −0.091 | −0.172 | −0.278 | −0.194 | −0.299 | −0.033 | −0.509 | −0.026 | −0.209 |
| p | 0.417 | 0.488 | 0.275 | 0.767 | 0.570 | 0.352 | 0.522 | 0.315 | 0.913 | 0.068 | 0.931 | 0.489 |
| $R^2$ | −0.029 | −0.050 | 0.034 | −0.100 | −0.070 | −0.004 | −0.059 | 0.013 | −0.110 | 0.248 | −0.110 | −0.050 |
| Sucker | | | | | | | | | | | | |
| Heteroptera (APE) | | | | | | | | | | | | |
| Est | 0.547 | 0.515 | 0.475 | 0.532 | 0.528 | 0.430 | 0.529 | 0.492 | 0.539 | 0.189 | 0.460 | 0.432 |
| p | 0.037 | 0.053 | 0.080 | 0.044 | 0.046 | 0.118 | 0.046 | 0.068 | 0.041 | 0.515 | 0.091 | 0.117 |
| $R^2$ | 0.302 | 0.256 | 0.203 | 0.281 | 0.275 | 0.149 | 0.276 | 0.225 | 0.290 | −0.052 | 0.184 | 0.151 |
| Heteroptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.350 | 0.353 | 0.340 | 0.418 | 0.380 | 0.141 | 0.455 | 0.379 | 0.448 | −0.067 | 0.254 | 0.137 |
| p | 0.214 | 0.210 | 0.229 | 0.131 | 0.174 | 0.628 | 0.096 | 0.175 | 0.102 | 0.819 | 0.377 | 0.637 |
| $R^2$ | 0.065 | 0.068 | 0.055 | 0.135 | 0.094 | −0.073 | 0.178 | 0.094 | 0.170 | −0.094 | −0.013 | −0.075 |
| Heteroptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.502 | 0.452 | 0.411 | 0.437 | 0.437 | 0.493 | 0.414 | 0.387 | 0.411 | 0.322 | 0.470 | 0.466 |
| p | 0.061 | 0.098 | 0.138 | 0.111 | 0.112 | 0.067 | 0.135 | 0.165 | 0.138 | 0.257 | 0.083 | 0.086 |
| $R^2$ | 0.239 | 0.175 | 0.127 | 0.157 | 0.156 | 0.226 | 0.130 | 0.102 | 0.127 | 0.039 | 0.197 | 0.192 |
| Symbiont | | | | | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | | | | | |
| Est | −0.233 | −0.366 | −0.440 | −0.248 | −0.327 | −0.480 | −0.309 | −0.405 | −0.186 | −0.628 | −0.245 | −0.422 |
| p | 0.418 | 0.192 | 0.109 | 0.388 | 0.248 | 0.076 | 0.277 | 0.144 | 0.521 | 0.012 | 0.394 | 0.126 |
| $R^2$ | −0.027 | 0.080 | 0.160 | −0.017 | 0.044 | 0.210 | 0.028 | 0.121 | −0.053 | 0.431 | −0.019 | 0.140 |
| Producer | | | | | | | | | | | | |
| Vascular plants | | | | | | | | | | | | |
| Est | 0.266 | 0.275 | 0.274 | 0.274 | 0.263 | 0.253 | 0.292 | 0.261 | 0.256 | 0.181 | 0.250 | 0.216 |
| p | 0.354 | 0.336 | 0.338 | 0.338 | 0.359 | 0.379 | 0.307 | 0.363 | 0.372 | 0.533 | 0.386 | 0.455 |
| $R^2$ | −0.005 | 0.002 | 0.001 | 0.001 | −0.007 | −0.014 | 0.014 | −0.009 | −0.012 | −0.056 | −0.016 | −0.037 |
| Mosses | | | | | | | | | | | | |
| Est | −0.710 | −0.736 | −0.666 | −0.733 | −0.730 | −0.731 | −0.702 | −0.653 | −0.713 | −0.413 | −0.731 | −0.710 |
| p | 0.002 | 0.001 | 0.006 | 0.001 | 0.002 | 0.001 | 0.003 | 0.008 | 0.002 | 0.136 | 0.001 | 0.002 |
| $R^2$ | 0.578 | 0.628 | 0.496 | 0.623 | 0.615 | 0.619 | 0.562 | 0.474 | 0.584 | 0.129 | 0.618 | 0.578 |

Table G4. Effects of naturalness, measures of management intensity, and stand structural attributes regarding stand age and dead and living wood volume (see Table 1) on the species richness of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community parameters and are thus not shown in the table.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.412 | −0.277 | −0.302 | −0.306 | 0.264 | 0.335 | −0.07 | −0.333 |
| p | 0.136 | 0.332 | 0.289 | 0.282 | 0.358 | 0.236 | 0.810 | 0.239 |
| $R^2$ | 0.129 | 0.003 | 0.023 | 0.026 | −0.007 | 0.051 | −0.093 | 0.049 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.107 | −0.023 | −0.026 | −0.056 | 0.176 | 0.068 | 0.355 | 0.132 |
| p | 0.715 | 0.939 | 0.929 | 0.848 | 0.544 | 0.817 | 0.207 | 0.652 |
| $R^2$ | −0.085 | −0.099 | −0.099 | −0.096 | −0.058 | −0.094 | 0.070 | −0.077 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.008 | −0.120 | −0.152 | −0.129 | 0.229 | 0.293 | −0.066 | −0.092 |
| p | 0.979 | 0.680 | 0.602 | 0.659 | 0.427 | 0.305 | 0.821 | 0.753 |
| $R^2$ | −0.100 | −0.081 | −0.069 | −0.078 | −0.029 | 0.015 | −0.094 | −0.089 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.554 | −0.655 | −0.654 | −0.624 | 0.434 | 0.531 | −0.142 | −0.513 |
| p | 0.034 | 0.008 | 0.008 | 0.013 | 0.115 | 0.045 | 0.627 | 0.055 |
| $R^2$ | 0.313 | 0.477 | 0.475 | 0.424 | 0.153 | 0.280 | −0.073 | 0.253 |
| Fungi (soil saprophytes) | | | | | | | | |
| Est | −0.402 | 0.519 | 0.547 | 0.524 | −0.355 | −0.479 | −0.256 | 0.162 |
| p | 0.147 | 0.051 | 0.037 | 0.048 | 0.207 | 0.076 | 0.373 | 0.578 |
| $R^2$ | 0.118 | 0.262 | 0.302 | 0.269 | 0.069 | 0.209 | −0.012 | −0.065 |
| Isopoda (PT) | | | | | | | | |
| Est | 0.755 | −0.659 | −0.684 | −0.704 | 0.610 | 0.743 | 0.457 | −0.435 |
| p | 0.001 | 0.007 | 0.004 | 0.003 | 0.016 | 0.001 | 0.093 | 0.114 |
| $R^2$ | 0.667 | 0.484 | 0.528 | 0.566 | 0.400 | 0.642 | 0.181 | 0.154 |
| Xylophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.011 | 0.054 | 0.062 | 0.015 | 0.076 | 0.15 | 0.607 | 0.100 |
| p | 0.971 | 0.854 | 0.833 | 0.959 | 0.795 | 0.606 | 0.017 | 0.733 |
| $R^2$ | −0.100 | −0.096 | −0.095 | −0.100 | −0.092 | −0.070 | 0.395 | −0.087 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.198 | −0.090 | −0.097 | −0.124 | 0.153 | 0.045 | 0.307 | 0.167 |
| p | 0.495 | 0.758 | 0.739 | 0.672 | 0.600 | 0.877 | 0.280 | 0.565 |
| $R^2$ | −0.048 | −0.089 | −0.087 | −0.079 | −0.069 | −0.097 | 0.027 | −0.062 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.020 | −0.012 | −0.049 | −0.026 | −0.056 | 0.095 | 0.156 | 0.022 |
| p | 0.945 | 0.968 | 0.866 | 0.928 | 0.847 | 0.746 | 0.592 | 0.940 |
| $R^2$ | −0.099 | −0.100 | −0.097 | −0.099 | −0.096 | −0.088 | −0.067 | −0.099 |
| Fungi (wood/bark species) | | | | | | | | |
| Est | 0.647 | −0.524 | −0.540 | −0.532 | 0.337 | 0.354 | 0.242 | −0.272 |
| p | 0.009 | 0.048 | 0.041 | 0.044 | 0.234 | 0.208 | 0.400 | 0.342 |
| $R^2$ | 0.462 | 0.269 | 0.291 | 0.281 | 0.052 | 0.068 | −0.021 | <0.001 |
| Predator | | | | | | | | |
| Big | | | | | | | | |
| Birds (breeding) | | | | | | | | |
| Est | 0.642 | −0.601 | −0.613 | −0.631 | 0.424 | 0.623 | 0.503 | −0.276 |
| p | 0.010 | 0.018 | 0.015 | 0.012 | 0.124 | 0.013 | 0.061 | 0.334 |
| $R^2$ | 0.455 | 0.386 | 0.405 | 0.436 | 0.142 | 0.422 | 0.240 | 0.003 |
| Birds (overwintering) | | | | | | | | |
| Est | 0.487 | −0.362 | −0.354 | −0.367 | 0.081 | 0.287 | 0.158 | −0.356 |
| p | 0.071 | 0.197 | 0.209 | 0.191 | 0.782 | 0.315 | 0.587 | 0.205 |
| $R^2$ | 0.219 | 0.077 | 0.068 | 0.081 | −0.091 | 0.011 | −0.066 | 0.071 |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | 0.404 | −0.421 | −0.408 | −0.435 | 0.166 | 0.271 | 0.373 | −0.112 |
| p | 0.145 | 0.128 | 0.141 | 0.113 | 0.568 | 0.344 | 0.183 | 0.702 |
| $R^2$ | 0.120 | 0.138 | 0.124 | 0.154 | −0.063 | −0.001 | 0.087 | −0.083 |

Table G4. Continued.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Coleoptera (APE) | | | | | | | | |
| Est | 0.462 | −0.538 | −0.535 | −0.544 | 0.399 | 0.491 | 0.163 | −0.392 |
| p | 0.090 | 0.041 | 0.043 | 0.039 | 0.152 | 0.068 | 0.576 | 0.159 |
| $R^2$ | 0.187 | 0.290 | 0.285 | 0.297 | 0.114 | 0.224 | −0.064 | 0.107 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.620 | −0.523 | −0.526 | −0.530 | 0.393 | 0.353 | 0.148 | −0.339 |
| p | 0.014 | 0.049 | 0.047 | 0.045 | 0.158 | 0.209 | 0.611 | 0.230 |
| $R^2$ | 0.417 | 0.268 | 0.272 | 0.277 | 0.108 | 0.068 | −0.071 | 0.055 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.321 | 0.366 | 0.337 | 0.352 | −0.325 | −0.228 | −0.075 | 0.163 |
| p | 0.257 | 0.192 | 0.233 | 0.211 | 0.251 | 0.430 | 0.797 | 0.576 |
| $R^2$ | 0.039 | 0.080 | 0.053 | 0.067 | 0.042 | −0.030 | −0.092 | −0.064 |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.605 | 0.671 | 0.656 | 0.656 | −0.657 | −0.526 | −0.249 | 0.355 |
| p | 0.017 | 0.006 | 0.008 | 0.008 | 0.007 | 0.047 | 0.387 | 0.207 |
| $R^2$ | 0.392 | 0.505 | 0.479 | 0.478 | 0.481 | 0.272 | −0.017 | 0.069 |
| Heteroptera (APE) | | | | | | | | |
| Est | −0.140 | 0.109 | 0.103 | 0.100 | −0.365 | −0.163 | 0.073 | 0.067 |
| p | 0.631 | 0.708 | 0.725 | 0.733 | 0.193 | 0.576 | 0.803 | 0.818 |
| $R^2$ | −0.074 | −0.084 | −0.086 | −0.087 | 0.079 | −0.064 | −0.093 | −0.094 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | 0.687 | −0.744 | −0.740 | −0.726 | 0.645 | 0.573 | 0.255 | −0.372 |
| p | 0.004 | 0.001 | 0.001 | 0.002 | 0.009 | 0.027 | 0.374 | 0.184 |
| $R^2$ | 0.534 | 0.643 | 0.635 | 0.609 | 0.459 | 0.342 | −0.012 | 0.086 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | −0.279 | 0.114 | 0.134 | 0.149 | −0.067 | −0.093 | −0.453 | −0.053 |
| p | 0.329 | 0.696 | 0.645 | 0.608 | 0.820 | 0.751 | 0.097 | 0.858 |
| $R^2$ | 0.005 | −0.083 | −0.076 | −0.070 | −0.094 | −0.088 | 0.176 | −0.096 |
| Neuropterida (APE) | | | | | | | | |
| Est | −0.071 | 0.040 | 0.059 | 0.086 | −0.450 | −0.344 | −0.372 | −0.028 |
| p | 0.809 | 0.890 | 0.839 | 0.769 | 0.100 | 0.223 | 0.184 | 0.924 |
| $R^2$ | −0.093 | −0.098 | −0.095 | −0.090 | 0.172 | 0.059 | 0.086 | −0.099 |
| Neuropterida (FIT-C) | | | | | | | | |
| Est | 0.172 | −0.290 | −0.252 | −0.229 | −0.164 | −0.100 | −0.138 | −0.111 |
| p | 0.553 | 0.309 | 0.381 | 0.427 | 0.573 | 0.731 | 0.636 | 0.704 |
| $R^2$ | −0.060 | 0.013 | −0.015 | −0.030 | −0.064 | −0.086 | −0.074 | −0.083 |
| Neuropterida (FIT-U) | | | | | | | | |
| Est | 0.199 | −0.155 | −0.149 | −0.164 | 0.459 | 0.368 | 0.122 | −0.163 |
| p | 0.493 | 0.594 | 0.610 | 0.573 | 0.092 | 0.189 | 0.676 | 0.574 |
| $R^2$ | −0.047 | −0.068 | −0.070 | −0.064 | 0.183 | 0.082 | −0.080 | −0.064 |
| Opiliones (APE) | | | | | | | | |
| Est | −0.256 | 0.304 | 0.328 | 0.333 | −0.506 | −0.463 | −0.181 | 0.089 |
| p | 0.372 | 0.285 | 0.246 | 0.239 | 0.059 | 0.089 | 0.533 | 0.760 |
| $R^2$ | −0.012 | 0.025 | 0.045 | 0.049 | 0.244 | 0.188 | −0.056 | −0.089 |
| Opiliones (PT) | | | | | | | | |
| Est | −0.441 | 0.399 | 0.414 | 0.406 | −0.123 | −0.177 | −0.208 | 0.022 |
| p | 0.107 | 0.152 | 0.135 | 0.144 | 0.674 | 0.543 | 0.473 | 0.941 |
| $R^2$ | 0.162 | 0.114 | 0.130 | 0.121 | −0.080 | −0.058 | −0.042 | −0.099 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.665 | −0.668 | −0.643 | −0.650 | 0.291 | 0.389 | 0.235 | −0.403 |
| p | 0.006 | 0.006 | 0.009 | 0.008 | 0.307 | 0.163 | 0.416 | 0.147 |
| $R^2$ | 0.495 | 0.500 | 0.456 | 0.468 | 0.014 | 0.103 | −0.026 | 0.118 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.470 | −0.438 | −0.401 | −0.413 | 0.355 | 0.235 | 0.227 | −0.297 |
| p | 0.084 | 0.110 | 0.149 | 0.136 | 0.207 | 0.414 | 0.431 | 0.297 |
| $R^2$ | 0.197 | 0.158 | 0.116 | 0.129 | 0.069 | −0.025 | −0.031 | 0.019 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.527 | −0.514 | −0.546 | −0.560 | 0.651 | 0.672 | 0.369 | −0.313 |
| p | 0.047 | 0.054 | 0.038 | 0.032 | 0.008 | 0.006 | 0.188 | 0.270 |
| $R^2$ | 0.274 | 0.256 | 0.301 | 0.322 | 0.470 | 0.508 | 0.083 | 0.032 |
| Coleoptera (GPE) | | | | | | | | |
| Est | 0.515 | −0.589 | −0.610 | −0.613 | 0.548 | 0.575 | 0.333 | −0.287 |
| p | 0.064 | 0.028 | 0.021 | 0.020 | 0.045 | 0.033 | 0.260 | 0.337 |
| $R^2$ | 0.257 | 0.37 | 0.406 | 0.41 | 0.306 | 0.348 | 0.043 | 0.003 |

Table G4. Continued.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Sucker | | | | | | | | |
| Heteroptera (APE) | | | | | | | | |
| Est | 0.43 | −0.488 | −0.445 | −0.456 | 0.448 | 0.321 | 0.135 | −0.349 |
| p | 0.118 | 0.070 | 0.104 | 0.094 | 0.102 | 0.258 | 0.643 | 0.215 |
| $R^2$ | 0.149 | 0.221 | 0.167 | 0.180 | 0.170 | 0.038 | −0.075 | 0.064 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | 0.100 | −0.146 | −0.114 | −0.124 | −0.045 | −0.065 | −0.099 | −0.027 |
| p | 0.733 | 0.616 | 0.696 | 0.672 | 0.879 | 0.825 | 0.736 | 0.926 |
| $R^2$ | −0.087 | −0.071 | −0.082 | −0.079 | −0.097 | −0.094 | −0.087 | −0.099 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | 0.607 | −0.61 | −0.635 | −0.657 | 0.524 | 0.633 | 0.523 | −0.233 |
| p | 0.017 | 0.016 | 0.011 | 0.007 | 0.049 | 0.011 | 0.049 | 0.418 |
| $R^2$ | 0.395 | 0.400 | 0.443 | 0.48 | 0.269 | 0.439 | 0.267 | −0.027 |
| Symbiont | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | |
| Est | −0.274 | 0.208 | 0.232 | 0.265 | −0.351 | −0.503 | −0.541 | 0.17 |
| p | 0.338 | 0.471 | 0.421 | 0.356 | 0.212 | 0.06 | 0.04 | 0.559 |
| $R^2$ | 0.001 | −0.042 | −0.028 | −0.006 | 0.066 | 0.241 | 0.293 | −0.061 |
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | −0.271 | 0.232 | 0.207 | 0.228 | −0.109 | −0.008 | −0.350 | −0.076 |
| p | 0.345 | 0.422 | 0.474 | 0.429 | 0.710 | 0.977 | 0.213 | 0.796 |
| $R^2$ | −0.002 | −0.028 | −0.042 | −0.030 | −0.084 | −0.100 | 0.065 | −0.092 |
| Mosses | | | | | | | | |
| Est | −0.668 | 0.665 | 0.671 | 0.68 | −0.489 | −0.649 | −0.215 | 0.490 |
| p | 0.006 | 0.006 | 0.006 | 0.005 | 0.069 | 0.009 | 0.457 | 0.069 |
| $R^2$ | 0.501 | 0.494 | 0.506 | 0.521 | 0.222 | 0.467 | −0.038 | 0.223 |

Table G5. Effects of stand structural attributes except stand age and wood volume (see Table 1) on the species richness of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community parameters and are thus not shown in the table.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.45 | −0.417 | 0.649 | 0.538 | −0.361 | 0.258 | 0.336 | −0.223 |
| p | 0.100 | 0.131 | 0.009 | 0.041 | 0.199 | 0.369 | 0.235 | 0.439 |
| $R^2$ | 0.172 | 0.134 | 0.465 | 0.290 | 0.075 | −0.011 | 0.051 | −0.033 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.187 | −0.034 | 0.093 | −0.293 | 0.052 | 0.126 | 0.037 | −0.592 |
| p | 0.518 | 0.907 | 0.749 | 0.304 | 0.859 | 0.665 | 0.899 | 0.021 |
| $R^2$ | −0.053 | −0.098 | −0.088 | 0.016 | −0.096 | −0.079 | −0.098 | 0.371 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.184 | −0.244 | −0.250 | −0.018 | −0.167 | −0.021 | −0.046 | −0.086 |
| p | 0.526 | 0.396 | 0.385 | 0.951 | 0.566 | 0.942 | 0.876 | 0.769 |
| $R^2$ | −0.054 | −0.020 | −0.016 | −0.100 | −0.063 | −0.099 | −0.097 | −0.090 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.655 | −0.328 | 0.441 | 0.633 | −0.732 | 0.448 | 0.483 | −0.150 |
| p | 0.008 | 0.247 | 0.107 | 0.011 | 0.001 | 0.102 | 0.074 | 0.607 |
| $R^2$ | 0.477 | 0.044 | 0.162 | 0.438 | 0.621 | 0.169 | 0.214 | −0.070 |
| Fungi (soil saprophytes) | | | | | | | | |
| Est | 0.299 | 0.210 | 0.174 | −0.102 | 0.487 | −0.217 | −0.149 | 0.209 |
| p | 0.294 | 0.469 | 0.549 | 0.726 | 0.071 | 0.453 | 0.608 | 0.470 |
| $R^2$ | 0.020 | −0.041 | −0.059 | −0.086 | 0.218 | −0.037 | −0.070 | −0.041 |
| Isopoda (PT) | | | | | | | | |
| Est | −0.588 | −0.616 | 0.393 | 0.531 | −0.619 | 0.479 | 0.415 | −0.271 |
| p | 0.022 | 0.015 | 0.158 | 0.045 | 0.014 | 0.077 | 0.134 | 0.344 |
| $R^2$ | 0.366 | 0.411 | 0.108 | 0.280 | 0.415 | 0.208 | 0.131 | −0.001 |
| Xylophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.166 | −0.160 | −0.368 | −0.323 | 0.207 | −0.017 | −0.245 | −0.188 |
| p | 0.569 | 0.582 | 0.189 | 0.255 | 0.475 | 0.953 | 0.394 | 0.516 |
| $R^2$ | −0.063 | −0.066 | 0.082 | 0.040 | −0.043 | −0.100 | −0.019 | −0.052 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.214 | 0.137 | 0.224 | −0.055 | −0.056 | 0.220 | 0.270 | −0.351 |
| p | 0.460 | 0.637 | 0.438 | 0.852 | 0.849 | 0.447 | 0.347 | 0.212 |
| $R^2$ | −0.039 | −0.075 | −0.033 | −0.096 | −0.096 | −0.035 | −0.002 | 0.066 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.104 | −0.217 | −0.437 | −0.113 | 0.003 | −0.306 | −0.343 | 0.081 |
| p | 0.722 | 0.452 | 0.112 | 0.699 | 0.993 | 0.282 | 0.224 | 0.782 |
| $R^2$ | −0.085 | −0.037 | 0.156 | −0.083 | −0.100 | 0.026 | 0.059 | −0.091 |
| Fungi (wood/bark species) | | | | | | | | |
| Est | −0.406 | −0.299 | 0.456 | 0.377 | −0.520 | 0.286 | 0.331 | −0.356 |
| p | 0.143 | 0.293 | 0.095 | 0.178 | 0.051 | 0.317 | 0.242 | 0.205 |
| $R^2$ | 0.122 | 0.020 | 0.180 | 0.091 | 0.263 | 0.010 | 0.047 | 0.071 |
| Predator | | | | | | | | |
| Big | | | | | | | | |
| Birds (breeding) | | | | | | | | |
| Est | −0.371 | −0.307 | 0.261 | 0.504 | −0.581 | 0.468 | 0.443 | −0.302 |
| p | 0.185 | 0.281 | 0.363 | 0.06 | 0.024 | 0.085 | 0.106 | 0.288 |
| $R^2$ | 0.085 | 0.026 | −0.008 | 0.241 | 0.353 | 0.194 | 0.164 | 0.023 |
| Birds (overwintering) | | | | | | | | |
| Est | −0.435 | −0.273 | 0.541 | 0.655 | −0.386 | 0.279 | 0.306 | −0.045 |
| p | 0.113 | 0.34 | 0.040 | 0.008 | 0.166 | 0.329 | 0.282 | 0.879 |
| $R^2$ | 0.155 | $<0.001$ | 0.294 | 0.477 | 0.101 | 0.005 | 0.026 | −0.097 |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | −0.106 | 0.013 | 0.291 | 0.151 | −0.318 | 0.443 | 0.311 | −0.335 |
| p | 0.716 | 0.964 | 0.308 | 0.604 | 0.263 | 0.106 | 0.274 | 0.236 |
| $R^2$ | −0.085 | −0.100 | 0.014 | −0.069 | 0.036 | 0.164 | 0.03 | 0.051 |

Table G5. Continued.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Coleoptera (APE) | | | | | | | | |
| Est | −0.474 | −0.361 | 0.269 | 0.274 | −0.458 | 0.439 | 0.265 | −0.147 |
| p | 0.080 | 0.199 | 0.348 | 0.338 | 0.093 | 0.109 | 0.356 | 0.613 |
| $R^2$ | 0.202 | 0.075 | −0.003 | 0.001 | 0.182 | 0.160 | −0.006 | −0.071 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.435 | −0.313 | 0.606 | 0.375 | −0.498 | 0.407 | 0.401 | −0.335 |
| p | 0.113 | 0.270 | 0.017 | 0.180 | 0.064 | 0.142 | 0.148 | 0.236 |
| $R^2$ | 0.155 | 0.032 | 0.394 | 0.089 | 0.233 | 0.123 | 0.117 | 0.051 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.119 | −0.085 | −0.352 | −0.306 | 0.346 | −0.489 | −0.522 | −0.010 |
| p | 0.684 | 0.772 | 0.211 | 0.282 | 0.219 | 0.070 | 0.050 | 0.974 |
| $R^2$ | −0.081 | −0.090 | 0.067 | 0.026 | 0.061 | 0.221 | 0.266 | −0.100 |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.409 | 0.297 | −0.299 | −0.159 | 0.597 | −0.538 | −0.434 | 0.444 |
| p | 0.140 | 0.298 | 0.294 | 0.586 | 0.020 | 0.042 | 0.114 | 0.105 |
| $R^2$ | 0.125 | 0.018 | 0.020 | −0.066 | 0.379 | 0.288 | 0.153 | 0.165 |
| Heteroptera (APE) | | | | | | | | |
| Est | 0.043 | 0.033 | −0.224 | −0.214 | 0.21 | −0.202 | −0.386 | 0.129 |
| p | 0.883 | 0.909 | 0.437 | 0.459 | 0.467 | 0.486 | 0.167 | 0.657 |
| $R^2$ | −0.097 | −0.098 | −0.032 | −0.039 | −0.040 | −0.045 | 0.100 | −0.077 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | −0.480 | −0.294 | 0.233 | 0.327 | −0.701 | 0.498 | 0.477 | −0.239 |
| p | 0.076 | 0.303 | 0.419 | 0.249 | 0.003 | 0.063 | 0.078 | 0.407 |
| $R^2$ | 0.209 | 0.016 | −0.027 | 0.043 | 0.560 | 0.234 | 0.206 | −0.023 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | −0.002 | 0.180 | −0.045 | 0.129 | 0.037 | 0.033 | 0.095 | 0.432 |
| p | 0.994 | 0.534 | 0.877 | 0.659 | 0.900 | 0.911 | 0.745 | 0.116 |
| $R^2$ | −0.100 | −0.056 | −0.097 | −0.078 | −0.098 | −0.099 | −0.088 | 0.151 |
| Neuropterida (APE) | | | | | | | | |
| Est | −0.029 | 0.286 | 0.325 | 0.136 | −0.015 | −0.068 | −0.030 | −0.068 |
| p | 0.920 | 0.316 | 0.251 | 0.642 | 0.960 | 0.817 | 0.919 | 0.815 |
| $R^2$ | −0.099 | 0.010 | 0.042 | −0.075 | −0.100 | −0.094 | −0.099 | −0.094 |
| Neuropterida (FIT-C) | | | | | | | | |
| Est | −0.097 | 0.325 | 0.244 | 0.207 | −0.288 | 0.215 | 0.218 | −0.062 |
| p | 0.740 | 0.251 | 0.396 | 0.475 | 0.313 | 0.457 | 0.451 | 0.833 |
| $R^2$ | −0.087 | 0.042 | −0.020 | −0.043 | 0.011 | −0.038 | −0.036 | −0.095 |
| Neuropterida (FIT-U) | | | | | | | | |
| Est | −0.147 | −0.238 | 0.147 | 0.321 | −0.235 | 0.252 | 0.366 | −0.092 |
| p | 0.615 | 0.410 | 0.615 | 0.257 | 0.416 | 0.381 | 0.192 | 0.754 |
| $R^2$ | −0.071 | −0.024 | −0.071 | 0.039 | −0.026 | −0.015 | 0.080 | −0.089 |
| Opiliones (APE) | | | | | | | | |
| Est | 0.142 | 0.187 | 0.070 | −0.185 | 0.318 | −0.293 | −0.345 | −0.063 |
| p | 0.627 | 0.520 | 0.811 | 0.524 | 0.263 | 0.305 | 0.221 | 0.830 |
| $R^2$ | −0.073 | −0.053 | −0.093 | −0.054 | 0.036 | 0.015 | 0.060 | −0.095 |
| Opiliones (PT) | | | | | | | | |
| Est | 0.087 | −0.088 | −0.340 | −0.216 | 0.407 | −0.283 | −0.352 | 0.443 |
| p | 0.766 | 0.764 | 0.228 | 0.455 | 0.142 | 0.322 | 0.211 | 0.106 |
| $R^2$ | −0.090 | −0.090 | 0.056 | −0.037 | 0.123 | 0.008 | 0.066 | 0.164 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.469 | −0.174 | 0.549 | 0.484 | −0.602 | 0.537 | 0.452 | −0.252 |
| p | 0.084 | 0.550 | 0.036 | 0.073 | 0.018 | 0.042 | 0.098 | 0.381 |
| $R^2$ | 0.196 | −0.059 | 0.305 | 0.215 | 0.387 | 0.288 | 0.175 | −0.015 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.294 | −0.185 | 0.372 | 0.166 | −0.351 | 0.372 | 0.283 | −0.264 |
| p | 0.302 | 0.523 | 0.184 | 0.567 | 0.212 | 0.184 | 0.323 | 0.357 |
| $R^2$ | 0.016 | −0.054 | 0.086 | −0.063 | 0.066 | 0.086 | 0.007 | −0.006 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.441 | −0.577 | 0.102 | 0.185 | −0.447 | 0.365 | 0.247 | −0.229 |
| p | 0.107 | 0.026 | 0.727 | 0.524 | 0.103 | 0.193 | 0.390 | 0.427 |
| $R^2$ | 0.162 | 0.347 | −0.086 | −0.054 | 0.168 | 0.079 | −0.018 | −0.029 |
| Coleoptera (GPE) | | | | | | | | |
| Est | −0.389 | −0.421 | −0.036 | 0.043 | −0.468 | 0.376 | 0.190 | −0.124 |
| p | 0.182 | 0.144 | 0.907 | 0.889 | 0.099 | 0.198 | 0.531 | 0.685 |
| $R^2$ | 0.099 | 0.135 | −0.109 | −0.109 | 0.193 | 0.085 | −0.061 | −0.090 |

Table G5. Continued.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Sucker | | | | | | | | |
| Heteroptera (APE) | | | | | | | | |
| Est | −0.337 | −0.165 | 0.298 | 0.235 | −0.406 | 0.469 | 0.377 | −0.037 |
| p | 0.233 | 0.571 | 0.296 | 0.415 | 0.143 | 0.084 | 0.177 | 0.900 |
| $R^2$ | 0.052 | −0.063 | 0.019 | −0.026 | 0.122 | 0.195 | 0.091 | −0.098 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | 0.056 | 0.299 | 0.457 | 0.168 | −0.160 | 0.344 | 0.361 | −0.265 |
| p | 0.848 | 0.294 | 0.094 | 0.564 | 0.583 | 0.223 | 0.199 | 0.355 |
| $R^2$ | −0.096 | 0.020 | 0.181 | −0.062 | −0.066 | 0.059 | 0.075 | −0.005 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | −0.334 | −0.387 | 0.205 | 0.134 | −0.502 | 0.483 | 0.304 | −0.542 |
| p | 0.237 | 0.166 | 0.478 | 0.646 | 0.061 | 0.074 | 0.285 | 0.039 |
| $R^2$ | 0.050 | 0.101 | −0.043 | −0.076 | 0.239 | 0.213 | 0.024 | 0.295 |
| Symbiont | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | |
| Est | 0.238 | 0.563 | 0.131 | 0.023 | 0.119 | −0.102 | 0.105 | 0.366 |
| p | 0.408 | 0.031 | 0.655 | 0.937 | 0.683 | 0.726 | 0.72 | 0.191 |
| $R^2$ | −0.024 | 0.327 | −0.077 | −0.099 | −0.081 | −0.086 | −0.085 | 0.081 |
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | −0.144 | −0.208 | −0.194 | 0.087 | 0.136 | −0.279 | −0.237 | 0.360 |
| p | 0.622 | 0.473 | 0.503 | 0.765 | 0.641 | 0.329 | 0.412 | 0.200 |
| $R^2$ | −0.072 | −0.042 | −0.049 | −0.090 | −0.075 | 0.005 | −0.025 | 0.074 |
| Mosses | | | | | | | | |
| Est | 0.615 | 0.488 | −0.543 | −0.552 | 0.658 | −0.540 | −0.45 | 0.424 |
| p | 0.015 | 0.070 | 0.039 | 0.035 | 0.007 | 0.040 | 0.100 | 0.124 |
| $R^2$ | 0.408 | 0.221 | 0.297 | 0.310 | 0.482 | 0.293 | 0.172 | 0.142 |

Table G6. Effects of stand structural complexity indices (see Appendix A: Table A3) on the species richness of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | | | | | |
| Mycetophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.392 | 0.418 | 0.296 | 0.462 | 0.422 | 0.444 | 0.368 | 0.283 | 0.464 | 0.088 | 0.546 | 0.458 |
| p | 0.160 | 0.130 | 0.300 | 0.090 | 0.126 | 0.105 | 0.190 | 0.323 | 0.088 | 0.765 | 0.038 | 0.093 |
| $R^2$ | 0.106 | 0.135 | 0.018 | 0.187 | 0.140 | 0.165 | 0.082 | 0.007 | 0.190 | −0.090 | 0.301 | 0.182 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | −0.124 | −0.041 | 0.083 | −0.132 | −0.057 | −0.025 | −0.029 | 0.085 | −0.159 | 0.275 | −0.219 | −0.057 |
| p | 0.670 | 0.889 | 0.777 | 0.652 | 0.846 | 0.931 | 0.921 | 0.771 | 0.585 | 0.336 | 0.448 | 0.846 |
| $R^2$ | −0.079 | −0.098 | −0.091 | −0.077 | −0.096 | −0.099 | −0.099 | −0.090 | −0.066 | 0.002 | −0.035 | −0.096 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.063 | 0.109 | 0.151 | 0.133 | 0.079 | 0.036 | 0.198 | 0.118 | 0.101 | 0.073 | 0.077 | −0.057 |
| p | 0.830 | 0.709 | 0.604 | 0.650 | 0.788 | 0.902 | 0.494 | 0.685 | 0.729 | 0.803 | 0.793 | 0.846 |
| $R^2$ | −0.095 | −0.084 | −0.069 | −0.076 | −0.092 | −0.098 | −0.047 | −0.081 | −0.086 | −0.093 | −0.092 | −0.096 |
| Saprophage | | | | | | | | | | | | |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | 0.655 | 0.665 | 0.574 | 0.742 | 0.671 | 0.532 | 0.715 | 0.573 | 0.746 | 0.118 | 0.684 | 0.502 |
| p | 0.008 | 0.006 | 0.027 | 0.001 | 0.006 | 0.044 | 0.002 | 0.027 | 0.001 | 0.687 | 0.004 | 0.061 |
| $R^2$ | 0.477 | 0.494 | 0.342 | 0.640 | 0.505 | 0.280 | 0.587 | 0.342 | 0.648 | −0.081 | 0.530 | 0.239 |
| Fungi (soil saprophytes) | | | | | | | | | | | | |
| Est | −0.394 | −0.427 | −0.510 | −0.391 | −0.410 | −0.324 | −0.501 | −0.509 | −0.361 | −0.374 | −0.234 | −0.251 |
| p | 0.156 | 0.121 | 0.056 | 0.161 | 0.139 | 0.253 | 0.062 | 0.057 | 0.199 | 0.181 | 0.417 | 0.382 |
| $R^2$ | 0.109 | 0.145 | 0.250 | 0.105 | 0.126 | 0.041 | 0.237 | 0.248 | 0.075 | 0.088 | −0.026 | −0.015 |
| Isopoda (PT) | | | | | | | | | | | | |
| Est | 0.702 | 0.735 | 0.713 | 0.668 | 0.718 | 0.798 | 0.664 | 0.695 | 0.629 | 0.622 | 0.668 | 0.773 |
| p | 0.003 | 0.001 | 0.002 | 0.006 | 0.002 | 0.000 | 0.007 | 0.004 | 0.012 | 0.013 | 0.006 | 0.000 |
| $R^2$ | 0.563 | 0.627 | 0.583 | 0.500 | 0.594 | 0.755 | 0.494 | 0.550 | 0.432 | 0.420 | 0.499 | 0.702 |
| Xylophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | −0.144 | −0.066 | 0.064 | −0.220 | −0.098 | 0.094 | −0.140 | 0.045 | −0.272 | 0.484 | −0.217 | 0.069 |
| p | 0.621 | 0.822 | 0.827 | 0.445 | 0.738 | 0.748 | 0.632 | 0.879 | 0.343 | 0.073 | 0.452 | 0.814 |
| $R^2$ | −0.072 | −0.094 | −0.094 | −0.035 | −0.087 | −0.088 | −0.074 | −0.097 | −0.001 | 0.216 | −0.037 | −0.094 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.121 | 0.089 | 0.141 | 0.018 | 0.093 | 0.117 | 0.055 | 0.160 | 0.013 | 0.233 | −0.031 | 0.136 |
| p | 0.679 | 0.762 | 0.628 | 0.951 | 0.749 | 0.689 | 0.850 | 0.584 | 0.965 | 0.419 | 0.917 | 0.641 |
| $R^2$ | −0.080 | −0.089 | −0.073 | −0.100 | −0.088 | −0.082 | −0.096 | −0.066 | −0.100 | −0.027 | −0.099 | −0.075 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.055 | 0.008 | 0.062 | −0.031 | −0.006 | 0.018 | 0.017 | 0.055 | −0.050 | 0.148 | −0.063 | −0.010 |
| p | 0.850 | 0.980 | 0.831 | 0.917 | 0.983 | 0.951 | 0.953 | 0.852 | 0.865 | 0.613 | 0.830 | 0.972 |
| $R^2$ | −0.096 | −0.100 | −0.095 | −0.099 | −0.100 | −0.100 | −0.100 | −0.096 | −0.097 | −0.071 | −0.095 | −0.100 |
| Fungi (wood/bark species) | | | | | | | | | | | | |
| Est | 0.483 | 0.523 | 0.507 | 0.496 | 0.538 | 0.480 | 0.503 | 0.532 | 0.499 | 0.313 | 0.420 | 0.498 |
| p | 0.074 | 0.049 | 0.058 | 0.065 | 0.041 | 0.076 | 0.061 | 0.044 | 0.063 | 0.270 | 0.129 | 0.064 |
| $R^2$ | 0.214 | 0.268 | 0.246 | 0.230 | 0.289 | 0.210 | 0.240 | 0.281 | 0.235 | 0.032 | 0.137 | 0.233 |
| Predator | | | | | | | | | | | | |
| Big | | | | | | | | | | | | |
| Birds (breeding) | | | | | | | | | | | | |
| Est | 0.699 | 0.699 | 0.678 | 0.618 | 0.695 | 0.766 | 0.608 | 0.679 | 0.592 | 0.605 | 0.608 | 0.774 |
| p | 0.003 | 0.003 | 0.005 | 0.014 | 0.003 | 0.001 | 0.017 | 0.005 | 0.021 | 0.017 | 0.017 | 0.000 |
| $R^2$ | 0.557 | 0.556 | 0.518 | 0.414 | 0.550 | 0.689 | 0.398 | 0.520 | 0.372 | 0.392 | 0.396 | 0.706 |

Table G6. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Birds (overwintering) | | | | | | | | | | | | |
| Est | 0.519 | 0.520 | 0.375 | 0.514 | 0.545 | 0.621 | 0.378 | 0.388 | 0.530 | 0.227 | 0.626 | 0.705 |
| p | 0.051 | 0.050 | 0.181 | 0.054 | 0.038 | 0.014 | 0.176 | 0.165 | 0.045 | 0.431 | 0.013 | 0.003 |
| $R^2$ | 0.263 | 0.264 | 0.089 | 0.255 | 0.300 | 0.419 | 0.093 | 0.102 | 0.278 | −0.031 | 0.427 | 0.569 |
| Small | | | | | | | | | | | | |
| Araneae (APE) | | | | | | | | | | | | |
| Est | 0.342 | 0.351 | 0.388 | 0.281 | 0.356 | 0.357 | 0.319 | 0.407 | 0.271 | 0.371 | 0.209 | 0.367 |
| p | 0.226 | 0.212 | 0.164 | 0.326 | 0.205 | 0.204 | 0.262 | 0.142 | 0.344 | 0.186 | 0.471 | 0.190 |
| $R^2$ | 0.057 | 0.066 | 0.103 | 0.006 | 0.071 | 0.071 | 0.036 | 0.123 | −0.001 | 0.085 | −0.042 | 0.081 |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.412 | 0.453 | 0.463 | 0.441 | 0.437 | 0.407 | 0.480 | 0.450 | 0.415 | 0.314 | 0.378 | 0.354 |
| p | 0.137 | 0.098 | 0.089 | 0.108 | 0.112 | 0.142 | 0.076 | 0.100 | 0.134 | 0.269 | 0.176 | 0.208 |
| $R^2$ | 0.128 | 0.175 | 0.189 | 0.161 | 0.157 | 0.122 | 0.209 | 0.173 | 0.131 | 0.032 | 0.092 | 0.068 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.455 | 0.488 | 0.463 | 0.482 | 0.499 | 0.435 | 0.484 | 0.479 | 0.484 | 0.247 | 0.418 | 0.439 |
| p | 0.096 | 0.070 | 0.089 | 0.074 | 0.063 | 0.114 | 0.073 | 0.077 | 0.073 | 0.390 | 0.130 | 0.110 |
| $R^2$ | 0.178 | 0.220 | 0.188 | 0.213 | 0.234 | 0.154 | 0.215 | 0.208 | 0.215 | −0.018 | 0.135 | 0.159 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.448 | −0.347 | −0.310 | −0.350 | −0.358 | −0.317 | −0.333 | −0.323 | −0.356 | −0.145 | −0.322 | −0.331 |
| p | 0.102 | 0.219 | 0.275 | 0.214 | 0.203 | 0.264 | 0.239 | 0.254 | 0.206 | 0.618 | 0.256 | 0.243 |
| $R^2$ | 0.170 | 0.062 | 0.030 | 0.065 | 0.072 | 0.035 | 0.049 | 0.040 | 0.070 | −0.072 | 0.039 | 0.047 |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | −0.462 | −0.512 | −0.595 | −0.483 | −0.499 | −0.374 | −0.602 | −0.600 | −0.456 | −0.388 | −0.294 | −0.299 |
| p | 0.090 | 0.055 | 0.020 | 0.074 | 0.063 | 0.182 | 0.018 | 0.019 | 0.095 | 0.164 | 0.302 | 0.294 |
| $R^2$ | 0.187 | 0.253 | 0.376 | 0.213 | 0.235 | 0.088 | 0.387 | 0.385 | 0.180 | 0.103 | 0.017 | 0.020 |
| Heteroptera (APE) | | | | | | | | | | | | |
| Est | −0.254 | −0.196 | −0.157 | −0.227 | −0.197 | −0.163 | −0.207 | −0.153 | −0.228 | −0.015 | −0.226 | −0.154 |
| p | 0.378 | 0.498 | 0.590 | 0.432 | 0.496 | 0.574 | 0.473 | 0.599 | 0.429 | 0.958 | 0.433 | 0.596 |
| $R^2$ | −0.014 | −0.048 | −0.067 | −0.031 | −0.048 | −0.064 | −0.042 | −0.069 | −0.030 | −0.100 | −0.031 | −0.068 |
| Heteroptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.637 | 0.637 | 0.680 | 0.614 | 0.633 | 0.510 | 0.697 | 0.692 | 0.595 | 0.412 | 0.447 | 0.459 |
| p | 0.011 | 0.011 | 0.005 | 0.015 | 0.011 | 0.056 | 0.003 | 0.004 | 0.020 | 0.137 | 0.103 | 0.092 |
| $R^2$ | 0.446 | 0.445 | 0.521 | 0.406 | 0.439 | 0.250 | 0.554 | 0.543 | 0.377 | 0.128 | 0.169 | 0.184 |
| Heteroptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.005 | −0.093 | −0.181 | 0.014 | −0.091 | −0.146 | −0.050 | −0.197 | 0.031 | −0.354 | 0.076 | −0.156 |
| p | 0.986 | 0.752 | 0.533 | 0.962 | 0.757 | 0.617 | 0.866 | 0.497 | 0.916 | 0.208 | 0.794 | 0.592 |
| $R^2$ | −0.100 | −0.088 | −0.056 | −0.100 | −0.089 | −0.072 | −0.097 | −0.048 | −0.099 | 0.069 | −0.092 | −0.067 |
| Neuropterida (APE) | | | | | | | | | | | | |
| Est | −0.106 | −0.077 | −0.164 | 0.010 | −0.034 | −0.171 | −0.059 | −0.123 | 0.067 | −0.399 | 0.004 | −0.100 |
| p | 0.718 | 0.792 | 0.573 | 0.973 | 0.907 | 0.556 | 0.841 | 0.673 | 0.819 | 0.151 | 0.990 | 0.732 |
| $R^2$ | −0.085 | −0.092 | −0.064 | −0.100 | −0.098 | −0.061 | −0.095 | −0.080 | −0.094 | 0.115 | −0.100 | −0.087 |
| Neuropterida (FIT-C) | | | | | | | | | | | | |
| Est | 0.205 | 0.185 | 0.145 | 0.231 | 0.225 | 0.056 | 0.217 | 0.196 | 0.275 | −0.137 | 0.138 | 0.108 |
| p | 0.478 | 0.524 | 0.618 | 0.423 | 0.435 | 0.849 | 0.452 | 0.500 | 0.336 | 0.638 | 0.637 | 0.711 |
| $R^2$ | −0.043 | −0.054 | −0.072 | −0.028 | −0.032 | −0.096 | −0.037 | −0.049 | 0.002 | −0.075 | −0.075 | −0.084 |
| Neuropterida (FIT-U) | | | | | | | | | | | | |
| Est | 0.363 | 0.321 | 0.270 | 0.311 | 0.307 | 0.388 | 0.270 | 0.245 | 0.289 | 0.235 | 0.378 | 0.373 |
| p | 0.196 | 0.257 | 0.346 | 0.273 | 0.280 | 0.164 | 0.346 | 0.395 | 0.311 | 0.414 | 0.176 | 0.183 |
| $R^2$ | 0.077 | 0.039 | −0.002 | 0.030 | 0.027 | 0.102 | −0.002 | −0.019 | 0.013 | −0.025 | 0.092 | 0.087 |
| Opiliones (APE) | | | | | | | | | | | | |
| Est | −0.429 | −0.344 | −0.364 | −0.321 | −0.319 | −0.343 | −0.358 | −0.337 | −0.285 | −0.315 | −0.296 | −0.282 |
| p | 0.120 | 0.222 | 0.195 | 0.257 | 0.261 | 0.223 | 0.203 | 0.233 | 0.318 | 0.267 | 0.299 | 0.324 |
| $R^2$ | 0.147 | 0.060 | 0.078 | 0.039 | 0.037 | 0.059 | 0.072 | 0.053 | 0.009 | 0.033 | 0.018 | 0.007 |

Table G6. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Opiliones (PT) | | | | | | | | | | | | |
| Est | −0.370 | −0.372 | −0.385 | −0.344 | −0.394 | −0.300 | −0.373 | −0.424 | −0.357 | −0.217 | −0.232 | −0.327 |
| p | 0.186 | 0.184 | 0.167 | 0.223 | 0.157 | 0.292 | 0.183 | 0.125 | 0.204 | 0.453 | 0.421 | 0.248 |
| $R^2$ | 0.084 | 0.086 | 0.100 | 0.059 | 0.109 | 0.021 | 0.087 | 0.141 | 0.071 | −0.037 | −0.028 | 0.044 |
| Herbivore | | | | | | | | | | | | |
| Chewer | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.593 | 0.609 | 0.570 | 0.589 | 0.630 | 0.562 | 0.577 | 0.599 | 0.598 | 0.322 | 0.518 | 0.593 |
| p | 0.021 | 0.017 | 0.028 | 0.022 | 0.012 | 0.031 | 0.026 | 0.019 | 0.019 | 0.256 | 0.052 | 0.021 |
| $R^2$ | 0.373 | 0.398 | 0.336 | 0.366 | 0.433 | 0.325 | 0.348 | 0.383 | 0.380 | 0.040 | 0.260 | 0.372 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.294 | 0.336 | 0.362 | 0.301 | 0.344 | 0.290 | 0.339 | 0.383 | 0.300 | 0.254 | 0.210 | 0.293 |
| p | 0.302 | 0.234 | 0.198 | 0.291 | 0.222 | 0.310 | 0.230 | 0.171 | 0.293 | 0.376 | 0.468 | 0.304 |
| $R^2$ | 0.017 | 0.052 | 0.076 | 0.022 | 0.060 | 0.013 | 0.054 | 0.097 | 0.021 | −0.013 | −0.041 | 0.015 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.443 | 0.487 | 0.551 | 0.427 | 0.449 | 0.489 | 0.508 | 0.516 | 0.370 | 0.532 | 0.362 | 0.397 |
| p | 0.106 | 0.071 | 0.036 | 0.122 | 0.101 | 0.069 | 0.058 | 0.053 | 0.187 | 0.044 | 0.198 | 0.154 |
| $R^2$ | 0.164 | 0.219 | 0.308 | 0.145 | 0.170 | 0.222 | 0.247 | 0.258 | 0.084 | 0.280 | 0.076 | 0.111 |
| Coleoptera (GPE) | | | | | | | | | | | | |
| Est | 0.426 | 0.442 | 0.541 | 0.381 | 0.410 | 0.367 | 0.507 | 0.524 | 0.331 | 0.459 | 0.224 | 0.265 |
| p | 0.139 | 0.122 | 0.049 | 0.192 | 0.156 | 0.210 | 0.069 | 0.058 | 0.263 | 0.107 | 0.458 | 0.376 |
| $R^2$ | 0.141 | 0.160 | 0.295 | 0.090 | 0.122 | 0.076 | 0.246 | 0.271 | 0.041 | 0.181 | −0.042 | −0.013 |
| Sucker | | | | | | | | | | | | |
| Heteroptera (APE) | | | | | | | | | | | | |
| Est | 0.398 | 0.381 | 0.388 | 0.371 | 0.382 | 0.319 | 0.402 | 0.396 | 0.364 | 0.225 | 0.293 | 0.301 |
| p | 0.153 | 0.173 | 0.164 | 0.185 | 0.172 | 0.261 | 0.148 | 0.155 | 0.194 | 0.435 | 0.305 | 0.291 |
| $R^2$ | 0.113 | 0.095 | 0.102 | 0.085 | 0.096 | 0.037 | 0.117 | 0.111 | 0.078 | −0.032 | 0.015 | 0.022 |
| Heteroptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.146 | 0.115 | 0.072 | 0.147 | 0.140 | 0.056 | 0.119 | 0.100 | 0.175 | −0.095 | 0.117 | 0.096 |
| p | 0.616 | 0.693 | 0.805 | 0.614 | 0.630 | 0.848 | 0.684 | 0.731 | 0.546 | 0.745 | 0.688 | 0.743 |
| $R^2$ | −0.071 | −0.082 | −0.093 | −0.071 | −0.073 | −0.096 | −0.081 | −0.086 | −0.059 | −0.088 | −0.082 | −0.088 |
| Heteroptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.455 | 0.530 | 0.630 | 0.434 | 0.503 | 0.514 | 0.546 | 0.620 | 0.384 | 0.623 | 0.308 | 0.442 |
| p | 0.096 | 0.045 | 0.012 | 0.114 | 0.060 | 0.054 | 0.038 | 0.014 | 0.169 | 0.013 | 0.279 | 0.107 |
| $R^2$ | 0.178 | 0.278 | 0.434 | 0.153 | 0.240 | 0.255 | 0.300 | 0.416 | 0.098 | 0.421 | 0.027 | 0.163 |
| Symbiont | | | | | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | | | | | |
| Est | −0.120 | −0.251 | −0.339 | −0.133 | −0.207 | −0.374 | −0.202 | −0.299 | −0.068 | −0.583 | −0.138 | −0.307 |
| p | 0.681 | 0.382 | 0.230 | 0.648 | 0.474 | 0.181 | 0.485 | 0.294 | 0.817 | 0.024 | 0.635 | 0.280 |
| $R^2$ | −0.081 | −0.015 | 0.055 | −0.076 | −0.042 | 0.088 | −0.045 | 0.020 | −0.094 | 0.356 | −0.074 | 0.027 |
| Producer | | | | | | | | | | | | |
| Vascular plants | | | | | | | | | | | | |
| Est | −0.129 | −0.126 | −0.205 | −0.047 | −0.141 | −0.104 | −0.114 | −0.244 | −0.051 | −0.248 | 0.069 | −0.132 |
| p | 0.658 | 0.666 | 0.479 | 0.873 | 0.628 | 0.723 | 0.696 | 0.397 | 0.861 | 0.389 | 0.814 | 0.651 |
| $R^2$ | −0.078 | −0.079 | −0.043 | −0.097 | −0.073 | −0.086 | −0.083 | −0.020 | −0.096 | −0.017 | −0.094 | −0.077 |
| Mosses | | | | | | | | | | | | |
| Est | −0.627 | −0.695 | −0.650 | −0.685 | −0.687 | −0.674 | −0.678 | −0.640 | −0.663 | −0.415 | −0.655 | −0.645 |
| p | 0.012 | 0.004 | 0.008 | 0.004 | 0.004 | 0.005 | 0.005 | 0.010 | 0.007 | 0.134 | 0.008 | 0.009 |
| $R^2$ | 0.428 | 0.549 | 0.469 | 0.531 | 0.534 | 0.510 | 0.517 | 0.451 | 0.492 | 0.131 | 0.478 | 0.459 |

Table G7. Effects of naturalness, measures of management intensity, and stand structural attributes regarding stand age and dead and living wood volume (see Table 1) on the diversity (reciprocal Simpson index 1/D) of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.495 | −0.420 | −0.435 | −0.407 | 0.256 | 0.258 | −0.117 | −0.288 |
| p | 0.065 | 0.128 | 0.114 | 0.143 | 0.373 | 0.370 | 0.689 | 0.313 |
| $R^2$ | 0.230 | 0.138 | 0.154 | 0.122 | −0.012 | −0.011 | −0.082 | 0.011 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.429 | −0.385 | −0.405 | −0.400 | 0.303 | 0.305 | 0.138 | −0.127 |
| p | 0.119 | 0.168 | 0.144 | 0.151 | 0.286 | 0.283 | 0.636 | 0.662 |
| $R^2$ | 0.147 | 0.099 | 0.121 | 0.115 | 0.024 | 0.025 | −0.074 | −0.078 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.276 | 0.157 | 0.206 | 0.237 | −0.118 | −0.294 | −0.591 | −0.121 |
| p | 0.335 | 0.589 | 0.477 | 0.411 | 0.687 | 0.303 | 0.021 | 0.679 |
| $R^2$ | 0.002 | −0.067 | −0.043 | −0.025 | −0.081 | 0.016 | 0.370 | −0.08 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.243 | 0.300 | 0.252 | 0.263 | −0.333 | −0.286 | −0.066 | 0.386 |
| p | 0.398 | 0.292 | 0.381 | 0.360 | 0.240 | 0.317 | 0.822 | 0.167 |
| $R^2$ | −0.020 | 0.021 | −0.015 | −0.007 | 0.049 | 0.010 | −0.094 | 0.100 |
| Fungi (soil saprophytes) | | | | | | | | |
| Est | −0.535 | 0.635 | 0.659 | 0.650 | −0.556 | −0.653 | −0.392 | 0.248 |
| p | 0.043 | 0.011 | 0.007 | 0.009 | 0.034 | 0.008 | 0.160 | 0.388 |
| $R^2$ | 0.286 | 0.441 | 0.484 | 0.467 | 0.315 | 0.473 | 0.106 | −0.017 |
| Isopoda (PT) | | | | | | | | |
| Est | −0.156 | 0.322 | 0.285 | 0.289 | −0.269 | −0.126 | −0.001 | 0.087 |
| p | 0.593 | 0.256 | 0.319 | 0.311 | 0.348 | 0.665 | 0.996 | 0.765 |
| $R^2$ | −0.067 | 0.040 | 0.009 | 0.012 | −0.003 | −0.079 | −0.100 | −0.090 |
| Xylophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.115 | 0.279 | 0.27 | 0.251 | −0.289 | −0.209 | 0.277 | 0.225 |
| p | 0.695 | 0.330 | 0.346 | 0.382 | 0.312 | 0.469 | 0.334 | 0.436 |
| $R^2$ | −0.082 | 0.004 | −0.002 | −0.015 | 0.012 | −0.041 | 0.003 | −0.032 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.395 | −0.327 | −0.357 | −0.394 | 0.447 | 0.475 | 0.684 | 0.047 |
| p | 0.155 | 0.248 | 0.204 | 0.156 | 0.103 | 0.080 | 0.004 | 0.872 |
| $R^2$ | 0.110 | 0.044 | 0.071 | 0.109 | 0.168 | 0.203 | 0.529 | −0.097 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.403 | −0.495 | −0.488 | −0.448 | 0.073 | 0.088 | −0.116 | −0.197 |
| p | 0.147 | 0.066 | 0.070 | 0.102 | 0.804 | 0.764 | 0.692 | 0.496 |
| $R^2$ | 0.118 | 0.229 | 0.221 | 0.169 | −0.093 | −0.09 | −0.082 | −0.048 |
| Fungi (wood/bark species) | | | | | | | | |
| Est | 0.560 | −0.425 | −0.433 | −0.439 | 0.279 | 0.258 | 0.373 | −0.161 |
| p | 0.032 | 0.123 | 0.115 | 0.110 | 0.329 | 0.369 | 0.182 | 0.579 |
| $R^2$ | 0.322 | 0.143 | 0.152 | 0.159 | 0.005 | −0.011 | 0.087 | −0.065 |
| Predator | | | | | | | | |
| Big | | | | | | | | |
| Birds (breeding) | | | | | | | | |
| Est | 0.546 | −0.512 | −0.529 | −0.551 | 0.451 | 0.610 | 0.557 | −0.176 |
| p | 0.038 | 0.055 | 0.046 | 0.036 | 0.099 | 0.016 | 0.033 | 0.544 |
| $R^2$ | 0.300 | 0.252 | 0.276 | 0.308 | 0.173 | 0.400 | 0.318 | −0.058 |
| Birds (overwintering) | | | | | | | | |
| Est | 0.738 | −0.625 | −0.635 | −0.640 | 0.419 | 0.548 | 0.238 | −0.421 |
| p | 0.001 | 0.013 | 0.011 | 0.010 | 0.129 | 0.037 | 0.409 | 0.127 |
| $R^2$ | 0.632 | 0.425 | 0.442 | 0.450 | 0.137 | 0.304 | −0.024 | 0.139 |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | 0.487 | −0.388 | −0.383 | −0.392 | 0.242 | 0.415 | 0.233 | −0.391 |
| p | 0.071 | 0.164 | 0.170 | 0.159 | 0.401 | 0.134 | 0.418 | 0.161 |
| $R^2$ | 0.219 | 0.102 | 0.097 | 0.106 | −0.021 | 0.132 | −0.027 | 0.105 |

Table G7. Continued.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Coleoptera (APE) | | | | | | | | |
| Est | 0.282 | −0.221 | −0.255 | −0.258 | 0.056 | 0.211 | 0.161 | −0.154 |
| p | 0.324 | 0.445 | 0.375 | 0.368 | 0.847 | 0.465 | 0.579 | 0.596 |
| $R^2$ | 0.007 | −0.035 | −0.013 | −0.010 | −0.096 | −0.040 | −0.065 | −0.068 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.063 | 0.091 | 0.074 | 0.047 | 0.259 | 0.086 | 0.114 | 0.057 |
| p | 0.831 | 0.756 | 0.799 | 0.872 | 0.368 | 0.768 | 0.695 | 0.846 |
| $R^2$ | −0.095 | −0.089 | −0.093 | −0.097 | −0.010 | −0.090 | −0.082 | −0.096 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.221 | −0.274 | −0.248 | −0.216 | 0.034 | −0.095 | −0.174 | −0.148 |
| p | 0.443 | 0.339 | 0.389 | 0.455 | 0.907 | 0.746 | 0.550 | 0.612 |
| $R^2$ | −0.034 | 0.001 | −0.017 | −0.037 | −0.098 | −0.088 | −0.060 | −0.071 |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.523 | 0.558 | 0.538 | 0.542 | −0.626 | −0.495 | −0.321 | 0.329 |
| p | 0.049 | 0.032 | 0.041 | 0.040 | 0.013 | 0.065 | 0.258 | 0.245 |
| $R^2$ | 0.268 | 0.319 | 0.289 | 0.295 | 0.427 | 0.230 | 0.038 | 0.046 |
| Heteroptera (APE) | | | | | | | | |
| Est | −0.011 | −0.029 | −0.044 | −0.039 | −0.267 | −0.088 | 0.089 | 0.036 |
| p | 0.971 | 0.921 | 0.881 | 0.893 | 0.351 | 0.763 | 0.762 | 0.901 |
| $R^2$ | −0.100 | −0.099 | −0.097 | −0.098 | −0.004 | −0.090 | −0.089 | −0.098 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | 0.330 | −0.445 | −0.394 | −0.392 | 0.322 | 0.224 | 0.100 | −0.314 |
| p | 0.244 | 0.104 | 0.157 | 0.160 | 0.256 | 0.438 | 0.733 | 0.268 |
| $R^2$ | 0.046 | 0.166 | 0.109 | 0.106 | 0.039 | −0.033 | −0.087 | 0.033 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | −0.414 | 0.264 | 0.289 | 0.312 | −0.194 | −0.223 | −0.572 | −0.028 |
| p | 0.134 | 0.357 | 0.312 | 0.272 | 0.504 | 0.440 | 0.027 | 0.924 |
| $R^2$ | 0.131 | −0.006 | 0.012 | 0.031 | −0.050 | −0.033 | 0.341 | −0.099 |
| Neuropterida (APE) | | | | | | | | |
| Est | 0.160 | −0.221 | −0.192 | −0.175 | −0.127 | −0.018 | −0.252 | −0.220 |
| p | 0.583 | 0.444 | 0.507 | 0.547 | 0.664 | 0.951 | 0.380 | 0.446 |
| $R^2$ | −0.066 | −0.034 | −0.050 | −0.059 | −0.078 | −0.100 | −0.014 | −0.035 |
| Neuropterida (FIT-C) | | | | | | | | |
| Est | 0.241 | −0.381 | −0.376 | −0.369 | 0.059 | 0.226 | 0.207 | −0.102 |
| p | 0.402 | 0.172 | 0.179 | 0.189 | 0.841 | 0.434 | 0.475 | 0.727 |
| $R^2$ | −0.022 | 0.096 | 0.090 | 0.083 | −0.095 | −0.032 | −0.042 | −0.086 |
| Neuropterida (FIT-U) | | | | | | | | |
| Est | 0.235 | −0.196 | −0.189 | −0.203 | 0.482 | 0.367 | 0.178 | −0.141 |
| p | 0.414 | 0.498 | 0.515 | 0.483 | 0.075 | 0.190 | 0.540 | 0.629 |
| $R^2$ | −0.026 | −0.048 | −0.052 | −0.045 | 0.212 | 0.081 | −0.057 | −0.073 |
| Opiliones (APE) | | | | | | | | |
| Est | −0.370 | 0.307 | 0.314 | 0.310 | −0.37 | −0.255 | 0.040 | 0.135 |
| p | 0.187 | 0.280 | 0.269 | 0.275 | 0.187 | 0.375 | 0.892 | 0.644 |
| $R^2$ | 0.084 | 0.027 | 0.033 | 0.030 | 0.084 | −0.013 | −0.098 | −0.076 |
| Opiliones (PT) | | | | | | | | |
| Est | −0.499 | 0.481 | 0.471 | 0.496 | −0.208 | −0.283 | −0.421 | 0.110 |
| p | 0.063 | 0.075 | 0.082 | 0.065 | 0.473 | 0.322 | 0.127 | 0.707 |
| $R^2$ | 0.234 | 0.211 | 0.199 | 0.231 | −0.042 | 0.008 | 0.139 | −0.084 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.562 | −0.618 | −0.613 | −0.573 | 0.211 | 0.275 | −0.165 | −0.396 |
| p | 0.031 | 0.014 | 0.016 | 0.027 | 0.466 | 0.337 | 0.571 | 0.154 |
| $R^2$ | 0.325 | 0.413 | 0.405 | 0.342 | −0.040 | 0.001 | −0.064 | 0.111 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.048 | 0.092 | 0.117 | 0.077 | −0.080 | −0.064 | 0.346 | 0.062 |
| p | 0.870 | 0.752 | 0.690 | 0.794 | 0.785 | 0.827 | 0.219 | 0.833 |
| $R^2$ | −0.097 | −0.089 | −0.082 | −0.092 | −0.091 | −0.095 | 0.061 | −0.095 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.629 | −0.645 | −0.659 | −0.668 | 0.730 | 0.762 | 0.446 | −0.381 |
| p | 0.012 | 0.009 | 0.007 | 0.006 | 0.002 | 0.001 | 0.103 | 0.173 |
| $R^2$ | 0.432 | 0.460 | 0.484 | 0.50 | 0.616 | 0.680 | 0.168 | 0.095 |
| Coleoptera (GPE) | | | | | | | | |
| Est | 0.347 | −0.332 | −0.353 | −0.377 | 0.687 | 0.595 | 0.232 | −0.231 |
| p | 0.238 | 0.262 | 0.230 | 0.197 | 0.006 | 0.026 | 0.442 | 0.444 |
| $R^2$ | 0.056 | 0.042 | 0.062 | 0.086 | 0.543 | 0.38 | −0.037 | −0.037 |

Table G7. Continued.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Sucker | | | | | | | | |
| Heteroptera (APE) | | | | | | | | |
| Est | 0.49 | −0.456 | −0.450 | −0.466 | 0.683 | 0.602 | 0.358 | −0.347 |
| p | 0.069 | 0.095 | 0.100 | 0.086 | 0.005 | 0.018 | 0.203 | 0.218 |
| $R^2$ | 0.223 | 0.179 | 0.172 | 0.192 | 0.527 | 0.387 | 0.072 | 0.062 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | 0.012 | −0.012 | 0.025 | 0.008 | 0.0100 | −0.061 | −0.242 | −0.110 |
| p | 0.967 | 0.968 | 0.931 | 0.978 | 0.973 | 0.835 | 0.400 | 0.706 |
| $R^2$ | −0.100 | −0.100 | −0.099 | −0.100 | −0.100 | −0.095 | −0.021 | −0.084 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | 0.105 | −0.201 | −0.237 | −0.205 | −0.031 | 0.070 | 0.095 | 0.124 |
| p | 0.720 | 0.487 | 0.411 | 0.479 | 0.916 | 0.811 | 0.745 | 0.672 |
| $R^2$ | −0.085 | −0.045 | −0.024 | −0.044 | −0.099 | −0.093 | −0.088 | −0.079 |
| Symbiont | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | |
| Est | −0.026 | −0.031 | −0.012 | 0.021 | −0.151 | −0.272 | −0.467 | 0.023 |
| p | 0.928 | 0.916 | 0.967 | 0.943 | 0.603 | 0.342 | 0.086 | 0.937 |
| $R^2$ | −0.099 | −0.099 | −0.100 | −0.099 | −0.069 | <0.001 | 0.193 | −0.099 |
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | −0.291 | 0.280 | 0.254 | 0.286 | −0.286 | −0.163 | −0.353 | −0.004 |
| p | 0.307 | 0.328 | 0.376 | 0.317 | 0.317 | 0.575 | 0.210 | 0.988 |
| $R^2$ | 0.014 | 0.005 | −0.013 | 0.010 | 0.010 | −0.064 | 0.067 | −0.100 |
| Mosses | | | | | | | | |
| Est | −0.300 | 0.312 | 0.320 | 0.333 | −0.303 | −0.361 | −0.058 | 0.142 |
| p | 0.293 | 0.272 | 0.260 | 0.239 | 0.287 | 0.199 | 0.843 | 0.627 |
| $R^2$ | 0.021 | 0.031 | 0.037 | 0.049 | 0.023 | 0.075 | −0.095 | −0.073 |

Table G8. Effects of stand structural attributes except stand age and wood volume (see Table 1) on the diversity (reciprocal Simpson index 1/D) of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.423 | −0.178 | 0.490 | 0.583 | −0.528 | 0.229 | 0.429 | −0.041 |
| p | 0.125 | 0.539 | 0.069 | 0.024 | 0.046 | 0.427 | 0.119 | 0.889 |
| $R^2$ | 0.141 | −0.057 | 0.223 | 0.357 | 0.275 | −0.029 | 0.147 | −0.098 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.201 | −0.144 | 0.408 | 0.194 | −0.419 | 0.308 | 0.343 | −0.622 |
| p | 0.487 | 0.621 | 0.141 | 0.504 | 0.130 | 0.28 | 0.224 | 0.013 |
| $R^2$ | −0.046 | −0.072 | 0.124 | −0.049 | 0.136 | 0.027 | 0.058 | 0.421 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.050 | 0.187 | 0.070 | 0.074 | 0.066 | −0.086 | 0.011 | 0.340 |
| p | 0.864 | 0.519 | 0.811 | 0.801 | 0.821 | 0.768 | 0.970 | 0.229 |
| $R^2$ | −0.097 | −0.053 | −0.093 | −0.093 | −0.094 | −0.090 | −0.10 | 0.055 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.362 | 0.283 | −0.160 | −0.240 | 0.259 | −0.285 | −0.174 | −0.004 |
| p | 0.198 | 0.323 | 0.581 | 0.405 | 0.367 | 0.319 | 0.549 | 0.989 |
| $R^2$ | 0.076 | 0.007 | −0.065 | −0.023 | −0.010 | 0.009 | −0.059 | −0.100 |
| Fungi (soil saprophytes) | | | | | | | | |
| Est | 0.380 | 0.350 | 0.086 | −0.149 | 0.582 | −0.363 | −0.257 | 0.353 |
| p | 0.174 | 0.214 | 0.768 | 0.609 | 0.024 | 0.195 | 0.370 | 0.209 |
| $R^2$ | 0.094 | 0.065 | −0.090 | −0.070 | 0.355 | 0.078 | −0.011 | 0.068 |
| Isopoda (PT) | | | | | | | | |
| Est | 0.005 | −0.184 | −0.206 | 0.084 | 0.260 | −0.446 | −0.340 | 0.357 |
| p | 0.987 | 0.526 | 0.477 | 0.775 | 0.364 | 0.104 | 0.229 | 0.204 |
| $R^2$ | −0.100 | −0.054 | −0.043 | −0.091 | −0.009 | 0.167 | 0.055 | 0.071 |
| Xylophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.253 | 0.037 | −0.116 | −0.194 | 0.300 | −0.284 | −0.291 | −0.209 |
| p | 0.379 | 0.900 | 0.691 | 0.503 | 0.293 | 0.321 | 0.308 | 0.471 |
| $R^2$ | −0.014 | −0.098 | −0.082 | −0.049 | 0.021 | 0.008 | 0.014 | −0.042 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.012 | −0.206 | −0.124 | −0.024 | −0.215 | 0.294 | 0.217 | −0.223 |
| p | 0.966 | 0.476 | 0.671 | 0.934 | 0.456 | 0.302 | 0.453 | 0.441 |
| $R^2$ | −0.10 | −0.043 | −0.079 | −0.099 | −0.038 | 0.017 | −0.037 | −0.033 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.295 | 0.101 | 0.278 | 0.221 | −0.492 | 0.237 | 0.260 | −0.155 |
| p | 0.300 | 0.730 | 0.331 | 0.444 | 0.068 | 0.411 | 0.365 | 0.595 |
| $R^2$ | 0.017 | −0.086 | 0.004 | −0.034 | 0.225 | −0.025 | −0.009 | −0.068 |
| Fungi (wood/bark species) | | | | | | | | |
| Est | −0.247 | −0.228 | 0.327 | 0.162 | −0.362 | 0.229 | 0.212 | −0.389 |
| p | 0.390 | 0.429 | 0.249 | 0.577 | 0.197 | 0.427 | 0.464 | 0.163 |
| $R^2$ | −0.018 | −0.030 | 0.043 | −0.065 | 0.077 | −0.029 | −0.040 | 0.103 |
| Predator | | | | | | | | |
| Big | | | | | | | | |
| Birds (breeding) | | | | | | | | |
| Est | −0.246 | −0.29 | 0.131 | 0.326 | −0.485 | 0.415 | 0.373 | −0.429 |
| p | 0.392 | 0.309 | 0.653 | 0.25 | 0.072 | 0.133 | 0.183 | 0.119 |
| $R^2$ | −0.018 | 0.013 | −0.077 | 0.043 | 0.217 | 0.132 | 0.087 | 0.148 |
| Birds (overwintering) | | | | | | | | |
| Est | −0.559 | −0.386 | 0.607 | 0.736 | −0.664 | 0.466 | 0.544 | −0.197 |
| p | 0.032 | 0.166 | 0.017 | 0.001 | 0.007 | 0.087 | 0.038 | 0.497 |
| $R^2$ | 0.320 | 0.101 | 0.396 | 0.628 | 0.492 | 0.191 | 0.298 | −0.048 |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | −0.48 | −0.443 | 0.402 | 0.506 | −0.413 | 0.243 | 0.214 | −0.326 |
| p | 0.076 | 0.106 | 0.147 | 0.058 | 0.136 | 0.398 | 0.459 | 0.249 |

Table G8. Continued.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| $R^2$ | 0.210 | 0.164 | 0.118 | 0.245 | 0.129 | −0.020 | −0.038 | 0.043 |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.284 | −0.321 | 0.135 | 0.088 | −0.150 | 0.049 | −0.071 | −0.066 |
| p | 0.321 | 0.258 | 0.644 | 0.765 | 0.606 | 0.866 | 0.808 | 0.821 |
| $R^2$ | 0.008 | 0.038 | −0.076 | −0.090 | −0.070 | −0.097 | −0.093 | −0.094 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.084 | −0.162 | 0.233 | −0.028 | 0.072 | 0.083 | 0.152 | −0.222 |
| p | 0.774 | 0.578 | 0.419 | 0.924 | 0.805 | 0.777 | 0.601 | 0.441 |
| $R^2$ | −0.090 | −0.065 | −0.027 | −0.099 | −0.093 | −0.091 | −0.069 | −0.033 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.176 | 0.107 | 0.230 | 0.030 | −0.255 | 0.106 | 0.115 | −0.110 |
| p | 0.545 | 0.714 | 0.426 | 0.917 | 0.375 | 0.716 | 0.693 | 0.707 |
| $R^2$ | −0.059 | −0.085 | −0.029 | −0.099 | −0.013 | −0.085 | −0.082 | −0.084 |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.368 | 0.341 | −0.119 | −0.135 | 0.483 | −0.406 | −0.315 | 0.285 |
| p | 0.189 | 0.228 | 0.682 | 0.644 | 0.073 | 0.143 | 0.267 | 0.319 |
| $R^2$ | 0.082 | 0.056 | −0.081 | −0.076 | 0.214 | 0.122 | 0.033 | 0.009 |
| Heteroptera (APE) | | | | | | | | |
| Est | −0.025 | 0.016 | −0.180 | −0.180 | 0.080 | −0.128 | −0.298 | 0.107 |
| p | 0.932 | 0.955 | 0.536 | 0.535 | 0.786 | 0.660 | 0.296 | 0.714 |
| $R^2$ | −0.099 | −0.100 | −0.057 | −0.056 | −0.091 | −0.078 | 0.019 | −0.085 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | −0.297 | −0.086 | 0.110 | 0.115 | −0.355 | 0.346 | 0.222 | −0.030 |
| p | 0.297 | 0.770 | 0.705 | 0.694 | 0.207 | 0.220 | 0.442 | 0.919 |
| $R^2$ | 0.019 | −0.090 | −0.084 | −0.082 | 0.070 | 0.060 | −0.034 | −0.099 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | 0.031 | 0.202 | −0.105 | 0.116 | 0.147 | −0.129 | −0.023 | 0.508 |
| p | 0.917 | 0.486 | 0.718 | 0.692 | 0.613 | 0.658 | 0.936 | 0.057 |
| $R^2$ | −0.099 | −0.045 | −0.085 | −0.082 | −0.071 | −0.078 | −0.099 | 0.247 |
| Neuropterida (APE) | | | | | | | | |
| Est | −0.226 | 0.110 | 0.467 | 0.355 | −0.287 | 0.214 | 0.235 | −0.232 |
| p | 0.434 | 0.708 | 0.086 | 0.207 | 0.316 | 0.459 | 0.415 | 0.421 |
| $R^2$ | −0.031 | −0.084 | 0.193 | 0.070 | 0.010 | −0.038 | −0.026 | −0.028 |
| Neuropterida (FIT-C) | | | | | | | | |
| Est | −0.151 | 0.064 | −0.164 | 0.120 | −0.300 | 0.214 | 0.109 | 0.139 |
| p | 0.604 | 0.827 | 0.572 | 0.681 | 0.292 | 0.460 | 0.709 | 0.634 |
| $R^2$ | −0.069 | −0.095 | −0.064 | −0.081 | 0.021 | −0.039 | −0.084 | −0.074 |
| Neuropterida (FIT-U) | | | | | | | | |
| Est | −0.125 | −0.207 | 0.105 | 0.271 | −0.253 | 0.262 | 0.369 | −0.098 |
| p | 0.669 | 0.474 | 0.719 | 0.344 | 0.378 | 0.360 | 0.189 | 0.736 |
| $R^2$ | −0.079 | −0.042 | −0.085 | −0.001 | −0.014 | −0.007 | 0.083 | −0.087 |
| Opiliones (APE) | | | | | | | | |
| Est | 0.167 | 0.036 | −0.487 | −0.433 | 0.408 | −0.36 | −0.566 | 0.176 |
| p | 0.565 | 0.903 | 0.071 | 0.116 | 0.141 | 0.200 | 0.029 | 0.545 |
| $R^2$ | −0.062 | −0.098 | 0.219 | 0.152 | 0.124 | 0.074 | 0.331 | −0.058 |
| Opiliones (PT) | | | | | | | | |
| Est | 0.119 | −0.017 | −0.343 | −0.185 | 0.377 | −0.466 | −0.368 | 0.358 |
| p | 0.684 | 0.955 | 0.224 | 0.524 | 0.178 | 0.086 | 0.190 | 0.203 |
| $R^2$ | −0.081 | −0.100 | 0.058 | −0.054 | 0.091 | 0.192 | 0.082 | 0.072 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.536 | −0.100 | 0.491 | 0.560 | −0.670 | 0.351 | 0.429 | −0.083 |
| p | 0.042 | 0.733 | 0.068 | 0.032 | 0.006 | 0.213 | 0.119 | 0.778 |
| $R^2$ | 0.287 | −0.087 | 0.224 | 0.321 | 0.503 | 0.065 | 0.148 | −0.091 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.153 | −0.036 | −0.047 | −0.322 | 0.234 | 0.012 | −0.217 | −0.297 |
| p | 0.599 | 0.901 | 0.872 | 0.256 | 0.417 | 0.967 | 0.452 | 0.297 |
| $R^2$ | −0.069 | −0.098 | −0.097 | 0.039 | −0.026 | −0.100 | −0.037 | 0.019 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.493 | −0.572 | 0.130 | 0.251 | −0.601 | 0.451 | 0.336 | −0.497 |
| p | 0.067 | 0.027 | 0.655 | 0.382 | 0.018 | 0.099 | 0.234 | 0.065 |
| $R^2$ | 0.227 | 0.340 | −0.077 | −0.015 | 0.385 | 0.173 | 0.052 | 0.231 |
| Coleoptera (GPE) | | | | | | | | |
| Est | −0.261 | −0.534 | 0.187 | 0.068 | −0.314 | 0.392 | 0.312 | −0.408 |
| p | 0.383 | 0.052 | 0.537 | 0.824 | 0.289 | 0.177 | 0.294 | 0.158 |
| $R^2$ | −0.016 | 0.285 | −0.062 | −0.105 | 0.026 | 0.103 | 0.024 | 0.120 |

Table G8. Continued.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Sucker | | | | | | | | |
| Heteroptera (APE) | | | | | | | | |
| Est | −0.399 | −0.509 | 0.119 | 0.273 | −0.43 | 0.36 | 0.322 | −0.206 |
| p | 0.151 | 0.057 | 0.685 | 0.34 | 0.118 | 0.200 | 0.257 | 0.476 |
| $R^2$ | 0.114 | 0.249 | −0.081 | <0.001 | 0.149 | 0.075 | 0.039 | −0.043 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | −0.012 | 0.169 | 0.527 | 0.323 | −0.074 | 0.305 | 0.387 | 0.008 |
| p | 0.967 | 0.562 | 0.047 | 0.254 | 0.802 | 0.284 | 0.165 | 0.979 |
| $R^2$ | −0.100 | −0.062 | 0.274 | 0.04 | −0.093 | 0.025 | 0.102 | −0.100 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | 0.024 | 0.128 | −0.296 | −0.141 | −0.179 | −0.051 | −0.057 | −0.076 |
| p | 0.935 | 0.662 | 0.300 | 0.630 | 0.537 | 0.861 | 0.845 | 0.795 |
| $R^2$ | −0.099 | −0.078 | 0.017 | −0.073 | −0.057 | −0.096 | −0.096 | −0.092 |
| Symbiont | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | |
| Est | 0.046 | 0.428 | 0.303 | 0.251 | −0.137 | 0.087 | 0.315 | 0.266 |
| p | 0.875 | 0.121 | 0.288 | 0.382 | 0.640 | 0.767 | 0.268 | 0.354 |
| $R^2$ | −0.097 | 0.146 | 0.023 | −0.015 | −0.075 | −0.090 | 0.033 | −0.005 |
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | −0.081 | −0.122 | −0.187 | −0.026 | 0.186 | −0.404 | −0.368 | 0.166 |
| p | 0.782 | 0.675 | 0.520 | 0.928 | 0.522 | 0.145 | 0.190 | 0.569 |
| $R^2$ | −0.091 | −0.080 | −0.053 | −0.099 | −0.054 | 0.120 | 0.082 | −0.063 |
| Mosses | | | | | | | | |
| Est | 0.151 | 0.065 | −0.448 | −0.370 | 0.378 | −0.449 | −0.502 | 0.397 |
| p | 0.603 | 0.824 | 0.102 | 0.187 | 0.177 | 0.100 | 0.061 | 0.154 |
| $R^2$ | −0.069 | −0.094 | 0.170 | 0.084 | 0.092 | 0.172 | 0.239 | 0.111 |

Table G9. Effects of stand structural complexity indices (see Appendix A: Table A3) on the diversity (reciprocal Simpson index 1/D) of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | | | | | |
| Mycetophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.548 | 0.504 | 0.387 | 0.565 | 0.531 | 0.433 | 0.489 | 0.408 | 0.592 | 0.023 | 0.558 | 0.471 |
| p | 0.037 | 0.060 | 0.166 | 0.030 | 0.045 | 0.115 | 0.069 | 0.141 | 0.021 | 0.936 | 0.033 | 0.082 |
| $R^2$ | 0.304 | 0.241 | 0.101 | 0.329 | 0.279 | 0.152 | 0.222 | 0.124 | 0.371 | −0.099 | 0.319 | 0.199 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.309 | 0.371 | 0.395 | 0.361 | 0.374 | 0.287 | 0.409 | 0.408 | 0.355 | 0.221 | 0.254 | 0.264 |
| p | 0.277 | 0.185 | 0.156 | 0.199 | 0.182 | 0.315 | 0.140 | 0.141 | 0.207 | 0.445 | 0.376 | 0.357 |
| $R^2$ | 0.028 | 0.085 | 0.110 | 0.075 | 0.088 | 0.011 | 0.125 | 0.124 | 0.070 | −0.035 | −0.013 | −0.006 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.145 | −0.188 | −0.280 | −0.053 | −0.167 | −0.304 | −0.115 | −0.272 | −0.012 | −0.532 | −0.032 | −0.291 |
| p | 0.618 | 0.517 | 0.328 | 0.856 | 0.565 | 0.285 | 0.693 | 0.342 | 0.968 | 0.044 | 0.914 | 0.308 |
| $R^2$ | −0.072 | −0.053 | 0.005 | −0.096 | −0.062 | 0.025 | −0.082 | 0.000 | −0.100 | 0.281 | −0.099 | 0.014 |
| Saprophage | | | | | | | | | | | | |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | −0.247 | −0.281 | −0.256 | −0.283 | −0.275 | −0.281 | −0.273 | −0.245 | −0.271 | −0.162 | −0.286 | −0.263 |
| p | 0.390 | 0.325 | 0.373 | 0.323 | 0.337 | 0.326 | 0.340 | 0.394 | 0.344 | 0.577 | 0.317 | 0.359 |
| $R^2$ | −0.018 | 0.006 | −0.012 | 0.007 | 0.001 | 0.006 | 0.000 | −0.019 | −0.001 | −0.065 | 0.010 | −0.007 |
| Fungi (soil saprophytes) | | | | | | | | | | | | |
| Est | −0.499 | −0.551 | −0.650 | −0.489 | −0.524 | −0.468 | −0.616 | −0.640 | −0.442 | −0.539 | −0.326 | −0.377 |
| p | 0.063 | 0.035 | 0.008 | 0.070 | 0.049 | 0.085 | 0.015 | 0.010 | 0.107 | 0.041 | 0.250 | 0.178 |
| $R^2$ | 0.235 | 0.308 | 0.469 | 0.221 | 0.269 | 0.195 | 0.409 | 0.450 | 0.163 | 0.291 | 0.043 | 0.091 |
| Isopoda (PT) | | | | | | | | | | | | |
| Est | −0.125 | −0.130 | −0.209 | −0.138 | −0.128 | 0.025 | −0.241 | −0.223 | −0.134 | −0.053 | 0.029 | 0.077 |
| p | 0.669 | 0.656 | 0.471 | 0.637 | 0.662 | 0.933 | 0.402 | 0.440 | 0.646 | 0.858 | 0.921 | 0.793 |
| $R^2$ | −0.079 | −0.077 | −0.041 | −0.075 | −0.078 | −0.099 | −0.022 | −0.033 | −0.076 | −0.096 | −0.099 | −0.092 |
| Xylophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | −0.266 | −0.197 | −0.167 | −0.278 | −0.191 | −0.067 | −0.291 | −0.155 | −0.278 | 0.108 | −0.224 | −0.012 |
| p | 0.354 | 0.497 | 0.566 | 0.332 | 0.511 | 0.820 | 0.308 | 0.594 | 0.332 | 0.713 | 0.437 | 0.966 |
| $R^2$ | −0.005 | −0.048 | −0.063 | 0.004 | −0.051 | −0.094 | 0.014 | −0.068 | 0.004 | −0.084 | −0.032 | −0.100 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.357 | 0.333 | 0.446 | 0.185 | 0.304 | 0.433 | 0.276 | 0.433 | 0.130 | 0.671 | 0.129 | 0.394 |
| p | 0.204 | 0.239 | 0.103 | 0.525 | 0.285 | 0.116 | 0.335 | 0.115 | 0.656 | 0.006 | 0.659 | 0.157 |
| $R^2$ | 0.071 | 0.049 | 0.168 | −0.054 | 0.024 | 0.152 | 0.002 | 0.152 | −0.077 | 0.505 | −0.078 | 0.108 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.329 | 0.332 | 0.331 | 0.382 | 0.363 | 0.128 | 0.425 | 0.378 | 0.414 | −0.045 | 0.209 | 0.135 |
| p | 0.246 | 0.240 | 0.242 | 0.171 | 0.196 | 0.660 | 0.124 | 0.177 | 0.134 | 0.879 | 0.471 | 0.643 |
| $R^2$ | 0.045 | 0.049 | 0.048 | 0.096 | 0.077 | −0.078 | 0.142 | 0.092 | 0.131 | −0.097 | −0.042 | −0.075 |
| Fungi (wood/ bark species) | | | | | | | | | | | | |
| Est | 0.323 | 0.378 | 0.418 | 0.309 | 0.388 | 0.361 | 0.353 | 0.446 | 0.305 | 0.366 | 0.213 | 0.378 |
| p | 0.254 | 0.177 | 0.130 | 0.277 | 0.164 | 0.198 | 0.210 | 0.104 | 0.284 | 0.192 | 0.460 | 0.177 |
| $R^2$ | 0.040 | 0.092 | 0.135 | 0.028 | 0.103 | 0.075 | 0.067 | 0.167 | 0.025 | 0.080 | −0.039 | 0.092 |
| Predator | | | | | | | | | | | | |
| Big | | | | | | | | | | | | |
| Birds (breeding) | | | | | | | | | | | | |
| Est | 0.571 | 0.594 | 0.624 | 0.493 | 0.579 | 0.661 | 0.527 | 0.618 | 0.455 | 0.637 | 0.457 | 0.642 |
| p | 0.028 | 0.020 | 0.013 | 0.067 | 0.025 | 0.007 | 0.047 | 0.014 | 0.096 | 0.010 | 0.093 | 0.010 |
| $R^2$ | 0.339 | 0.374 | 0.424 | 0.227 | 0.351 | 0.487 | 0.273 | 0.413 | 0.178 | 0.446 | 0.181 | 0.454 |

Table G9. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Birds (overwintering) | | | | | | | | | | | | |
| Est | 0.772 | 0.755 | 0.643 | 0.743 | 0.771 | 0.788 | 0.661 | 0.653 | 0.745 | 0.389 | 0.774 | 0.829 |
| p | 0.000 | 0.001 | 0.010 | 0.001 | 0.000 | 0.000 | 0.007 | 0.008 | 0.001 | 0.162 | 0.000 | 0.000 |
| $R^2$ | 0.701 | 0.666 | 0.456 | 0.643 | 0.698 | 0.735 | 0.488 | 0.474 | 0.647 | 0.104 | 0.706 | 0.825 |
| Small | | | | | | | | | | | | |
| Araneae (APE) | | | | | | | | | | | | |
| Est | 0.429 | 0.517 | 0.440 | 0.492 | 0.522 | 0.585 | 0.427 | 0.438 | 0.484 | 0.332 | 0.544 | 0.613 |
| p | 0.119 | 0.052 | 0.109 | 0.068 | 0.050 | 0.023 | 0.121 | 0.111 | 0.073 | 0.241 | 0.038 | 0.016 |
| $R^2$ | 0.148 | 0.259 | 0.160 | 0.225 | 0.266 | 0.360 | 0.145 | 0.158 | 0.215 | 0.048 | 0.298 | 0.405 |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.119 | 0.179 | 0.194 | 0.151 | 0.171 | 0.196 | 0.167 | 0.187 | 0.135 | 0.199 | 0.138 | 0.179 |
| p | 0.684 | 0.536 | 0.504 | 0.605 | 0.557 | 0.499 | 0.564 | 0.519 | 0.644 | 0.493 | 0.637 | 0.536 |
| $R^2$ | −0.081 | −0.057 | −0.050 | −0.069 | −0.061 | −0.048 | −0.062 | −0.053 | −0.076 | −0.047 | −0.074 | −0.057 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | −0.007 | −0.011 | −0.001 | −0.040 | −0.026 | 0.057 | −0.042 | −0.020 | −0.059 | 0.115 | 0.004 | 0.043 |
| p | 0.981 | 0.970 | 0.996 | 0.891 | 0.930 | 0.846 | 0.886 | 0.945 | 0.840 | 0.694 | 0.989 | 0.882 |
| $R^2$ | −0.100 | −0.100 | −0.100 | −0.098 | −0.099 | −0.096 | −0.098 | −0.099 | −0.095 | −0.082 | −0.100 | −0.097 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.073 | 0.097 | 0.112 | 0.146 | 0.124 | −0.085 | 0.191 | 0.154 | 0.179 | −0.160 | −0.005 | −0.077 |
| p | 0.804 | 0.741 | 0.702 | 0.617 | 0.671 | 0.770 | 0.510 | 0.596 | 0.538 | 0.583 | 0.987 | 0.792 |
| $R^2$ | −0.093 | −0.087 | −0.083 | −0.071 | −0.079 | −0.090 | −0.051 | −0.068 | −0.057 | −0.066 | −0.100 | −0.092 |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | −0.412 | −0.454 | −0.531 | −0.403 | −0.438 | −0.382 | −0.502 | −0.530 | −0.372 | −0.426 | −0.265 | −0.321 |
| p | 0.137 | 0.096 | 0.045 | 0.146 | 0.110 | 0.171 | 0.061 | 0.045 | 0.184 | 0.123 | 0.355 | 0.258 |
| $R^2$ | 0.128 | 0.177 | 0.278 | 0.119 | 0.158 | 0.096 | 0.238 | 0.277 | 0.086 | 0.144 | −0.005 | 0.038 |
| Heteroptera (APE) | | | | | | | | | | | | |
| Est | −0.144 | −0.099 | −0.045 | −0.127 | −0.099 | −0.111 | −0.084 | −0.036 | −0.128 | 0.026 | −0.175 | −0.114 |
| p | 0.621 | 0.735 | 0.877 | 0.663 | 0.736 | 0.703 | 0.774 | 0.903 | 0.660 | 0.930 | 0.547 | 0.698 |
| $R^2$ | −0.072 | −0.087 | −0.097 | −0.078 | −0.087 | −0.083 | −0.091 | −0.098 | −0.078 | −0.099 | −0.059 | −0.083 |
| Heteroptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.275 | 0.289 | 0.323 | 0.282 | 0.292 | 0.190 | 0.340 | 0.340 | 0.280 | 0.161 | 0.164 | 0.167 |
| p | 0.337 | 0.312 | 0.254 | 0.324 | 0.305 | 0.512 | 0.229 | 0.229 | 0.327 | 0.581 | 0.573 | 0.565 |
| $R^2$ | 0.002 | 0.012 | 0.041 | 0.007 | 0.015 | −0.051 | 0.055 | 0.055 | 0.006 | −0.065 | −0.064 | −0.062 |
| Heteroptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.116 | −0.203 | −0.319 | −0.074 | −0.196 | −0.246 | −0.168 | −0.335 | −0.047 | −0.490 | 0.025 | −0.241 |
| p | 0.692 | 0.483 | 0.261 | 0.800 | 0.499 | 0.392 | 0.564 | 0.237 | 0.873 | 0.069 | 0.932 | 0.403 |
| $R^2$ | −0.082 | −0.045 | 0.037 | −0.093 | −0.049 | −0.019 | −0.062 | 0.050 | −0.097 | 0.223 | −0.099 | −0.022 |
| Neuropterida (APE) | | | | | | | | | | | | |
| Est | 0.190 | 0.222 | 0.124 | 0.298 | 0.254 | 0.131 | 0.233 | 0.153 | 0.338 | −0.183 | 0.285 | 0.177 |
| p | 0.513 | 0.442 | 0.670 | 0.295 | 0.376 | 0.653 | 0.418 | 0.600 | 0.232 | 0.528 | 0.318 | 0.543 |
| $R^2$ | −0.052 | −0.034 | −0.079 | 0.020 | −0.013 | −0.077 | −0.027 | −0.069 | 0.053 | −0.055 | 0.009 | −0.058 |
| Neuropterida (FIT-C) | | | | | | | | | | | | |
| Est | 0.324 | 0.286 | 0.317 | 0.252 | 0.289 | 0.244 | 0.295 | 0.332 | 0.247 | 0.236 | 0.169 | 0.237 |
| p | 0.253 | 0.317 | 0.263 | 0.380 | 0.312 | 0.396 | 0.301 | 0.241 | 0.391 | 0.412 | 0.562 | 0.410 |
| $R^2$ | 0.041 | 0.010 | 0.035 | −0.014 | 0.012 | −0.020 | 0.017 | 0.048 | −0.018 | −0.025 | −0.062 | −0.024 |
| Neuropterida (FIT-U) | | | | | | | | | | | | |
| Est | 0.372 | 0.326 | 0.300 | 0.303 | 0.313 | 0.378 | 0.285 | 0.281 | 0.280 | 0.274 | 0.337 | 0.360 |
| p | 0.183 | 0.249 | 0.292 | 0.287 | 0.270 | 0.177 | 0.318 | 0.325 | 0.327 | 0.339 | 0.233 | 0.200 |
| $R^2$ | 0.087 | 0.043 | 0.021 | 0.023 | 0.032 | 0.092 | 0.009 | 0.006 | 0.006 | 0.001 | 0.053 | 0.075 |
| Opiliones (APE) | | | | | | | | | | | | |
| Est | −0.484 | −0.402 | −0.324 | −0.438 | −0.417 | −0.361 | −0.390 | −0.334 | −0.450 | −0.076 | −0.434 | −0.378 |
| p | 0.073 | 0.147 | 0.253 | 0.111 | 0.132 | 0.199 | 0.162 | 0.238 | 0.100 | 0.795 | 0.115 | 0.176 |
| $R^2$ | 0.215 | 0.118 | 0.041 | 0.157 | 0.133 | 0.075 | 0.104 | 0.050 | 0.172 | −0.092 | 0.153 | 0.092 |

Table G9. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Opiliones (PT) | | | | | | | | | | | | |
| Est | −0.410 | −0.409 | −0.447 | −0.330 | −0.419 | −0.407 | −0.370 | −0.475 | −0.324 | −0.409 | −0.240 | −0.428 |
| p | 0.139 | 0.141 | 0.102 | 0.244 | 0.129 | 0.142 | 0.187 | 0.079 | 0.253 | 0.140 | 0.405 | 0.120 |
| $R^2$ | 0.126 | 0.124 | 0.169 | 0.046 | 0.136 | 0.123 | 0.084 | 0.204 | 0.041 | 0.125 | −0.023 | 0.147 |
| Herbivore | | | | | | | | | | | | |
| Chewer | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.578 | 0.564 | 0.476 | 0.640 | 0.597 | 0.399 | 0.610 | 0.512 | 0.674 | −0.003 | 0.544 | 0.420 |
| p | 0.025 | 0.030 | 0.079 | 0.010 | 0.020 | 0.152 | 0.016 | 0.055 | 0.005 | 0.992 | 0.038 | 0.128 |
| $R^2$ | 0.349 | 0.328 | 0.205 | 0.452 | 0.379 | 0.114 | 0.400 | 0.252 | 0.511 | −0.100 | 0.298 | 0.138 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | −0.274 | −0.170 | −0.073 | −0.267 | −0.183 | −0.086 | −0.207 | −0.074 | −0.289 | 0.216 | −0.284 | −0.089 |
| p | 0.339 | 0.557 | 0.804 | 0.352 | 0.528 | 0.770 | 0.475 | 0.802 | 0.311 | 0.456 | 0.321 | 0.762 |
| $R^2$ | 0.001 | −0.061 | −0.093 | −0.004 | −0.055 | −0.090 | −0.043 | −0.093 | 0.013 | −0.037 | 0.008 | −0.089 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.537 | 0.626 | 0.700 | 0.554 | 0.591 | 0.597 | 0.654 | 0.676 | 0.498 | 0.622 | 0.444 | 0.505 |
| p | 0.042 | 0.013 | 0.003 | 0.034 | 0.021 | 0.019 | 0.008 | 0.005 | 0.063 | 0.013 | 0.105 | 0.059 |
| $R^2$ | 0.288 | 0.426 | 0.559 | 0.313 | 0.370 | 0.379 | 0.474 | 0.514 | 0.234 | 0.420 | 0.165 | 0.243 |
| Coleoptera (GPE) | | | | | | | | | | | | |
| Est | 0.302 | 0.341 | 0.402 | 0.301 | 0.293 | 0.338 | 0.383 | 0.355 | 0.239 | 0.394 | 0.251 | 0.221 |
| p | 0.311 | 0.247 | 0.165 | 0.311 | 0.325 | 0.252 | 0.189 | 0.226 | 0.428 | 0.175 | 0.403 | 0.465 |
| $R^2$ | 0.015 | 0.051 | 0.113 | 0.015 | 0.008 | 0.047 | 0.093 | 0.064 | −0.032 | 0.105 | −0.023 | −0.044 |
| Sucker | | | | | | | | | | | | |
| Heteroptera (APE) | | | | | | | | | | | | |
| Est | 0.469 | 0.498 | 0.523 | 0.440 | 0.471 | 0.528 | 0.479 | 0.498 | 0.396 | 0.495 | 0.412 | 0.472 |
| p | 0.084 | 0.064 | 0.049 | 0.109 | 0.083 | 0.047 | 0.076 | 0.064 | 0.154 | 0.066 | 0.137 | 0.082 |
| $R^2$ | 0.196 | 0.233 | 0.267 | 0.161 | 0.198 | 0.274 | 0.209 | 0.233 | 0.111 | 0.229 | 0.128 | 0.199 |
| Heteroptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.165 | 0.091 | −0.032 | 0.156 | 0.112 | 0.101 | 0.048 | −0.026 | 0.185 | −0.194 | 0.245 | 0.153 |
| p | 0.570 | 0.757 | 0.913 | 0.591 | 0.701 | 0.729 | 0.870 | 0.931 | 0.523 | 0.504 | 0.394 | 0.598 |
| $R^2$ | −0.063 | −0.089 | −0.099 | −0.067 | −0.083 | −0.086 | −0.097 | −0.099 | −0.054 | −0.049 | −0.019 | −0.068 |
| Heteroptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.078 | 0.079 | 0.169 | 0.061 | 0.079 | −0.037 | 0.162 | 0.188 | 0.057 | 0.095 | −0.093 | −0.073 |
| p | 0.791 | 0.786 | 0.561 | 0.836 | 0.787 | 0.900 | 0.577 | 0.518 | 0.846 | 0.745 | 0.750 | 0.803 |
| $R^2$ | −0.092 | −0.092 | −0.062 | −0.095 | −0.092 | −0.098 | −0.065 | −0.053 | −0.096 | −0.088 | −0.088 | −0.093 |
| Symbiont | | | | | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | | | | | |
| Est | 0.154 | 0.018 | −0.093 | 0.135 | 0.063 | −0.113 | 0.057 | −0.054 | 0.196 | −0.437 | 0.121 | −0.050 |
| p | 0.596 | 0.950 | 0.750 | 0.643 | 0.831 | 0.699 | 0.847 | 0.855 | 0.499 | 0.112 | 0.680 | 0.864 |
| $R^2$ | −0.068 | −0.100 | −0.088 | −0.075 | −0.095 | −0.083 | −0.096 | −0.096 | −0.048 | 0.156 | −0.080 | −0.097 |
| Producer | | | | | | | | | | | | |
| Vascular plants | | | | | | | | | | | | |
| Est | −0.276 | −0.215 | −0.269 | −0.141 | −0.219 | −0.229 | −0.187 | −0.287 | −0.132 | −0.313 | −0.073 | −0.239 |
| p | 0.334 | 0.456 | 0.348 | 0.628 | 0.449 | 0.428 | 0.519 | 0.315 | 0.650 | 0.271 | 0.804 | 0.406 |
| $R^2$ | 0.003 | −0.038 | −0.003 | −0.073 | −0.036 | −0.030 | −0.053 | 0.011 | −0.077 | 0.031 | −0.093 | −0.023 |
| Mosses | | | | | | | | | | | | |
| Est | −0.420 | −0.401 | −0.351 | −0.412 | −0.398 | −0.390 | −0.387 | −0.344 | −0.403 | −0.188 | −0.416 | −0.379 |
| p | 0.128 | 0.149 | 0.212 | 0.137 | 0.152 | 0.161 | 0.166 | 0.223 | 0.146 | 0.518 | 0.133 | 0.175 |
| $R^2$ | 0.137 | 0.116 | 0.066 | 0.128 | 0.113 | 0.105 | 0.101 | 0.059 | 0.119 | −0.053 | 0.132 | 0.093 |

Table G10. Effects of naturalness, measures of management intensity, and stand structural attributes regarding stand age and dead and living wood volume (see Table 1) on the entropy (bias-corrected exponential Shannon's entropy eHbc) of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.509 | −0.443 | −0.452 | −0.436 | 0.464 | 0.386 | −0.075 | −0.324 |
| p | 0.057 | 0.106 | 0.098 | 0.112 | 0.088 | 0.167 | 0.798 | 0.253 |
| $R^2$ | 0.248 | 0.164 | 0.175 | 0.156 | 0.189 | 0.100 | −0.092 | 0.041 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.316 | −0.238 | −0.263 | −0.272 | 0.304 | 0.276 | 0.117 | −0.071 |
| p | 0.266 | 0.410 | 0.359 | 0.342 | 0.285 | 0.334 | 0.688 | 0.808 |
| $R^2$ | 0.034 | −0.024 | −0.007 | <0.001 | 0.024 | 0.003 | −0.082 | −0.093 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.170 | 0.016 | 0.066 | 0.099 | −0.069 | −0.182 | −0.593 | −0.231 |
| p | 0.558 | 0.957 | 0.822 | 0.736 | 0.812 | 0.532 | 0.021 | 0.424 |
| $R^2$ | −0.061 | −0.100 | −0.094 | −0.087 | −0.094 | −0.056 | 0.373 | −0.029 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.263 | 0.301 | 0.255 | 0.275 | −0.327 | −0.299 | −0.160 | 0.370 |
| p | 0.359 | 0.290 | 0.374 | 0.336 | 0.249 | 0.295 | 0.583 | 0.187 |
| $R^2$ | −0.007 | 0.022 | −0.012 | 0.002 | 0.043 | 0.020 | −0.066 | 0.084 |
| Fungi (soil saprophytes) | | | | | | | | |
| Est | −0.170 | 0.272 | 0.308 | 0.286 | −0.201 | −0.260 | −0.252 | −0.053 |
| p | 0.558 | 0.343 | 0.279 | 0.317 | 0.488 | 0.364 | 0.380 | 0.857 |
| $R^2$ | −0.061 | −0.001 | 0.028 | 0.010 | −0.046 | −0.009 | −0.015 | −0.096 |
| Isopoda (PT) | | | | | | | | |
| Est | −0.211 | 0.392 | 0.355 | 0.353 | −0.296 | −0.164 | −0.055 | 0.121 |
| p | 0.466 | 0.159 | 0.208 | 0.209 | 0.298 | 0.572 | 0.852 | 0.678 |
| $R^2$ | −0.040 | 0.107 | 0.069 | 0.068 | 0.018 | −0.064 | −0.096 | −0.080 |
| Xylophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.024 | 0.043 | 0.011 | 0.023 | −0.256 | −0.196 | −0.026 | 0.225 |
| p | 0.935 | 0.884 | 0.970 | 0.938 | 0.373 | 0.498 | 0.929 | 0.435 |
| $R^2$ | −0.099 | −0.098 | −0.100 | −0.099 | −0.012 | −0.048 | −0.099 | −0.032 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.307 | −0.275 | −0.297 | −0.335 | 0.406 | 0.379 | 0.613 | 0.119 |
| p | 0.280 | 0.336 | 0.297 | 0.235 | 0.143 | 0.176 | 0.015 | 0.684 |
| $R^2$ | 0.027 | 0.002 | 0.019 | 0.051 | 0.122 | 0.093 | 0.406 | −0.081 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.522 | −0.614 | −0.619 | −0.580 | 0.188 | 0.295 | 0.010 | −0.270 |
| p | 0.050 | 0.015 | 0.014 | 0.025 | 0.517 | 0.300 | 0.973 | 0.346 |
| $R^2$ | 0.266 | 0.407 | 0.415 | 0.352 | −0.053 | 0.017 | −0.100 | −0.002 |
| Fungi (wood/bark species) | | | | | | | | |
| Est | 0.592 | −0.464 | −0.475 | −0.474 | 0.325 | 0.307 | 0.298 | −0.223 |
| p | 0.021 | 0.088 | 0.080 | 0.080 | 0.251 | 0.280 | 0.295 | 0.440 |
| $R^2$ | 0.372 | 0.189 | 0.203 | 0.202 | 0.042 | 0.027 | 0.020 | −0.033 |
| Predator | | | | | | | | |
| Big | | | | | | | | |
| Birds (breeding) | | | | | | | | |
| Est | 0.512 | −0.481 | −0.496 | −0.515 | 0.432 | 0.574 | 0.514 | −0.160 |
| p | 0.055 | 0.075 | 0.065 | 0.053 | 0.117 | 0.027 | 0.054 | 0.582 |
| $R^2$ | 0.252 | 0.211 | 0.230 | 0.257 | 0.150 | 0.343 | 0.255 | −0.065 |
| Birds (overwintering) | | | | | | | | |
| Est | 0.640 | −0.520 | −0.520 | −0.533 | 0.424 | 0.370 | 0.380 | −0.227 |
| p | 0.010 | 0.051 | 0.051 | 0.044 | 0.124 | 0.187 | 0.174 | 0.431 |
| $R^2$ | 0.451 | 0.263 | 0.263 | 0.281 | 0.142 | 0.084 | 0.094 | −0.031 |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | 0.580 | −0.480 | −0.485 | −0.500 | 0.347 | 0.542 | 0.366 | −0.391 |

Table G10. Continued.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| p | 0.025 | 0.076 | 0.072 | 0.063 | 0.218 | 0.040 | 0.192 | 0.160 |
| $R^2$ | 0.352 | 0.210 | 0.216 | 0.236 | 0.062 | 0.294 | 0.080 | 0.106 |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.403 | −0.338 | −0.363 | −0.377 | 0.310 | 0.359 | 0.178 | −0.244 |
| p | 0.147 | 0.232 | 0.196 | 0.177 | 0.276 | 0.201 | 0.539 | 0.397 |
| $R^2$ | 0.118 | 0.054 | 0.077 | 0.091 | 0.029 | 0.074 | −0.057 | −0.020 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.314 | −0.196 | −0.199 | −0.216 | 0.319 | 0.167 | 0.091 | −0.068 |
| p | 0.269 | 0.498 | 0.491 | 0.456 | 0.261 | 0.566 | 0.755 | 0.815 |
| $R^2$ | 0.032 | −0.048 | −0.047 | −0.037 | 0.037 | −0.062 | −0.089 | −0.094 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.052 | −0.131 | −0.096 | −0.065 | −0.111 | −0.219 | −0.166 | −0.063 |
| p | 0.860 | 0.654 | 0.742 | 0.824 | 0.704 | 0.448 | 0.569 | 0.831 |
| $R^2$ | −0.096 | −0.077 | −0.088 | −0.094 | −0.083 | −0.035 | −0.063 | −0.095 |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.470 | 0.503 | 0.476 | 0.477 | −0.546 | −0.413 | −0.264 | 0.316 |
| p | 0.083 | 0.061 | 0.079 | 0.078 | 0.038 | 0.135 | 0.358 | 0.265 |
| $R^2$ | 0.197 | 0.240 | 0.204 | 0.206 | 0.301 | 0.130 | −0.007 | 0.034 |
| Heteroptera (APE) | | | | | | | | |
| Est | 0.311 | −0.467 | −0.446 | −0.408 | 0.073 | 0.187 | −0.265 | −0.368 |
| p | 0.273 | 0.086 | 0.103 | 0.141 | 0.804 | 0.520 | 0.355 | 0.190 |
| $R^2$ | 0.030 | 0.193 | 0.168 | 0.123 | −0.093 | −0.053 | −0.005 | 0.082 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | 0.407 | −0.440 | −0.396 | −0.413 | 0.330 | 0.255 | 0.353 | −0.236 |
| p | 0.143 | 0.108 | 0.155 | 0.136 | 0.243 | 0.375 | 0.210 | 0.413 |
| $R^2$ | 0.122 | 0.161 | 0.111 | 0.129 | 0.047 | −0.013 | 0.068 | −0.025 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | −0.170 | −0.011 | 0.025 | 0.057 | −0.044 | −0.159 | −0.599 | −0.141 |
| p | 0.559 | 0.969 | 0.932 | 0.845 | 0.881 | 0.584 | 0.019 | 0.628 |
| $R^2$ | −0.061 | −0.10 | −0.099 | −0.096 | −0.097 | −0.066 | 0.382 | −0.073 |
| Neuropterida (APE) | | | | | | | | |
| Est | −0.019 | −0.008 | 0.013 | 0.029 | −0.243 | −0.135 | −0.303 | −0.105 |
| p | 0.948 | 0.978 | 0.964 | 0.922 | 0.399 | 0.643 | 0.287 | 0.719 |
| $R^2$ | −0.10 | −0.10 | −0.100 | −0.099 | −0.021 | −0.075 | 0.023 | −0.085 |
| Neuropterida (FIT-C) | | | | | | | | |
| Est | 0.237 | −0.392 | −0.375 | −0.348 | −0.041 | 0.087 | −0.026 | −0.116 |
| p | 0.411 | 0.159 | 0.181 | 0.216 | 0.890 | 0.767 | 0.929 | 0.692 |
| $R^2$ | −0.024 | 0.107 | 0.089 | 0.063 | −0.098 | −0.090 | −0.099 | −0.082 |
| Neuropterida (FIT-U) | | | | | | | | |
| Est | 0.077 | −0.099 | −0.081 | −0.080 | 0.339 | 0.156 | 0.036 | −0.042 |
| p | 0.793 | 0.734 | 0.781 | 0.785 | 0.230 | 0.591 | 0.902 | 0.886 |
| $R^2$ | −0.092 | −0.087 | −0.091 | −0.091 | 0.054 | −0.067 | −0.098 | −0.098 |
| Opiliones (APE) | | | | | | | | |
| Est | −0.471 | 0.352 | 0.367 | 0.376 | −0.328 | −0.335 | −0.135 | 0.166 |
| p | 0.083 | 0.211 | 0.191 | 0.179 | 0.246 | 0.235 | 0.645 | 0.568 |
| $R^2$ | 0.198 | 0.067 | 0.081 | 0.090 | 0.045 | 0.051 | −0.076 | −0.063 |
| Opiliones (PT) | | | | | | | | |
| Est | −0.406 | 0.342 | 0.325 | 0.353 | −0.054 | −0.125 | −0.392 | 0.086 |
| p | 0.143 | 0.225 | 0.251 | 0.210 | 0.853 | 0.669 | 0.160 | 0.769 |
| $R^2$ | 0.122 | 0.057 | 0.042 | 0.067 | −0.096 | −0.079 | 0.106 | −0.090 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.578 | −0.617 | −0.607 | −0.572 | 0.187 | 0.252 | −0.131 | −0.391 |
| p | 0.025 | 0.014 | 0.017 | 0.027 | 0.518 | 0.381 | 0.653 | 0.161 |
| $R^2$ | 0.350 | 0.413 | 0.396 | 0.340 | −0.053 | −0.015 | −0.077 | 0.105 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.311 | −0.290 | −0.255 | −0.281 | 0.278 | 0.197 | 0.302 | −0.218 |
| p | 0.274 | 0.309 | 0.375 | 0.325 | 0.331 | 0.497 | 0.290 | 0.451 |
| $R^2$ | 0.030 | 0.013 | −0.013 | 0.007 | 0.004 | −0.048 | 0.022 | −0.036 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.704 | −0.758 | −0.771 | −0.767 | 0.764 | 0.763 | 0.328 | −0.423 |
| p | 0.003 | 0.001 | <0.001 | <0.001 | 0.001 | 0.001 | 0.246 | 0.125 |
| $R^2$ | 0.567 | 0.672 | 0.700 | 0.692 | 0.684 | 0.682 | 0.045 | 0.141 |
| Coleoptera (GPE) | | | | | | | | |
| Est | 0.628 | −0.593 | −0.619 | −0.640 | 0.763 | 0.773 | 0.458 | −0.366 |
| p | 0.016 | 0.026 | 0.018 | 0.013 | 0.001 | 0.001 | 0.108 | 0.211 |

Table G10. Continued.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| $R^2$ | 0.437 | 0.378 | 0.421 | 0.457 | 0.697 | 0.720 | 0.180 | 0.075 |
| Sucker | | | | | | | | |
| Heteroptera (APE) | | | | | | | | |
| Est | 0.171 | −0.097 | −0.112 | −0.14 | 0.467 | 0.476 | 0.292 | −0.225 |
| p | 0.556 | 0.741 | 0.703 | 0.630 | 0.085 | 0.079 | 0.305 | 0.435 |
| $R^2$ | −0.061 | −0.087 | −0.083 | −0.073 | 0.194 | 0.205 | 0.015 | −0.032 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | −0.070 | 0.120 | 0.158 | 0.133 | −0.056 | −0.078 | −0.162 | −0.100 |
| p | 0.812 | 0.681 | 0.587 | 0.649 | 0.848 | 0.791 | 0.577 | 0.733 |
| $R^2$ | −0.093 | −0.081 | −0.066 | −0.076 | −0.096 | −0.092 | −0.065 | −0.087 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | 0.065 | −0.146 | −0.184 | −0.151 | −0.105 | 0.035 | 0.064 | 0.135 |
| p | 0.823 | 0.616 | 0.527 | 0.603 | 0.720 | 0.905 | 0.828 | 0.642 |
| $R^2$ | −0.094 | −0.071 | −0.055 | −0.069 | −0.085 | −0.098 | −0.095 | −0.075 |
| Symbiont | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | |
| Est | 0.025 | 0.005 | −0.01 | 0.018 | 0.015 | −0.115 | −0.242 | 0.110 |
| p | 0.932 | 0.985 | 0.973 | 0.952 | 0.959 | 0.695 | 0.400 | 0.707 |
| $R^2$ | −0.099 | −0.100 | −0.100 | −0.100 | −0.100 | −0.082 | −0.021 | −0.084 |
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | −0.288 | 0.255 | 0.230 | 0.252 | −0.152 | −0.043 | −0.314 | −0.054 |
| p | 0.313 | 0.375 | 0.425 | 0.380 | 0.603 | 0.884 | 0.270 | 0.855 |
| $R^2$ | 0.011 | −0.013 | −0.029 | −0.015 | −0.069 | −0.098 | 0.032 | −0.096 |
| Mosses | | | | | | | | |
| Est | −0.495 | 0.526 | 0.533 | 0.54 | −0.423 | −0.541 | −0.122 | 0.346 |
| p | 0.066 | 0.047 | 0.044 | 0.04 | 0.126 | 0.040 | 0.676 | 0.219 |
| $R^2$ | 0.229 | 0.272 | 0.282 | 0.293 | 0.140 | 0.294 | −0.08 | 0.061 |

Table G11. Effects of stand structural attributes except stand age and wood volume (see Table 1) on the entropy (bias-corrected exponential Shannon's entropy eHbc) of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.425 | −0.266 | 0.533 | 0.566 | −0.554 | 0.352 | 0.538 | −0.168 |
| p | 0.123 | 0.354 | 0.044 | 0.030 | 0.034 | 0.212 | 0.042 | 0.562 |
| $R^2$ | 0.143 | −0.005 | 0.282 | 0.330 | 0.312 | 0.066 | 0.289 | −0.062 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.116 | −0.174 | 0.432 | 0.137 | −0.277 | 0.284 | 0.319 | −0.610 |
| p | 0.692 | 0.550 | 0.117 | 0.638 | 0.333 | 0.321 | 0.260 | 0.016 |
| $R^2$ | −0.082 | −0.059 | 0.150 | −0.075 | 0.003 | 0.008 | 0.037 | 0.400 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.185 | 0.120 | 0.161 | 0.176 | −0.069 | 0.023 | 0.076 | 0.270 |
| p | 0.523 | 0.680 | 0.579 | 0.545 | 0.813 | 0.938 | 0.794 | 0.346 |
| $R^2$ | −0.054 | −0.081 | −0.065 | −0.058 | −0.094 | −0.099 | −0.092 | −0.002 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.344 | 0.314 | −0.161 | −0.18 | 0.224 | −0.295 | −0.133 | 0.052 |
| p | 0.223 | 0.269 | 0.581 | 0.536 | 0.438 | 0.300 | 0.648 | 0.859 |
| $R^2$ | 0.059 | 0.033 | −0.065 | −0.057 | −0.033 | 0.017 | −0.076 | −0.096 |
| Fungi (soil saprophytes) | | | | | | | | |
| Est | 0.051 | 0.083 | 0.403 | 0.218 | 0.214 | 0.001 | 0.079 | 0.174 |
| p | 0.862 | 0.778 | 0.147 | 0.451 | 0.459 | 0.998 | 0.787 | 0.550 |
| $R^2$ | −0.096 | −0.091 | 0.118 | −0.036 | −0.038 | −0.100 | −0.092 | −0.059 |
| Isopoda (PT) | | | | | | | | |
| Est | 0.062 | −0.136 | −0.125 | 0.113 | 0.307 | −0.426 | −0.289 | 0.350 |
| p | 0.832 | 0.640 | 0.667 | 0.698 | 0.281 | 0.122 | 0.312 | 0.215 |
| $R^2$ | −0.095 | −0.075 | −0.079 | −0.083 | 0.026 | 0.144 | 0.012 | 0.064 |
| Xylophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.189 | 0.261 | 0.167 | −0.052 | 0.011 | −0.066 | 0.026 | −0.248 |
| p | 0.515 | 0.363 | 0.567 | 0.859 | 0.970 | 0.821 | 0.928 | 0.388 |
| $R^2$ | −0.052 | −0.008 | −0.063 | −0.096 | −0.100 | −0.094 | −0.099 | −0.017 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.131 | −0.065 | −0.082 | −0.145 | −0.160 | 0.331 | 0.241 | −0.349 |
| p | 0.653 | 0.825 | 0.778 | 0.620 | 0.581 | 0.242 | 0.404 | 0.215 |
| $R^2$ | −0.077 | −0.094 | −0.091 | −0.072 | −0.065 | 0.047 | −0.022 | 0.064 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.412 | −0.031 | 0.208 | 0.387 | −0.624 | 0.292 | 0.327 | −0.083 |
| p | 0.137 | 0.916 | 0.472 | 0.165 | 0.013 | 0.307 | 0.249 | 0.776 |
| $R^2$ | 0.128 | −0.099 | −0.042 | 0.101 | 0.423 | 0.014 | 0.044 | −0.091 |
| Fungi (wood/bark species) | | | | | | | | |
| Est | −0.33 | −0.285 | 0.391 | 0.246 | −0.429 | 0.252 | 0.258 | −0.394 |
| p | 0.243 | 0.318 | 0.161 | 0.393 | 0.119 | 0.380 | 0.368 | 0.157 |
| $R^2$ | 0.047 | 0.009 | 0.105 | −0.019 | 0.148 | −0.015 | −0.01 | 0.108 |
| Predator | | | | | | | | |
| Big | | | | | | | | |
| Birds (breeding) | | | | | | | | |
| Est | −0.221 | −0.249 | 0.128 | 0.336 | −0.471 | 0.399 | 0.385 | −0.399 |
| p | 0.444 | 0.387 | 0.660 | 0.235 | 0.083 | 0.151 | 0.168 | 0.151 |
| $R^2$ | −0.034 | −0.017 | −0.078 | 0.052 | 0.198 | 0.114 | 0.099 | 0.114 |
| Birds (overwintering) | | | | | | | | |
| Est | −0.296 | −0.230 | 0.420 | 0.320 | −0.467 | 0.395 | 0.412 | −0.282 |
| p | 0.299 | 0.424 | 0.129 | 0.260 | 0.086 | 0.156 | 0.137 | 0.324 |
| $R^2$ | 0.018 | −0.029 | 0.137 | 0.037 | 0.193 | 0.109 | 0.128 | 0.007 |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | −0.499 | −0.501 | 0.378 | 0.503 | −0.484 | 0.318 | 0.264 | −0.402 |
| p | 0.063 | 0.062 | 0.177 | 0.060 | 0.073 | 0.263 | 0.358 | 0.147 |
| $R^2$ | 0.234 | 0.238 | 0.092 | 0.240 | 0.215 | 0.036 | −0.006 | 0.118 |

Table G11. Continued.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Coleoptera (APE) | | | | | | | | |
| Est | −0.345 | −0.397 | 0.342 | 0.166 | −0.277 | 0.266 | 0.157 | −0.239 |
| p | 0.221 | 0.153 | 0.226 | 0.568 | 0.333 | 0.353 | 0.590 | 0.407 |
| $R^2$ | 0.060 | 0.112 | 0.057 | −0.063 | 0.003 | −0.005 | −0.067 | −0.023 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.066 | −0.062 | 0.455 | 0.242 | −0.223 | 0.306 | 0.425 | −0.188 |
| p | 0.822 | 0.832 | 0.095 | 0.401 | 0.440 | 0.283 | 0.123 | 0.518 |
| $R^2$ | −0.094 | −0.095 | 0.178 | −0.021 | −0.033 | 0.026 | 0.143 | −0.053 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.057 | 0.193 | 0.021 | −0.112 | −0.093 | −0.031 | −0.057 | −0.008 |
| p | 0.847 | 0.506 | 0.944 | 0.702 | 0.752 | 0.916 | 0.847 | 0.977 |
| $R^2$ | −0.096 | −0.050 | −0.099 | −0.083 | −0.088 | −0.099 | −0.096 | −0.100 |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.342 | 0.289 | −0.128 | −0.136 | 0.439 | −0.359 | −0.283 | 0.254 |
| p | 0.225 | 0.311 | 0.662 | 0.642 | 0.110 | 0.201 | 0.322 | 0.377 |
| $R^2$ | 0.057 | 0.012 | −0.078 | −0.075 | 0.159 | 0.073 | 0.008 | −0.013 |
| Heteroptera (APE) | | | | | | | | |
| Est | −0.457 | −0.029 | 0.282 | 0.422 | −0.508 | 0.264 | 0.259 | 0.011 |
| p | 0.094 | 0.920 | 0.325 | 0.127 | 0.057 | 0.358 | 0.366 | 0.971 |
| $R^2$ | 0.181 | −0.099 | 0.007 | 0.139 | 0.247 | −0.007 | −0.010 | −0.100 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | −0.203 | −0.116 | 0.163 | 0.025 | −0.312 | 0.373 | 0.206 | −0.313 |
| p | 0.483 | 0.690 | 0.576 | 0.932 | 0.273 | 0.183 | 0.476 | 0.271 |
| $R^2$ | −0.045 | −0.082 | −0.064 | −0.099 | 0.031 | 0.087 | −0.043 | 0.032 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | −0.098 | 0.250 | 0.139 | 0.203 | −0.101 | 0.102 | 0.206 | 0.405 |
| p | 0.738 | 0.385 | 0.632 | 0.482 | 0.730 | 0.728 | 0.478 | 0.144 |
| $R^2$ | −0.087 | −0.016 | −0.074 | −0.044 | −0.086 | −0.086 | −0.043 | 0.121 |
| Neuropterida (APE) | | | | | | | | |
| Est | −0.089 | 0.153 | 0.379 | 0.277 | −0.109 | 0.06 | 0.125 | −0.203 |
| p | 0.762 | 0.599 | 0.175 | 0.333 | 0.710 | 0.837 | 0.669 | 0.482 |
| $R^2$ | −0.089 | −0.069 | 0.093 | 0.003 | −0.084 | −0.095 | −0.079 | −0.044 |
| Neuropterida (FIT-C) | | | | | | | | |
| Est | −0.155 | 0.234 | 0.042 | 0.233 | −0.381 | 0.231 | 0.227 | 0.056 |
| p | 0.595 | 0.417 | 0.885 | 0.418 | 0.172 | 0.422 | 0.432 | 0.848 |
| $R^2$ | −0.068 | −0.027 | −0.098 | −0.027 | 0.095 | −0.028 | −0.031 | −0.096 |
| Neuropterida (FIT-U) | | | | | | | | |
| Est | 0.002 | −0.001 | −0.054 | 0.102 | −0.148 | 0.142 | 0.261 | 0.047 |
| p | 0.996 | 0.998 | 0.854 | 0.728 | 0.612 | 0.626 | 0.364 | 0.871 |
| $R^2$ | −0.100 | −0.100 | −0.096 | −0.086 | −0.071 | −0.073 | −0.009 | −0.097 |
| Opiliones (APE) | | | | | | | | |
| Est | 0.225 | 0.132 | −0.523 | −0.533 | 0.426 | −0.376 | −0.543 | 0.175 |
| p | 0.436 | 0.652 | 0.049 | 0.044 | 0.122 | 0.179 | 0.039 | 0.546 |
| $R^2$ | −0.032 | −0.077 | 0.267 | 0.282 | 0.144 | 0.090 | 0.296 | −0.059 |
| Opiliones (PT) | | | | | | | | |
| Est | 0.081 | −0.027 | −0.316 | −0.134 | 0.219 | −0.326 | −0.216 | 0.211 |
| p | 0.782 | 0.926 | 0.265 | 0.647 | 0.447 | 0.250 | 0.455 | 0.466 |
| $R^2$ | −0.091 | −0.099 | 0.034 | −0.076 | −0.035 | 0.043 | −0.037 | −0.04 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.519 | −0.072 | 0.520 | 0.582 | −0.660 | 0.365 | 0.446 | −0.058 |
| p | 0.051 | 0.807 | 0.050 | 0.024 | 0.007 | 0.194 | 0.103 | 0.843 |
| $R^2$ | 0.262 | −0.093 | 0.264 | 0.355 | 0.485 | 0.079 | 0.167 | −0.095 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.180 | −0.213 | 0.239 | −0.051 | −0.165 | 0.294 | 0.099 | −0.390 |
| p | 0.536 | 0.462 | 0.407 | 0.863 | 0.570 | 0.303 | 0.735 | 0.162 |
| $R^2$ | −0.057 | −0.039 | −0.023 | −0.097 | −0.063 | 0.016 | −0.087 | 0.104 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.556 | −0.503 | 0.235 | 0.331 | −0.726 | 0.536 | 0.459 | −0.441 |
| p | 0.034 | 0.061 | 0.415 | 0.243 | 0.002 | 0.042 | 0.092 | 0.107 |
| $R^2$ | 0.315 | 0.240 | −0.026 | 0.047 | 0.608 | 0.287 | 0.183 | 0.162 |
| Coleoptera (GPE) | | | | | | | | |
| Est | −0.465 | −0.705 | 0.150 | 0.172 | −0.521 | 0.450 | 0.297 | −0.432 |
| p | 0.101 | 0.004 | 0.623 | 0.572 | 0.06 | 0.114 | 0.318 | 0.132 |
| $R^2$ | 0.189 | 0.579 | −0.080 | −0.070 | 0.266 | 0.170 | 0.012 | 0.149 |

Table G11. Continued.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Sucker | | | | | | | | |
| Heteroptera (APE) | | | | | | | | |
| Est | −0.268 | −0.585 | −0.076 | 0.133 | −0.082 | 0.095 | 0.022 | −0.021 |
| p | 0.350 | 0.023 | 0.796 | 0.649 | 0.779 | 0.746 | 0.940 | 0.942 |
| $R^2$ | −0.003 | 0.360 | −0.092 | −0.076 | −0.091 | −0.088 | −0.099 | −0.099 |
| Heteroptera (FIT-C) | | | | | | | | |
| Est | 0.006 | 0.076 | 0.403 | 0.324 | 0.053 | 0.168 | 0.244 | 0.091 |
| p | 0.983 | 0.796 | 0.147 | 0.253 | 0.855 | 0.564 | 0.397 | 0.755 |
| $R^2$ | −0.100 | −0.092 | 0.118 | 0.041 | −0.096 | −0.062 | −0.020 | −0.089 |
| Heteroptera (FIT-U) | | | | | | | | |
| Est | 0.034 | 0.140 | −0.287 | −0.091 | −0.145 | −0.097 | −0.079 | −0.030 |
| p | 0.908 | 0.631 | 0.315 | 0.755 | 0.620 | 0.741 | 0.787 | 0.919 |
| $R^2$ | −0.098 | −0.074 | 0.011 | −0.089 | −0.072 | −0.087 | −0.092 | −0.099 |
| Symbiont | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | |
| Est | 0.086 | 0.227 | 0.147 | 0.154 | −0.114 | −0.011 | 0.248 | 0.079 |
| p | 0.768 | 0.430 | 0.614 | 0.596 | 0.697 | 0.970 | 0.388 | 0.788 |
| $R^2$ | −0.090 | −0.030 | −0.071 | −0.068 | −0.083 | −0.100 | −0.017 | −0.092 |
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | −0.125 | −0.219 | −0.245 | −0.002 | 0.175 | −0.339 | −0.329 | 0.276 |
| p | 0.670 | 0.448 | 0.395 | 0.993 | 0.546 | 0.230 | 0.245 | 0.334 |
| $R^2$ | −0.079 | −0.035 | −0.020 | −0.100 | −0.059 | 0.054 | 0.046 | 0.003 |
| Mosses | | | | | | | | |
| Est | 0.422 | 0.311 | −0.494 | −0.433 | 0.555 | −0.510 | −0.462 | 0.513 |
| p | 0.127 | 0.274 | 0.066 | 0.116 | 0.034 | 0.056 | 0.090 | 0.054 |
| $R^2$ | 0.139 | 0.030 | 0.229 | 0.152 | 0.314 | 0.250 | 0.187 | 0.254 |

Table G12. Effects of stand structural complexity indices (see Appendix A: Table A3) on the entropy (bias-corrected exponential Shannon's entropy eHbc) of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | | | | | |
| Mycetophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.577 | 0.539 | 0.441 | 0.592 | 0.551 | 0.475 | 0.537 | 0.445 | 0.601 | 0.105 | 0.584 | 0.481 |
| p | 0.026 | 0.041 | 0.108 | 0.021 | 0.035 | 0.079 | 0.042 | 0.104 | 0.018 | 0.719 | 0.023 | 0.075 |
| $R^2$ | 0.348 | 0.291 | 0.161 | 0.370 | 0.309 | 0.204 | 0.288 | 0.167 | 0.386 | −0.085 | 0.359 | 0.211 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.210 | 0.265 | 0.283 | 0.253 | 0.258 | 0.229 | 0.286 | 0.279 | 0.239 | 0.195 | 0.199 | 0.199 |
| p | 0.469 | 0.355 | 0.323 | 0.379 | 0.369 | 0.428 | 0.317 | 0.329 | 0.407 | 0.502 | 0.492 | 0.492 |
| $R^2$ | −0.041 | −0.005 | 0.007 | −0.014 | −0.011 | −0.030 | 0.010 | 0.005 | −0.023 | −0.049 | −0.047 | −0.047 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.039 | −0.063 | −0.164 | 0.080 | −0.043 | −0.201 | 0.020 | −0.157 | 0.120 | −0.488 | 0.087 | −0.197 |
| p | 0.893 | 0.831 | 0.574 | 0.783 | 0.884 | 0.487 | 0.947 | 0.589 | 0.682 | 0.070 | 0.766 | 0.496 |
| $R^2$ | −0.098 | −0.095 | −0.064 | −0.091 | −0.098 | −0.046 | −0.099 | −0.067 | −0.081 | 0.220 | −0.090 | −0.048 |
| Saprophage | | | | | | | | | | | | |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | −0.212 | −0.264 | −0.262 | −0.241 | −0.253 | −0.285 | −0.247 | −0.249 | −0.222 | −0.233 | −0.240 | −0.264 |
| p | 0.463 | 0.357 | 0.362 | 0.402 | 0.378 | 0.319 | 0.391 | 0.386 | 0.441 | 0.419 | 0.404 | 0.357 |
| $R^2$ | −0.040 | −0.006 | −0.008 | −0.022 | −0.014 | 0.009 | −0.018 | −0.016 | −0.034 | −0.027 | −0.022 | −0.006 |
| Fungi (soil saprophytes) | | | | | | | | | | | | |
| Est | −0.093 | −0.133 | −0.276 | −0.079 | −0.111 | −0.033 | −0.231 | −0.275 | −0.047 | −0.282 | 0.097 | 0.049 |
| p | 0.752 | 0.647 | 0.335 | 0.786 | 0.704 | 0.910 | 0.424 | 0.337 | 0.873 | 0.324 | 0.740 | 0.867 |
| $R^2$ | −0.088 | −0.076 | 0.002 | −0.092 | −0.083 | −0.099 | −0.029 | 0.001 | −0.097 | 0.007 | −0.087 | −0.097 |
| Isopoda (PT) | | | | | | | | | | | | |
| Est | −0.139 | −0.162 | −0.264 | −0.159 | −0.158 | 0.011 | −0.287 | −0.282 | −0.151 | −0.105 | 0.042 | 0.072 |
| p | 0.633 | 0.578 | 0.356 | 0.585 | 0.587 | 0.971 | 0.315 | 0.325 | 0.603 | 0.719 | 0.887 | 0.805 |
| $R^2$ | −0.074 | −0.065 | −0.006 | −0.066 | −0.066 | −0.100 | 0.011 | 0.007 | −0.069 | −0.085 | −0.098 | −0.093 |
| Xylophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | −0.054 | −0.057 | −0.051 | −0.055 | −0.035 | −0.103 | −0.050 | −0.019 | −0.029 | −0.098 | −0.104 | −0.064 |
| p | 0.854 | 0.845 | 0.862 | 0.852 | 0.906 | 0.724 | 0.865 | 0.948 | 0.920 | 0.737 | 0.722 | 0.826 |
| $R^2$ | −0.096 | −0.096 | −0.097 | −0.096 | −0.098 | −0.086 | −0.097 | −0.100 | −0.099 | −0.087 | −0.085 | −0.094 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.248 | 0.231 | 0.369 | 0.093 | 0.203 | 0.287 | 0.211 | 0.361 | 0.043 | 0.582 | 0.000 | 0.239 |
| p | 0.388 | 0.424 | 0.189 | 0.750 | 0.483 | 0.315 | 0.466 | 0.199 | 0.883 | 0.024 | 1000 | 0.407 |
| $R^2$ | −0.017 | −0.029 | 0.083 | −0.088 | −0.045 | 0.011 | −0.040 | 0.075 | −0.098 | 0.356 | −0.100 | −0.023 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.536 | 0.521 | 0.501 | 0.552 | 0.545 | 0.362 | 0.576 | 0.536 | 0.571 | 0.127 | 0.409 | 0.366 |
| p | 0.042 | 0.050 | 0.062 | 0.035 | 0.038 | 0.197 | 0.026 | 0.042 | 0.028 | 0.663 | 0.140 | 0.192 |
| $R^2$ | 0.286 | 0.265 | 0.237 | 0.309 | 0.299 | 0.077 | 0.347 | 0.287 | 0.338 | −0.078 | 0.125 | 0.080 |
| Fungi (wood/bark species) | | | | | | | | | | | | |
| Est | 0.377 | 0.433 | 0.452 | 0.387 | 0.444 | 0.400 | 0.418 | 0.475 | 0.384 | 0.334 | 0.298 | 0.410 |
| p | 0.177 | 0.115 | 0.098 | 0.166 | 0.105 | 0.150 | 0.130 | 0.079 | 0.169 | 0.238 | 0.296 | 0.139 |
| $R^2$ | 0.091 | 0.153 | 0.174 | 0.101 | 0.165 | 0.115 | 0.135 | 0.204 | 0.098 | 0.050 | 0.019 | 0.126 |
| Predator | | | | | | | | | | | | |
| Big | | | | | | | | | | | | |
| Birds (breeding) | | | | | | | | | | | | |
| Est | 0.564 | 0.575 | 0.595 | 0.484 | 0.563 | 0.638 | 0.508 | 0.589 | 0.450 | 0.592 | 0.455 | 0.625 |
| p | 0.030 | 0.026 | 0.020 | 0.073 | 0.031 | 0.010 | 0.058 | 0.022 | 0.100 | 0.021 | 0.096 | 0.013 |
| $R^2$ | 0.328 | 0.344 | 0.375 | 0.215 | 0.326 | 0.447 | 0.247 | 0.367 | 0.172 | 0.372 | 0.178 | 0.425 |

Table G12. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Birds (overwintering) | | | | | | | | | | | | |
| Est | 0.512 | 0.508 | 0.515 | 0.446 | 0.518 | 0.508 | 0.462 | 0.537 | 0.440 | 0.416 | 0.378 | 0.528 |
| p | 0.055 | 0.057 | 0.054 | 0.104 | 0.051 | 0.058 | 0.090 | 0.042 | 0.109 | 0.133 | 0.177 | 0.046 |
| $R^2$ | 0.253 | 0.247 | 0.256 | 0.167 | 0.261 | 0.247 | 0.187 | 0.288 | 0.160 | 0.133 | 0.092 | 0.276 |
| Small | | | | | | | | | | | | |
| Araneae (APE) | | | | | | | | | | | | |
| Est | 0.513 | 0.603 | 0.553 | 0.550 | 0.599 | 0.680 | 0.512 | 0.547 | 0.529 | 0.476 | 0.581 | 0.691 |
| p | 0.054 | 0.018 | 0.035 | 0.036 | 0.019 | 0.005 | 0.055 | 0.037 | 0.046 | 0.079 | 0.024 | 0.004 |
| $R^2$ | 0.254 | 0.388 | 0.311 | 0.307 | 0.383 | 0.521 | 0.252 | 0.302 | 0.277 | 0.205 | 0.354 | 0.541 |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.244 | 0.301 | 0.316 | 0.276 | 0.285 | 0.300 | 0.303 | 0.301 | 0.251 | 0.271 | 0.248 | 0.263 |
| p | 0.396 | 0.291 | 0.266 | 0.336 | 0.318 | 0.292 | 0.287 | 0.290 | 0.383 | 0.344 | 0.388 | 0.360 |
| $R^2$ | −0.020 | 0.022 | 0.034 | 0.002 | 0.009 | 0.021 | 0.023 | 0.022 | −0.015 | −0.001 | −0.017 | −0.007 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.308 | 0.252 | 0.217 | 0.245 | 0.260 | 0.261 | 0.219 | 0.224 | 0.248 | 0.132 | 0.250 | 0.280 |
| p | 0.279 | 0.381 | 0.454 | 0.394 | 0.366 | 0.362 | 0.449 | 0.439 | 0.388 | 0.651 | 0.384 | 0.327 |
| $R^2$ | 0.027 | −0.015 | −0.037 | −0.019 | −0.009 | −0.008 | −0.036 | −0.033 | −0.017 | −0.077 | −0.016 | 0.006 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.088 | −0.058 | −0.024 | −0.020 | −0.032 | −0.217 | 0.031 | 0.019 | 0.013 | −0.205 | −0.160 | −0.205 |
| p | 0.764 | 0.844 | 0.936 | 0.945 | 0.914 | 0.452 | 0.915 | 0.950 | 0.965 | 0.479 | 0.582 | 0.479 |
| $R^2$ | −0.090 | −0.096 | −0.099 | −0.099 | −0.099 | −0.036 | −0.099 | −0.100 | −0.100 | −0.043 | −0.066 | −0.044 |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | −0.363 | −0.406 | −0.467 | −0.366 | −0.396 | −0.334 | −0.448 | −0.471 | −0.344 | −0.352 | −0.240 | −0.287 |
| p | 0.195 | 0.144 | 0.086 | 0.192 | 0.155 | 0.238 | 0.102 | 0.083 | 0.223 | 0.211 | 0.404 | 0.316 |
| $R^2$ | 0.078 | 0.121 | 0.193 | 0.080 | 0.111 | 0.050 | 0.170 | 0.198 | 0.059 | 0.067 | −0.022 | 0.010 |
| Heteroptera (APE) | | | | | | | | | | | | |
| Est | 0.385 | 0.391 | 0.315 | 0.482 | 0.415 | 0.229 | 0.458 | 0.337 | 0.510 | −0.109 | 0.404 | 0.231 |
| p | 0.167 | 0.160 | 0.268 | 0.075 | 0.134 | 0.428 | 0.093 | 0.233 | 0.056 | 0.709 | 0.146 | 0.424 |
| $R^2$ | 0.100 | 0.106 | 0.033 | 0.212 | 0.131 | −0.030 | 0.183 | 0.053 | 0.250 | −0.084 | 0.119 | −0.028 |
| Heteroptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.238 | 0.296 | 0.375 | 0.227 | 0.296 | 0.253 | 0.310 | 0.395 | 0.214 | 0.350 | 0.100 | 0.238 |
| p | 0.408 | 0.299 | 0.180 | 0.431 | 0.299 | 0.379 | 0.275 | 0.156 | 0.460 | 0.214 | 0.732 | 0.409 |
| $R^2$ | −0.024 | 0.018 | 0.089 | −0.031 | 0.018 | −0.014 | 0.029 | 0.110 | −0.039 | 0.065 | −0.087 | −0.024 |
| Heteroptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.068 | −0.034 | −0.139 | 0.112 | −0.014 | −0.178 | 0.050 | −0.132 | 0.152 | −0.483 | 0.117 | −0.175 |
| p | 0.817 | 0.908 | 0.634 | 0.700 | 0.963 | 0.540 | 0.863 | 0.650 | 0.601 | 0.074 | 0.689 | 0.547 |
| $R^2$ | −0.094 | −0.098 | −0.074 | −0.083 | −0.100 | −0.057 | −0.097 | −0.076 | −0.069 | 0.213 | −0.082 | −0.059 |
| Neuropterida (APE) | | | | | | | | | | | | |
| Est | 0.037 | 0.069 | −0.039 | 0.149 | 0.099 | 0.020 | 0.062 | −0.018 | 0.189 | −0.266 | 0.185 | 0.074 |
| p | 0.898 | 0.813 | 0.895 | 0.610 | 0.734 | 0.947 | 0.832 | 0.952 | 0.515 | 0.353 | 0.525 | 0.802 |
| $R^2$ | −0.098 | −0.094 | −0.098 | −0.070 | −0.087 | −0.099 | −0.095 | −0.100 | −0.052 | −0.005 | −0.054 | −0.093 |
| Neuropterida (FIT-C) | | | | | | | | | | | | |
| Est | 0.345 | 0.297 | 0.279 | 0.322 | 0.323 | 0.179 | 0.333 | 0.316 | 0.348 | 0.017 | 0.218 | 0.201 |
| p | 0.222 | 0.297 | 0.329 | 0.256 | 0.254 | 0.538 | 0.239 | 0.266 | 0.217 | 0.953 | 0.450 | 0.487 |
| $R^2$ | 0.060 | 0.019 | 0.005 | 0.040 | 0.041 | −0.057 | 0.049 | 0.034 | 0.062 | −0.100 | −0.036 | −0.046 |
| Neuropterida (FIT-U) | | | | | | | | | | | | |
| Est | 0.214 | 0.147 | 0.144 | 0.147 | 0.142 | 0.132 | 0.154 | 0.139 | 0.139 | 0.089 | 0.132 | 0.117 |
| p | 0.460 | 0.615 | 0.621 | 0.614 | 0.626 | 0.650 | 0.596 | 0.633 | 0.632 | 0.761 | 0.651 | 0.690 |
| $R^2$ | −0.039 | −0.071 | −0.072 | −0.071 | −0.073 | −0.076 | −0.068 | −0.074 | −0.074 | −0.089 | −0.077 | −0.082 |
| Opiliones (APE) | | | | | | | | | | | | |
| Est | −0.571 | −0.500 | −0.405 | −0.498 | −0.515 | −0.536 | −0.422 | −0.413 | −0.504 | −0.231 | −0.542 | −0.578 |
| p | 0.028 | 0.062 | 0.145 | 0.064 | 0.054 | 0.042 | 0.127 | 0.136 | 0.060 | 0.424 | 0.040 | 0.025 |
| $R^2$ | 0.338 | 0.236 | 0.120 | 0.233 | 0.256 | 0.287 | 0.139 | 0.129 | 0.242 | −0.028 | 0.294 | 0.349 |

Table G12. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Opiliones (PT) | | | | | | | | | | | | |
| Est | −0.272 | −0.276 | −0.298 | −0.196 | −0.293 | −0.313 | −0.207 | −0.330 | −0.200 | −0.324 | −0.148 | −0.362 |
| p | 0.341 | 0.335 | 0.296 | 0.499 | 0.304 | 0.270 | 0.474 | 0.243 | 0.490 | 0.253 | 0.610 | 0.197 |
| $R^2$ | 0.000 | 0.002 | 0.019 | −0.048 | 0.016 | 0.032 | −0.042 | 0.047 | −0.046 | 0.041 | −0.070 | 0.077 |
| Herbivore | | | | | | | | | | | | |
| Chewer | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.595 | 0.571 | 0.476 | 0.640 | 0.608 | 0.424 | 0.597 | 0.516 | 0.677 | 0.011 | 0.555 | 0.461 |
| p | 0.020 | 0.028 | 0.079 | 0.010 | 0.017 | 0.125 | 0.019 | 0.053 | 0.005 | 0.969 | 0.034 | 0.090 |
| $R^2$ | 0.377 | 0.339 | 0.204 | 0.450 | 0.398 | 0.141 | 0.380 | 0.257 | 0.516 | −0.100 | 0.314 | 0.186 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.071 | 0.169 | 0.245 | 0.105 | 0.161 | 0.159 | 0.177 | 0.251 | 0.086 | 0.291 | 0.020 | 0.136 |
| p | 0.808 | 0.561 | 0.395 | 0.719 | 0.579 | 0.585 | 0.542 | 0.383 | 0.769 | 0.308 | 0.945 | 0.640 |
| $R^2$ | −0.093 | −0.062 | −0.020 | −0.085 | −0.065 | −0.066 | −0.058 | −0.015 | −0.090 | 0.014 | −0.099 | −0.075 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.639 | 0.694 | 0.753 | 0.657 | 0.669 | 0.599 | 0.757 | 0.739 | 0.613 | 0.540 | 0.509 | 0.507 |
| p | 0.010 | 0.004 | 0.001 | 0.007 | 0.006 | 0.019 | 0.001 | 0.001 | 0.015 | 0.040 | 0.057 | 0.058 |
| $R^2$ | 0.450 | 0.548 | 0.663 | 0.480 | 0.502 | 0.382 | 0.670 | 0.635 | 0.405 | 0.292 | 0.249 | 0.246 |
| Coleoptera (GPE) | | | | | | | | | | | | |
| Est | 0.509 | 0.576 | 0.653 | 0.490 | 0.531 | 0.581 | 0.592 | 0.617 | 0.421 | 0.624 | 0.396 | 0.471 |
| p | 0.067 | 0.032 | 0.011 | 0.081 | 0.054 | 0.030 | 0.027 | 0.019 | 0.144 | 0.017 | 0.172 | 0.096 |
| $R^2$ | 0.249 | 0.350 | 0.482 | 0.223 | 0.281 | 0.358 | 0.375 | 0.418 | 0.135 | 0.430 | 0.107 | 0.197 |
| Sucker | | | | | | | | | | | | |
| Heteroptera (APE) | | | | | | | | | | | | |
| Est | 0.182 | 0.225 | 0.232 | 0.167 | 0.182 | 0.362 | 0.166 | 0.177 | 0.110 | 0.398 | 0.258 | 0.301 |
| p | 0.530 | 0.435 | 0.421 | 0.566 | 0.532 | 0.197 | 0.568 | 0.543 | 0.707 | 0.152 | 0.370 | 0.290 |
| $R^2$ | −0.055 | −0.032 | −0.027 | −0.063 | −0.056 | 0.076 | −0.063 | −0.058 | −0.084 | 0.113 | −0.011 | 0.022 |
| Heteroptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.095 | 0.038 | −0.101 | 0.080 | 0.055 | 0.134 | −0.060 | −0.105 | 0.103 | −0.145 | 0.241 | 0.202 |
| p | 0.744 | 0.897 | 0.729 | 0.784 | 0.852 | 0.645 | 0.837 | 0.720 | 0.725 | 0.619 | 0.403 | 0.485 |
| $R^2$ | −0.088 | −0.098 | −0.086 | −0.091 | −0.096 | −0.076 | −0.095 | −0.085 | −0.086 | −0.072 | −0.022 | −0.045 |
| Heteroptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.071 | 0.066 | 0.129 | 0.054 | 0.069 | −0.026 | 0.127 | 0.147 | 0.055 | 0.059 | −0.064 | −0.046 |
| p | 0.809 | 0.822 | 0.659 | 0.853 | 0.813 | 0.929 | 0.664 | 0.615 | 0.850 | 0.841 | 0.828 | 0.875 |
| $R^2$ | −0.093 | −0.094 | −0.078 | −0.096 | −0.094 | −0.099 | −0.078 | −0.071 | −0.096 | −0.095 | −0.095 | −0.097 |
| Symbiont | | | | | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | | | | | |
| Est | 0.146 | 0.045 | −0.013 | 0.108 | 0.069 | −0.034 | 0.070 | 0.009 | 0.140 | −0.216 | 0.090 | −0.004 |
| p | 0.617 | 0.878 | 0.965 | 0.712 | 0.815 | 0.906 | 0.810 | 0.976 | 0.632 | 0.455 | 0.757 | 0.989 |
| $R^2$ | −0.071 | −0.097 | −0.100 | −0.084 | −0.094 | −0.098 | −0.093 | −0.100 | −0.074 | −0.037 | −0.089 | −0.100 |
| Producer | | | | | | | | | | | | |
| Vascular plants | | | | | | | | | | | | |
| Est | −0.215 | −0.175 | −0.228 | −0.109 | −0.192 | −0.160 | −0.154 | −0.264 | −0.115 | −0.236 | −0.015 | −0.193 |
| p | 0.458 | 0.546 | 0.429 | 0.709 | 0.507 | 0.582 | 0.598 | 0.357 | 0.693 | 0.413 | 0.958 | 0.505 |
| $R^2$ | −0.038 | −0.059 | −0.030 | −0.084 | −0.050 | −0.066 | −0.068 | −0.006 | −0.082 | −0.025 | −0.100 | −0.050 |
| Mosses | | | | | | | | | | | | |
| Est | −0.505 | −0.559 | −0.529 | −0.564 | −0.550 | −0.515 | −0.570 | −0.518 | −0.545 | −0.306 | −0.524 | −0.477 |
| p | 0.060 | 0.032 | 0.046 | 0.030 | 0.036 | 0.053 | 0.028 | 0.052 | 0.038 | 0.283 | 0.049 | 0.078 |
| $R^2$ | 0.242 | 0.321 | 0.276 | 0.328 | 0.307 | 0.256 | 0.337 | 0.261 | 0.300 | 0.026 | 0.269 | 0.206 |

Table G13. Relationship between forest types and the abundance of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Residual degrees of freedom (df), p-values of a Fligner-Killeen test of homogeneity of variances, estimates (Est) for each forest type (UM = unmanaged deciduous forest, MD = Managed deciduous forest, MM = Managed Mixed beech-spruce forest, MS = Managed spruce forest), adjusted $R^2$ and p-values of ANOVAs are shown. Additionally the standard error (SE) of the multcomp comparison (Hothorn et al. 2010) is given.

| | | Abundance | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Trophic guild | df | p> Fligner | p- value | adj- $R^2$ | Est UF | Est MD | Est MM | Est MS | SE |
| Decomposer | | | | | | | | | |
| Mycetophage | | | | | | | | | |
| Coleoptera (APE) | 8 | 0.482 | 0.016 | 0.594 | −0.497 | −0.552 | −0.187 | 1.236 | 0.470 |
| Coleoptera (FIT-C) | 8 | 0.848 | 0.500 | −0.040 | 0.221 | −0.727 | 0.140 | 0.366 | 0.753 |
| Coleoptera (FIT-U) | 8 | 0.687 | 0.111 | 0.325 | 0.564 | −0.807 | −0.393 | 0.636 | 0.607 |
| Saprophage | | | | | | | | | |
| Coleoptera (PT) | 8 | 0.899 | 0.320 | 0.091 | 0.106 | 0.758 | −0.603 | −0.261 | 0.704 |
| Fungi (soil saprophytes) | 8 | 0.981 | 0.019 | 0.578 | −0.790 | −0.639 | 0.827 | 0.602 | 0.480 |
| Isopoda(PT) | 8 | 0.510 | 0.002 | 0.762 | 0.886 | 0.682 | −0.773 | −0.795 | 0.360 |
| Xylophage | | | | | | | | | |
| Coleoptera (APE) | 8 | 0.893 | 0.201 | 0.205 | 0.540 | −0.233 | −0.814 | 0.507 | 0.658 |
| Coleoptera (FIT-C) | 8 | 0.699 | 0.700 | −0.162 | 0.146 | −0.426 | 0.473 | −0.193 | 0.796 |
| Coleoptera (FIT-U) | 8 | 0.893 | 0.780 | −0.209 | 0.193 | −0.420 | −0.134 | 0.361 | 0.812 |
| Fungi (wood/bark species) | 8 | 0.731 | 0.023 | 0.554 | 0.924 | 0.270 | −0.159 | −1.036 | 0.493 |
| Predator | | | | | | | | | |
| Big | | | | | | | | | |
| Birds (breeding) | 8 | 0.946 | 0.028 | 0.532 | 1.069 | −0.059 | −0.103 | −0.907 | 0.505 |
| Birds (overwintering) | 8 | 0.778 | 0.005 | 0.699 | 1.243 | −0.787 | −0.034 | −0.422 | 0.405 |
| Small | | | | | | | | | |
| Araneae (APE) | 8 | 0.597 | 0.507 | −0.044 | −0.038 | −0.300 | −0.367 | 0.704 | 0.755 |
| Coleoptera (APE) | 8 | 0.773 | 0.643 | −0.128 | −0.231 | 0.556 | −0.410 | 0.086 | 0.784 |
| Coleoptera (FIT-C) | 8 | 0.643 | 0.065 | 0.416 | 0.911 | 0.184 | −0.185 | −0.910 | 0.564 |
| Coleoptera (FIT-U) | 8 | 0.609 | 0.080 | 0.383 | −0.221 | −0.920 | 0.803 | 0.338 | 0.580 |
| Coleoptera (PT) | 8 | 0.699 | 0.746 | −0.190 | −0.293 | 0.535 | −0.161 | −0.082 | 0.805 |
| Heteroptera (APE) | 8 | 0.591 | 0.557 | −0.076 | −0.053 | −0.313 | −0.309 | 0.675 | 0.766 |
| Heteroptera (FIT-C) | 8 | 0.855 | 0.032 | 0.516 | 0.555 | 0.688 | −0.180 | −1.063 | 0.514 |
| Heteroptera (FIT-U) | 8 | 0.944 | 0.881 | −0.271 | −0.371 | 0.170 | 0.242 | −0.041 | 0.833 |
| Neuropterida (APE) | 8 | 0.982 | 0.310 | 0.100 | −0.535 | 0.256 | −0.429 | 0.708 | 0.701 |
| Neuropterida (FIT-C) | 8 | 0.624 | 0.535 | −0.062 | 0.157 | 0.483 | 0.010 | −0.651 | 0.761 |
| Neuropterida (FIT-U) | 8 | 0.850 | 0.654 | −0.135 | 0.054 | −0.182 | 0.554 | −0.425 | 0.787 |
| Opiliones (APE) | 8 | 0.528 | 0.980 | −0.345 | 0.151 | 0.040 | −0.201 | 0.009 | 0.857 |
| Opiliones (PT) | 8 | 0.802 | 0.684 | −0.153 | −0.451 | −0.090 | 0.018 | 0.523 | 0.793 |
| Herbivore | | | | | | | | | |
| Chewer | | | | | | | | | |
| Coleoptera (APE) | 8 | 0.672 | 0.464 | −0.016 | −0.159 | 0.087 | −0.575 | 0.647 | 0.744 |
| Coleoptera (FIT-C) | 8 | 0.944 | 0.326 | 0.087 | 0.551 | 0.414 | −0.299 | −0.666 | 0.706 |
| Coleoptera (FIT-U) | 8 | 0.643 | 0.626 | −0.118 | −0.059 | −0.291 | 0.628 | −0.279 | 0.781 |
| Coleoptera (GPE) | 8 | 0.896 | 0.290 | 0.136 | −0.691 | 0.641 | 0.286 | −0.353 | 0.679 |
| Sucker | | | | | | | | | |
| Heteroptera (APE) | 8 | 0.796 | 0.103 | 0.339 | 0.276 | 0.890 | −0.516 | −0.650 | 0.601 |
| Heteroptera (FIT-C) | 8 | 0.931 | 0.023 | 0.555 | −0.076 | 1.146 | −0.797 | −0.273 | 0.493 |
| Heteroptera (FIT-U) | 8 | 0.830 | 0.471 | −0.020 | 0.537 | 0.144 | 0.001 | −0.682 | 0.746 |
| Symbiont | | | | | | | | | |
| Fungi (Mycorrhiza) | 8 | 0.802 | 0.218 | 0.186 | −0.956 | 0.376 | 0.300 | 0.281 | 0.666 |
| Producer | | | | | | | | | |
| Vascular plants | 8 | 0.915 | 0.314 | 0.097 | 0.085 | 0.761 | −0.630 | −0.216 | 0.702 |
| Mosses | 8 | 0.831 | 0.020 | 0.572 | −0.545 | −0.805 | 0.351 | 0.999 | 0.483 |

Table G14. Relationship between forest types and the species richness of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Residual degrees of freedom (df), p-values of a Fligner-Killeen test of homogeneity of variances, estimates (Est) for each forest type (UM = unmanaged deciduous forest, MD = Managed deciduous forest, MM = Managed Mixed beech-spruce forest, MS = Managed spruce forest), adjusted $R^2$ and p-values of ANOVAs are shown. Additionally the standard error (SE) of the multcomp comparison (Hothorn et al. 2010) is given.

| | | Species richness | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Trophic guild | df | p> Fligner | p- value | adj- $R^2$ | Est UF | Est MD | Est MM | Est MS | SE |
| Decomposer | | | | | | | | | |
| Mycetophage | | | | | | | | | |
| Coleoptera (APE) | 8 | 0.731 | 0.151 | 0.266 | 0.263 | 0.382 | 0.376 | −1.021 | 0.633 |
| Coleoptera (FIT-C) | 8 | 0.843 | 0.332 | 0.082 | 0.576 | −0.608 | −0.368 | 0.400 | 0.708 |
| Coleoptera (FIT-U) | 8 | 0.923 | 0.734 | −0.182 | −0.126 | 0.446 | −0.438 | 0.118 | 0.803 |
| Saprophage | | | | | | | | | |
| Coleoptera (PT) | 8 | 0.928 | 0.001 | 0.805 | 0.096 | 1.231 | −0.375 | −0.953 | 0.326 |
| Fungi (soil saprophytes) | 8 | 0.899 | 0.164 | 0.249 | −0.541 | −0.513 | 0.881 | 0.173 | 0.640 |
| Isopoda (PT) | 8 | 0.919 | 0.003 | 0.731 | 1.077 | 0.215 | −0.215 | −1.077 | 0.383 |
| Xylophage | | | | | | | | | |
| Coleoptera (APE) | 8 | 0.926 | 0.082 | 0.378 | 0.657 | −0.928 | −0.261 | 0.531 | 0.582 |
| Coleoptera (FIT-C) | 8 | 0.917 | 0.403 | 0.027 | 0.676 | −0.647 | 0.005 | −0.035 | 0.728 |
| Coleoptera (FIT-U) | 8 | 0.976 | 0.969 | −0.335 | 0.248 | −0.100 | −0.123 | −0.025 | 0.853 |
| Fungi (wood/bark species) | 8 | 0.858 | 0.064 | 0.419 | 0.859 | 0.220 | −0.112 | −0.967 | 0.563 |
| Predator | | | | | | | | | |
| Big | | | | | | | | | |
| Birds (breeding) | 8 | 0.946 | 0.040 | 0.488 | 1.060 | −0.094 | −0.107 | −0.859 | 0.529 |
| Birds (overwintering) | 8 | 0.727 | 0.034 | 0.509 | 0.519 | 0.105 | 0.540 | −1.165 | 0.517 |
| Small | | | | | | | | | |
| Araneae (APE) | 8 | 0.624 | 0.446 | −0.003 | 0.635 | 0.099 | −0.621 | −0.112 | 0.740 |
| Coleoptera (APE) | 8 | 0.863 | 0.075 | 0.394 | 0.311 | 0.871 | −0.841 | −0.341 | 0.575 |
| Coleoptera (FIT-C) | 8 | 0.731 | 0.131 | 0.294 | 0.640 | 0.495 | −0.282 | −0.853 | 0.620 |
| Coleoptera (FIT-U) | 8 | 0.863 | 0.793 | −0.217 | −0.269 | −0.296 | 0.168 | 0.396 | 0.815 |
| Coleoptera (PT) | 8 | 0.672 | 0.025 | 0.548 | −0.629 | −0.705 | 1.008 | 0.326 | 0.496 |
| Heteroptera (APE) | 8 | 0.919 | 0.741 | −0.186 | −0.148 | 0.128 | −0.423 | 0.442 | 0.804 |
| Heteroptera (FIT-C) | 8 | 0.877 | 0.016 | 0.594 | 0.756 | 0.696 | −0.756 | −0.696 | 0.471 |
| Heteroptera (FIT-U) | 8 | 0.665 | 0.217 | 0.187 | −0.883 | 0.648 | 0.102 | 0.132 | 0.666 |
| Neuropterida (APE) | 8 | 0.714 | 0.553 | −0.073 | −0.561 | 0.579 | 0.053 | −0.071 | 0.765 |
| Neuropterida (FIT-C) | 8 | 0.946 | 0.555 | −0.075 | −0.166 | 0.682 | −0.377 | −0.139 | 0.766 |
| Neuropterida (FIT-U) | 8 | 0.672 | 0.410 | 0.022 | 0.363 | −0.342 | 0.545 | −0.566 | 0.730 |
| Opiliones (APE) | 8 | 0.661 | 0.802 | −0.222 | −0.441 | −0.063 | 0.189 | 0.315 | 0.816 |
| Opiliones (PT) | 8 | 0.957 | 0.500 | −0.040 | −0.678 | −0.032 | 0.258 | 0.452 | 0.753 |
| Herbivore | | | | | | | | | |
| Chewer | | | | | | | | | |
| Coleoptera (APE) | 8 | 0.944 | 0.066 | 0.412 | 0.625 | 0.668 | −0.500 | −0.794 | 0.566 |
| Coleoptera (FIT-C) | 8 | 0.931 | 0.501 | −0.041 | 0.532 | 0.307 | −0.421 | −0.419 | 0.753 |
| Coleoptera (FIT-U) | 8 | 0.951 | 0.164 | 0.249 | 0.774 | 0.342 | −0.664 | −0.451 | 0.640 |
| Coleoptera (GPE) | 8 | 0.081 | 0.026 | 0.591 | 0.564 | 0.630 | −1.081 | −0.169 | 0.467 |
| Sucker | | | | | | | | | |
| Heteroptera (APE) | 8 | 0.612 | 0.377 | 0.046 | 0.314 | 0.614 | −0.545 | −0.383 | 0.721 |
| Heteroptera (FIT-C) | 8 | 0.415 | 0.957 | −0.324 | −0.116 | 0.270 | −0.154 | 0.000 | 0.850 |
| Heteroptera (FIT-U) | 8 | 0.863 | 0.020 | 0.574 | 0.986 | 0.242 | −0.992 | −0.235 | 0.482 |
| Symbiont | | | | | | | | | |
| Fungi (Mycorrhiza) | 8 | 0.737 | 0.396 | 0.032 | −0.782 | 0.397 | 0.343 | 0.042 | 0.726 |
| Producer | | | | | | | | | |
| Vascular plants | 8 | 0.868 | 0.518 | −0.051 | −0.657 | 0.356 | 0.378 | −0.077 | 0.757 |
| Mosses | 8 | 0.951 | 0.047 | 0.464 | −0.606 | −0.715 | 0.462 | 0.859 | 0.541 |

Table G15. Relationship between forest types and the diversity of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Residual degrees of freedom (df), p-values of a Fligner-Killeen test of homogeneity of variances, estimates (Est) for each forest type (UM = unmanaged deciduous forest, MD = Managed deciduous forest, MM = Managed Mixed beech-spruce forest, MS = Managed spruce forest), adjusted $R^2$ and p-values of ANOVAs are shown. Additionally the standard error (SE) of the multcomp comparison (Hothorn et al. 2010) is given.

| | | Diversity | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Trophic guild | df | p> Fligner | p- value | adj- $R^2$ | Est UF | Est MD | Est MM | Est MS | SE |
| Decomposer | | | | | | | | | |
| Mycetophage | | | | | | | | | |
| Coleoptera (APE) | 8 | 0.802 | 0.028 | 0.534 | 0.343 | 0.509 | 0.363 | −1.214 | 0.504 |
| Coleoptera (FIT-C) | 8 | 0.672 | 0.588 | −0.095 | 0.551 | 0.185 | −0.339 | −0.397 | 0.773 |
| Coleoptera (FIT-U) | 8 | 0.502 | 0.086 | 0.371 | −1.014 | 0.729 | 0.258 | 0.027 | 0.586 |
| Saprophage | | | | | | | | | |
| Coleoptera (PT) | 8 | 0.930 | 0.793 | −0.217 | −0.051 | −0.453 | 0.184 | 0.320 | 0.815 |
| Fungi (soil saprophytes) | 8 | 0.976 | 0.048 | 0.462 | −0.780 | −0.451 | 0.973 | 0.258 | 0.542 |
| Isopoda(PT) | 8 | 0.769 | 0.090 | 0.363 | 0.060 | −0.628 | 1.009 | −0.441 | 0.589 |
| Xylophage | | | | | | | | | |
| Coleoptera (APE) | 8 | 0.737 | 0.105 | 0.336 | 0.396 | −1.050 | 0.524 | 0.130 | 0.602 |
| Coleoptera (FIT-C) | 8 | 0.814 | 0.019 | 0.576 | 1.196 | −0.700 | −0.375 | −0.120 | 0.481 |
| Coleoptera (FIT-U) | 8 | 0.740 | 0.072 | 0.400 | 0.099 | 1.010 | −0.708 | −0.401 | 0.572 |
| Fungi (wood/bark species) | 8 | 0.843 | 0.163 | 0.250 | 0.951 | −0.087 | −0.235 | −0.629 | 0.640 |
| Predator | | | | | | | | | |
| Big | | | | | | | | | |
| Birds (breeding) | 8 | 0.774 | 0.088 | 0.366 | 1.081 | −0.322 | −0.209 | −0.550 | 0.588 |
| Birds (overwintering) | 8 | 0.624 | 0.000 | 0.939 | 0.863 | 0.284 | 0.257 | −1.405 | 0.182 |
| Small | | | | | | | | | |
| Araneae (APE) | 8 | 0.489 | 0.189 | 0.218 | 0.591 | 0.068 | 0.271 | −0.931 | 0.653 |
| Coleoptera (APE) | 8 | 0.851 | 0.664 | −0.141 | 0.354 | 0.353 | −0.420 | −0.288 | 0.789 |
| Coleoptera (FIT-C) | 8 | 0.923 | 0.588 | −0.095 | 0.351 | −0.569 | 0.375 | −0.157 | 0.773 |
| Coleoptera (FIT-U) | 8 | 0.961 | 0.395 | 0.033 | −0.091 | 0.769 | −0.515 | −0.163 | 0.726 |
| Coleoptera (PT) | 8 | 0.830 | 0.239 | 0.165 | −0.685 | −0.352 | 0.671 | 0.366 | 0.675 |
| Heteroptera (APE) | 8 | 0.831 | 0.592 | −0.098 | −0.016 | 0.323 | −0.629 | 0.322 | 0.774 |
| Heteroptera (FIT-C) | 8 | 0.596 | 0.320 | 0.091 | 0.155 | 0.690 | −0.705 | −0.140 | 0.704 |
| Heteroptera (FIT-U) | 8 | 0.919 | 0.069 | 0.406 | −1.097 | 0.557 | 0.416 | 0.125 | 0.569 |
| Neuropterida (APE) | 8 | 0.816 | 0.507 | −0.044 | −0.311 | 0.709 | −0.051 | −0.347 | 0.755 |
| Neuropterida (FIT-C) | 8 | 0.873 | 0.483 | −0.028 | 0.271 | 0.457 | −0.688 | −0.040 | 0.749 |
| Neuropterida (FIT-U) | 8 | 0.703 | 0.454 | −0.009 | 0.467 | −0.361 | 0.419 | −0.525 | 0.742 |
| Opiliones (APE) | 8 | 0.407 | 0.357 | 0.061 | −0.371 | −0.094 | −0.358 | 0.823 | 0.715 |
| Opiliones (PT) | 8 | 0.774 | 0.291 | 0.116 | −0.816 | −0.031 | 0.573 | 0.274 | 0.694 |
| Herbivore | | | | | | | | | |
| Chewer | | | | | | | | | |
| Coleoptera (APE) | 8 | 0.644 | 0.002 | 0.753 | 0.151 | 1.167 | −0.338 | −0.980 | 0.367 |
| Coleoptera (FIT-C) | 8 | 0.875 | 0.455 | −0.010 | 0.274 | −0.492 | −0.368 | 0.587 | 0.742 |
| Coleoptera (FIT-U) | 8 | 0.676 | 0.075 | 0.393 | 0.921 | 0.285 | −0.700 | −0.506 | 0.575 |
| Coleoptera (GPE) | 8 | 0.842 | 0.702 | −0.182 | 0.451 | 0.132 | −0.469 | −0.172 | 0.794 |
| Sucker | | | | | | | | | |
| Heteroptera (APE) | 8 | 0.816 | 0.331 | 0.083 | 0.765 | −0.003 | −0.133 | −0.629 | 0.707 |
| Heteroptera (FIT-C) | 8 | 0.966 | 0.735 | −0.183 | −0.336 | 0.214 | 0.417 | −0.294 | 0.803 |
| Heteroptera (FIT-U) | 8 | 0.888 | 0.548 | −0.071 | 0.225 | 0.273 | −0.704 | 0.206 | 0.764 |
| Symbiont | | | | | | | | | |
| Fungi (Mycorrhiza) | 8 | 0.802 | 0.450 | −0.006 | −0.514 | 0.564 | 0.308 | −0.357 | 0.741 |
| Producer | | | | | | | | | |
| Vascular plants | 8 | 0.699 | 0.607 | −0.107 | −0.637 | 0.280 | 0.314 | 0.044 | 0.777 |
| Mosses | 8 | 0.667 | 0.855 | −0.254 | −0.280 | −0.164 | 0.049 | 0.395 | 0.827 |

Table G16. Relationship between forest types and the entropy of various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Residual degrees of freedom (df), p-values of a Fligner-Killeen test of homogeneity of variances, estimates (Est) for each forest type (UM = unmanaged deciduous forest, MD = Managed deciduous forest, MM = Managed Mixed beech-spruce forest, MS = Managed spruce forest), adjusted $R^2$ and p-values of ANOVAs are shown. Additionally the standard error (SE) of the multcomp comparison (Hothorn et al. 2010) is given.

| Trophic guild | df | Entropy | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | p> Fligner | p- value | adj- $R^2$ | Est UF | Est MD | Est MM | Est MS | SE |
| Decomposer | | | | | | | | | |
| Mycetophage | | | | | | | | | |
| Coleoptera (APE) | 8 | 0.672 | 0.066 | 0.413 | 0.389 | 0.436 | 0.308 | −1.133 | 0.566 |
| Coleoptera (FIT-C) | 8 | 0.773 | 0.810 | −0.227 | 0.464 | −0.014 | −0.173 | −0.277 | 0.818 |
| Coleoptera (FIT-U) | 8 | 0.873 | 0.017 | 0.589 | −1.014 | 1.034 | 0.037 | −0.058 | 0.474 |
| Saprophage | | | | | | | | | |
| Coleoptera (PT) | 8 | 0.731 | 0.822 | −0.235 | −0.165 | −0.367 | 0.303 | 0.229 | 0.821 |
| Fungi (soil saprophytes) | 8 | 0.644 | 0.252 | 0.152 | −0.428 | −0.196 | 0.918 | −0.293 | 0.680 |
| Isopoda(PT) | 8 | 0.830 | 0.017 | 0.587 | −0.024 | −0.716 | 1.180 | −0.440 | 0.474 |
| Xylophage | | | | | | | | | |
| Coleoptera (APE) | 8 | 0.981 | 0.987 | −0.352 | 0.147 | −0.166 | 0.006 | 0.014 | 0.859 |
| Coleoptera (FIT-C) | 8 | 0.871 | 0.048 | 0.462 | 1.026 | −0.642 | −0.570 | 0.186 | 0.542 |
| Coleoptera (FIT-U) | 8 | 0.606 | 0.051 | 0.453 | 0.339 | 0.935 | −0.592 | −0.682 | 0.546 |
| Fungi (wood/bark species) | 8 | 0.873 | 0.149 | 0.268 | 0.881 | 0.080 | −0.199 | −0.762 | 0.632 |
| Predator | | | | | | | | | |
| Big | | | | | | | | | |
| Birds (breeding) | 8 | 0.687 | 0.125 | 0.303 | 1.018 | −0.342 | −0.115 | −0.560 | 0.617 |
| Birds (overwintering) | 8 | 0.624 | 0.064 | 0.419 | 1.005 | −0.036 | −0.129 | −0.839 | 0.563 |
| Small | | | | | | | | | |
| Araneae (APE) | 8 | 0.506 | 0.100 | 0.344 | 0.825 | 0.003 | 0.107 | −0.936 | 0.598 |
| Coleoptera (APE) | 8 | 0.923 | 0.473 | −0.022 | 0.457 | 0.417 | −0.484 | −0.390 | 0.747 |
| Coleoptera (FIT-C) | 8 | 0.586 | 0.543 | −0.068 | 0.480 | −0.175 | 0.274 | −0.579 | 0.763 |
| Coleoptera (FIT-U) | 8 | 0.961 | 0.545 | −0.068 | −0.233 | 0.601 | −0.489 | 0.122 | 0.763 |
| Coleoptera (PT) | 8 | 0.510 | 0.396 | 0.032 | −0.579 | −0.338 | 0.557 | 0.359 | 0.726 |
| Heteroptera (APE) | 8 | 0.762 | 0.009 | 0.654 | −0.285 | 1.289 | −0.493 | −0.510 | 0.434 |
| Heteroptera (FIT-C) | 8 | 0.624 | 0.403 | 0.027 | 0.573 | 0.200 | −0.711 | −0.061 | 0.728 |
| Heteroptera (FIT-U) | 8 | 0.714 | 0.020 | 0.572 | −0.983 | 1.048 | −0.012 | −0.053 | 0.483 |
| Neuropterida (APE) | 8 | 0.796 | 0.696 | −0.160 | −0.439 | 0.382 | 0.282 | −0.225 | 0.795 |
| Neuropterida (FIT-C) | 8 | 0.991 | 0.442 | −0.001 | 0.017 | 0.705 | −0.532 | −0.191 | 0.739 |
| Neuropterida (FIT-U) | 8 | 0.737 | 0.903 | −0.286 | 0.171 | −0.208 | 0.266 | −0.228 | 0.837 |
| Opiliones (APE) | 8 | 0.606 | 0.067 | 0.412 | −0.651 | 0.115 | −0.485 | 1.022 | 0.566 |
| Opiliones (PT) | 8 | 0.982 | 0.505 | −0.043 | −0.719 | 0.095 | 0.354 | 0.271 | 0.754 |
| Herbivore | | | | | | | | | |
| Chewer | | | | | | | | | |
| Coleoptera (APE) | 8 | 0.686 | 0.005 | 0.700 | 0.209 | 1.082 | −0.260 | −1.031 | 0.405 |
| Coleoptera (FIT-C) | 8 | 0.774 | 0.604 | −0.105 | 0.450 | 0.113 | −0.610 | 0.047 | 0.776 |
| Coleoptera (FIT-U) | 8 | 0.558 | 0.008 | 0.657 | 0.826 | 0.661 | −0.860 | −0.627 | 0.432 |
| Coleoptera (GPE) | 8 | 0.723 | 0.111 | 0.363 | 0.849 | 0.228 | −0.703 | −0.562 | 0.583 |
| Sucker | | | | | | | | | |
| Heteroptera (APE) | 8 | 0.957 | 0.690 | −0.156 | 0.458 | −0.325 | 0.211 | −0.343 | 0.794 |
| Heteroptera (FIT-C) | 8 | 0.659 | 0.415 | 0.018 | −0.281 | −0.165 | 0.794 | −0.348 | 0.732 |
| Heteroptera (FIT-U) | 8 | 0.875 | 0.793 | −0.217 | 0.173 | 0.200 | −0.507 | 0.135 | 0.815 |
| Symbiont | | | | | | | | | |
| Fungi (Mycorrhiza) | 8 | 0.687 | 0.768 | −0.202 | −0.059 | 0.004 | 0.459 | −0.404 | 0.810 |
| Producer | | | | | | | | | |
| Vascular plants | 8 | 0.875 | 0.621 | −0.115 | −0.628 | 0.306 | 0.277 | 0.044 | 0.780 |
| Mosses | 8 | 0.780 | 0.342 | 0.074 | −0.400 | −0.579 | 0.439 | 0.540 | 0.711 |

Table G17. Number of cases (NC) in which a significant effect of forest types, combined land-use measures, single structural attributes and stand structural complexity indices on species abundance/richness/diversity/entropy was observed. Significant results based on jackknife analyses were only counted when all 4/3 (if unmanaged forests were kept) resamplings regarding forest type and 12 resamplings regarding the quantitative measures were significant. The second column gives the number of cases in which at least one of the community attributes showed a significant response of a particular trophic guild.

| Explanatory variable | NC across organismic groups | NC across organismic groups and measures | Jackknifed NCs across organismic groups and measures |
|---|---|---|---|
| Maximum | 35 | 140 | 140 |
| Forest types (management categories) | 19 (54%) | 30 (21%) | 5 (4%)/8 (6%) |
| Land-use measures | | | |
| 'Naturalness' | 18 (51%) | 34 (24%) | 20 (14%) |
| Silvicultural management intensity (SMIG)† | 19 (54%) | 32 (23%) | 20 (14%) |
| Silvicultural management intensity (SMIV)† | 19 (54%) | 35 (25%) | 20 (14%) |
| Silvicultural management intensity (SMIVD)† | 19 (54%) | 36 (26%) | 18 (13%) |
| Single structural attributes | | | |
| Maximum stand age (maxAge) | 9 (26%) | 18 (13%) | 11 (8%) |
| Average stand age (avgAge years) | 14 (40%) | 26 (19%) | 11 (8%) |
| Dead wood volume (DWV $m^3/ha^{-1}$) | 8 (23%) | 12 (9%) | 4 (3%) |
| Wood volume (WV $m^3$ $ha^{-1}$) | 1 (3%) | 1 (1%) | 0 (0%) |
| Basal area (G $m^2$ $ha^{-1}$) | 7 (20%) | 9 (6%) | 3 (2%) |
| Stand density (no. trees $ha^{-1}$) | 5 (14%) | 7 (5%) | 1 (1%) |
| Quadratic mean diameter (QMD cm) | 0 (0%) | 0 (0%) | 0 (0%) |
| Arithmetic mean diameter (MD cm) | 0 (0%) | 0 (0%) | 0 (0%) |
| Tree species richness (SR) | 8 (23%) | 11 (8%) | 1 (1%) |
| Tree species diversity (SD) | 8 (23%) | 14 (10%) | 5 (4%) |
| Proportion of conifers (Con) | 15 (43%) | 26 (19%) | 14 (10%) |
| Proportion of broad-leaved trees excl. beech (OBL) | 6 (17%) | 7 (5%) | 0 (0%) |
| Vertical structural diversity (VS) | 5 (14%) | 7 (5%) | 1 (1%) |
| Horizontal structural diversity (HS) | 2 (6%) | 4 (3%) | 0 (0%) |
| Stand structural complexity indices | | | |
| 7 Attributes (Con, avgAge, SD, DWV, VS, HS, WV) | 14 (40%) | 25 (18%) | 12 (9%) |
| 4 Attributes (Con, avgAge, SD, DWV) | 16 (46%) | 29 (21%) | 14 (10%) |
| 3 AttributesA (Con avgAge, DWV) | 17 (49%) | 29 (21%) | 16 (11%) |
| 3 AttributesB (Con, avgAge, SD) | 15 (43%) | 25 (18%) | 14 (10%) |
| 3 AttributesC (Con, SD, DWV) | 15 (43%) | 31 (22%) | 16 (11%) |
| 3 AttributesD (avgAge, SD, DWV) | 16 (46%) | 24 (17%) | 14 (10%) |
| 2 AttributesA (Con, avgAge) | 17 (49%) | 28 (20%) | 15 (11%) |
| 2 AttributesB (Con, DWV) | 17 (49%) | 28 (20%) | 14 (10%) |
| 2 AttributesC (Con, SD) | 15 (43%) | 25 (18%) | 11 (8%) |
| 2 AttributesD (avgAge, DWV) | 10 (29%) | 19 (14%) | 4 (3%) |
| 2 AttributesE (avgAge, SD) | 10 (29%) | 20 (14%) | 7 (5%) |
| 2 AttributesF (SD, DWV) | 12 (34%) | 20 (14%) | 12 (9%) |

† See Schall and Ammer (2013).

Table G18. Effects of naturalness, measures of management intensity, and stand structural attributes regarding stand age and dead and living wood volume (see Table 1) on the abundance of forest specialists, including various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.460 | 0.502 | 0.488 | 0.496 | −0.663 | −0.617 | −0.016 | 0.352 |
| p | 0.091 | 0.061 | 0.071 | 0.065 | 0.007 | 0.015 | 0.955 | 0.211 |
| $R^2$ | 0.185 | 0.239 | 0.220 | 0.231 | 0.492 | 0.411 | −0.100 | 0.067 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.180 | 0.224 | 0.245 | 0.244 | −0.205 | −0.356 | −0.015 | 0.236 |
| p | 0.534 | 0.437 | 0.394 | 0.397 | 0.480 | 0.206 | 0.960 | 0.412 |
| $R^2$ | −0.056 | −0.032 | −0.019 | −0.020 | −0.044 | 0.070 | −0.100 | −0.025 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.205 | 0.209 | 0.160 | 0.162 | −0.148 | −0.038 | 0.306 | 0.343 |
| p | 0.479 | 0.470 | 0.583 | 0.577 | 0.612 | 0.896 | 0.282 | 0.224 |
| $R^2$ | −0.044 | −0.041 | −0.066 | −0.065 | −0.071 | −0.098 | 0.026 | 0.058 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.721 | −0.804 | −0.782 | −0.762 | 0.529 | 0.597 | 0.070 | −0.499 |
| p | 0.002 | <0.001 | <0.001 | 0.001 | 0.046 | 0.019 | 0.811 | 0.063 |
| $R^2$ | 0.598 | 0.769 | 0.722 | 0.680 | 0.276 | 0.380 | −0.093 | 0.234 |
| Predator | | | | | | | | |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | −0.181 | 0.110 | 0.125 | 0.091 | −0.026 | −0.092 | 0.161 | 0.164 |
| p | 0.532 | 0.706 | 0.669 | 0.755 | 0.930 | 0.753 | 0.581 | 0.572 |
| $R^2$ | −0.056 | −0.084 | −0.079 | −0.089 | −0.099 | −0.089 | −0.065 | −0.064 |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.040 | −0.105 | −0.083 | −0.064 | −0.133 | 0.010 | 0.006 | −0.087 |
| p | 0.893 | 0.721 | 0.776 | 0.826 | 0.648 | 0.972 | 0.983 | 0.767 |
| $R^2$ | −0.098 | −0.085 | −0.091 | −0.094 | −0.076 | −0.100 | −0.100 | −0.090 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.403 | −0.289 | −0.327 | −0.337 | 0.073 | 0.297 | 0.312 | −0.134 |
| p | 0.147 | 0.311 | 0.249 | 0.233 | 0.804 | 0.298 | 0.272 | 0.645 |
| $R^2$ | 0.118 | 0.013 | 0.044 | 0.053 | −0.093 | 0.018 | 0.031 | −0.076 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.481 | 0.582 | 0.547 | 0.535 | −0.275 | −0.215 | −0.089 | 0.299 |
| p | 0.075 | 0.024 | 0.037 | 0.043 | 0.338 | 0.456 | 0.762 | 0.293 |
| $R^2$ | 0.211 | 0.355 | 0.303 | 0.285 | 0.001 | −0.038 | −0.089 | 0.020 |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.262 | −0.304 | −0.271 | −0.265 | 0.313 | 0.188 | 0.005 | −0.321 |
| p | 0.361 | 0.285 | 0.344 | 0.356 | 0.271 | 0.516 | 0.985 | 0.258 |
| $R^2$ | −0.008 | 0.024 | −0.001 | −0.006 | 0.031 | −0.052 | −0.100 | 0.038 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.163 | 0.084 | 0.077 | 0.057 | −0.112 | −0.011 | 0.145 | −0.001 |
| p | 0.575 | 0.774 | 0.794 | 0.847 | 0.701 | 0.971 | 0.620 | 0.996 |
| $R^2$ | −0.064 | −0.091 | −0.092 | −0.096 | −0.083 | −0.100 | −0.072 | −0.100 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.439 | −0.362 | −0.379 | −0.357 | 0.019 | 0.075 | 0.031 | −0.151 |
| p | 0.110 | 0.197 | 0.175 | 0.205 | 0.948 | 0.798 | 0.916 | 0.603 |
| $R^2$ | 0.159 | 0.076 | 0.094 | 0.071 | −0.100 | −0.092 | −0.099 | −0.069 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.103 | 0.223 | 0.189 | 0.178 | −0.196 | −0.045 | 0.018 | −0.120 |
| p | 0.724 | 0.440 | 0.514 | 0.540 | 0.498 | 0.878 | 0.952 | 0.682 |
| $R^2$ | −0.086 | −0.033 | −0.052 | −0.057 | −0.048 | −0.097 | −0.100 | −0.081 |
| Coleoptera (GPE) | | | | | | | | |
| Est | −0.227 | 0.223 | 0.220 | 0.242 | −0.426 | −0.376 | −0.367 | −0.033 |
| p | 0.452 | 0.460 | 0.467 | 0.420 | 0.139 | 0.198 | 0.210 | 0.913 |
| $R^2$ | −0.040 | −0.042 | −0.044 | −0.029 | 0.141 | 0.085 | 0.076 | −0.110 |

Table G18. Continued.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | 0.304 | −0.456 | −0.446 | −0.421 | 0.302 | 0.266 | 0.006 | −0.203 |
| p | 0.285 | 0.095 | 0.104 | 0.127 | 0.288 | 0.353 | 0.984 | 0.484 |
| $R^2$ | 0.024 | 0.179 | 0.167 | 0.139 | 0.023 | −0.005 | −0.100 | −0.045 |

Table G19. Effects of stand structural attributes except stand age and wood volume (see Table 1) on the abundance of forest specialists, including various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.424 | 0.367 | −0.424 | −0.404 | 0.569 | −0.545 | −0.564 | 0.343 |
| p | 0.124 | 0.191 | 0.124 | 0.146 | 0.028 | 0.038 | 0.030 | 0.224 |
| $R^2$ | 0.142 | 0.081 | 0.142 | 0.119 | 0.336 | 0.300 | 0.327 | 0.058 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.361 | 0.396 | 0.003 | −0.166 | 0.208 | −0.085 | 0.013 | −0.056 |
| p | 0.199 | 0.154 | 0.993 | 0.569 | 0.473 | 0.770 | 0.964 | 0.848 |
| $R^2$ | 0.075 | 0.111 | −0.100 | −0.063 | −0.042 | −0.09 | −0.100 | −0.096 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.299 | 0.018 | −0.628 | −0.456 | 0.268 | −0.355 | −0.415 | −0.053 |
| p | 0.295 | 0.951 | 0.012 | 0.095 | 0.350 | 0.207 | 0.134 | 0.856 |
| $R^2$ | 0.020 | −0.100 | 0.431 | 0.180 | −0.003 | 0.070 | 0.131 | −0.096 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.644 | −0.303 | 0.430 | 0.577 | −0.819 | 0.558 | 0.548 | −0.198 |
| p | 0.009 | 0.287 | 0.118 | 0.026 | <0.001 | 0.033 | 0.037 | 0.493 |
| $R^2$ | 0.457 | 0.023 | 0.149 | 0.347 | 0.801 | 0.318 | 0.303 | −0.047 |
| Predator | | | | | | | | |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | 0.313 | 0.245 | −0.085 | −0.273 | 0.217 | 0.158 | 0.028 | −0.031 |
| p | 0.270 | 0.394 | 0.772 | 0.341 | 0.454 | 0.586 | 0.923 | 0.915 |
| $R^2$ | 0.032 | −0.019 | −0.090 | <0.001 | −0.037 | −0.066 | −0.099 | −0.099 |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.089 | 0.076 | −0.282 | 0.009 | −0.074 | −0.035 | −0.134 | 0.160 |
| p | 0.762 | 0.795 | 0.324 | 0.975 | 0.800 | 0.904 | 0.645 | 0.583 |
| $R^2$ | −0.089 | −0.092 | 0.007 | −0.100 | −0.093 | −0.098 | −0.076 | −0.066 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.242 | −0.290 | 0.342 | 0.264 | −0.263 | 0.159 | 0.111 | −0.455 |
| p | 0.400 | 0.309 | 0.226 | 0.358 | 0.359 | 0.584 | 0.703 | 0.096 |
| $R^2$ | −0.021 | 0.013 | 0.057 | −0.007 | −0.007 | −0.066 | −0.083 | 0.178 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.313 | −0.022 | −0.339 | −0.189 | 0.507 | −0.455 | −0.360 | 0.261 |
| p | 0.271 | 0.940 | 0.230 | 0.514 | 0.058 | 0.096 | 0.200 | 0.363 |
| $R^2$ | 0.031 | −0.099 | 0.055 | −0.052 | 0.246 | 0.178 | 0.074 | −0.008 |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.305 | −0.174 | 0.176 | 0.168 | −0.291 | 0.237 | 0.188 | −0.100 |
| p | 0.283 | 0.549 | 0.544 | 0.563 | 0.307 | 0.410 | 0.516 | 0.734 |
| $R^2$ | 0.025 | −0.059 | −0.058 | −0.062 | 0.014 | −0.024 | −0.052 | −0.087 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.053 | −0.068 | −0.192 | −0.269 | 0.210 | −0.025 | −0.274 | −0.061 |
| p | 0.858 | 0.816 | 0.507 | 0.347 | 0.468 | 0.931 | 0.339 | 0.834 |
| $R^2$ | −0.096 | −0.094 | −0.050 | −0.003 | −0.041 | −0.099 | 0.001 | −0.095 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.284 | −0.090 | 0.378 | 0.235 | −0.353 | 0.101 | 0.143 | −0.221 |
| p | 0.319 | 0.760 | 0.176 | 0.414 | 0.210 | 0.730 | 0.623 | 0.443 |
| $R^2$ | 0.009 | −0.089 | 0.093 | −0.026 | 0.067 | −0.086 | −0.072 | −0.034 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.162 | −0.363 | −0.007 | 0.077 | 0.249 | −0.282 | −0.358 | 0.189 |
| p | 0.578 | 0.196 | 0.980 | 0.793 | 0.387 | 0.323 | 0.203 | 0.514 |
| $R^2$ | −0.065 | 0.077 | −0.100 | −0.092 | −0.017 | 0.007 | 0.072 | −0.052 |
| Coleoptera (GPE) | | | | | | | | |
| Est | −0.084 | 0.043 | −0.015 | 0.008 | 0.227 | −0.331 | −0.332 | 0.462 |
| p | 0.784 | 0.888 | 0.962 | 0.980 | 0.451 | 0.263 | 0.260 | 0.104 |
| $R^2$ | −0.101 | −0.109 | −0.111 | −0.111 | −0.039 | 0.041 | 0.042 | 0.186 |

Table G19. Continued.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | −0.295 | −0.094 | −0.077 | −0.001 | −0.393 | 0.224 | 0.129 | 0.020 |
| p | 0.302 | 0.748 | 0.792 | 0.998 | 0.158 | 0.437 | 0.659 | 0.945 |
| $R^2$ | 0.017 | −0.088 | −0.092 | −0.100 | 0.108 | −0.032 | −0.078 | −0.099 |

Table G20. Effects of stand structural complexity indices (see Appendix A: Table A3) on the abundance of forest specialists, including various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | | | | | |
| Mycetophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | −0.546 | −0.543 | −0.521 | −0.573 | −0.520 | −0.465 | −0.598 | −0.492 | −0.543 | −0.263 | −0.523 | −0.385 |
| p | 0.038 | 0.039 | 0.050 | 0.027 | 0.051 | 0.087 | 0.019 | 0.067 | 0.039 | 0.360 | 0.049 | 0.167 |
| $R^2$ | 0.300 | 0.296 | 0.265 | 0.341 | 0.263 | 0.191 | 0.380 | 0.226 | 0.296 | −0.007 | 0.268 | 0.100 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | −0.186 | −0.224 | −0.216 | −0.235 | −0.199 | −0.223 | −0.245 | −0.183 | −0.206 | −0.155 | −0.247 | −0.163 |
| p | 0.522 | 0.437 | 0.455 | 0.415 | 0.492 | 0.441 | 0.395 | 0.529 | 0.477 | 0.594 | 0.391 | 0.575 |
| $R^2$ | −0.054 | −0.032 | −0.037 | −0.026 | −0.047 | −0.033 | −0.019 | −0.055 | −0.043 | −0.068 | −0.018 | −0.064 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.286 | −0.243 | −0.105 | −0.334 | −0.269 | −0.194 | −0.229 | −0.117 | −0.369 | 0.198 | −0.386 | −0.238 |
| p | 0.317 | 0.399 | 0.720 | 0.238 | 0.348 | 0.504 | 0.427 | 0.688 | 0.189 | 0.494 | 0.167 | 0.409 |
| $R^2$ | 0.010 | −0.021 | −0.085 | 0.050 | −0.003 | −0.050 | −0.029 | −0.082 | 0.083 | −0.047 | 0.100 | −0.024 |
| Saprophage | | | | | | | | | | | | |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | 0.751 | 0.750 | 0.711 | 0.780 | 0.758 | 0.609 | 0.800 | 0.724 | 0.778 | 0.292 | 0.659 | 0.579 |
| p | 0.001 | 0.001 | 0.002 | 0.000 | 0.001 | 0.016 | 0.000 | 0.002 | 0.000 | 0.305 | 0.007 | 0.025 |
| $R^2$ | 0.658 | 0.657 | 0.580 | 0.718 | 0.672 | 0.398 | 0.759 | 0.606 | 0.714 | 0.015 | 0.484 | 0.351 |
| Predator | | | | | | | | | | | | |
| Small | | | | | | | | | | | | |
| Araneae (APE) | | | | | | | | | | | | |
| Est | −0.158 | −0.191 | −0.122 | −0.242 | −0.202 | −0.145 | −0.198 | −0.126 | −0.257 | 0.074 | −0.252 | −0.156 |
| p | 0.586 | 0.511 | 0.676 | 0.400 | 0.486 | 0.618 | 0.494 | 0.665 | 0.371 | 0.799 | 0.380 | 0.592 |
| $R^2$ | −0.066 | −0.051 | −0.080 | −0.021 | −0.045 | −0.072 | −0.047 | −0.079 | −0.011 | −0.093 | −0.014 | −0.067 |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.028 | 0.047 | 0.057 | 0.048 | 0.051 | 0.012 | 0.063 | 0.066 | 0.052 | 0.009 | 0.011 | 0.012 |
| p | 0.923 | 0.874 | 0.846 | 0.870 | 0.861 | 0.967 | 0.828 | 0.822 | 0.859 | 0.977 | 0.971 | 0.967 |
| $R^2$ | −0.099 | −0.097 | −0.096 | −0.097 | −0.096 | −0.100 | −0.095 | −0.094 | −0.096 | −0.100 | −0.100 | −0.100 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.264 | 0.351 | 0.336 | 0.296 | 0.352 | 0.416 | 0.279 | 0.339 | 0.284 | 0.339 | 0.309 | 0.435 |
| p | 0.358 | 0.213 | 0.235 | 0.300 | 0.211 | 0.132 | 0.330 | 0.231 | 0.321 | 0.230 | 0.277 | 0.113 |
| $R^2$ | −0.007 | 0.066 | 0.051 | 0.018 | 0.066 | 0.133 | 0.004 | 0.054 | 0.008 | 0.054 | 0.028 | 0.155 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.373 | −0.394 | −0.427 | −0.397 | −0.414 | −0.236 | −0.464 | −0.465 | −0.411 | −0.150 | −0.222 | −0.230 |
| p | 0.183 | 0.157 | 0.121 | 0.153 | 0.135 | 0.413 | 0.088 | 0.087 | 0.138 | 0.607 | 0.441 | 0.426 |
| $R^2$ | 0.087 | 0.109 | 0.145 | 0.112 | 0.130 | −0.025 | 0.189 | 0.191 | 0.127 | −0.070 | −0.034 | −0.029 |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | 0.208 | 0.246 | 0.243 | 0.260 | 0.249 | 0.174 | 0.280 | 0.251 | 0.261 | 0.080 | 0.196 | 0.159 |
| p | 0.473 | 0.393 | 0.399 | 0.365 | 0.386 | 0.549 | 0.328 | 0.383 | 0.363 | 0.783 | 0.498 | 0.584 |
| $R^2$ | −0.042 | −0.019 | −0.021 | −0.009 | −0.016 | −0.059 | 0.005 | −0.016 | −0.008 | −0.091 | −0.048 | −0.066 |
| Herbivore | | | | | | | | | | | | |
| Chewer | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | −0.261 | −0.178 | −0.108 | −0.225 | −0.200 | −0.128 | −0.176 | −0.126 | −0.251 | 0.096 | −0.224 | −0.162 |
| p | 0.363 | 0.539 | 0.713 | 0.435 | 0.489 | 0.661 | 0.545 | 0.665 | 0.382 | 0.741 | 0.438 | 0.577 |
| $R^2$ | −0.008 | −0.057 | −0.084 | −0.032 | −0.046 | −0.078 | −0.059 | −0.079 | −0.015 | −0.087 | −0.033 | −0.065 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.257 | 0.294 | 0.274 | 0.305 | 0.321 | 0.203 | 0.307 | 0.312 | 0.330 | 0.052 | 0.216 | 0.237 |
| p | 0.371 | 0.303 | 0.338 | 0.284 | 0.257 | 0.483 | 0.281 | 0.272 | 0.244 | 0.859 | 0.455 | 0.410 |
| $R^2$ | −0.011 | 0.016 | 0.001 | 0.025 | 0.039 | −0.044 | 0.027 | 0.031 | 0.046 | −0.096 | −0.037 | −0.024 |

Table G20. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.187 | −0.110 | −0.180 | −0.122 | −0.118 | 0.051 | −0.215 | −0.206 | −0.129 | −0.006 | 0.049 | 0.082 |
| p | 0.519 | 0.705 | 0.535 | 0.677 | 0.686 | 0.862 | 0.457 | 0.477 | 0.658 | 0.983 | 0.868 | 0.779 |
| $R^2$ | −0.053 | −0.084 | −0.056 | −0.080 | −0.081 | −0.097 | −0.038 | −0.043 | −0.078 | −0.100 | −0.097 | −0.091 |
| Coleoptera (GPE) | | | | | | | | | | | | |
| Est | −0.283 | −0.270 | −0.345 | −0.188 | −0.247 | −0.292 | −0.266 | −0.333 | −0.149 | −0.406 | −0.116 | −0.241 |
| p | 0.343 | 0.367 | 0.241 | 0.534 | 0.412 | 0.328 | 0.375 | 0.259 | 0.625 | 0.161 | 0.703 | 0.423 |
| $R^2$ | 0.000 | −0.010 | 0.055 | −0.062 | −0.027 | 0.007 | −0.013 | 0.043 | −0.080 | 0.118 | −0.092 | −0.031 |
| Producer | | | | | | | | | | | | |
| Vascular plants | | | | | | | | | | | | |
| Est | 0.249 | 0.252 | 0.330 | 0.267 | 0.245 | 0.075 | 0.380 | 0.338 | 0.256 | 0.113 | 0.083 | 0.003 |
| p | 0.387 | 0.380 | 0.244 | 0.353 | 0.395 | 0.798 | 0.174 | 0.231 | 0.373 | 0.700 | 0.778 | 0.992 |
| $R^2$ | −0.017 | −0.015 | 0.046 | −0.005 | −0.020 | −0.092 | 0.094 | 0.054 | −0.012 | −0.083 | −0.091 | −0.100 |

Table G21. Effects of naturalness, measures of management intensity, and stand structural attributes regarding stand age and dead and living wood volume (see Table 1) on the species richness of forest specialists, including various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.510 | −0.432 | −0.447 | −0.461 | 0.146 | 0.670 | 0.621 | −0.147 |
| p | 0.197 | 0.307 | 0.265 | 0.260 | 0.788 | 0.130 | 0.110 | 0.682 |
| $R^2$ | 0.136 | 0.034 | 0.068 | 0.072 | −0.152 | 0.228 | 0.264 | −0.132 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.031 | 0.119 | 0.108 | 0.090 | 0.038 | −0.084 | 0.178 | 0.188 |
| p | 0.915 | 0.683 | 0.712 | 0.759 | 0.898 | 0.774 | 0.540 | 0.516 |
| $R^2$ | −0.099 | −0.081 | −0.084 | −0.089 | −0.098 | −0.090 | −0.057 | −0.052 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.074 | −0.020 | −0.032 | −0.019 | 0.163 | 0.211 | 0.060 | 0.016 |
| p | 0.802 | 0.947 | 0.913 | 0.948 | 0.576 | 0.466 | 0.839 | 0.956 |
| $R^2$ | −0.093 | −0.099 | −0.099 | −0.100 | −0.064 | −0.040 | −0.095 | −0.100 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.560 | −0.550 | −0.530 | −0.521 | 0.433 | 0.343 | −0.094 | −0.375 |
| p | 0.032 | 0.036 | 0.045 | 0.050 | 0.115 | 0.224 | 0.749 | 0.180 |
| $R^2$ | 0.322 | 0.307 | 0.278 | 0.265 | 0.152 | 0.058 | −0.088 | 0.089 |
| Predator | | | | | | | | |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | 0.286 | −0.310 | −0.310 | −0.333 | 0.062 | 0.141 | 0.343 | −0.055 |
| p | 0.317 | 0.275 | 0.276 | 0.238 | 0.831 | 0.628 | 0.225 | 0.851 |
| $R^2$ | 0.010 | 0.029 | 0.029 | 0.049 | −0.095 | −0.073 | 0.058 | −0.096 |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.331 | −0.466 | −0.455 | −0.452 | 0.317 | 0.413 | 0.031 | −0.353 |
| p | 0.242 | 0.087 | 0.096 | 0.098 | 0.265 | 0.136 | 0.917 | 0.209 |
| $R^2$ | 0.047 | 0.191 | 0.178 | 0.174 | 0.035 | 0.129 | −0.099 | 0.068 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.230 | −0.139 | −0.132 | −0.146 | 0.216 | 0.119 | −0.091 | −0.062 |
| p | 0.425 | 0.634 | 0.651 | 0.617 | 0.456 | 0.683 | 0.755 | 0.833 |
| $R^2$ | −0.029 | −0.074 | −0.077 | −0.072 | −0.038 | −0.081 | −0.089 | −0.095 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.245 | 0.301 | 0.274 | 0.294 | −0.306 | −0.208 | −0.144 | 0.029 |
| p | 0.395 | 0.290 | 0.339 | 0.303 | 0.282 | 0.473 | 0.622 | 0.921 |
| $R^2$ | −0.019 | 0.022 | 0.001 | 0.016 | 0.026 | −0.042 | −0.072 | −0.099 |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.665 | 0.654 | 0.659 | 0.669 | −0.743 | −0.664 | −0.331 | 0.381 |
| p | 0.006 | 0.008 | 0.007 | 0.006 | 0.001 | 0.007 | 0.243 | 0.172 |
| $R^2$ | 0.494 | 0.474 | 0.483 | 0.502 | 0.642 | 0.492 | 0.047 | 0.096 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.639 | −0.677 | −0.664 | −0.669 | 0.303 | 0.409 | 0.306 | −0.361 |
| p | 0.010 | 0.005 | 0.007 | 0.006 | 0.287 | 0.140 | 0.282 | 0.199 |
| $R^2$ | 0.448 | 0.516 | 0.492 | 0.502 | 0.023 | 0.125 | 0.026 | 0.075 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.321 | −0.319 | −0.286 | −0.299 | 0.312 | 0.158 | 0.050 | −0.271 |
| p | 0.258 | 0.261 | 0.316 | 0.294 | 0.272 | 0.586 | 0.865 | 0.343 |
| $R^2$ | 0.038 | 0.037 | 0.010 | 0.020 | 0.031 | −0.066 | −0.097 | −0.001 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.718 | −0.713 | −0.718 | −0.729 | 0.619 | 0.678 | 0.275 | −0.476 |
| p | 0.002 | 0.002 | 0.002 | 0.002 | 0.014 | 0.005 | 0.336 | 0.079 |
| $R^2$ | 0.593 | 0.583 | 0.593 | 0.615 | 0.415 | 0.518 | 0.002 | 0.205 |
| Coleoptera (GPE) | | | | | | | | |
| Est | 0.747 | −0.771 | −0.752 | −0.747 | 0.585 | 0.574 | 0.124 | −0.486 |
| p | 0.001 | 0.001 | 0.001 | 0.001 | 0.029 | 0.033 | 0.683 | 0.084 |
| $R^2$ | 0.663 | 0.715 | 0.674 | 0.663 | 0.364 | 0.346 | −0.090 | 0.217 |

Table G21. Continued.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | 0.020 | −0.069 | −0.079 | −0.056 | 0.151 | 0.234 | −0.194 | −0.157 |
| p | 0.944 | 0.815 | 0.786 | 0.847 | 0.604 | 0.416 | 0.504 | 0.590 |
| $R^2$ | −0.099 | −0.094 | −0.092 | −0.096 | −0.069 | −0.026 | −0.049 | −0.067 |

Table G22. Effects of stand structural attributes except stand age and wood volume (see Table 1) on the species richness of forest specialists, including various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.289 | −0.386 | −0.212 | 0.446 | −0.419 | −0.030 | −0.053 | −0.059 |
| p | 0.414 | 0.294 | 0.704 | 0.262 | 0.337 | 0.965 | 0.918 | 0.885 |
| $R^2$ | −0.034 | 0.044 | −0.137 | 0.071 | 0.012 | −0.166 | −0.164 | −0.162 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.259 | 0.077 | 0.098 | −0.261 | 0.135 | 0.010 | 0.009 | −0.507 |
| p | 0.367 | 0.792 | 0.738 | 0.363 | 0.645 | 0.972 | 0.975 | 0.058 |
| $R^2$ | −0.010 | −0.092 | −0.087 | −0.008 | −0.076 | −0.100 | −0.100 | 0.245 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.044 | −0.183 | −0.422 | −0.209 | −0.037 | −0.113 | −0.181 | −0.125 |
| p | 0.881 | 0.529 | 0.127 | 0.470 | 0.900 | 0.698 | 0.533 | 0.669 |
| $R^2$ | −0.097 | −0.055 | 0.139 | −0.041 | −0.098 | −0.083 | −0.056 | −0.079 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.456 | −0.209 | 0.674 | 0.418 | −0.593 | 0.484 | 0.525 | −0.395 |
| p | 0.095 | 0.469 | 0.005 | 0.131 | 0.021 | 0.073 | 0.048 | 0.156 |
| $R^2$ | 0.180 | −0.041 | 0.511 | 0.134 | 0.372 | 0.215 | 0.271 | 0.110 |
| Predator | | | | | | | | |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | −0.018 | 0.063 | 0.246 | 0.028 | −0.173 | 0.356 | 0.195 | −0.311 |
| p | 0.951 | 0.829 | 0.393 | 0.925 | 0.551 | 0.206 | 0.500 | 0.273 |
| $R^2$ | −0.100 | −0.095 | −0.019 | −0.099 | −0.060 | 0.070 | −0.049 | 0.030 |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.433 | −0.277 | 0.128 | 0.221 | −0.409 | 0.347 | 0.191 | −0.029 |
| p | 0.115 | 0.333 | 0.661 | 0.443 | 0.140 | 0.218 | 0.510 | 0.921 |
| $R^2$ | 0.153 | 0.003 | −0.078 | −0.034 | 0.125 | 0.062 | −0.051 | −0.099 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.063 | 0.001 | 0.567 | 0.305 | −0.218 | 0.312 | 0.456 | −0.226 |
| p | 0.829 | 0.998 | 0.029 | 0.284 | 0.451 | 0.273 | 0.095 | 0.434 |
| $R^2$ | −0.095 | −0.100 | 0.332 | 0.025 | −0.036 | 0.030 | 0.180 | −0.031 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.036 | −0.169 | −0.267 | −0.138 | 0.273 | −0.480 | −0.490 | 0.155 |
| p | 0.902 | 0.562 | 0.352 | 0.636 | 0.340 | 0.076 | 0.069 | 0.594 |
| $R^2$ | −0.098 | −0.062 | −0.004 | −0.074 | <0.001 | 0.210 | 0.223 | −0.068 |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.471 | 0.486 | −0.375 | −0.254 | 0.612 | −0.539 | −0.456 | 0.553 |
| p | 0.083 | 0.072 | 0.180 | 0.378 | 0.016 | 0.041 | 0.095 | 0.035 |
| $R^2$ | 0.198 | 0.217 | 0.089 | −0.014 | 0.404 | 0.290 | 0.179 | 0.312 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.413 | −0.145 | 0.452 | 0.407 | −0.578 | 0.548 | 0.430 | −0.270 |
| p | 0.136 | 0.618 | 0.098 | 0.142 | 0.025 | 0.037 | 0.118 | 0.346 |
| $R^2$ | 0.129 | −0.072 | 0.174 | 0.123 | 0.349 | 0.304 | 0.149 | −0.002 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.22 | −0.058 | 0.395 | 0.269 | −0.278 | 0.394 | 0.380 | <0.001 |
| p | 0.446 | 0.842 | 0.155 | 0.349 | 0.331 | 0.157 | 0.174 | 0.999 |
| $R^2$ | −0.035 | −0.095 | 0.110 | −0.003 | 0.004 | 0.109 | 0.094 | −0.100 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.600 | −0.497 | 0.473 | 0.504 | −0.661 | 0.575 | 0.493 | −0.237 |
| p | 0.019 | 0.064 | 0.081 | 0.060 | 0.007 | 0.026 | 0.067 | 0.410 |
| $R^2$ | 0.384 | 0.233 | 0.200 | 0.241 | 0.488 | 0.344 | 0.227 | −0.024 |
| Coleoptera (GPE) | | | | | | | | |
| Est | −0.580 | −0.335 | 0.519 | 0.532 | −0.755 | 0.616 | 0.571 | −0.210 |
| p | 0.031 | 0.256 | 0.061 | 0.054 | 0.001 | 0.019 | 0.035 | 0.486 |

Table G22. Continued.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| $R^2$ | 0.356 | 0.045 | 0.263 | 0.281 | 0.681 | 0.415 | 0.341 | −0.050 |
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | −0.289 | −0.306 | −0.159 | 0.141 | −0.155 | −0.104 | −0.068 | 0.167 |
| p | 0.312 | 0.283 | 0.584 | 0.629 | 0.594 | 0.721 | 0.815 | 0.566 |
| $R^2$ | 0.012 | 0.026 | −0.066 | −0.073 | −0.068 | −0.085 | −0.094 | −0.063 |

Table G23. Effects of stand structural complexity indices (see Appendix A: Table A3) on the species richness of forest specialists, including various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | | | | | |
| Mycetophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.593 | 0.631 | 0.606 | 0.505 | 0.621 | 0.795 | 0.469 | 0.582 | 0.477 | 0.760 | 0.526 | 0.795 |
| p | −0.056 | −0.044 | −0.014 | −0.077 | −0.041 | −0.036 | −0.060 | <0.001 | −0.079 | 0.018 | −0.094 | −0.026 |
| $R^2$ | 0.027 | 0.022 | 0.025 | 0.036 | 0.018 | 0.038 | 0.031 | 0.017 | 0.036 | 0.174 | 0.090 | 0.030 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.156 | 0.116 | 0.142 | 0.227 | 0.121 | 0.026 | 0.279 | 0.153 | 0.258 | 0.060 | 0.178 | 0.020 |
| p | 0.338 | 0.366 | 0.375 | 0.381 | 0.351 | 0.286 | 0.423 | 0.361 | 0.361 | 0.190 | 0.311 | 0.225 |
| $R^2$ | 0.339 | 0.364 | 0.349 | 0.305 | 0.388 | 0.301 | 0.325 | 0.392 | 0.306 | 0.094 | 0.186 | 0.328 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.190 | 0.253 | 0.209 | 0.104 | 0.245 | 0.521 | 0.056 | 0.193 | 0.074 | 0.383 | 0.160 | 0.561 |
| p | 0.232 | 0.192 | 0.181 | 0.172 | 0.213 | 0.317 | 0.125 | 0.199 | 0.199 | 0.513 | 0.275 | 0.436 |
| $R^2$ | 0.321 | 0.281 | 0.242 | 0.286 | 0.294 | 0.259 | 0.262 | 0.256 | 0.295 | 0.099 | 0.269 | 0.280 |
| Saprophage | | | | | | | | | | | | |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | −0.199 | −0.137 | −0.057 | −0.189 | −0.142 | −0.127 | −0.129 | −0.050 | −0.199 | 0.090 | −0.240 | −0.135 |
| p | 0.053 | 0.080 | 0.089 | 0.095 | 0.065 | 0.010 | 0.141 | 0.075 | 0.075 | −0.052 | 0.030 | −0.032 |
| $R^2$ | 0.258 | 0.326 | 0.401 | 0.317 | 0.303 | 0.367 | 0.360 | 0.374 | 0.300 | 0.734 | 0.347 | 0.328 |
| Predator | | | | | | | | | | | | |
| Small | | | | | | | | | | | | |
| Araneae (APE) | | | | | | | | | | | | |
| Est | −0.092 | −0.100 | −0.091 | −0.099 | −0.097 | −0.095 | −0.093 | −0.096 | −0.094 | −0.078 | −0.085 | −0.066 |
| p | 0.218 | 0.365 | 0.336 | 0.403 | 0.360 | 0.440 | 0.349 | 0.317 | 0.411 | 0.524 | 0.540 | 0.455 |
| $R^2$ | 0.763 | 0.723 | 0.678 | 0.737 | 0.728 | 0.612 | 0.746 | 0.689 | 0.728 | 0.310 | 0.633 | 0.584 |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.475 | 0.497 | 0.455 | 0.552 | 0.511 | 0.349 | 0.560 | 0.472 | 0.564 | 0.075 | 0.449 | 0.331 |
| p | 0.062 | −0.009 | 0.002 | −0.022 | −0.007 | −0.033 | −0.003 | 0.010 | −0.025 | −0.054 | −0.057 | −0.037 |
| $R^2$ | 0.001 | 0.003 | 0.007 | 0.002 | 0.002 | 0.020 | 0.001 | 0.006 | 0.002 | 0.296 | 0.015 | 0.029 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.080 | 0.064 | 0.095 | 0.035 | 0.056 | 0.216 | 0.032 | 0.082 | 0.030 | 0.799 | 0.101 | 0.241 |
| p | −0.521 | −0.592 | −0.655 | −0.547 | −0.568 | −0.518 | −0.643 | −0.643 | −0.507 | −0.501 | −0.415 | −0.437 |
| $R^2$ | 0.698 | 0.616 | 0.528 | 0.643 | 0.626 | 0.409 | 0.662 | 0.547 | 0.626 | 0.022 | 0.446 | 0.363 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.203 | 0.232 | 0.179 | 0.309 | 0.250 | 0.064 | 0.322 | 0.199 | 0.327 | −0.093 | 0.171 | 0.048 |
| p | 0.050 | 0.021 | 0.008 | 0.037 | 0.029 | 0.052 | 0.010 | 0.010 | 0.058 | 0.062 | 0.133 | 0.112 |
| $R^2$ | 0.107 | 0.122 | 0.093 | 0.177 | 0.102 | 0.074 | 0.176 | 0.062 | 0.161 | −0.040 | 0.189 | 0.013 |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | 0.180 | 0.203 | 0.253 | 0.131 | 0.209 | 0.219 | 0.172 | 0.273 | 0.124 | 0.297 | 0.067 | 0.234 |
| p | 0.265 | 0.371 | 0.478 | 0.303 | 0.334 | 0.260 | 0.455 | 0.456 | 0.245 | 0.238 | 0.132 | 0.157 |
| $R^2$ | 0.714 | 0.677 | 0.750 | 0.542 | 0.728 | 0.800 | 0.544 | 0.833 | 0.580 | 0.892 | 0.515 | 0.964 |
| Herbivore | | | | | | | | | | | | |
| Chewer | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.492 | 0.640 | 0.847 | 0.514 | 0.627 | 0.664 | 0.660 | 0.865 | 0.493 | 0.758 | 0.404 | 0.644 |
| p | 0.279 | 0.223 | 0.149 | 0.259 | 0.234 | 0.208 | 0.204 | 0.153 | 0.271 | −0.015 | 0.287 | 0.228 |
| $R^2$ | 0.038 | 0.006 | −0.021 | 0.010 | 0.016 | −0.010 | −0.007 | −0.012 | 0.017 | −0.087 | −0.002 | 0.005 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | −0.047 | −0.075 | −0.096 | −0.052 | −0.073 | −0.078 | −0.078 | −0.097 | −0.047 | −0.089 | −0.022 | −0.076 |
| p | 0.329 | 0.441 | 0.610 | 0.367 | 0.417 | 0.472 | 0.480 | 0.600 | 0.343 | 0.959 | 0.315 | 0.429 |
| $R^2$ | 0.680 | 0.697 | 0.676 | 0.673 | 0.685 | 0.675 | 0.686 | 0.665 | 0.645 | 0.468 | 0.625 | 0.636 |

Table G23. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.078 | −0.012 | 0.082 | −0.027 | −0.046 | −0.064 | 0.074 | 0.053 | −0.065 | 0.128 | −0.105 | −0.158 |
| p | 0.005 | −0.033 | −0.070 | −0.010 | −0.027 | −0.042 | −0.044 | −0.069 | −0.001 | −0.100 | 0.011 | −0.030 |
| $R^2$ | 0.005 | 0.003 | 0.005 | 0.006 | 0.004 | 0.005 | 0.004 | 0.006 | 0.009 | 0.085 | 0.013 | 0.011 |
| Coleoptera (GPE) | | | | | | | | | | | | |
| Est | 0.790 | 0.968 | 0.780 | 0.926 | 0.876 | 0.827 | 0.801 | 0.856 | 0.825 | 0.662 | 0.719 | 0.587 |
| p | −0.347 | −0.260 | −0.276 | −0.241 | −0.263 | −0.223 | −0.269 | −0.286 | −0.237 | −0.185 | −0.178 | −0.216 |
| $R^2$ | 0.522 | 0.553 | 0.514 | 0.508 | 0.531 | 0.512 | 0.533 | 0.494 | 0.459 | 0.195 | 0.424 | 0.443 |
| Producer | | | | | | | | | | | | |
| Vascular plants | | | | | | | | | | | | |
| Est | 0.535 | 0.482 | 0.379 | 0.652 | 0.471 | 0.449 | 0.553 | 0.341 | 0.670 | 0.298 | 0.820 | 0.417 |
| p | 0.572 | 0.588 | 0.578 | 0.549 | 0.603 | 0.546 | 0.562 | 0.605 | 0.549 | 0.380 | 0.461 | 0.564 |
| $R^2$ | −0.085 | −0.080 | −0.088 | −0.058 | −0.086 | −0.093 | −0.058 | −0.095 | −0.065 | −0.098 | −0.052 | −0.100 |

Table G24. Effects of naturalness, measures of management intensity, and stand structural attributes regarding stand age and dead and living wood volume (see Table 1) on the diversity (reciprocal Simpson index 1/D) of forest specialists, including various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.530 | −0.419 | −0.480 | −0.505 | 0.304 | 0.474 | 0.717 | −0.052 |
| p | 0.045 | 0.129 | 0.076 | 0.060 | 0.285 | 0.080 | 0.002 | 0.858 |
| $R^2$ | 0.277 | 0.136 | 0.210 | 0.242 | 0.024 | 0.203 | 0.592 | −0.096 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.257 | 0.326 | 0.276 | 0.272 | −0.144 | −0.118 | 0.107 | 0.279 |
| p | 0.370 | 0.249 | 0.335 | 0.342 | 0.62 | 0.686 | 0.714 | 0.329 |
| $R^2$ | −0.011 | 0.043 | 0.002 | <0.001 | −0.072 | −0.081 | −0.085 | 0.005 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.043 | −0.148 | −0.083 | −0.072 | 0.156 | 0.007 | −0.431 | −0.325 |
| p | 0.884 | 0.611 | 0.777 | 0.806 | 0.591 | 0.982 | 0.117 | 0.251 |
| $R^2$ | −0.098 | −0.070 | −0.091 | −0.093 | −0.067 | −0.100 | 0.150 | 0.042 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.631 | 0.654 | 0.665 | 0.665 | −0.645 | −0.780 | −0.351 | 0.456 |
| p | 0.012 | 0.008 | 0.006 | 0.006 | 0.009 | <0.001 | 0.213 | 0.094 |
| $R^2$ | 0.436 | 0.475 | 0.494 | 0.494 | 0.459 | 0.718 | 0.066 | 0.180 |
| Predator | | | | | | | | |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | 0.458 | −0.368 | −0.373 | −0.377 | 0.207 | 0.377 | 0.205 | −0.381 |
| p | 0.093 | 0.190 | 0.182 | 0.178 | 0.474 | 0.177 | 0.479 | 0.172 |
| $R^2$ | 0.182 | 0.082 | 0.087 | 0.091 | −0.042 | 0.092 | −0.044 | 0.096 |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.249 | −0.202 | −0.248 | −0.247 | −0.065 | 0.166 | 0.214 | −0.102 |
| p | 0.386 | 0.486 | 0.388 | 0.390 | 0.825 | 0.569 | 0.459 | 0.726 |
| $R^2$ | −0.016 | −0.045 | −0.017 | −0.018 | −0.094 | −0.063 | −0.038 | −0.086 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.107 | 0.057 | 0.039 | 0.013 | 0.235 | 0.121 | 0.157 | 0.082 |
| p | 0.715 | 0.846 | 0.894 | 0.964 | 0.415 | 0.678 | 0.590 | 0.781 |
| $R^2$ | −0.085 | −0.096 | −0.098 | −0.100 | −0.026 | −0.080 | −0.067 | −0.091 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.125 | −0.171 | −0.142 | −0.115 | 0.010 | −0.140 | −0.207 | −0.140 |
| p | 0.668 | 0.557 | 0.625 | 0.694 | 0.974 | 0.630 | 0.475 | 0.632 |
| $R^2$ | −0.079 | −0.061 | −0.073 | −0.082 | −0.100 | −0.073 | −0.042 | −0.074 |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.565 | 0.537 | 0.529 | 0.534 | −0.603 | −0.459 | −0.265 | 0.347 |
| p | 0.030 | 0.042 | 0.046 | 0.043 | 0.018 | 0.092 | 0.356 | 0.219 |
| $R^2$ | 0.329 | 0.287 | 0.276 | 0.284 | 0.389 | 0.183 | −0.006 | 0.062 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.567 | −0.608 | −0.584 | −0.548 | 0.197 | 0.275 | −0.153 | −0.396 |
| p | 0.029 | 0.017 | 0.023 | 0.037 | 0.496 | 0.337 | 0.599 | 0.155 |
| $R^2$ | 0.332 | 0.397 | 0.358 | 0.303 | −0.048 | 0.001 | −0.069 | 0.111 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.189 | 0.193 | 0.176 | 0.147 | −0.213 | −0.131 | 0.229 | 0.094 |
| p | 0.516 | 0.505 | 0.544 | 0.614 | 0.462 | 0.654 | 0.426 | 0.749 |
| $R^2$ | −0.052 | −0.050 | −0.058 | −0.071 | −0.039 | −0.077 | −0.029 | −0.088 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.560 | −0.544 | −0.563 | −0.579 | 0.659 | 0.724 | 0.485 | −0.372 |
| p | 0.032 | 0.038 | 0.031 | 0.025 | 0.007 | 0.002 | 0.072 | 0.184 |

Table G24. Continued.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| $R^2$ | 0.322 | 0.298 | 0.326 | 0.351 | 0.483 | 0.605 | 0.217 | 0.086 |
| Coleoptera (GPE) | | | | | | | | |
| Est | 0.575 | −0.533 | −0.534 | −0.550 | 0.747 | 0.655 | 0.186 | −0.375 |
| p | 0.033 | 0.053 | 0.052 | 0.044 | 0.001 | 0.010 | 0.539 | 0.199 |
| $R^2$ | 0.349 | 0.284 | 0.285 | 0.309 | 0.663 | 0.484 | −0.063 | 0.084 |
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | 0.203 | −0.172 | −0.153 | −0.124 | 0.190 | 0.206 | −0.369 | −0.312 |
| p | 0.483 | 0.553 | 0.598 | 0.671 | 0.512 | 0.478 | 0.188 | 0.272 |
| $R^2$ | −0.044 | −0.060 | −0.068 | −0.079 | −0.051 | −0.043 | 0.083 | 0.031 |

Table G25. Effects of stand structural attributes except stand age and wood volume (see Table 1) on the diversity (reciprocal Simpson index 1/D) of forest specialists, including various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.167 | −0.366 | 0.017 | 0.064 | −0.266 | 0.210 | 0.080 | −0.341 |
| p | 0.566 | 0.192 | 0.954 | 0.828 | 0.353 | 0.468 | 0.784 | 0.228 |
| $R^2$ | −0.062 | 0.080 | −0.100 | −0.095 | −0.005 | −0.041 | −0.091 | 0.056 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.245 | −0.094 | −0.341 | −0.450 | 0.347 | −0.372 | −0.419 | −0.210 |
| p | 0.395 | 0.747 | 0.227 | 0.100 | 0.218 | 0.184 | 0.129 | 0.467 |
| $R^2$ | −0.019 | −0.088 | 0.057 | 0.172 | 0.062 | 0.086 | 0.136 | −0.040 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.265 | 0.038 | 0.362 | 0.313 | −0.228 | 0.272 | 0.313 | 0.154 |
| p | 0.356 | 0.896 | 0.197 | 0.271 | 0.429 | 0.342 | 0.271 | 0.598 |
| $R^2$ | −0.006 | −0.098 | 0.077 | 0.032 | −0.030 | <0.001 | 0.031 | −0.068 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.611 | 0.602 | −0.107 | −0.471 | 0.643 | −0.403 | −0.336 | 0.171 |
| p | 0.016 | 0.018 | 0.715 | 0.082 | 0.009 | 0.147 | 0.235 | 0.556 |
| $R^2$ | 0.402 | 0.388 | −0.085 | 0.199 | 0.457 | 0.118 | 0.052 | −0.061 |
| Predator | | | | | | | | |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | −0.465 | −0.421 | 0.403 | 0.494 | −0.388 | 0.222 | 0.195 | −0.314 |
| p | 0.087 | 0.127 | 0.146 | 0.066 | 0.165 | 0.442 | 0.500 | 0.268 |
| $R^2$ | 0.191 | 0.139 | 0.119 | 0.228 | 0.102 | −0.034 | −0.049 | 0.033 |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.241 | −0.275 | 0.038 | 0.079 | −0.108 | −0.036 | −0.156 | −0.029 |
| p | 0.403 | 0.336 | 0.898 | 0.788 | 0.711 | 0.903 | 0.592 | 0.920 |
| $R^2$ | −0.022 | 0.002 | −0.098 | −0.092 | −0.084 | −0.098 | −0.067 | −0.099 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.101 | −0.108 | 0.252 | 0.090 | 0.003 | 0.104 | 0.234 | −0.262 |
| p | 0.730 | 0.712 | 0.380 | 0.759 | 0.992 | 0.721 | 0.416 | 0.360 |
| $R^2$ | −0.086 | −0.084 | −0.014 | −0.089 | −0.100 | −0.085 | −0.026 | −0.007 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.141 | 0.101 | 0.173 | −0.015 | −0.168 | 0.050 | 0.052 | −0.076 |
| p | 0.629 | 0.731 | 0.551 | 0.961 | 0.564 | 0.865 | 0.859 | 0.795 |
| $R^2$ | −0.073 | −0.086 | −0.060 | −0.100 | −0.062 | −0.097 | −0.096 | −0.092 |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.390 | 0.351 | −0.321 | −0.235 | 0.493 | −0.426 | −0.385 | 0.335 |
| p | 0.162 | 0.213 | 0.258 | 0.415 | 0.067 | 0.123 | 0.168 | 0.235 |
| $R^2$ | 0.105 | 0.065 | 0.038 | −0.026 | 0.227 | 0.143 | 0.099 | 0.051 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.538 | −0.101 | 0.493 | 0.573 | −0.669 | 0.346 | 0.426 | −0.080 |
| p | 0.042 | 0.731 | 0.067 | 0.027 | 0.006 | 0.220 | 0.122 | 0.784 |
| $R^2$ | 0.289 | −0.086 | 0.227 | 0.342 | 0.502 | 0.061 | 0.144 | −0.091 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.179 | −0.012 | −0.113 | −0.319 | 0.329 | −0.086 | −0.310 | −0.170 |
| p | 0.537 | 0.968 | 0.698 | 0.260 | 0.244 | 0.769 | 0.276 | 0.558 |
| $R^2$ | −0.057 | −0.100 | −0.083 | 0.037 | 0.046 | −0.090 | 0.029 | −0.061 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.467 | −0.618 | 0.103 | 0.237 | −0.491 | 0.38 | 0.241 | −0.468 |
| p | 0.086 | 0.014 | 0.725 | 0.411 | 0.068 | 0.174 | 0.402 | 0.085 |
| $R^2$ | 0.193 | 0.413 | −0.086 | −0.025 | 0.224 | 0.094 | −0.022 | 0.194 |
| Coleoptera (GPE) | | | | | | | | |
| Est | −0.442 | −0.548 | 0.420 | 0.325 | −0.547 | 0.522 | 0.49 | −0.405 |
| p | 0.123 | 0.045 | 0.145 | 0.272 | 0.045 | 0.060 | 0.081 | 0.162 |
| $R^2$ | 0.160 | 0.307 | 0.134 | 0.036 | 0.305 | 0.267 | 0.222 | 0.117 |

Table G25. Continued.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | −0.424 | −0.258 | 0.354 | 0.514 | −0.369 | 0.065 | 0.256 | −0.033 |
| p | 0.125 | 0.370 | 0.209 | 0.054 | 0.188 | 0.824 | 0.373 | 0.911 |
| $R^2$ | 0.141 | −0.011 | 0.068 | 0.255 | 0.083 | −0.094 | −0.012 | −0.099 |

Table G26. Effects of stand structural complexity indices (see Appendix A: Table A3) on the diversity (reciprocal Simpson index 1/D) of forest specialists, including various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps;for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | | | | | |
| Mycetophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.347 | 0.400 | 0.493 | 0.247 | 0.380 | 0.511 | 0.318 | 0.489 | 0.201 | 0.694 | 0.201 | 0.496 |
| p | 0.219 | 0.150 | 0.067 | 0.390 | 0.174 | 0.056 | 0.263 | 0.070 | 0.488 | 0.004 | 0.488 | 0.065 |
| $R^2$ | 0.061 | 0.115 | 0.227 | −0.018 | 0.094 | 0.251 | 0.036 | 0.221 | −0.046 | 0.547 | −0.046 | 0.230 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | −0.433 | −0.341 | −0.236 | −0.389 | −0.368 | −0.304 | −0.311 | −0.257 | −0.417 | 0.026 | −0.405 | −0.353 |
| p | 0.116 | 0.227 | 0.413 | 0.163 | 0.189 | 0.285 | 0.274 | 0.370 | 0.131 | 0.928 | 0.144 | 0.209 |
| $R^2$ | 0.152 | 0.056 | −0.025 | 0.103 | 0.082 | 0.024 | 0.030 | −0.011 | 0.134 | −0.099 | 0.121 | 0.068 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.177 | 0.137 | 0.033 | 0.252 | 0.154 | 0.024 | 0.190 | 0.038 | 0.282 | −0.298 | 0.258 | 0.029 |
| p | 0.542 | 0.640 | 0.911 | 0.381 | 0.598 | 0.935 | 0.512 | 0.898 | 0.324 | 0.296 | 0.368 | 0.922 |
| $R^2$ | −0.058 | −0.075 | −0.099 | −0.015 | −0.068 | −0.099 | −0.051 | −0.098 | 0.007 | 0.019 | −0.010 | −0.099 |
| Saprophage | | | | | | | | | | | | |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | −0.670 | −0.707 | −0.705 | −0.665 | −0.681 | −0.715 | −0.693 | −0.677 | −0.620 | −0.563 | −0.630 | −0.652 |
| p | 0.006 | 0.003 | 0.003 | 0.006 | 0.005 | 0.002 | 0.004 | 0.005 | 0.014 | 0.031 | 0.012 | 0.008 |
| $R^2$ | 0.504 | 0.573 | 0.568 | 0.495 | 0.524 | 0.587 | 0.545 | 0.517 | 0.416 | 0.326 | 0.434 | 0.471 |
| Predator | | | | | | | | | | | | |
| Small | | | | | | | | | | | | |
| Araneae (APE) | | | | | | | | | | | | |
| Est | 0.398 | 0.487 | 0.406 | 0.467 | 0.494 | 0.553 | 0.398 | 0.406 | 0.463 | 0.297 | 0.523 | 0.584 |
| p | 0.152 | 0.071 | 0.143 | 0.086 | 0.067 | 0.035 | 0.152 | 0.144 | 0.089 | 0.298 | 0.049 | 0.023 |
| $R^2$ | 0.113 | 0.219 | 0.122 | 0.193 | 0.227 | 0.311 | 0.113 | 0.121 | 0.188 | 0.019 | 0.267 | 0.359 |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.097 | 0.160 | 0.172 | 0.117 | 0.155 | 0.202 | 0.124 | 0.171 | 0.104 | 0.217 | 0.116 | 0.203 |
| p | 0.741 | 0.583 | 0.554 | 0.689 | 0.593 | 0.486 | 0.672 | 0.557 | 0.722 | 0.453 | 0.690 | 0.482 |
| $R^2$ | −0.087 | −0.066 | −0.060 | −0.082 | −0.068 | −0.045 | −0.079 | −0.061 | −0.085 | −0.037 | −0.082 | −0.044 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.107 | 0.084 | 0.067 | 0.050 | 0.076 | 0.171 | 0.023 | 0.055 | 0.036 | 0.159 | 0.112 | 0.179 |
| p | 0.715 | 0.775 | 0.818 | 0.865 | 0.795 | 0.557 | 0.938 | 0.852 | 0.901 | 0.585 | 0.703 | 0.538 |
| $R^2$ | −0.085 | −0.091 | −0.094 | −0.097 | −0.092 | −0.061 | −0.099 | −0.096 | −0.098 | −0.066 | −0.083 | −0.057 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.013 | 0.019 | 0.032 | 0.072 | 0.043 | −0.146 | 0.110 | 0.068 | 0.103 | −0.202 | −0.056 | −0.139 |
| p | 0.965 | 0.948 | 0.914 | 0.807 | 0.883 | 0.617 | 0.707 | 0.817 | 0.724 | 0.486 | 0.849 | 0.633 |
| $R^2$ | −0.100 | −0.100 | −0.099 | −0.093 | −0.097 | −0.071 | −0.084 | −0.094 | −0.086 | −0.045 | −0.096 | −0.074 |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | −0.438 | −0.477 | −0.514 | −0.442 | −0.470 | −0.418 | −0.502 | −0.518 | −0.421 | −0.372 | −0.336 | −0.380 |
| p | 0.110 | 0.078 | 0.054 | 0.107 | 0.083 | 0.131 | 0.061 | 0.052 | 0.127 | 0.184 | 0.234 | 0.174 |
| $R^2$ | 0.158 | 0.206 | 0.255 | 0.163 | 0.197 | 0.134 | 0.239 | 0.260 | 0.139 | 0.086 | 0.052 | 0.094 |
| Herbivore | | | | | | | | | | | | |
| Chewer | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.585 | 0.572 | 0.480 | 0.646 | 0.605 | 0.414 | 0.610 | 0.516 | 0.680 | 0.005 | 0.555 | 0.440 |
| p | 0.023 | 0.027 | 0.076 | 0.009 | 0.017 | 0.135 | 0.016 | 0.053 | 0.005 | 0.986 | 0.034 | 0.109 |
| $R^2$ | 0.361 | 0.339 | 0.209 | 0.460 | 0.393 | 0.130 | 0.400 | 0.258 | 0.521 | −0.100 | 0.315 | 0.161 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | −0.353 | −0.258 | −0.188 | −0.331 | −0.272 | −0.157 | −0.299 | −0.198 | −0.350 | 0.107 | −0.302 | −0.157 |
| p | 0.210 | 0.369 | 0.516 | 0.242 | 0.342 | 0.590 | 0.294 | 0.495 | 0.213 | 0.715 | 0.288 | 0.588 |
| $R^2$ | 0.067 | −0.010 | −0.052 | 0.047 | 0.000 | −0.067 | 0.020 | −0.047 | 0.065 | −0.085 | 0.023 | −0.067 |

Table G26. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.459 | 0.564 | 0.627 | 0.479 | 0.527 | 0.595 | 0.555 | 0.596 | 0.420 | 0.634 | 0.420 | 0.515 |
| p | 0.092 | 0.030 | 0.013 | 0.076 | 0.047 | 0.020 | 0.034 | 0.020 | 0.128 | 0.011 | 0.128 | 0.053 |
| $R^2$ | 0.183 | 0.328 | 0.428 | 0.209 | 0.274 | 0.375 | 0.314 | 0.377 | 0.138 | 0.440 | 0.138 | 0.257 |
| Coleoptera (GPE) | | | | | | | | | | | | |
| Est | 0.550 | 0.560 | 0.564 | 0.546 | 0.531 | 0.518 | 0.589 | 0.536 | 0.503 | 0.385 | 0.486 | 0.432 |
| p | 0.044 | 0.039 | 0.038 | 0.046 | 0.054 | 0.062 | 0.027 | 0.052 | 0.072 | 0.186 | 0.084 | 0.132 |
| $R^2$ | 0.308 | 0.325 | 0.331 | 0.304 | 0.281 | 0.261 | 0.371 | 0.287 | 0.240 | 0.095 | 0.218 | 0.148 |
| Producer | | | | | | | | | | | | |
| Vascular plants | | | | | | | | | | | | |
| Est | 0.322 | 0.327 | 0.188 | 0.439 | 0.338 | 0.251 | 0.348 | 0.181 | 0.459 | −0.174 | 0.485 | 0.253 |
| p | 0.256 | 0.249 | 0.518 | 0.110 | 0.231 | 0.382 | 0.217 | 0.533 | 0.092 | 0.549 | 0.072 | 0.378 |
| $R^2$ | 0.039 | 0.044 | −0.053 | 0.159 | 0.054 | −0.015 | 0.062 | −0.056 | 0.183 | −0.059 | 0.216 | −0.014 |

Table G27. Effects of naturalness, measures of management intensity, and stand structural attributes regarding stand age and dead and living wood volume (see Table 1) on the entropy (bias-corrected exponential Shannon's entropy eHbc) of forest specialists, including various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.60 | −0.539 | −0.547 | −0.566 | 0.741 | 0.69 | 0.322 | −0.348 |
| p | 0.019 | 0.041 | 0.037 | 0.030 | 0.001 | 0.004 | 0.256 | 0.217 |
| $R^2$ | 0.384 | 0.290 | 0.303 | 0.330 | 0.638 | 0.540 | 0.040 | 0.063 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.198 | −0.105 | −0.156 | −0.182 | 0.323 | 0.356 | 0.363 | −0.031 |
| p | 0.494 | 0.720 | 0.591 | 0.532 | 0.255 | 0.206 | 0.195 | 0.916 |
| $R^2$ | −0.047 | −0.085 | −0.067 | −0.056 | 0.040 | 0.070 | 0.078 | −0.099 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.121 | −0.255 | −0.191 | −0.176 | 0.183 | 0.084 | −0.43 | −0.382 |
| p | 0.679 | 0.375 | 0.510 | 0.545 | 0.529 | 0.774 | 0.118 | 0.171 |
| $R^2$ | −0.080 | −0.013 | −0.051 | −0.058 | −0.055 | −0.09 | 0.149 | 0.097 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.178 | 0.264 | 0.242 | 0.247 | −0.279 | −0.279 | −0.122 | 0.330 |
| p | 0.541 | 0.356 | 0.400 | 0.391 | 0.329 | 0.329 | 0.677 | 0.244 |
| $R^2$ | −0.058 | −0.006 | −0.021 | −0.018 | 0.005 | 0.005 | −0.08 | 0.046 |
| Predator | | | | | | | | |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | −0.079 | 0.234 | 0.185 | 0.185 | −0.375 | −0.134 | 0.197 | 0.108 |
| p | 0.787 | 0.416 | 0.524 | 0.524 | 0.180 | 0.647 | 0.496 | 0.712 |
| $R^2$ | −0.092 | −0.026 | −0.054 | −0.054 | 0.090 | −0.076 | −0.048 | −0.084 |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.214 | −0.166 | −0.197 | −0.208 | 0.165 | 0.206 | 0.059 | −0.121 |
| p | 0.459 | 0.569 | 0.497 | 0.471 | 0.569 | 0.477 | 0.841 | 0.678 |
| $R^2$ | −0.038 | −0.063 | −0.048 | −0.042 | −0.063 | −0.043 | −0.095 | −0.080 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | 0.384 | −0.293 | −0.282 | −0.291 | 0.381 | 0.257 | 0.001 | −0.145 |
| p | 0.169 | 0.304 | 0.324 | 0.308 | 0.173 | 0.371 | 0.998 | 0.618 |
| $R^2$ | 0.098 | 0.015 | 0.007 | 0.014 | 0.095 | −0.011 | −0.100 | −0.072 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.091 | −0.168 | −0.137 | −0.108 | −0.025 | −0.148 | −0.162 | −0.120 |
| p | 0.755 | 0.564 | 0.638 | 0.711 | 0.931 | 0.612 | 0.577 | 0.680 |
| $R^2$ | −0.089 | −0.062 | −0.075 | −0.084 | −0.099 | −0.071 | −0.065 | −0.081 |
| Coleoptera (PT) | | | | | | | | |
| Est | −0.517 | 0.499 | 0.491 | 0.499 | −0.584 | −0.446 | −0.291 | 0.338 |
| p | 0.052 | 0.063 | 0.068 | 0.063 | 0.023 | 0.103 | 0.307 | 0.231 |
| $R^2$ | 0.259 | 0.235 | 0.224 | 0.234 | 0.359 | 0.168 | 0.014 | 0.054 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | 0.624 | −0.653 | −0.631 | −0.599 | 0.259 | 0.324 | −0.092 | −0.408 |
| p | 0.013 | 0.008 | 0.012 | 0.019 | 0.367 | 0.253 | 0.753 | 0.141 |
| $R^2$ | 0.424 | 0.474 | 0.435 | 0.382 | −0.010 | 0.041 | −0.089 | 0.124 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.054 | 0.039 | 0.057 | 0.028 | 0.191 | 0.019 | −0.047 | −0.116 |
| p | 0.853 | 0.894 | 0.845 | 0.923 | 0.510 | 0.950 | 0.871 | 0.692 |
| $R^2$ | −0.096 | −0.098 | −0.096 | −0.099 | −0.051 | −0.100 | −0.097 | −0.082 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | 0.786 | −0.797 | −0.809 | −0.813 | 0.766 | 0.825 | 0.432 | −0.455 |
| p | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 | 0.116 | 0.095 |
| $R^2$ | 0.730 | 0.755 | 0.779 | 0.789 | 0.689 | 0.815 | 0.151 | 0.179 |

Table G27. Continued.

| Trophic guild | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|
| Coleoptera (GPE) | | | | | | | | |
| Est | 0.656 | −0.633 | −0.63 | −0.64 | 0.768 | 0.69 | 0.196 | −0.421 |
| p | 0.010 | 0.015 | 0.016 | 0.013 | 0.001 | 0.005 | 0.518 | 0.144 |
| $R^2$ | 0.486 | 0.445 | 0.44 | 0.457 | 0.708 | 0.55 | −0.058 | 0.135 |
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | −0.018 | −0.019 | −0.029 | −0.006 | 0.139 | 0.209 | −0.214 | −0.145 |
| p | 0.951 | 0.949 | 0.923 | 0.984 | 0.633 | 0.471 | 0.460 | 0.619 |
| $R^2$ | −0.100 | −0.100 | −0.099 | −0.100 | −0.074 | −0.041 | −0.039 | −0.072 |

Table G28. Effects of stand structural attributes except stand age and wood volume (see Table 1) on the entropy (bias-corrected exponential Shannon's entropy eHbc) of forest specialists, including various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the table.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | |
| Mycetophage | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.437 | −0.506 | 0.320 | 0.432 | −0.546 | 0.487 | 0.511 | −0.229 |
| p | 0.111 | 0.059 | 0.259 | 0.116 | 0.037 | 0.071 | 0.056 | 0.428 |
| $R^2$ | 0.157 | 0.244 | 0.038 | 0.151 | 0.301 | 0.219 | 0.251 | −0.03 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.101 | −0.446 | 0.022 | −0.139 | −0.042 | 0.067 | −0.055 | −0.478 |
| p | 0.731 | 0.103 | 0.940 | 0.635 | 0.887 | 0.820 | 0.852 | 0.078 |
| $R^2$ | −0.086 | 0.168 | −0.099 | −0.074 | −0.098 | −0.094 | −0.096 | 0.207 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.354 | −0.005 | 0.396 | 0.355 | −0.328 | 0.328 | 0.337 | 0.097 |
| p | 0.208 | 0.988 | 0.154 | 0.207 | 0.247 | 0.247 | 0.233 | 0.739 |
| $R^2$ | 0.069 | −0.100 | 0.111 | 0.069 | 0.045 | 0.045 | 0.053 | −0.087 |
| Saprophage | | | | | | | | |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.318 | 0.273 | 0.052 | −0.134 | 0.199 | −0.196 | −0.046 | −0.090 |
| p | 0.262 | 0.340 | 0.860 | 0.645 | 0.491 | 0.500 | 0.875 | 0.759 |
| $R^2$ | 0.036 | <0.001 | −0.096 | −0.076 | −0.047 | −0.049 | −0.097 | −0.089 |
| Predator | | | | | | | | |
| Small | | | | | | | | |
| Araneae (APE) | | | | | | | | |
| Est | 0.036 | −0.138 | −0.196 | 0.042 | 0.254 | −0.408 | −0.391 | 0.199 |
| p | 0.904 | 0.636 | 0.498 | 0.886 | 0.376 | 0.141 | 0.161 | 0.492 |
| $R^2$ | −0.098 | −0.074 | −0.048 | −0.098 | −0.013 | 0.124 | 0.105 | −0.047 |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.207 | −0.293 | 0.259 | 0.039 | −0.118 | 0.128 | 0.044 | −0.213 |
| p | 0.475 | 0.305 | 0.368 | 0.895 | 0.685 | 0.660 | 0.881 | 0.461 |
| $R^2$ | −0.043 | 0.015 | −0.010 | −0.098 | −0.081 | −0.078 | −0.097 | −0.039 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.169 | −0.075 | 0.542 | 0.402 | −0.374 | 0.387 | 0.554 | −0.207 |
| p | 0.562 | 0.797 | 0.039 | 0.147 | 0.182 | 0.166 | 0.034 | 0.475 |
| $R^2$ | −0.062 | −0.092 | 0.295 | 0.118 | 0.088 | 0.101 | 0.313 | −0.043 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.114 | 0.135 | 0.045 | −0.056 | −0.145 | 0.021 | −0.003 | −0.006 |
| p | 0.696 | 0.644 | 0.877 | 0.849 | 0.618 | 0.942 | 0.992 | 0.983 |
| $R^2$ | −0.082 | −0.076 | −0.097 | −0.096 | −0.072 | −0.099 | −0.100 | −0.100 |
| Coleoptera (PT) | | | | | | | | |
| Est | 0.366 | 0.355 | −0.245 | −0.188 | 0.443 | −0.395 | −0.327 | 0.314 |
| p | 0.191 | 0.207 | 0.394 | 0.518 | 0.106 | 0.156 | 0.248 | 0.268 |
| $R^2$ | 0.081 | 0.069 | −0.019 | −0.053 | 0.164 | 0.110 | 0.044 | 0.033 |
| Herbivore | | | | | | | | |
| Chewer | | | | | | | | |
| Coleoptera (APE) | | | | | | | | |
| Est | −0.550 | −0.129 | 0.522 | 0.587 | −0.705 | 0.393 | 0.470 | −0.126 |
| p | 0.036 | 0.658 | 0.049 | 0.022 | 0.003 | 0.158 | 0.084 | 0.667 |
| $R^2$ | 0.307 | −0.078 | 0.267 | 0.363 | 0.568 | 0.108 | 0.197 | −0.079 |
| Coleoptera (FIT-C) | | | | | | | | |
| Est | −0.007 | −0.099 | 0.246 | −0.123 | 0.09 | 0.208 | 0.082 | −0.208 |
| p | 0.981 | 0.736 | 0.392 | 0.674 | 0.757 | 0.471 | 0.780 | 0.473 |
| $R^2$ | −0.100 | −0.087 | −0.018 | −0.080 | −0.089 | −0.042 | −0.091 | −0.042 |
| Coleoptera (FIT-U) | | | | | | | | |
| Est | −0.603 | −0.574 | 0.292 | 0.411 | −0.755 | 0.565 | 0.473 | −0.467 |
| p | 0.018 | 0.027 | 0.306 | 0.138 | 0.001 | 0.030 | 0.081 | 0.086 |
| $R^2$ | 0.389 | 0.343 | 0.015 | 0.127 | 0.666 | 0.329 | 0.201 | 0.194 |
| Coleoptera (GPE) | | | | | | | | |
| Est | −0.505 | −0.54 | 0.421 | 0.377 | −0.64 | 0.561 | 0.524 | −0.375 |
| p | 0.070 | 0.049 | 0.144 | 0.196 | 0.013 | 0.039 | 0.058 | 0.199 |
| $R^2$ | 0.243 | 0.294 | 0.135 | 0.087 | 0.459 | 0.325 | 0.271 | 0.084 |

Table G28. Continued.

| Trophic guild | G | N | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|
| Producer | | | | | | | | |
| Vascular plants | | | | | | | | |
| Est | −0.268 | −0.301 | −0.177 | 0.147 | −0.118 | −0.137 | −0.080 | 0.213 |
| p | 0.350 | 0.291 | 0.542 | 0.613 | 0.686 | 0.639 | 0.785 | 0.461 |
| $R^2$ | −0.004 | 0.022 | −0.058 | −0.071 | −0.081 | −0.075 | −0.091 | −0.039 |

Table G29. Effects of stand structural complexity indices (see Appendix A: Table A3) on the entropy (bias-corrected exponential Shannon's entropy eHbc) of forest specialists, including various groups of organisms (N = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Estimates, $R^2$ and p-values of linear models are shown.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | | | | | |
| Mycetophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.637 | 0.621 | 0.611 | 0.581 | 0.598 | 0.649 | 0.594 | 0.584 | 0.540 | 0.506 | 0.569 | 0.598 |
| p | 0.011 | 0.014 | 0.016 | 0.024 | 0.019 | 0.009 | 0.020 | 0.023 | 0.041 | 0.059 | 0.028 | 0.019 |
| $R^2$ | 0.445 | 0.419 | 0.401 | 0.353 | 0.380 | 0.466 | 0.374 | 0.359 | 0.291 | 0.244 | 0.336 | 0.380 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | −0.008 | 0.107 | 0.204 | 0.023 | 0.066 | 0.168 | 0.108 | 0.168 | −0.032 | 0.399 | −0.002 | 0.092 |
| p | 0.978 | 0.715 | 0.481 | 0.937 | 0.822 | 0.562 | 0.712 | 0.563 | 0.914 | 0.151 | 0.994 | 0.752 |
| $R^2$ | −0.100 | −0.085 | −0.044 | −0.099 | −0.094 | −0.062 | −0.084 | −0.062 | −0.099 | 0.114 | −0.100 | −0.089 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.241 | 0.217 | 0.118 | 0.337 | 0.233 | 0.076 | 0.288 | 0.123 | 0.364 | −0.266 | 0.317 | 0.068 |
| p | 0.402 | 0.453 | 0.686 | 0.233 | 0.420 | 0.796 | 0.313 | 0.673 | 0.194 | 0.354 | 0.264 | 0.816 |
| $R^2$ | −0.022 | −0.037 | −0.081 | 0.053 | −0.027 | −0.092 | 0.012 | −0.080 | 0.079 | −0.005 | 0.035 | −0.094 |
| Saprophage | | | | | | | | | | | | |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | −0.186 | −0.223 | −0.229 | −0.207 | −0.210 | −0.230 | −0.222 | −0.215 | −0.187 | −0.199 | −0.197 | −0.199 |
| p | 0.521 | 0.440 | 0.427 | 0.474 | 0.468 | 0.426 | 0.441 | 0.458 | 0.519 | 0.492 | 0.496 | 0.492 |
| $R^2$ | −0.053 | −0.033 | −0.030 | −0.042 | −0.041 | −0.029 | −0.034 | −0.038 | −0.053 | −0.047 | −0.048 | −0.047 |
| Predator | | | | | | | | | | | | |
| Small | | | | | | | | | | | | |
| Araneae (APE) | | | | | | | | | | | | |
| Est | −0.130 | −0.096 | −0.145 | −0.151 | −0.088 | 0.086 | −0.238 | −0.145 | −0.148 | 0.083 | −0.007 | 0.159 |
| p | 0.656 | 0.743 | 0.619 | 0.604 | 0.763 | 0.769 | 0.410 | 0.619 | 0.612 | 0.776 | 0.980 | 0.584 |
| $R^2$ | −0.077 | −0.088 | −0.072 | −0.069 | −0.090 | −0.090 | −0.024 | −0.072 | −0.071 | −0.091 | −0.100 | −0.066 |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.064 | 0.120 | 0.139 | 0.113 | 0.104 | 0.111 | 0.140 | 0.123 | 0.094 | 0.125 | 0.096 | 0.072 |
| p | 0.826 | 0.680 | 0.633 | 0.698 | 0.721 | 0.703 | 0.630 | 0.675 | 0.749 | 0.669 | 0.742 | 0.807 |
| $R^2$ | −0.094 | −0.081 | −0.074 | −0.083 | −0.085 | −0.083 | −0.074 | −0.080 | −0.088 | −0.079 | −0.088 | −0.093 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | 0.452 | 0.383 | 0.313 | 0.407 | 0.394 | 0.359 | 0.362 | 0.319 | 0.415 | 0.105 | 0.410 | 0.375 |
| p | 0.098 | 0.171 | 0.271 | 0.143 | 0.157 | 0.202 | 0.198 | 0.260 | 0.134 | 0.719 | 0.139 | 0.181 |
| $R^2$ | 0.175 | 0.097 | 0.031 | 0.122 | 0.109 | 0.073 | 0.076 | 0.037 | 0.131 | −0.085 | 0.126 | 0.089 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | −0.026 | 0.001 | 0.028 | 0.042 | 0.024 | −0.156 | 0.089 | 0.065 | 0.071 | −0.173 | −0.092 | −0.150 |
| p | 0.929 | 0.996 | 0.924 | 0.887 | 0.933 | 0.591 | 0.760 | 0.825 | 0.809 | 0.551 | 0.754 | 0.605 |
| $R^2$ | −0.099 | −0.100 | −0.099 | −0.098 | −0.099 | −0.067 | −0.089 | −0.094 | −0.093 | −0.060 | −0.089 | −0.070 |
| Coleoptera (PT) | | | | | | | | | | | | |
| Est | −0.390 | −0.437 | −0.484 | −0.393 | −0.427 | −0.393 | −0.458 | −0.484 | −0.368 | −0.385 | −0.293 | −0.352 |
| p | 0.162 | 0.111 | 0.073 | 0.158 | 0.121 | 0.158 | 0.093 | 0.073 | 0.189 | 0.167 | 0.304 | 0.212 |
| $R^2$ | 0.104 | 0.157 | 0.215 | 0.108 | 0.145 | 0.107 | 0.182 | 0.216 | 0.082 | 0.099 | 0.016 | 0.066 |
| Herbivore | | | | | | | | | | | | |
| Chewer | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Est | 0.630 | 0.617 | 0.532 | 0.678 | 0.649 | 0.466 | 0.649 | 0.568 | 0.709 | 0.068 | 0.582 | 0.490 |
| p | 0.012 | 0.015 | 0.044 | 0.005 | 0.009 | 0.087 | 0.009 | 0.029 | 0.003 | 0.816 | 0.024 | 0.069 |
| $R^2$ | 0.434 | 0.411 | 0.281 | 0.519 | 0.466 | 0.192 | 0.467 | 0.334 | 0.575 | −0.094 | 0.355 | 0.223 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Est | −0.150 | −0.102 | −0.076 | −0.096 | −0.118 | −0.105 | −0.071 | −0.095 | −0.111 | −0.026 | −0.095 | −0.143 |
| p | 0.607 | 0.728 | 0.796 | 0.742 | 0.686 | 0.720 | 0.809 | 0.747 | 0.704 | 0.930 | 0.746 | 0.624 |
| $R^2$ | −0.070 | −0.086 | −0.092 | −0.088 | −0.081 | −0.085 | −0.093 | −0.088 | −0.083 | −0.099 | −0.088 | −0.073 |

Table G29. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Est | 0.709 | 0.772 | 0.817 | 0.713 | 0.747 | 0.722 | 0.794 | 0.802 | 0.666 | 0.638 | 0.594 | 0.645 |
| p | 0.003 | 0.000 | 0.000 | 0.002 | 0.001 | 0.002 | 0.000 | 0.000 | 0.006 | 0.010 | 0.020 | 0.009 |
| $R^2$ | 0.576 | 0.700 | 0.797 | 0.584 | 0.650 | 0.600 | 0.747 | 0.765 | 0.497 | 0.447 | 0.375 | 0.459 |
| Coleoptera (GPE) | | | | | | | | | | | | |
| Est | 0.638 | 0.638 | 0.640 | 0.627 | 0.614 | 0.571 | 0.674 | 0.618 | 0.587 | 0.406 | 0.542 | 0.488 |
| p | 0.014 | 0.014 | 0.013 | 0.016 | 0.020 | 0.035 | 0.007 | 0.018 | 0.028 | 0.161 | 0.048 | 0.083 |
| $R^2$ | 0.455 | 0.455 | 0.457 | 0.435 | 0.413 | 0.341 | 0.520 | 0.420 | 0.367 | 0.117 | 0.297 | 0.219 |
| Producer | | | | | | | | | | | | |
| Vascular plants | | | | | | | | | | | | |
| Est | 0.090 | 0.096 | 0.056 | 0.154 | 0.076 | 0.062 | 0.141 | 0.023 | 0.139 | −0.064 | 0.186 | 0.007 |
| p | 0.759 | 0.744 | 0.848 | 0.596 | 0.795 | 0.831 | 0.630 | 0.938 | 0.632 | 0.827 | 0.522 | 0.981 |
| $R^2$ | −0.089 | −0.088 | −0.096 | −0.068 | −0.092 | −0.095 | −0.073 | −0.099 | −0.074 | −0.095 | −0.054 | −0.100 |

Table G30. Effects of forest type, naturalness, measures of management intensity, and stand structural attributes regarding stand age and dead and living wood volume (see Table 1) on the community composition of various groups of organisms (df = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Analyses are based on a partial constrained correspondence analysis (pCCA) by removing effect of region.

| Trophic guild | FT | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | | |
| Mycetophage | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | |
| $Chi^2$ | 0.305 | 0.137 | 0.156 | 0.168 | 0.162 | 0.097 | 0.122 | 0.062 | 0.109 |
| p | 0.330 | 0.150 | 0.057 | 0.032 | 0.054 | 0.260 | 0.170 | 0.580 | 0.270 |
| $R^2$ | 0.335 | 0.151 | 0.171 | 0.184 | 0.178 | 0.107 | 0.134 | 0.068 | 0.119 |
| Coleoptera (FIT-C) | | | | | | | | | |
| $Chi^2$ | 0.369 | 0.189 | 0.158 | 0.172 | 0.166 | 0.100 | 0.127 | 0.120 | 0.115 |
| p | 0.380 | 0.078 | 0.100 | 0.145 | 0.097 | 0.480 | 0.270 | 0.390 | 0.450 |
| $R^2$ | 0.357 | 0.183 | 0.153 | 0.167 | 0.160 | 0.097 | 0.123 | 0.116 | 0.111 |
| Coleoptera (FIT-U) | | | | | | | | | |
| $Chi^2$ | 0.324 | 0.135 | 0.140 | 0.138 | 0.141 | 0.141 | 0.139 | 0.117 | 0.128 |
| p | 0.240 | 0.210 | 0.088 | 0.190 | 0.105 | 0.130 | 0.170 | 0.280 | 0.190 |
| $R^2$ | 0.372 | 0.154 | 0.161 | 0.158 | 0.161 | 0.162 | 0.159 | 0.135 | 0.147 |
| Saprophage | | | | | | | | | |
| Coleoptera (PT) | | | | | | | | | |
| $Chi^2$ | 0.216 | 0.128 | 0.141 | 0.137 | 0.139 | 0.177 | 0.161 | 0.023 | 0.167 |
| p | 0.270 | 0.054 | 0.036 | 0.025 | 0.036 | 0.010 | 0.015 | 0.900 | 0.010 |
| $R^2$ | 0.344 | 0.203 | 0.225 | 0.219 | 0.222 | 0.282 | 0.257 | 0.037 | 0.267 |
| Fungi (soil saprophytes) | | | | | | | | | |
| $Chi^2$ | 0.511 | 0.226 | 0.227 | 0.227 | 0.225 | 0.207 | 0.201 | 0.157 | 0.204 |
| p | 0.068 | 0.025 | 0.020 | 0.024 | 0.015 | 0.048 | 0.074 | 0.390 | 0.056 |
| $R^2$ | 0.370 | 0.164 | 0.165 | 0.165 | 0.163 | 0.150 | 0.146 | 0.114 | 0.148 |
| Isopoda (PT) | | | | | | | | | |
| $Chi^2$ | 0.065 | 0.033 | 0.013 | 0.011 | 0.019 | 0.014 | 0.024 | 0.050 | 0.042 |
| p | 0.970 | 0.620 | 0.870 | 0.930 | 0.850 | 0.870 | 0.620 | 0.340 | 0.430 |
| $R^2$ | 0.241 | 0.123 | 0.047 | 0.042 | 0.070 | 0.051 | 0.090 | 0.185 | 0.154 |
| Xylophage | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | |
| $Chi^2$ | 0.931 | 0.345 | 0.354 | 0.340 | 0.349 | 0.409 | 0.348 | 0.346 | 0.377 |
| p | 0.530 | 0.280 | 0.220 | 0.320 | 0.240 | 0.130 | 0.290 | 0.300 | 0.300 |
| $R^2$ | 0.287 | 0.106 | 0.109 | 0.105 | 0.108 | 0.126 | 0.107 | 0.107 | 0.116 |
| Coleoptera (FIT-C) | | | | | | | | | |
| $Chi^2$ | 0.451 | 0.204 | 0.183 | 0.181 | 0.188 | 0.177 | 0.194 | 0.192 | 0.179 |
| p | 0.430 | 0.070 | 0.140 | 0.200 | 0.135 | 0.250 | 0.135 | 0.107 | 0.230 |
| $R^2$ | 0.317 | 0.143 | 0.129 | 0.127 | 0.132 | 0.124 | 0.136 | 0.135 | 0.126 |
| Coleoptera (FIT-U) | | | | | | | | | |
| $Chi^2$ | 0.663 | 0.382 | 0.366 | 0.382 | 0.391 | 0.377 | 0.380 | 0.309 | 0.222 |
| p | 0.140 | 0.005 | 0.015 | 0.013 | 0.005 | 0.020 | 0.017 | 0.080 | 0.360 |
| $R^2$ | 0.435 | 0.251 | 0.240 | 0.250 | 0.256 | 0.247 | 0.249 | 0.202 | 0.146 |
| Fungi (wood/bark species) | | | | | | | | | |
| $Chi^2$ | 0.564 | 0.277 | 0.260 | 0.262 | 0.263 | 0.218 | 0.235 | 0.206 | 0.228 |
| p | 0.010 | 0.005 | 0.005 | 0.005 | 0.015 | 0.030 | 0.010 | 0.053 | 0.020 |
| $R^2$ | 0.421 | 0.207 | 0.195 | 0.195 | 0.197 | 0.163 | 0.176 | 0.154 | 0.170 |
| Predator | | | | | | | | | |
| Big | | | | | | | | | |
| Birds (breeding) | | | | | | | | | |
| $Chi^2$ | 0.135 | 0.095 | 0.094 | 0.093 | 0.093 | 0.079 | 0.082 | 0.051 | 0.078 |
| p | 0.130 | 0.005 | 0.010 | 0.005 | 0.005 | 0.020 | 0.017 | 0.170 | 0.015 |
| $R^2$ | 0.413 | 0.291 | 0.287 | 0.285 | 0.285 | 0.240 | 0.252 | 0.156 | 0.240 |
| Birds (overwintering) | | | | | | | | | |
| $Chi^2$ | 0.179 | 0.118 | 0.117 | 0.116 | 0.115 | 0.086 | 0.099 | 0.055 | 0.106 |
| p | 0.010 | 0.005 | 0.015 | 0.010 | 0.010 | 0.028 | 0.010 | 0.210 | 0.010 |
| $R^2$ | 0.524 | 0.348 | 0.344 | 0.341 | 0.337 | 0.253 | 0.292 | 0.160 | 0.311 |
| Small | | | | | | | | | |
| Araneae (APE) | | | | | | | | | |
| $Chi^2$ | 0.702 | 0.354 | 0.372 | 0.386 | 0.378 | 0.261 | 0.328 | 0.142 | 0.319 |
| p | 0.062 | 0.015 | 0.025 | 0.005 | 0.015 | 0.220 | 0.041 | 0.740 | 0.063 |

Table G30. Continued.

| Trophic guild | FT | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|---|
| $R^2$ | 0.444 | 0.224 | 0.235 | 0.244 | 0.239 | 0.165 | 0.208 | 0.090 | 0.202 |
| Coleoptera (APE) | | | | | | | | | |
| $Chi^2$ | 0.841 | 0.344 | 0.359 | 0.371 | 0.361 | 0.187 | 0.262 | 0.115 | 0.284 |
| p | 0.090 | 0.140 | 0.110 | 0.093 | 0.095 | 0.660 | 0.370 | 0.850 | 0.360 |
| $R^2$ | 0.498 | 0.204 | 0.212 | 0.219 | 0.214 | 0.111 | 0.155 | 0.068 | 0.168 |
| Coleoptera (FIT-C) | | | | | | | | | |
| $Chi^2$ | 0.480 | 0.240 | 0.252 | 0.246 | 0.247 | 0.194 | 0.183 | 0.158 | 0.187 |
| p | 0.460 | 0.015 | 0.023 | 0.020 | 0.010 | 0.260 | 0.270 | 0.470 | 0.270 |
| $R^2$ | 0.331 | 0.165 | 0.174 | 0.169 | 0.170 | 0.134 | 0.126 | 0.109 | 0.129 |
| Coleoptera (FIT-U) | | | | | | | | | |
| $Chi^2$ | 0.638 | 0.250 | 0.270 | 0.259 | 0.260 | 0.206 | 0.198 | 0.190 | 0.248 |
| p | 0.390 | 0.180 | 0.115 | 0.170 | 0.180 | 0.470 | 0.560 | 0.730 | 0.180 |
| $R^2$ | 0.339 | 0.133 | 0.143 | 0.138 | 0.138 | 0.109 | 0.105 | 0.101 | 0.132 |
| Coleoptera (PT) | | | | | | | | | |
| $Chi^2$ | 0.276 | 0.177 | 0.197 | 0.195 | 0.194 | 0.186 | 0.180 | 0.054 | 0.167 |
| p | 0.250 | 0.010 | 0.005 | 0.010 | 0.010 | 0.010 | 0.010 | 0.770 | 0.023 |
| $R^2$ | 0.383 | 0.245 | 0.273 | 0.270 | 0.269 | 0.257 | 0.249 | 0.074 | 0.231 |
| Heteroptera (APE) | | | | | | | | | |
| $Chi^2$ | 0.768 | 0.380 | 0.430 | 0.439 | 0.426 | 0.181 | 0.207 | 0.213 | 0.245 |
| p | 0.290 | 0.230 | 0.160 | 0.090 | 0.140 | 0.670 | 0.520 | 0.500 | 0.470 |
| $R^2$ | 0.416 | 0.205 | 0.233 | 0.237 | 0.230 | 0.098 | 0.112 | 0.115 | 0.132 |
| Heteroptera (FIT-C) | | | | | | | | | |
| $Chi^2$ | 0.544 | 0.278 | 0.271 | 0.276 | 0.276 | 0.215 | 0.270 | 0.119 | 0.234 |
| p | 0.150 | 0.010 | 0.010 | 0.018 | 0.010 | 0.150 | 0.030 | 0.610 | 0.051 |
| $R^2$ | 0.313 | 0.141 | 0.173 | 0.169 | 0.172 | 0.165 | 0.161 | 0.057 | 0.143 |
| Heteroptera (FIT-U) | | | | | | | | | |
| $Chi^2$ | 1.442 | 0.591 | 0.593 | 0.591 | 0.609 | 0.575 | 0.629 | 0.511 | 0.533 |
| p | 0.310 | 0.170 | 0.130 | 0.140 | 0.115 | 0.130 | 0.140 | 0.390 | 0.270 |
| $R^2$ | 0.352 | 0.131 | 0.132 | 0.132 | 0.136 | 0.128 | 0.141 | 0.112 | 0.117 |
| Neuropterida (APE) | | | | | | | | | |
| $Chi^2$ | 0.851 | 0.559 | 0.587 | 0.584 | 0.583 | 0.500 | 0.443 | 0.167 | 0.569 |
| p | 0.093 | 0.010 | 0.015 | 0.020 | 0.005 | 0.025 | 0.030 | 0.530 | 0.010 |
| $R^2$ | 0.524 | 0.344 | 0.362 | 0.359 | 0.359 | 0.308 | 0.273 | 0.103 | 0.350 |
| Neuropterida (FIT-C) | | | | | | | | | |
| $Chi^2$ | 0.506 | 0.270 | 0.250 | 0.250 | 0.261 | 0.215 | 0.241 | 0.248 | 0.181 |
| p | 0.103 | 0.013 | 0.025 | 0.033 | 0.032 | 0.180 | 0.060 | 0.031 | 0.230 |
| $R^2$ | 0.477 | 0.254 | 0.235 | 0.236 | 0.246 | 0.203 | 0.227 | 0.234 | 0.171 |
| Neuropterida (FIT-U) | | | | | | | | | |
| $Chi^2$ | 0.995 | 0.400 | 0.423 | 0.442 | 0.427 | 0.405 | 0.395 | 0.267 | 0.338 |
| p | 0.180 | 0.180 | 0.110 | 0.066 | 0.092 | 0.140 | 0.260 | 0.690 | 0.420 |
| $R^2$ | 0.366 | 0.147 | 0.155 | 0.162 | 0.157 | 0.149 | 0.145 | 0.098 | 0.124 |
| Opiliones (APE) | | | | | | | | | |
| $Chi^2$ | 0.222 | 0.110 | 0.097 | 0.097 | 0.100 | 0.098 | 0.102 | 0.083 | 0.107 |
| p | 0.260 | 0.135 | 0.220 | 0.240 | 0.260 | 0.240 | 0.130 | 0.330 | 0.170 |
| $R^2$ | 0.506 | 0.250 | 0.221 | 0.221 | 0.229 | 0.224 | 0.233 | 0.189 | 0.244 |
| Opiliones (PT) | | | | | | | | | |
| $Chi^2$ | 0.281 | 0.079 | 0.101 | 0.099 | 0.101 | 0.121 | 0.098 | 0.092 | 0.074 |
| p | 0.140 | 0.480 | 0.180 | 0.230 | 0.200 | 0.160 | 0.250 | 0.240 | 0.510 |
| $R^2$ | 0.448 | 0.126 | 0.161 | 0.157 | 0.161 | 0.194 | 0.157 | 0.147 | 0.119 |
| Herbivore | | | | | | | | | |
| Chewer | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | |
| $Chi^2$ | 0.995 | 0.714 | 0.714 | 0.712 | 0.715 | 0.676 | 0.670 | 0.335 | 0.704 |
| p | 0.024 | 0.005 | 0.010 | 0.005 | 0.010 | 0.005 | 0.015 | 0.310 | 0.015 |
| $R^2$ | 0.566 | 0.406 | 0.406 | 0.405 | 0.406 | 0.385 | 0.381 | 0.190 | 0.400 |
| Coleoptera (FIT-C) | | | | | | | | | |
| $Chi^2$ | 0.521 | 0.265 | 0.257 | 0.254 | 0.257 | 0.210 | 0.198 | 0.108 | 0.214 |
| p | 0.190 | 0.083 | 0.051 | 0.060 | 0.052 | 0.240 | 0.300 | 0.660 | 0.180 |
| $R^2$ | 0.356 | 0.181 | 0.176 | 0.174 | 0.176 | 0.143 | 0.135 | 0.074 | 0.146 |
| Coleoptera (FIT-U) | | | | | | | | | |
| $Chi^2$ | 0.534 | 0.373 | 0.392 | 0.384 | 0.398 | 0.382 | 0.340 | 0.240 | 0.217 |
| p | 0.055 | 0.005 | 0.005 | 0.010 | 0.005 | 0.005 | 0.010 | 0.077 | 0.150 |
| $R^2$ | 0.481 | 0.336 | 0.353 | 0.346 | 0.359 | 0.344 | 0.306 | 0.216 | 0.196 |
| Coleoptera (GPE) | | | | | | | | | |
| $Chi^2$ | 0.586 | 0.286 | 0.247 | 0.253 | 0.263 | 0.252 | 0.257 | 0.222 | 0.172 |
| p | 0.480 | 0.103 | 0.220 | 0.140 | 0.170 | 0.180 | 0.140 | 0.350 | 0.570 |
| $R^2$ | 0.411 | 0.201 | 0.173 | 0.177 | 0.184 | 0.177 | 0.180 | 0.156 | 0.121 |

Table G30. Continued.

| Trophic guild | FT | Nat | SMIG | SMIV | SMIVD | max Age | avg Age | DWV | WV |
|---|---|---|---|---|---|---|---|---|---|
| Sucker | | | | | | | | | |
| Heteroptera (APE) | | | | | | | | | |
| $Chi^2$ | 0.872 | 0.475 | 0.504 | 0.513 | 0.502 | 0.267 | 0.378 | 0.172 | 0.491 |
| p | 0.034 | 0.029 | 0.023 | 0.005 | 0.025 | 0.340 | 0.080 | 0.610 | 0.025 |
| $R^2$ | 0.529 | 0.294 | 0.318 | 0.325 | 0.316 | 0.146 | 0.221 | 0.090 | 0.307 |
| Heteroptera (FIT-C) | | | | | | | | | |
| $Chi^2$ | 0.477 | 0.245 | 0.300 | 0.294 | 0.298 | 0.287 | 0.279 | 0.099 | 0.248 |
| p | 0.057 | 0.025 | 0.005 | 0.020 | 0.010 | 0.025 | 0.015 | 0.680 | 0.046 |
| $R^2$ | 0.485 | 0.751 | 0.695 | 0.702 | 0.697 | 0.708 | 0.717 | 0.900 | 0.748 |
| Heteroptera (FIT-U) | | | | | | | | | |
| $Chi^2$ | 1.123 | 0.562 | 0.532 | 0.527 | 0.532 | 0.485 | 0.473 | 0.339 | 0.537 |
| p | 0.130 | 0.010 | 0.005 | 0.026 | 0.034 | 0.105 | 0.140 | 0.500 | 0.037 |
| $R^2$ | 0.403 | 0.202 | 0.191 | 0.189 | 0.191 | 0.174 | 0.170 | 0.121 | 0.192 |
| Symbiont | | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | | |
| $Chi^2$ | 0.757 | 0.354 | 0.363 | 0.356 | 0.355 | 0.320 | 0.311 | 0.213 | 0.334 |
| p | 0.150 | 0.027 | 0.017 | 0.028 | 0.010 | 0.110 | 0.150 | 0.600 | 0.059 |
| $R^2$ | 0.410 | 0.192 | 0.196 | 0.193 | 0.192 | 0.174 | 0.168 | 0.115 | 0.181 |
| Producer | | | | | | | | | |
| Vascular plants | | | | | | | | | |
| $Chi^2$ | 0.479 | 0.240 | 0.241 | 0.246 | 0.241 | 0.198 | 0.198 | 0.082 | 0.212 |
| p | 0.230 | 0.044 | 0.035 | 0.034 | 0.046 | 0.210 | 0.200 | 0.950 | 0.130 |
| $R^2$ | 0.369 | 0.185 | 0.185 | 0.190 | 0.185 | 0.152 | 0.153 | 0.063 | 0.164 |
| Mosses | | | | | | | | | |
| $Chi^2$ | 0.813 | 0.565 | 0.608 | 0.589 | 0.592 | 0.518 | 0.542 | 0.164 | 0.637 |
| p | 0.130 | 0.005 | 0.017 | 0.025 | 0.015 | 0.010 | 0.010 | 0.730 | 0.005 |
| $R^2$ | 0.440 | 0.306 | 0.329 | 0.319 | 0.320 | 0.280 | 0.293 | 0.088 | 0.344 |

Table G31. Effects of stand structural attributes except stand age and wood volume (see Table 1) on the community composition of various groups of organisms (df = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Analyses are based on a partial constrained correspondence analysis (pCCA) by removing effect of region.

| Trophic guild | G | N | Dg | Dm | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | | | |
| Mycetophage | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | |
| $Chi^2$ | 0.125 | 0.075 | 0.104 | 0.104 | 0.077 | 0.111 | 0.162 | 0.133 | 0.120 | 0.075 |
| p | 0.170 | 0.510 | 0.290 | 0.260 | 0.530 | 0.280 | 0.058 | 0.190 | 0.170 | 0.480 |
| $R^2$ | 0.137 | 0.082 | 0.114 | 0.114 | 0.084 | 0.122 | 0.178 | 0.146 | 0.132 | 0.082 |
| Coleoptera (FIT-C) | | | | | | | | | | |
| $Chi^2$ | 0.154 | 0.119 | 0.116 | 0.128 | 0.100 | 0.143 | 0.173 | 0.106 | 0.134 | 0.107 |
| p | 0.210 | 0.330 | 0.410 | 0.320 | 0.520 | 0.210 | 0.130 | 0.590 | 0.250 | 0.480 |
| $R^2$ | 0.149 | 0.116 | 0.112 | 0.124 | 0.097 | 0.139 | 0.168 | 0.103 | 0.130 | 0.104 |
| Coleoptera (FIT-U) | | | | | | | | | | |
| $Chi^2$ | 0.101 | 0.108 | 0.138 | 0.132 | 0.143 | 0.102 | 0.144 | 0.182 | 0.171 | 0.142 |
| p | 0.530 | 0.370 | 0.115 | 0.260 | 0.150 | 0.440 | 0.075 | 0.015 | 0.010 | 0.090 |
| $R^2$ | 0.116 | 0.124 | 0.158 | 0.152 | 0.164 | 0.118 | 0.165 | 0.209 | 0.197 | 0.163 |
| Saprophage | | | | | | | | | | |
| Coleoptera (PT) | | | | | | | | | | |
| $Chi^2$ | 0.155 | 0.140 | 0.082 | 0.063 | 0.068 | 0.073 | 0.133 | 0.158 | 0.109 | 0.076 |
| p | 0.010 | 0.027 | 0.300 | 0.400 | 0.460 | 0.340 | 0.052 | 0.028 | 0.170 | 0.280 |
| $R^2$ | 0.247 | 0.223 | 0.130 | 0.101 | 0.109 | 0.116 | 0.212 | 0.252 | 0.174 | 0.121 |
| Fungi (soil saprophytes) | | | | | | | | | | |
| $Chi^2$ | 0.200 | 0.174 | 0.179 | 0.182 | 0.141 | 0.185 | 0.240 | 0.217 | 0.222 | 0.182 |
| p | 0.140 | 0.320 | 0.170 | 0.180 | 0.500 | 0.180 | 0.010 | 0.034 | 0.030 | 0.180 |
| $R^2$ | 0.145 | 0.126 | 0.130 | 0.132 | 0.102 | 0.134 | 0.174 | 0.158 | 0.161 | 0.132 |
| Isopoda (PT) | | | | | | | | | | |
| $Chi^2$ | 0.025 | 0.050 | 0.093 | 0.090 | 0.093 | 0.026 | 0.014 | 0.059 | 0.015 | 0.046 |
| p | 0.600 | 0.360 | 0.180 | 0.160 | 0.200 | 0.710 | 0.720 | 0.300 | 0.840 | 0.370 |
| $R^2$ | 0.091 | 0.183 | 0.343 | 0.330 | 0.343 | 0.095 | 0.052 | 0.216 | 0.056 | 0.170 |
| Xylophage | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | |
| $Chi^2$ | 0.319 | 0.312 | 0.261 | 0.226 | 0.350 | 0.244 | 0.318 | 0.382 | 0.347 | 0.330 |
| p | 0.480 | 0.390 | 0.680 | 0.910 | 0.370 | 0.760 | 0.460 | 0.180 | 0.390 | 0.340 |
| $R^2$ | 0.098 | 0.096 | 0.081 | 0.070 | 0.108 | 0.075 | 0.098 | 0.118 | 0.107 | 0.102 |
| Coleoptera (FIT-C) | | | | | | | | | | |
| $Chi^2$ | 0.168 | 0.164 | 0.172 | 0.148 | 0.184 | 0.141 | 0.170 | 0.202 | 0.174 | 0.197 |
| p | 0.310 | 0.420 | 0.250 | 0.450 | 0.300 | 0.620 | 0.250 | 0.113 | 0.230 | 0.170 |
| $R^2$ | 0.118 | 0.115 | 0.121 | 0.104 | 0.129 | 0.099 | 0.119 | 0.142 | 0.122 | 0.138 |
| Coleoptera (FIT-U) | | | | | | | | | | |
| $Chi^2$ | 0.233 | 0.265 | 0.257 | 0.174 | 0.161 | 0.170 | 0.328 | 0.351 | 0.286 | 0.309 |
| p | 0.300 | 0.200 | 0.190 | 0.450 | 0.530 | 0.630 | 0.050 | 0.025 | 0.130 | 0.090 |
| $R^2$ | 0.153 | 0.174 | 0.169 | 0.114 | 0.105 | 0.112 | 0.215 | 0.230 | 0.188 | 0.203 |
| Fungi (wood/bark species) | | | | | | | | | | |
| $Chi^2$ | 0.228 | 0.177 | 0.160 | 0.159 | 0.207 | 0.226 | 0.277 | 0.265 | 0.280 | 0.158 |
| p | 0.023 | 0.220 | 0.350 | 0.500 | 0.160 | 0.029 | 0.005 | 0.005 | 0.005 | 0.300 |
| $R^2$ | 0.170 | 0.133 | 0.120 | 0.119 | 0.154 | 0.169 | 0.207 | 0.198 | 0.209 | 0.118 |
| Predator | | | | | | | | | | |
| Big | | | | | | | | | | |
| Birds (breeding) | | | | | | | | | | |
| $Chi^2$ | 0.077 | 0.055 | 0.041 | 0.033 | 0.050 | 0.062 | 0.101 | 0.096 | 0.078 | 0.060 |
| p | 0.025 | 0.130 | 0.340 | 0.550 | 0.200 | 0.066 | 0.005 | 0.010 | 0.015 | 0.080 |
| $R^2$ | 0.237 | 0.167 | 0.125 | 0.102 | 0.151 | 0.189 | 0.308 | 0.293 | 0.237 | 0.183 |
| Birds (overwintering) | | | | | | | | | | |
| $Chi^2$ | 0.113 | 0.076 | 0.049 | 0.037 | 0.034 | 0.085 | 0.124 | 0.095 | 0.068 | 0.036 |
| p | 0.005 | 0.043 | 0.310 | 0.390 | 0.540 | 0.031 | 0.005 | 0.015 | 0.090 | 0.450 |
| $R^2$ | 0.331 | 0.223 | 0.143 | 0.109 | 0.099 | 0.249 | 0.363 | 0.280 | 0.199 | 0.106 |
| Small | | | | | | | | | | |
| Araneae (APE) | | | | | | | | | | |
| $Chi^2$ | 0.369 | 0.198 | 0.135 | 0.169 | 0.305 | 0.364 | 0.398 | 0.331 | 0.350 | 0.140 |
| p | 0.023 | 0.430 | 0.770 | 0.660 | 0.180 | 0.033 | 0.013 | 0.058 | 0.045 | 0.710 |
| $R^2$ | 0.234 | 0.125 | 0.085 | 0.107 | 0.193 | 0.230 | 0.252 | 0.209 | 0.222 | 0.088 |
| Coleoptera (APE) | | | | | | | | | | |
| $Chi^2$ | 0.375 | 0.257 | 0.211 | 0.256 | 0.257 | 0.380 | 0.366 | 0.312 | 0.321 | 0.143 |
| p | 0.093 | 0.410 | 0.530 | 0.330 | 0.320 | 0.150 | 0.130 | 0.230 | 0.190 | 0.820 |
| $R^2$ | 0.222 | 0.152 | 0.125 | 0.151 | 0.152 | 0.225 | 0.217 | 0.185 | 0.190 | 0.084 |

Table G31. Continued.

| Trophic guild | G | N | Dg | Dm | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|---|---|
| Coleoptera (FIT-C) | | | | | | | | | | |
| $Chi^2$ | 0.167 | 0.134 | 0.170 | 0.171 | 0.184 | 0.119 | 0.231 | 0.260 | 0.241 | 0.206 |
| p | 0.420 | 0.700 | 0.390 | 0.370 | 0.220 | 0.770 | 0.046 | 0.005 | 0.017 | 0.140 |
| $R^2$ | 0.115 | 0.092 | 0.117 | 0.117 | 0.127 | 0.082 | 0.159 | 0.179 | 0.166 | 0.142 |
| Coleoptera (FIT-U) | | | | | | | | | | |
| $Chi^2$ | 0.227 | 0.204 | 0.234 | 0.232 | 0.246 | 0.190 | 0.245 | 0.284 | 0.262 | 0.205 |
| p | 0.370 | 0.530 | 0.340 | 0.370 | 0.240 | 0.560 | 0.250 | 0.140 | 0.190 | 0.530 |
| $R^2$ | 0.121 | 0.108 | 0.124 | 0.123 | 0.131 | 0.101 | 0.130 | 0.151 | 0.139 | 0.109 |
| Coleoptera (PT) | | | | | | | | | | |
| $Chi^2$ | 0.159 | 0.109 | 0.078 | 0.083 | 0.093 | 0.128 | 0.205 | 0.211 | 0.193 | 0.095 |
| p | 0.017 | 0.210 | 0.450 | 0.420 | 0.290 | 0.150 | 0.005 | 0.005 | 0.010 | 0.280 |
| $R^2$ | 0.220 | 0.150 | 0.107 | 0.115 | 0.129 | 0.177 | 0.283 | 0.292 | 0.267 | 0.132 |
| Heteroptera (APE) | | | | | | | | | | |
| $Chi^2$ | 0.270 | 0.155 | 0.312 | 0.375 | 0.387 | 0.240 | 0.401 | 0.391 | 0.404 | 0.164 |
| p | 0.390 | 0.790 | 0.190 | 0.200 | 0.160 | 0.440 | 0.180 | 0.115 | 0.140 | 0.740 |
| $R^2$ | 0.146 | 0.084 | 0.169 | 0.203 | 0.209 | 0.130 | 0.217 | 0.212 | 0.219 | 0.089 |
| Heteroptera (FIT-C) | | | | | | | | | | |
| $Chi^2$ | 0.283 | 0.193 | 0.137 | 0.143 | 0.146 | 0.264 | 0.297 | 0.272 | 0.307 | 0.184 |
| p | 0.020 | 0.130 | 0.570 | 0.490 | 0.570 | 0.033 | 0.015 | 0.035 | 0.015 | 0.270 |
| $R^2$ | 0.124 | 0.067 | 0.047 | 0.051 | 0.086 | 0.101 | 0.157 | 0.187 | 0.159 | 0.088 |
| Heteroptera (FIT-U) | | | | | | | | | | |
| $Chi^2$ | 0.533 | 0.427 | 0.385 | 0.353 | 0.605 | 0.532 | 0.576 | 0.641 | 0.570 | 0.551 |
| p | 0.360 | 0.580 | 0.650 | 0.780 | 0.170 | 0.300 | 0.190 | 0.105 | 0.250 | 0.220 |
| $R^2$ | 0.117 | 0.092 | 0.082 | 0.075 | 0.135 | 0.117 | 0.128 | 0.144 | 0.126 | 0.122 |
| Neuropterida (APE) | | | | | | | | | | |
| $Chi^2$ | 0.537 | 0.275 | 0.217 | 0.230 | 0.363 | 0.409 | 0.594 | 0.605 | 0.559 | 0.347 |
| p | 0.010 | 0.200 | 0.310 | 0.370 | 0.100 | 0.048 | 0.010 | 0.010 | 0.015 | 0.130 |
| $R^2$ | 0.330 | 0.169 | 0.134 | 0.142 | 0.223 | 0.252 | 0.365 | 0.373 | 0.344 | 0.214 |
| Neuropterida (FIT-C) | | | | | | | | | | |
| $Chi^2$ | 0.178 | 0.170 | 0.127 | 0.112 | 0.147 | 0.155 | 0.216 | 0.241 | 0.204 | 0.129 |
| p | 0.260 | 0.330 | 0.740 | 0.770 | 0.430 | 0.440 | 0.130 | 0.042 | 0.107 | 0.730 |
| $R^2$ | 0.168 | 0.160 | 0.120 | 0.105 | 0.139 | 0.146 | 0.204 | 0.227 | 0.192 | 0.122 |
| Neuropterida (FIT-U) | | | | | | | | | | |
| $Chi^2$ | 0.386 | 0.376 | 0.290 | 0.279 | 0.186 | 0.330 | 0.439 | 0.343 | 0.351 | 0.378 |
| p | 0.260 | 0.240 | 0.490 | 0.510 | 0.840 | 0.330 | 0.076 | 0.390 | 0.310 | 0.220 |
| $R^2$ | 0.142 | 0.138 | 0.106 | 0.103 | 0.068 | 0.121 | 0.161 | 0.126 | 0.129 | 0.139 |
| Opiliones (APE) | | | | | | | | | | |
| $Chi^2$ | 0.094 | 0.103 | 0.084 | 0.062 | 0.085 | 0.082 | 0.096 | 0.112 | 0.109 | 0.133 |
| p | 0.260 | 0.240 | 0.390 | 0.380 | 0.280 | 0.380 | 0.300 | 0.150 | 0.260 | 0.074 |
| $R^2$ | 0.214 | 0.235 | 0.191 | 0.140 | 0.193 | 0.186 | 0.219 | 0.256 | 0.249 | 0.303 |
| Opiliones (PT) | | | | | | | | | | |
| $Chi^2$ | 0.077 | 0.065 | 0.057 | 0.050 | 0.062 | 0.083 | 0.081 | 0.104 | 0.074 | 0.053 |
| p | 0.500 | 0.530 | 0.710 | 0.730 | 0.570 | 0.460 | 0.400 | 0.150 | 0.500 | 0.720 |
| $R^2$ | 0.123 | 0.104 | 0.091 | 0.080 | 0.099 | 0.132 | 0.129 | 0.167 | 0.119 | 0.085 |
| Herbivore | | | | | | | | | | |
| Chewer | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | |
| $Chi^2$ | 0.672 | 0.522 | 0.341 | 0.178 | 0.618 | 0.650 | 0.721 | 0.709 | 0.682 | 0.566 |
| p | 0.010 | 0.055 | 0.140 | 0.590 | 0.020 | 0.013 | 0.005 | 0.010 | 0.010 | 0.030 |
| $R^2$ | 0.382 | 0.297 | 0.194 | 0.101 | 0.351 | 0.369 | 0.410 | 0.403 | 0.388 | 0.322 |
| Coleoptera (FIT-C) | | | | | | | | | | |
| $Chi^2$ | 0.194 | 0.166 | 0.118 | 0.113 | 0.159 | 0.215 | 0.248 | 0.288 | 0.269 | 0.187 |
| p | 0.200 | 0.360 | 0.580 | 0.490 | 0.300 | 0.170 | 0.100 | 0.088 | 0.080 | 0.290 |
| $R^2$ | 0.132 | 0.114 | 0.080 | 0.077 | 0.108 | 0.147 | 0.169 | 0.197 | 0.183 | 0.128 |
| Coleoptera (FIT-U) | | | | | | | | | | |
| $Chi^2$ | 0.191 | 0.193 | 0.230 | 0.152 | 0.136 | 0.105 | 0.329 | 0.435 | 0.324 | 0.287 |
| p | 0.230 | 0.180 | 0.130 | 0.260 | 0.380 | 0.580 | 0.010 | 0.005 | 0.020 | 0.037 |
| $R^2$ | 0.172 | 0.174 | 0.207 | 0.137 | 0.122 | 0.094 | 0.296 | 0.392 | 0.292 | 0.259 |
| Coleoptera (GPE) | | | | | | | | | | |
| $Chi^2$ | 0.176 | 0.237 | 0.212 | 0.175 | 0.194 | 0.123 | 0.217 | 0.273 | 0.218 | 0.239 |
| p | 0.540 | 0.280 | 0.360 | 0.530 | 0.450 | 0.860 | 0.390 | 0.150 | 0.360 | 0.300 |
| $R^2$ | 0.124 | 0.166 | 0.149 | 0.123 | 0.136 | 0.086 | 0.152 | 0.192 | 0.153 | 0.168 |
| Sucker | | | | | | | | | | |
| Heteroptera (APE) | | | | | | | | | | |
| $Chi^2$ | 0.523 | 0.204 | 0.165 | 0.236 | 0.443 | 0.521 | 0.534 | 0.480 | 0.514 | 0.204 |
| p | 0.010 | 0.520 | 0.660 | 0.450 | 0.050 | 0.005 | 0.010 | 0.029 | 0.020 | 0.560 |
| $R^2$ | 0.334 | 0.108 | 0.086 | 0.127 | 0.269 | 0.332 | 0.343 | 0.298 | 0.326 | 0.108 |

Table G31. Continued.

| Trophic guild | G | N | Dg | Dm | SR | SD | Con | OBL | VS | HS |
|---|---|---|---|---|---|---|---|---|---|---|
| Heteroptera (FIT-C) | | | | | | | | | | |
| $Chi^2$ | 0.216 | 0.116 | 0.082 | 0.089 | 0.150 | 0.175 | 0.273 | 0.325 | 0.275 | 0.153 |
| p | 0.088 | 0.600 | 0.770 | 0.800 | 0.260 | 0.260 | 0.020 | 0.010 | 0.027 | 0.290 |
| $R^2$ | 0.780 | 0.882 | 0.916 | 0.910 | 0.848 | 0.822 | 0.723 | 0.669 | 0.720 | 0.845 |
| Heteroptera (FIT-U) | | | | | | | | | | |
| $Chi^2$ | 0.503 | 0.388 | 0.300 | 0.241 | 0.581 | 0.548 | 0.550 | 0.580 | 0.595 | 0.510 |
| p | 0.074 | 0.420 | 0.480 | 0.750 | 0.025 | 0.035 | 0.028 | 0.023 | 0.015 | 0.060 |
| $R^2$ | 0.180 | 0.139 | 0.108 | 0.086 | 0.208 | 0.196 | 0.197 | 0.208 | 0.213 | 0.183 |
| Symbiont | | | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | | | |
| $Chi^2$ | 0.309 | 0.249 | 0.314 | 0.329 | 0.287 | 0.349 | 0.392 | 0.396 | 0.388 | 0.250 |
| p | 0.085 | 0.320 | 0.093 | 0.130 | 0.160 | 0.037 | 0.015 | 0.010 | 0.015 | 0.360 |
| $R^2$ | 0.167 | 0.135 | 0.170 | 0.178 | 0.155 | 0.189 | 0.212 | 0.215 | 0.210 | 0.135 |
| Producer | | | | | | | | | | |
| Vascular plants | | | | | | | | | | |
| $Chi^2$ | 0.224 | 0.162 | 0.115 | 0.135 | 0.196 | 0.234 | 0.264 | 0.241 | 0.273 | 0.112 |
| p | 0.069 | 0.310 | 0.770 | 0.610 | 0.230 | 0.053 | 0.026 | 0.043 | 0.028 | 0.780 |
| $R^2$ | 0.173 | 0.125 | 0.088 | 0.104 | 0.151 | 0.180 | 0.203 | 0.185 | 0.210 | 0.087 |
| Mosses | | | | | | | | | | |
| $Chi^2$ | 0.597 | 0.402 | 0.220 | 0.162 | 0.260 | 0.398 | 0.586 | 0.546 | 0.422 | 0.267 |
| p | 0.015 | 0.058 | 0.410 | 0.580 | 0.320 | 0.058 | 0.015 | 0.005 | 0.044 | 0.210 |
| $R^2$ | 0.323 | 0.217 | 0.119 | 0.088 | 0.140 | 0.216 | 0.317 | 0.296 | 0.228 | 0.144 |

Table G32. Effects of stand structural complexity indices (see Appendix A: Table A3) on the community composition of various groups of organisms (df = 12 forest sites). Arthropods were sampled by different trapping methods (APE = arboreal photo eclectors; FIT-C/U = flight-interception traps canopy/understorey; GPE = ground photo eclectors; PT = pitfall traps; for details see Appendix E). Analyses are based on a partial constrained correspondence analysis (pCCA) by removing effect of region.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decomposer | | | | | | | | | | | | |
| Mycetophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Chi$^2$ | 0.155 | 0.145 | 0.143 | 0.149 | 0.145 | 0.121 | 0.159 | 0.144 | 0.147 | 0.125 | 0.079 | 0.114 |
| p | 0.130 | 0.130 | 0.098 | 0.130 | 0.098 | 0.230 | 0.140 | 0.140 | 0.180 | 0.170 | 0.510 | 0.210 |
| $R^2$ | 0.171 | 0.159 | 0.156 | 0.164 | 0.159 | 0.133 | 0.175 | 0.158 | 0.161 | 0.137 | 0.087 | 0.125 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Chi$^2$ | 0.169 | 0.168 | 0.158 | 0.170 | 0.174 | 0.153 | 0.164 | 0.165 | 0.175 | 0.151 | 0.125 | 0.157 |
| p | 0.180 | 0.130 | 0.130 | 0.117 | 0.084 | 0.150 | 0.130 | 0.130 | 0.095 | 0.220 | 0.270 | 0.140 |
| $R^2$ | 0.163 | 0.163 | 0.153 | 0.165 | 0.168 | 0.148 | 0.159 | 0.159 | 0.169 | 0.146 | 0.121 | 0.152 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Chi$^2$ | 0.140 | 0.138 | 0.140 | 0.137 | 0.137 | 0.127 | 0.144 | 0.139 | 0.135 | 0.116 | 0.128 | 0.119 |
| p | 0.125 | 0.097 | 0.130 | 0.170 | 0.145 | 0.170 | 0.068 | 0.170 | 0.180 | 0.280 | 0.230 | 0.340 |
| $R^2$ | 0.160 | 0.158 | 0.161 | 0.157 | 0.157 | 0.146 | 0.165 | 0.159 | 0.155 | 0.134 | 0.147 | 0.136 |
| Saprophage | | | | | | | | | | | | |
| Coleoptera (PT) | | | | | | | | | | | | |
| Chi$^2$ | 0.108 | 0.127 | 0.130 | 0.123 | 0.120 | 0.102 | 0.145 | 0.119 | 0.114 | 0.099 | 0.055 | 0.082 |
| p | 0.150 | 0.051 | 0.046 | 0.066 | 0.077 | 0.140 | 0.038 | 0.097 | 0.095 | 0.130 | 0.500 | 0.210 |
| $R^2$ | 0.172 | 0.203 | 0.207 | 0.196 | 0.191 | 0.162 | 0.230 | 0.190 | 0.181 | 0.158 | 0.088 | 0.131 |
| Fungi (soil saprophytes) | | | | | | | | | | | | |
| Chi$^2$ | 0.235 | 0.232 | 0.225 | 0.232 | 0.232 | 0.216 | 0.236 | 0.228 | 0.229 | 0.210 | 0.176 | 0.208 |
| p | 0.010 | 0.005 | 0.005 | 0.017 | 0.015 | 0.033 | 0.010 | 0.010 | 0.020 | 0.046 | 0.250 | 0.045 |
| $R^2$ | 0.170 | 0.168 | 0.163 | 0.168 | 0.168 | 0.157 | 0.171 | 0.165 | 0.166 | 0.152 | 0.128 | 0.151 |
| Isopoda (PT) | | | | | | | | | | | | |
| Chi$^2$ | 0.013 | 0.017 | 0.014 | 0.014 | 0.016 | 0.045 | 0.009 | 0.012 | 0.016 | 0.026 | 0.044 | 0.052 |
| p | 0.900 | 0.820 | 0.870 | 0.890 | 0.800 | 0.450 | 0.920 | 0.850 | 0.780 | 0.660 | 0.390 | 0.330 |
| $R^2$ | 0.047 | 0.063 | 0.053 | 0.050 | 0.060 | 0.164 | 0.034 | 0.045 | 0.059 | 0.097 | 0.161 | 0.192 |
| Xylophage | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| Chi$^2$ | 0.304 | 0.314 | 0.351 | 0.295 | 0.308 | 0.301 | 0.328 | 0.350 | 0.286 | 0.266 | 0.356 | 0.289 |
| p | 0.530 | 0.390 | 0.300 | 0.530 | 0.520 | 0.460 | 0.450 | 0.290 | 0.550 | 0.650 | 0.270 | 0.580 |
| $R^2$ | 0.094 | 0.097 | 0.108 | 0.091 | 0.095 | 0.093 | 0.101 | 0.108 | 0.088 | 0.082 | 0.110 | 0.089 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| Chi$^2$ | 0.176 | 0.189 | 0.196 | 0.171 | 0.188 | 0.198 | 0.177 | 0.195 | 0.166 | 0.158 | 0.205 | 0.194 |
| p | 0.200 | 0.130 | 0.110 | 0.290 | 0.160 | 0.110 | 0.260 | 0.093 | 0.360 | 0.460 | 0.115 | 0.150 |
| $R^2$ | 0.124 | 0.133 | 0.138 | 0.120 | 0.132 | 0.139 | 0.124 | 0.137 | 0.116 | 0.111 | 0.144 | 0.137 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| Chi$^2$ | 0.334 | 0.342 | 0.392 | 0.292 | 0.328 | 0.334 | 0.349 | 0.388 | 0.269 | 0.232 | 0.378 | 0.297 |
| p | 0.036 | 0.036 | 0.005 | 0.105 | 0.048 | 0.035 | 0.023 | 0.010 | 0.210 | 0.270 | 0.023 | 0.140 |
| $R^2$ | 0.219 | 0.224 | 0.257 | 0.192 | 0.215 | 0.219 | 0.228 | 0.254 | 0.176 | 0.152 | 0.248 | 0.195 |
| Fungi (wood/ bark species) | | | | | | | | | | | | |
| Chi$^2$ | 0.283 | 0.281 | 0.264 | 0.283 | 0.285 | 0.262 | 0.274 | 0.266 | 0.283 | 0.256 | 0.219 | 0.257 |
| p | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.010 | 0.005 | 0.005 | 0.005 | 0.010 | 0.027 | 0.015 |
| $R^2$ | 0.211 | 0.210 | 0.197 | 0.211 | 0.213 | 0.196 | 0.204 | 0.199 | 0.212 | 0.192 | 0.164 | 0.192 |
| Predator | | | | | | | | | | | | |
| Big | | | | | | | | | | | | |
| Birds (breeding) | | | | | | | | | | | | |
| Chi$^2$ | 0.096 | 0.099 | 0.093 | 0.099 | 0.100 | 0.088 | 0.100 | 0.094 | 0.097 | 0.082 | 0.064 | 0.085 |
| p | 0.010 | 0.005 | 0.005 | 0.005 | 0.005 | 0.010 | 0.005 | 0.010 | 0.015 | 0.015 | 0.056 | 0.010 |
| $R^2$ | 0.294 | 0.303 | 0.285 | 0.302 | 0.305 | 0.267 | 0.306 | 0.286 | 0.297 | 0.251 | 0.196 | 0.259 |

Table G32. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Birds (overwintering) | | | | | | | | | | | | |
| $Chi^2$ | 0.125 | 0.125 | 0.112 | 0.126 | 0.127 | 0.113 | 0.122 | 0.113 | 0.125 | 0.112 | 0.073 | 0.112 |
| p | 0.005 | 0.010 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.010 | 0.052 | 0.010 |
| $R^2$ | 0.368 | 0.368 | 0.330 | 0.371 | 0.374 | 0.333 | 0.359 | 0.331 | 0.367 | 0.328 | 0.216 | 0.328 |
| Small | | | | | | | | | | | | |
| Araneae (APE) | | | | | | | | | | | | |
| $Chi^2$ | 0.403 | 0.390 | 0.360 | 0.404 | 0.392 | 0.340 | 0.398 | 0.361 | 0.403 | 0.381 | 0.194 | 0.335 |
| p | 0.005 | 0.010 | 0.023 | 0.010 | 0.015 | 0.043 | 0.005 | 0.025 | 0.015 | 0.010 | 0.380 | 0.047 |
| $R^2$ | 0.255 | 0.246 | 0.228 | 0.256 | 0.248 | 0.215 | 0.252 | 0.228 | 0.255 | 0.241 | 0.123 | 0.212 |
| Coleoptera (APE) | | | | | | | | | | | | |
| $Chi^2$ | 0.382 | 0.364 | 0.325 | 0.376 | 0.369 | 0.348 | 0.361 | 0.335 | 0.375 | 0.390 | 0.108 | 0.359 |
| p | 0.160 | 0.140 | 0.170 | 0.105 | 0.150 | 0.130 | 0.130 | 0.135 | 0.093 | 0.069 | 0.940 | 0.160 |
| $R^2$ | 0.226 | 0.216 | 0.192 | 0.222 | 0.218 | 0.206 | 0.214 | 0.198 | 0.222 | 0.231 | 0.064 | 0.213 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| $Chi^2$ | 0.208 | 0.207 | 0.224 | 0.196 | 0.208 | 0.174 | 0.225 | 0.232 | 0.193 | 0.143 | 0.174 | 0.166 |
| p | 0.130 | 0.105 | 0.077 | 0.150 | 0.090 | 0.340 | 0.065 | 0.045 | 0.180 | 0.640 | 0.360 | 0.370 |
| $R^2$ | 0.143 | 0.142 | 0.154 | 0.135 | 0.143 | 0.120 | 0.155 | 0.160 | 0.133 | 0.098 | 0.120 | 0.114 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| $Chi^2$ | 0.214 | 0.222 | 0.230 | 0.220 | 0.224 | 0.206 | 0.236 | 0.236 | 0.220 | 0.199 | 0.194 | 0.204 |
| p | 0.400 | 0.410 | 0.290 | 0.350 | 0.310 | 0.550 | 0.310 | 0.250 | 0.410 | 0.680 | 0.580 | 0.460 |
| $R^2$ | 0.114 | 0.118 | 0.122 | 0.117 | 0.119 | 0.109 | 0.125 | 0.125 | 0.117 | 0.105 | 0.103 | 0.108 |
| Coleoptera (PT) | | | | | | | | | | | | |
| $Chi^2$ | 0.193 | 0.195 | 0.190 | 0.196 | 0.192 | 0.160 | 0.208 | 0.188 | 0.189 | 0.163 | 0.093 | 0.142 |
| p | 0.005 | 0.005 | 0.015 | 0.005 | 0.005 | 0.020 | 0.005 | 0.005 | 0.015 | 0.015 | 0.330 | 0.051 |
| $R^2$ | 0.267 | 0.270 | 0.263 | 0.271 | 0.266 | 0.222 | 0.288 | 0.260 | 0.261 | 0.225 | 0.129 | 0.196 |
| Heteroptera (APE) | | | | | | | | | | | | |
| $Chi^2$ | 0.349 | 0.306 | 0.321 | 0.327 | 0.320 | 0.203 | 0.368 | 0.346 | 0.341 | 0.234 | 0.181 | 0.201 |
| p | 0.150 | 0.350 | 0.260 | 0.200 | 0.240 | 0.510 | 0.210 | 0.250 | 0.210 | 0.360 | 0.570 | 0.590 |
| $R^2$ | 0.189 | 0.166 | 0.174 | 0.177 | 0.173 | 0.110 | 0.199 | 0.187 | 0.184 | 0.127 | 0.098 | 0.109 |
| Heteroptera (FIT-C) | | | | | | | | | | | | |
| $Chi^2$ | 0.355 | 0.344 | 0.284 | 0.342 | 0.346 | 0.328 | 0.309 | 0.281 | 0.328 | 0.349 | 0.163 | 0.328 |
| p | 0.005 | 0.005 | 0.020 | 0.015 | 0.005 | 0.010 | 0.015 | 0.010 | 0.010 | 0.005 | 0.330 | 0.005 |
| $R^2$ | 0.165 | 0.162 | 0.170 | 0.151 | 0.156 | 0.145 | 0.167 | 0.168 | 0.140 | 0.135 | 0.096 | 0.132 |
| Heteroptera (FIT-U) | | | | | | | | | | | | |
| $Chi^2$ | 0.609 | 0.611 | 0.624 | 0.590 | 0.605 | 0.585 | 0.600 | 0.615 | 0.578 | 0.560 | 0.569 | 0.568 |
| p | 0.130 | 0.130 | 0.105 | 0.180 | 0.133 | 0.200 | 0.130 | 0.130 | 0.210 | 0.180 | 0.220 | 0.230 |
| $R^2$ | 0.136 | 0.137 | 0.140 | 0.131 | 0.135 | 0.130 | 0.134 | 0.138 | 0.128 | 0.124 | 0.126 | 0.126 |
| Neuropterida (APE) | | | | | | | | | | | | |
| $Chi^2$ | 0.548 | 0.555 | 0.541 | 0.564 | 0.546 | 0.469 | 0.599 | 0.545 | 0.545 | 0.491 | 0.225 | 0.430 |
| p | 0.017 | 0.005 | 0.018 | 0.010 | 0.020 | 0.015 | 0.015 | 0.015 | 0.025 | 0.015 | 0.310 | 0.037 |
| $R^2$ | 0.338 | 0.341 | 0.333 | 0.347 | 0.336 | 0.289 | 0.369 | 0.335 | 0.336 | 0.302 | 0.138 | 0.265 |
| Neuropterida (FIT-C) | | | | | | | | | | | | |
| $Chi^2$ | 0.246 | 0.255 | 0.271 | 0.215 | 0.253 | 0.270 | 0.228 | 0.274 | 0.203 | 0.195 | 0.267 | 0.267 |
| p | 0.051 | 0.030 | 0.020 | 0.130 | 0.024 | 0.017 | 0.090 | 0.023 | 0.105 | 0.140 | 0.025 | 0.020 |
| $R^2$ | 0.232 | 0.241 | 0.255 | 0.203 | 0.238 | 0.254 | 0.215 | 0.258 | 0.192 | 0.184 | 0.251 | 0.252 |
| Neuropterida (FIT-U) | | | | | | | | | | | | |
| $Chi^2$ | 0.371 | 0.392 | 0.411 | 0.402 | 0.385 | 0.333 | 0.440 | 0.412 | 0.388 | 0.366 | 0.313 | 0.299 |
| p | 0.260 | 0.140 | 0.150 | 0.135 | 0.145 | 0.420 | 0.150 | 0.160 | 0.180 | 0.290 | 0.490 | 0.590 |
| $R^2$ | 0.136 | 0.144 | 0.151 | 0.148 | 0.141 | 0.122 | 0.162 | 0.151 | 0.142 | 0.134 | 0.115 | 0.110 |
| Opiliones (APE) | | | | | | | | | | | | |
| $Chi^2$ | 0.104 | 0.111 | 0.105 | 0.103 | 0.110 | 0.118 | 0.101 | 0.105 | 0.098 | 0.105 | 0.095 | 0.117 |
| p | 0.170 | 0.190 | 0.135 | 0.180 | 0.140 | 0.170 | 0.270 | 0.190 | 0.240 | 0.160 | 0.220 | 0.107 |
| $R^2$ | 0.238 | 0.252 | 0.240 | 0.235 | 0.250 | 0.268 | 0.230 | 0.239 | 0.224 | 0.239 | 0.217 | 0.268 |

Table G32. Continued.

| Trophic guild | 7 Attrib | 4 Attrib | 3 AttribA | 3 AttribB | 3 AttribC | 3 AttribD | 2 AttribA | 2 AttribB | 2 AttribC | 2 AttribD | 2 AttribE | 2 AttribF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Opiliones (PT) | | | | | | | | | | | | |
| $Chi^2$ | 0.081 | 0.079 | 0.091 | 0.077 | 0.077 | 0.078 | 0.084 | 0.090 | 0.075 | 0.080 | 0.100 | 0.075 |
| p | 0.430 | 0.450 | 0.230 | 0.490 | 0.370 | 0.430 | 0.370 | 0.270 | 0.510 | 0.500 | 0.190 | 0.470 |
| $R^2$ | 0.129 | 0.126 | 0.146 | 0.122 | 0.122 | 0.124 | 0.135 | 0.143 | 0.119 | 0.128 | 0.160 | 0.120 |
| Herbivore | | | | | | | | | | | | |
| Chewer | | | | | | | | | | | | |
| Coleoptera (APE) | | | | | | | | | | | | |
| $Chi^2$ | 0.713 | 0.727 | 0.709 | 0.726 | 0.723 | 0.692 | 0.732 | 0.707 | 0.713 | 0.706 | 0.493 | 0.676 |
| p | 0.015 | 0.005 | 0.010 | 0.005 | 0.005 | 0.013 | 0.010 | 0.005 | 0.005 | 0.015 | 0.070 | 0.005 |
| $R^2$ | 0.405 | 0.413 | 0.403 | 0.413 | 0.411 | 0.393 | 0.416 | 0.402 | 0.405 | 0.401 | 0.280 | 0.385 |
| Coleoptera (FIT-C) | | | | | | | | | | | | |
| $Chi^2$ | 0.241 | 0.246 | 0.237 | 0.240 | 0.247 | 0.242 | 0.244 | 0.243 | 0.235 | 0.243 | 0.147 | 0.241 |
| p | 0.130 | 0.093 | 0.107 | 0.150 | 0.092 | 0.123 | 0.130 | 0.085 | 0.170 | 0.120 | 0.410 | 0.180 |
| $R^2$ | 0.165 | 0.168 | 0.162 | 0.164 | 0.169 | 0.165 | 0.167 | 0.166 | 0.160 | 0.166 | 0.100 | 0.165 |
| Coleoptera (FIT-U) | | | | | | | | | | | | |
| $Chi^2$ | 0.315 | 0.323 | 0.382 | 0.270 | 0.310 | 0.290 | 0.345 | 0.383 | 0.244 | 0.181 | 0.317 | 0.251 |
| p | 0.015 | 0.017 | 0.005 | 0.051 | 0.024 | 0.037 | 0.005 | 0.010 | 0.065 | 0.210 | 0.020 | 0.074 |
| $R^2$ | 0.284 | 0.291 | 0.344 | 0.243 | 0.279 | 0.261 | 0.310 | 0.345 | 0.220 | 0.163 | 0.285 | 0.226 |
| Coleoptera (GPE) | | | | | | | | | | | | |
| $Chi^2$ | 0.222 | 0.233 | 0.253 | 0.199 | 0.225 | 0.258 | 0.224 | 0.251 | 0.187 | 0.161 | 0.256 | 0.230 |
| p | 0.300 | 0.330 | 0.190 | 0.420 | 0.370 | 0.125 | 0.340 | 0.230 | 0.490 | 0.630 | 0.180 | 0.260 |
| $R^2$ | 0.156 | 0.164 | 0.177 | 0.139 | 0.158 | 0.181 | 0.157 | 0.176 | 0.131 | 0.113 | 0.180 | 0.162 |
| Sucker | | | | | | | | | | | | |
| Heteroptera (APE) | | | | | | | | | | | | |
| $Chi^2$ | 0.546 | 0.526 | 0.459 | 0.551 | 0.534 | 0.465 | 0.527 | 0.469 | 0.551 | 0.542 | 0.188 | 0.472 |
| p | 0.010 | 0.005 | 0.045 | 0.013 | 0.020 | 0.025 | 0.020 | 0.037 | 0.005 | 0.010 | 0.580 | 0.024 |
| $R^2$ | 0.354 | 0.336 | 0.282 | 0.358 | 0.343 | 0.286 | 0.337 | 0.289 | 0.358 | 0.350 | 0.099 | 0.292 |
| Heteroptera (FIT-C) | | | | | | | | | | | | |
| $Chi^2$ | 0.286 | 0.280 | 0.295 | 0.262 | 0.271 | 0.252 | 0.289 | 0.292 | 0.244 | 0.234 | 0.167 | 0.229 |
| p | 0.010 | 0.030 | 0.023 | 0.031 | 0.015 | 0.038 | 0.015 | 0.010 | 0.048 | 0.065 | 0.270 | 0.060 |
| $R^2$ | 0.710 | 0.715 | 0.700 | 0.734 | 0.724 | 0.743 | 0.706 | 0.703 | 0.752 | 0.762 | 0.830 | 0.767 |
| Heteroptera (FIT-U) | | | | | | | | | | | | |
| $Chi^2$ | 0.559 | 0.572 | 0.531 | 0.574 | 0.581 | 0.548 | 0.549 | 0.540 | 0.570 | 0.582 | 0.400 | 0.562 |
| p | 0.029 | 0.013 | 0.036 | 0.015 | 0.010 | 0.020 | 0.013 | 0.030 | 0.010 | 0.020 | 0.330 | 0.010 |
| $R^2$ | 0.201 | 0.205 | 0.190 | 0.206 | 0.208 | 0.197 | 0.197 | 0.194 | 0.204 | 0.209 | 0.143 | 0.201 |
| Symbiont | | | | | | | | | | | | |
| Fungi (Mycorrhiza) | | | | | | | | | | | | |
| $Chi^2$ | 0.373 | 0.378 | 0.351 | 0.391 | 0.382 | 0.340 | 0.383 | 0.355 | 0.394 | 0.368 | 0.243 | 0.329 |
| p | 0.023 | 0.020 | 0.033 | 0.010 | 0.010 | 0.053 | 0.010 | 0.023 | 0.010 | 0.020 | 0.380 | 0.110 |
| $R^2$ | 0.202 | 0.205 | 0.190 | 0.212 | 0.207 | 0.184 | 0.207 | 0.192 | 0.213 | 0.199 | 0.132 | 0.178 |
| Producer | | | | | | | | | | | | |
| Vascular plants | | | | | | | | | | | | |
| $Chi^2$ | 0.272 | 0.251 | 0.221 | 0.267 | 0.254 | 0.219 | 0.257 | 0.224 | 0.268 | 0.254 | 0.111 | 0.214 |
| p | 0.026 | 0.039 | 0.068 | 0.025 | 0.030 | 0.160 | 0.010 | 0.072 | 0.026 | 0.025 | 0.790 | 0.130 |
| $R^2$ | 0.210 | 0.193 | 0.170 | 0.206 | 0.196 | 0.169 | 0.198 | 0.173 | 0.207 | 0.196 | 0.086 | 0.165 |
| Mosses | | | | | | | | | | | | |
| $Chi^2$ | 0.541 | 0.593 | 0.581 | 0.575 | 0.584 | 0.524 | 0.604 | 0.576 | 0.550 | 0.503 | 0.316 | 0.478 |
| p | 0.020 | 0.005 | 0.013 | 0.005 | 0.005 | 0.015 | 0.015 | 0.017 | 0.020 | 0.018 | 0.180 | 0.020 |
| $R^2$ | 0.293 | 0.321 | 0.314 | 0.311 | 0.316 | 0.283 | 0.327 | 0.311 | 0.297 | 0.272 | 0.171 | 0.259 |

# Appendix H

*Relationships between land-use measures and community attributes*

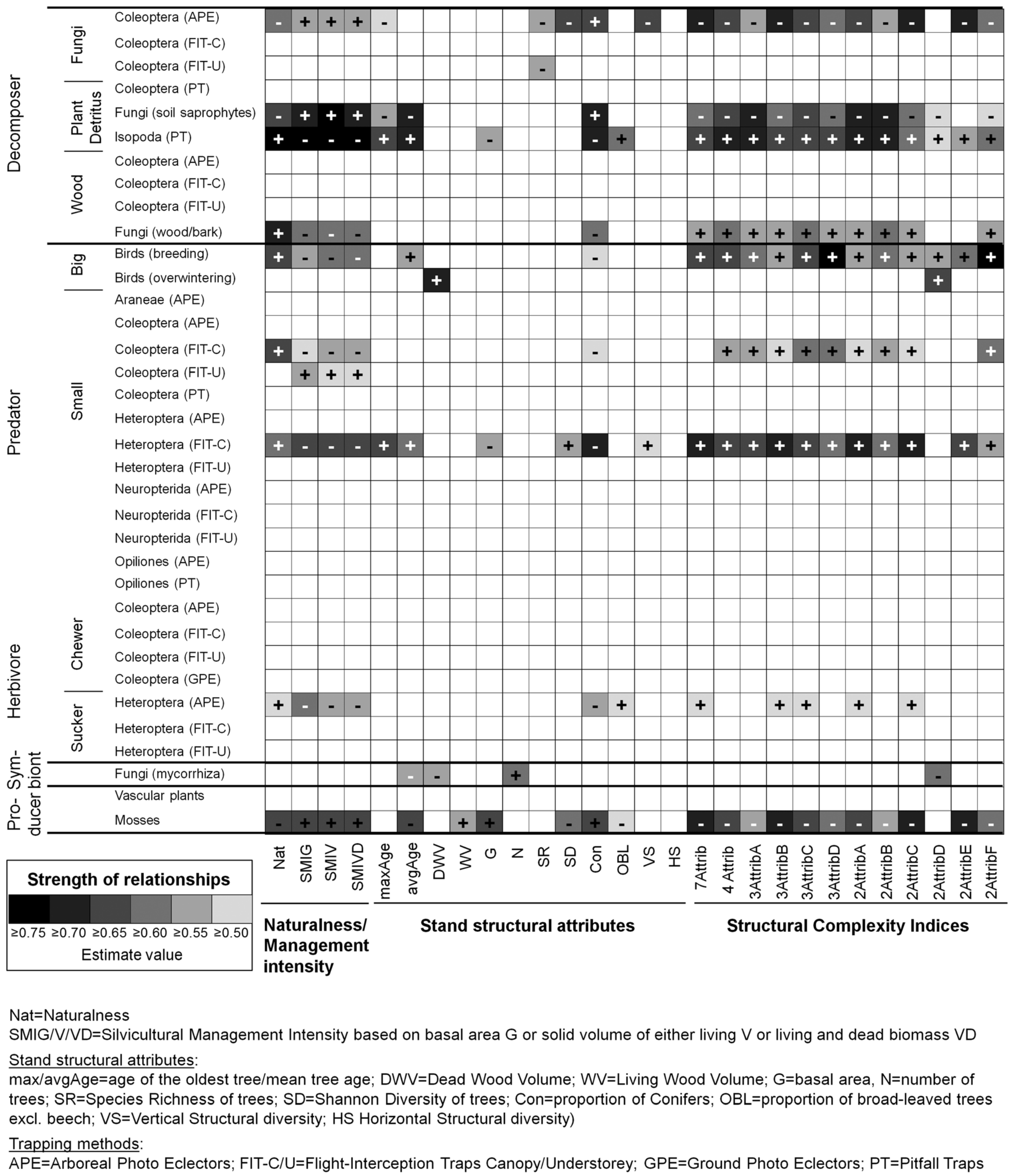
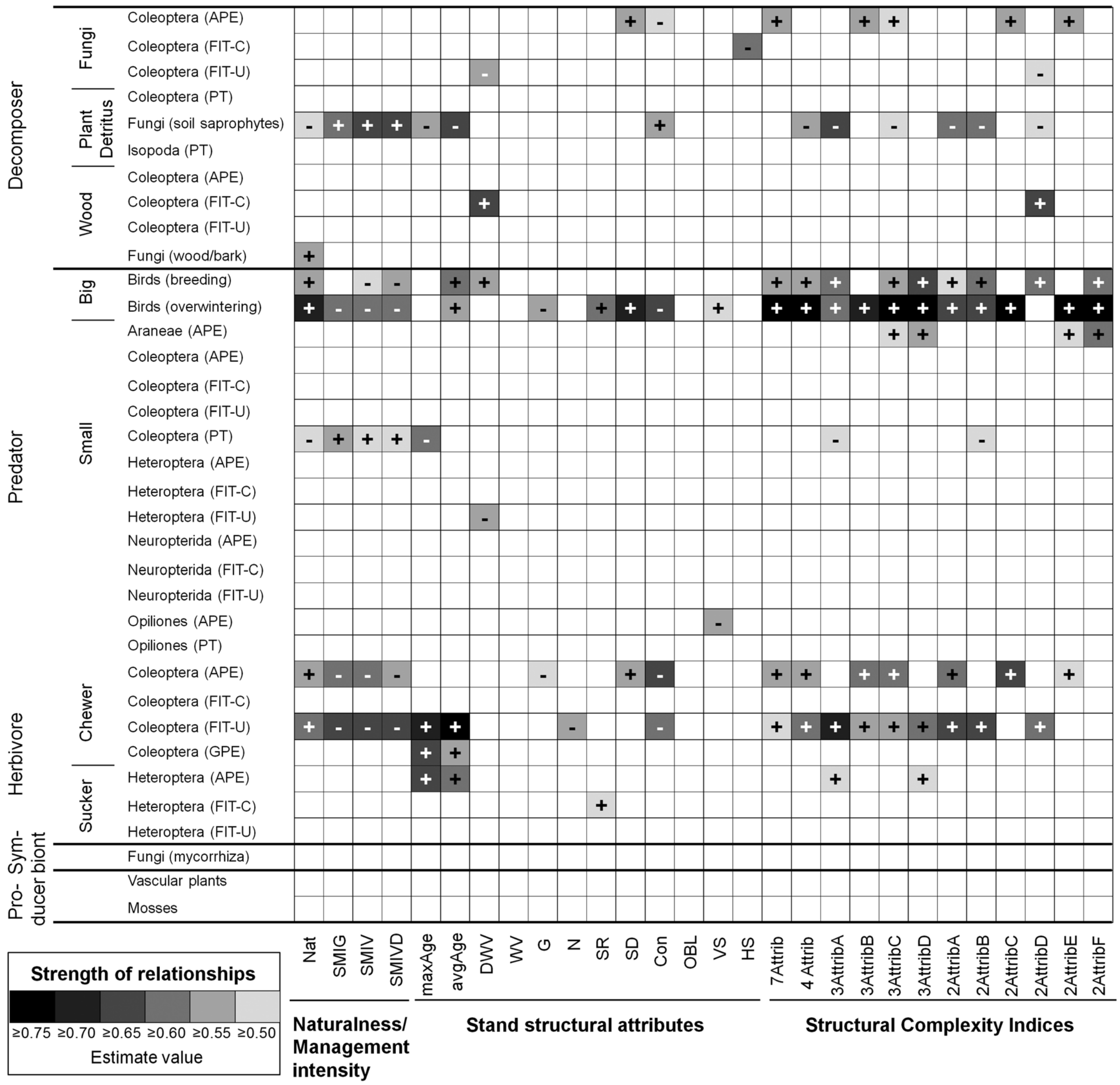



Fig. H1. Effects of 'naturalness' and different measures of land-use intensity, stand structural attributes (Appendix A: Table A2) and stand structural complexity indices (Appendix A: Table A3) on the abundance of various groups of organisms (df = 12 forest sites). Arthropods were sampled by different trapping methods. The sign (+ or –) indicates the direction and the grey scale the strength (based on estimate values of the statistical model) of the relationship. White signs on grey background indicate that by using the jackknife method all resampled subsets were significant. Statistical details are shown in Appendix G. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the figures.

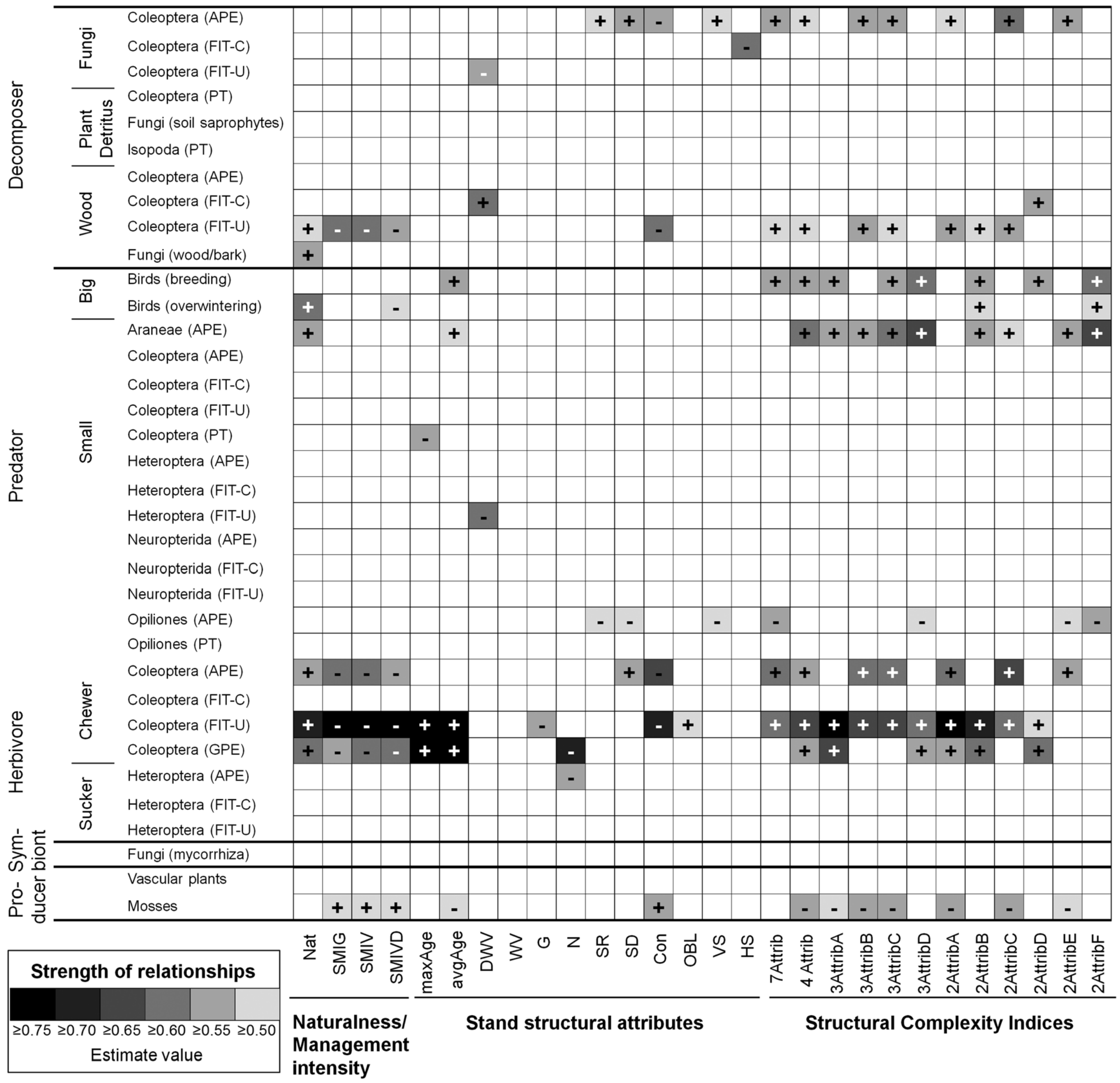



Nat=Naturalness
SMIG/V/VD=Silvicultural Management Intensity based on basal area G or solid volume of either living V or living and dead biomass VD

Stand structural attributes:
max/avgAge=age of the oldest tree/mean tree age; DWV=Dead Wood Volume; WV=Living Wood Volume; G=basal area, N=number of trees; SR=Species Richness of trees; SD=Shannon Diversity of trees; Con=proportion of Conifers; OBL=proportion of broad-leaved trees excl. beech; VS=Vertical Structural diversity; HS Horizontal Structural diversity)

Trapping methods:
APE=Arboreal Photo Eclectors; FIT-C/U=Flight-Interception Traps Canopy/Understorey; GPE=Ground Photo Eclectors; PT=Pitfall Traps

Fig. H2. Effects of 'naturalness' and different measures of land-use intensity, stand structural attributes (Appendix A: Table A2) and stand structural complexity indices (see Appendix A: Table A3) on the diversity (reciprocal Simpson index 1/D) of various groups of organisms (df = 12 forest sites). Arthropods were sampled by different trapping methods. The sign (+ or −) indicates the direction and the grey scale the strength (based on estimate values of the statistical model) of the relationship. White signs on grey background indicate that by using the jackknife method all resampled subsets were significant. Statistical details are shown in Appendix G. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the figures.

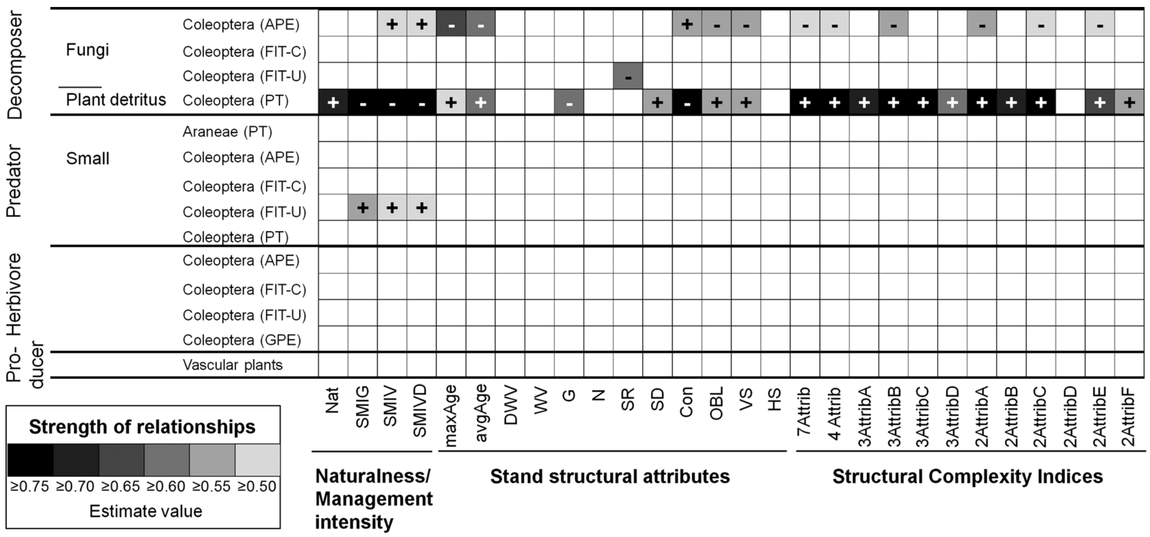



Nat=Naturalness
SMIG/V/VD=Silvicultural Management Intensity based on basal area G or solid volume of either living V or living and dead biomass VD

Stand structural attributes:
max/avgAge=age of the oldest tree/mean tree age; DWV=Dead Wood Volume; WV=Living Wood Volume; G=basal area, N=number of trees; SR=Species Richness of trees; SD=Shannon Diversity of trees; Con=proportion of Conifers; OBL=proportion of broad-leaved trees excl. beech; VS=Vertical Structural diversity; HS Horizontal Structural diversity)

Trapping methods:
APE=Arboreal Photo Eclectors; FIT-C/U=Flight-Interception Traps Canopy/Understorey; GPE=Ground Photo Eclectors; PT=Pitfall Traps

Fig. H3. Effects of 'naturalness' and different measures of land-use intensity, stand structural attributes (Appendix A: Table A2) and stand structural complexity indices (see Appendix A: Table A3) on entropy (bias-corrected exponential Shannon's entropy eHbc) of various groups of organisms (df = 12 forest sites). Arthropods were sampled by different trapping methods. The sign (+ or −) indicates the direction and the grey scale the strength (based on estimate values of the statistical model) of the relationship. White signs on grey background indicate that by using the jackknife method all resampled subsets were significant. Statistical details are shown in Appendix G. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the figures.

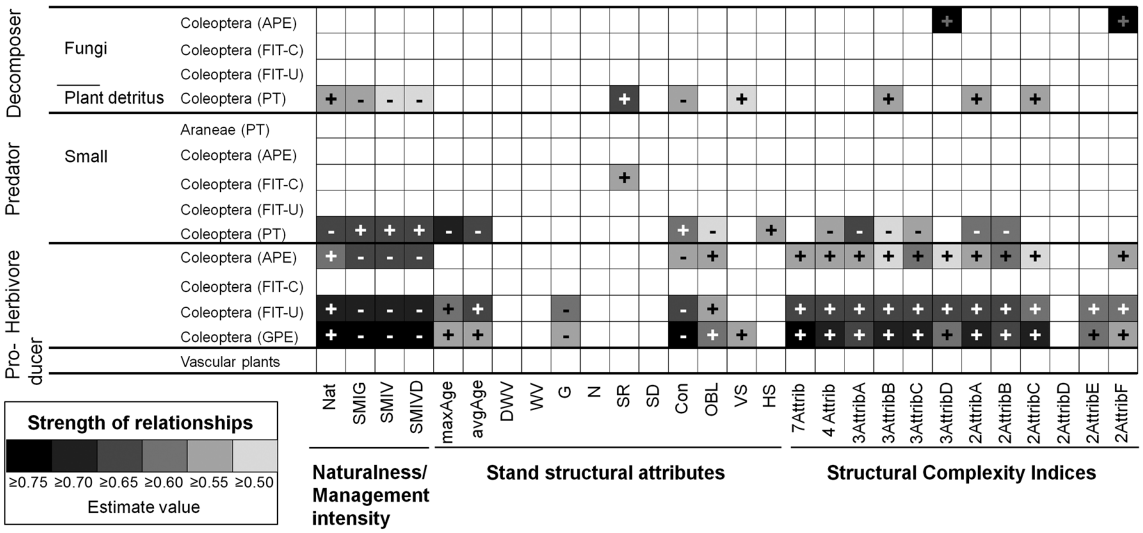



Nat=Naturalness
SMIG/V/VD=Silvicultural Management Intensity based on basal area G or solid volume of either living V or living and dead biomass VD

Stand structural attributes:
max/avgAge=age of the oldest tree/mean tree age; DWV=Dead Wood Volume; WV=Living Wood Volume; G=basal area, N=number of trees; SR=Species Richness of trees; SD=Shannon Diversity of trees; Con=proportion of Conifers; OBL=proportion of broad-leaved trees excl. beech; VS=Vertical Structural diversity; HS Horizontal Structural diversity)

Trapping methods:
APE=Arboreal Photo Eclectors; FIT-C/U=Flight-Interception Traps Canopy/Understorey; GPE=Ground Photo Eclectors; PT=Pitfall Traps

Fig. H4. Effects of 'naturalness' and different measures of management intensity, stand structural attributes (Appendix A: Table A2) and stand structural complexity indices (see Appendix A: Table A3) on the abundance of forest specialists among beetles, spiders and vascular plants (df = 12 forest sites). The sign (+ or −) indicates the direction and the grey scale the strength (based on estimate values) of the relationship. White signs on grey background indicate that by using the jackknife method all resampled subsets were significant. Statistical details are shown in Appendix G. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the figures.

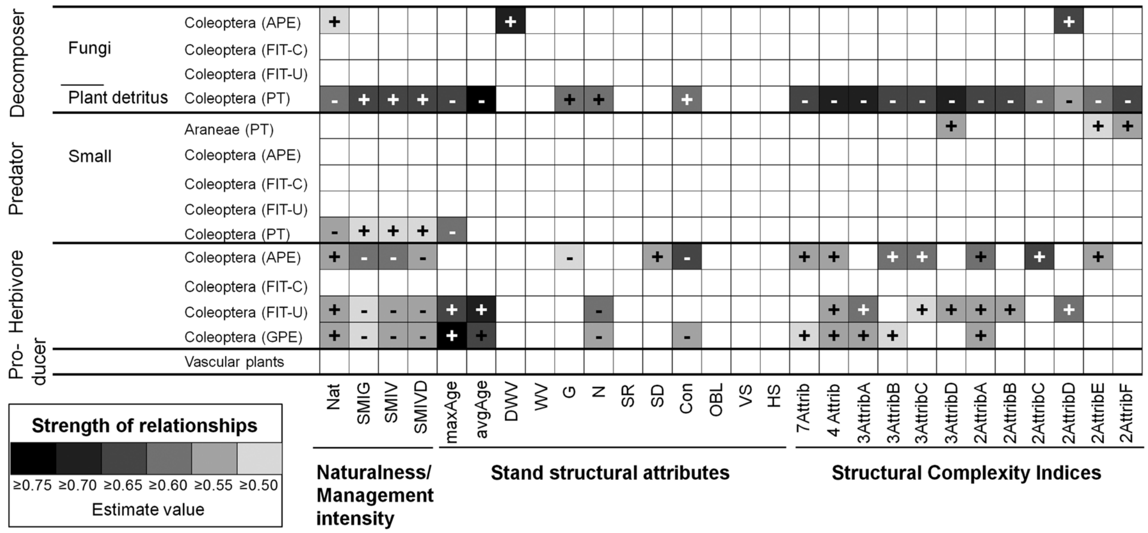



Nat=Naturalness
SMIG/V/VD=Silvicultural Management Intensity based on basal area G or solid volume of either living V or living and dead biomass VD

Stand structural attributes:
max/avgAge=age of the oldest tree/mean tree age; DWV=Dead Wood Volume; WV=Living Wood Volume; G=basal area, N=number of trees; SR=Species Richness of trees; SD=Shannon Diversity of trees; Con=proportion of Conifers; OBL=proportion of broad-leaved trees excl. beech; VS=Vertical Structural diversity; HS Horizontal Structural diversity)

Trapping methods:
APE=Arboreal Photo Eclectors; FIT-C/U=Flight-Interception Traps Canopy/Understorey; GPE=Ground Photo Eclectors; PT=Pitfall Traps

Fig. H5. Effects of 'naturalness' and different measures of management intensity, stand structural attributes (Appendix A: Table A2) and stand structural complexity indices (see Appendix A: Table A3) on species richness of forest specialists among beetles, spiders and vascular plants (df = 12 forest sites). The sign (+ or −) indicates the direction and the grey scale the strength (based on estimate values) of the relationship. White signs on grey background indicate that by using the jackknife method all resampled subsets were significant. Statistical details are shown in Appendix G. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the figures.

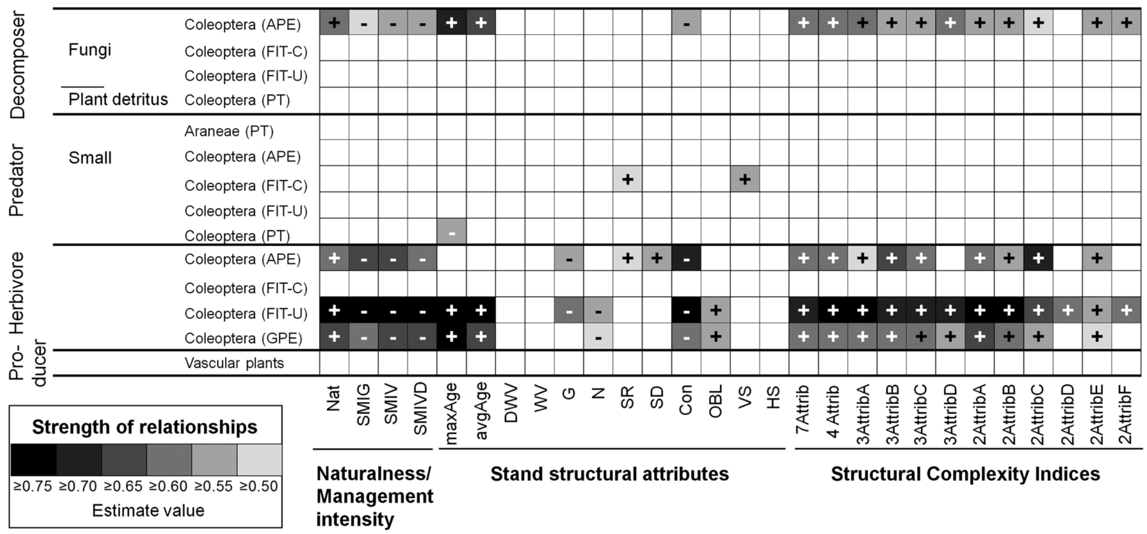



Nat=Naturalness
SMIG/V/VD=Silvicultural Management Intensity based on basal area G or solid volume of either living V or living and dead biomass VD

Stand structural attributes:
max/avgAge=age of the oldest tree/mean tree age; DWV=Dead Wood Volume; WV=Living Wood Volume; G=basal area, N=number of trees; SR=Species Richness of trees; SD=Shannon Diversity of trees; Con=proportion of Conifers; OBL=proportion of broad-leaved trees excl. beech; VS=Vertical Structural diversity; HS Horizontal Structural diversity)

Trapping methods:
APE=Arboreal Photo Eclectors; FIT-C/U=Flight-Interception Traps Canopy/Understorey; GPE=Ground Photo Eclectors; PT=Pitfall Traps

Fig. H6. Effects of 'naturalness' and different measures of management intensity, stand structural attributes (Appendix A: Table A2) and stand structural complexity indices (see Appendix A: Table A3) on the diversity (reciprocal Simpson) of forest specialists among beetles, spiders and vascular plants (df = 12 forest sites). The sign (+ or −) indicates the direction and the grey scale the strength (based on estimate values) of the relationship. White signs on grey background indicate that by using the jackknife method all resampled subsets were significant. Statistical details are shown in Appendix G. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the figures.

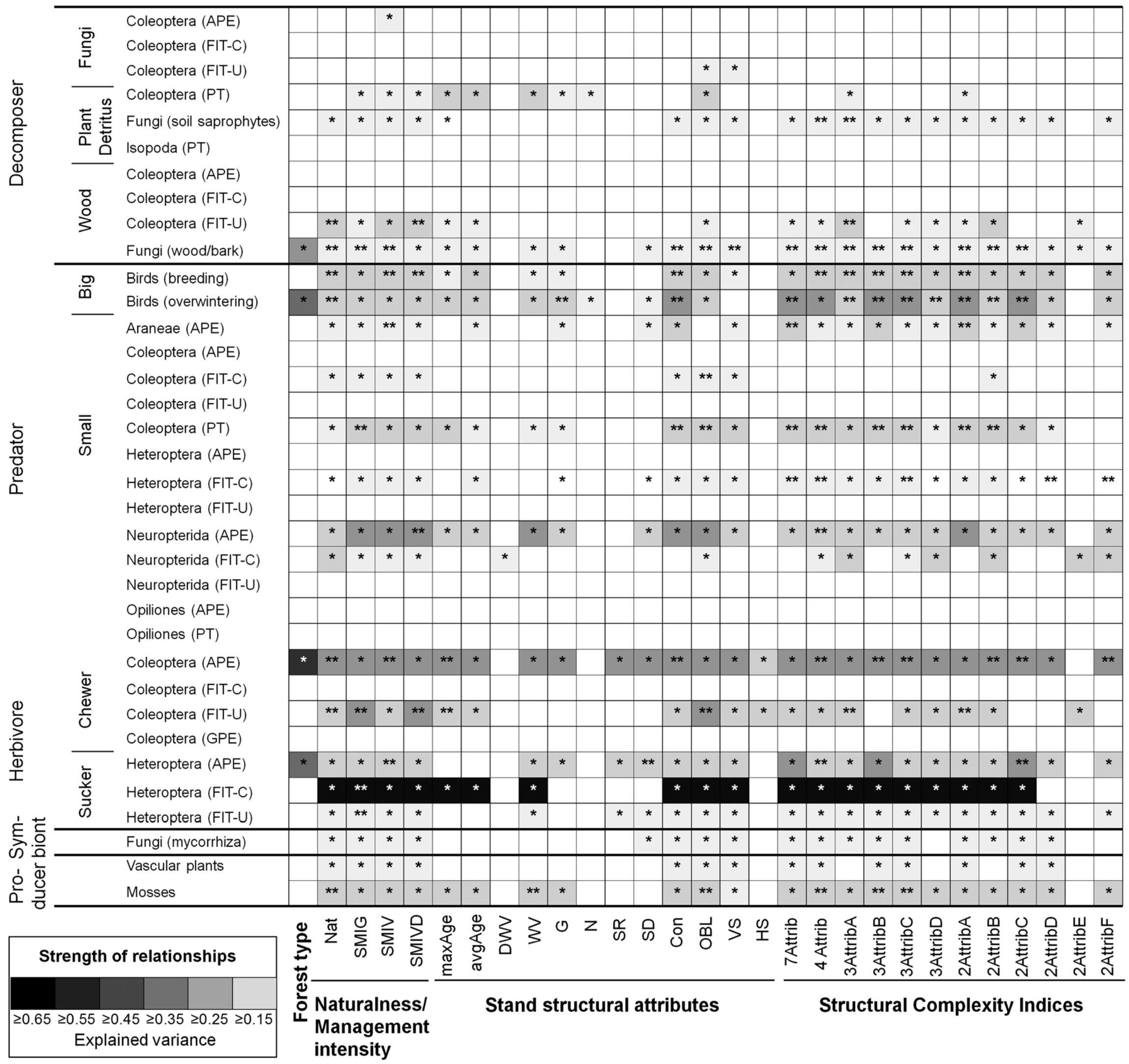



Nat=Naturalness
SMIG/V/VD=Silvicultural Management Intensity based on basal area G or solid volume of either living V or living and dead biomass VD

Stand structural attributes:
max/avgAge=age of the oldest tree/mean tree age; DWV=Dead Wood Volume; WV=Living Wood Volume; G=basal area, N=number of trees; SR=Species Richness of trees; SD=Shannon Diversity of trees; Con=proportion of Conifers; OBL=proportion of broad-leaved trees excl. beech; VS=Vertical Structural diversity; HS Horizontal Structural diversity)

Trapping methods:
APE=Arboreal Photo Eclectors; FIT-C/U=Flight-Interception Traps Canopy/Understorey; GPE=Ground Photo Eclectors; PT=Pitfall Traps

Fig. H7. Effects of 'naturalness' and different measures of management intensity, stand structural attributes (Appendix A: Table A2) and stand structural complexity indices (see Appendix A: Table A3) on the entropy (bias-corrected exponential Shannon's entropy eHbc) of forest specialists among beetles, spiders and vascular plants (df = 12 forest sites). The sign (+ or −) indicates the direction and the grey scale the strength (based on estimate values) of the relationship. White signs on grey background indicate that by using the jackknife method all resampled subsets were significant. Statistical details are shown in Appendix G. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the figures.




Nat=Naturalness
SMIG/V/VD=Silvicultural Management Intensity based on basal area G or solid volume of either living V or living and dead biomass VD
Stand structural attributes:
max/avgAge=age of the oldest tree/mean tree age; DWV=Dead Wood Volume; WV=Living Wood Volume; G=basal area, N=number of trees; SR=Species Richness of trees; SD=Shannon Diversity of trees; Con=proportion of Conifers; OBL=proportion of broad-leaved trees excl. beech; VS=Vertical Structural diversity; HS Horizontal Structural diversity)
Trapping methods:
APE=Arboreal Photo Eclectors; FIT-C/U=Flight-Interception Traps Canopy/Understorey; GPE=Ground Photo Eclectors; PT=Pitfall Traps

Fig. H8. Effects of forest type, 'naturalness' and different measures of management intensity, stand structural attributes (Appendix A: Table A2), and stand structural complexity indices (see Appendix A: Table A3) on the community composition of various groups of organisms (df = 12 forest sites). Arthropods were sampled by different trapping methods. The stars indicate the significance based on an ANOVA like permutation test (maximum 2000 permutations) for constrained correspondence analysis (***$p < 0.001$, **$p < 0.01$, *$p < 0.05$) and the grey scale the strength of the relationship (constrained inertia/(total inertia − conditional inertia)). Analyses are based on a partial constrained correspondence analysis (pCCA) by removing effect of region. Statistical details are shown in Appendix G. Tree diameter related variables (Dg = quadratic mean diameter at breast height, Dm = arithmetic mean dbh) did not show any effect on organismic community attributes and are thus not shown in the figures.