Network structure of phytophagous insects associated with *Theobroma bicolor* (macambo) in an agroforestry system of the Peruvian Amazon

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Abstract

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Plant-insect interactions play a crucial role in shaping ecosystem structure and dynamics. In the present study, we describe the network structure of phytophagous insects associated with individual *Theobroma bicolor* in an agroforestry system of the Peruvian Amazon. Network analysis showed higher specialization and modularity than expected by null models, suggesting distinct insect assemblages with unique interactions. At the species level, Chrysomelidae sp. and *Antiteuchus tripterus* had higher degree and centrality, likely due to their greater mobility and ability to connect different segments of the network. Our findings highlight the high specialization in the phytophagous insect-*Theobroma bicolor* network. Understanding these interaction patterns can help identify key species and develop management strategies for biodiversity conservation in agroforestry systems.

Keywords

biodiversity, connectance, ecological interactions, insect diversity, modularity, specializations

Introduction

Agroforestry is the deliberate practice of integrating woody vegetation such as trees or shrubs, with crop and/or animal production systems to optimize ecological and economic interactions (Torralba et al., 2016). Whitin these systems, the ecological interaction between plants and insect play a crucial role maintaining the stability, productivity and functionality of the ecosystem (Jankielsohn, 2018). The complexity and efficiency of these interactions are profoundly influenced by the tree species selected for agroforestry practices, which provide essential resources, such as pollen, nectar, and shelter, for insect communities (Shanker and Solanki, 2000). These interactions are essential for ecosystem services like pollination, pest control, and nutrient cycling, which directly affect crop yields and sustainability of the system (Power, 2010).

The tree *Theobroma bicolor* Bonpl., commonly known as *macambo* in Peru, is a native to the Neotropics, with a range extending from southern Mexico to the Peruvian and Brazilian Amazon (Tineo et al., 2024). In the Peruvian Amazon, it is cultivated by smallholder farmers in diverse agroforestry systems alongside *T. cacao* (*cacao*) and *T. grandiflorum* (*copoazu*) (Lagneaux et al., 2021). However, within these agroforestry systems, *T. bicolor* is exposed to the pressure of phytophagous insects, which can significantly impact its productivity and quality (Coral and Reyna, 2010). These insects, by feeding on leaves, flowers and fruits, reduce the ability of plant to allocate resources to fruit production, leading to lower yields and potentially affecting market value (El-Wakeil, 2010).

Interspecific interaction networks, which represent the relationships between phytophagous insects and their host plants, are key tools for understanding the dynamics of agroecosystems (Windsor et al., 2022). Although the cultivation of related species such as *T. cacao* has been

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widely studied in the Peruvian Amazon (Deheuvels et al., 2017; Delgado et al., 2023), the ecological interactions of *T. bicolor* have received less attention. Evaluating these networks in an agroforestry context can help identify key species and develop management strategies, optimizing agricultural production sustainably and strengthening long-tern food security (Windsor et al., 2022).

The present study aims to analyze the interspecific interaction network between phytophagous insects and *Theobroma bicolor* in an agroforestry system of the Peruvian Amazon. We hypothesize that the network will exhibit low specialization and modularity, but high connectance and nestedness. This is expected because *T. bicolor* provides abundant and consistent resources across the system, which are readily exploited by generalist insects. Additionally, we also calculated species-level network descriptors (degree, betweenness centrality, and closeness centrality) for the different phytophagous insect species to identify the key species contributing to network structure.

Materials and methods

Study area

The study was conducted at “The Che” farm, situated at Km 44.5 on the Iquitos-Nauta road in the Peruvian Amazon (S 04°07’44.3” and W 73°27’51.4”) at an altitude of 141 m asl. The climate is tropical with an annual average temperature of 26 °C. The annual average rainfall is 3,087 mm, with precipitation more frequent in November, March and April, and less frequent between June and September (Marengo, 1998).

The research was conducted in agroforestry systems that combined fruit trees with other agricultural crops. These agroforestry systems were established in an area previously used for livestock, where the vegetation mainly consisted of pastures and a few non-commercial native tree species. Furthermore, the surrounding area of the agroforestry systems also includes fish farms for raising fish.

Data sampling

The sampling was conducted monthly from March to August 2024. A total of 20 individuals of *Theobroma bicolor* were randomly selected within a single agroforestry system, and the same individuals were repeatedly sampled throughout this period. Each plant was visited to collect all phytophagous insects affecting its different parts, excluding subterranean parts (roots). The initial collection of insects on the external parts of the plant was conducted through active searching, with insects being captured using an entomological aspirator. Subsequently, three branches were randomly selected for each individual, and ten beatings were performed on each branch using a modified entomological umbrella method of 100 × 80 cm (Oliveira et al., 2020). All insects were placed in plastic containers with 70% alcohol. Each container was labeled in situ with the date, the plant number, and the insect order. The plastic containers holding the insects were then transported to the Entomology Laboratory of the Instituto de Investigaciones de la Amazonía Peruana for their identification. The insect species were identified as morphospecies using external morphological characteristics and classified to the highest possible taxonomic level based on specific literature.

Data analyses

The individual-based plant-phytophagous insect network in the agroforestry system was constructed using an adjacency matrix, with individuals of *Theobroma bicolor* represented in the rows and phytophagous insect species in the columns. The network was quantified based on the abundance of each phytophagous insect species per individual of *Theobroma bicolor.*

To characterize the interaction structure of the networks, we used the following network descriptors: connectance, specialization, nestedness and modularity. Connectance (C) is the proportion of observed interactions in relation to the total possible interactions in the network (Dormann et al., 2009). Connectance ranges from 0 (totally specialized) to 1 (totally connected) (Dormann et al., 2009). Specialization was calculated using the index H2, which is a quantitative measure of specialization at the network level, ranging from 0 (total generalization) to 1 (total specialization) (Blüthgen et al., 2006). This index measures the degree to which each species interacts with a limited subset of partner species, based on the pool of potential partners available (Zahra et al., 2024). Nestedness (NODF) describes a structural or hierarchical pattern where species with fewer interactions are connected to a subset of species with more interactions. In other words, specialized species interact only with a select group of more generalist species, while generalist species have broader interactions, including both specialized species and other generalists. The NODF index takes values between 0 (perfectly non-nested) and 100 (perfectly nested), where values close to 100 indicate a strong hierarchy in the network, with an organized structure of interactions (Almeida-Neto and Ulrich, 2011). Modularity (M) measures the degree to which species (nodes) and their interactions (links) are organized into modules or groups. These modules are subsets of species that interact more intensively among themselves than with the rest of the network. Modularity varies from 0 (non-modular) to 1 (perfectly modular) and was calculated using the *computeModules* function of the *bipartite* package (Dormann et al., 2008).

Null models were used to evaluate whether the observed values of network descriptors (connectance, specialization, nestedness, and modularity) resulted from random processes. To this end, 999 null networks were generated using the *r2dtable* algorithm (Dormann et al., 2009). In this approach, two key network characteristics were kept constant: the marginal totals (total number of interactions per row and column) and the number of links. The values generated by the null models were expressed as mean ($\overline{x}$) ± standard deviation (SD), and a 95% confidence interval was established for each metric based on the simulated values. An observed value was considered significant if it did not overlap with the confidence interval generated by the null networks.

In addition to network-level indices, three species-level indices were calculated. (1) degree, which represents the number of interactions each species has within the network. (2) betweenness centrality, which quantifies how often a species lies on the shortest path between other pairs of species in the network, indicating the importance of a species as a connector within the network. (3) closeness centrality, which measures the proximity of a species to all other species in the network. Species with high centrality values can quickly affect other species in the network and are useful for identifying key species for the network's topology.

The values for each descriptor in the bipartite network, as well as all null models, were calculated using *bipartite* and *vegan* packages (Dormann et al., 2008) in the R software version 4.4.0 (R Foundation for Statistical Computing, Vienna, AT)

Results

A total of 87 species and 410 individuals of phytophagous insects were recorded on 20 individuals of *Theobroma bicolor* in the agroforestry system (Fig. 1, Table S1). The insect orders with the highest abundance were Hemiptera (192 individuals), followed by Coleoptera (156), Lepidoptera (46), Orthoptera (15) and Thysanoptera (1). The most abundant species were *Antiteuchus tripterus* with 75 individuals, and Chrysomelidae sp. with 58. The other recorded species had an abundance of less than 24 individuals each. We recorded 47 singleton morphospecies, which corresponds to 54%.

The individual-based plant-phytophagous insect network in the agroforestry system exhibited a connectance (C = 0.117; Table 1) lower than expected by chance (C null = 0.149; Table 1). Similarly, the nestedness (NODF = 16.42) was significantly lower than predicted by null models (NODF null = 24.872). However, specialization (H2 = 0.339) and modularity (Q = 0.438) were higher than expected by null models (H2 null = 0.122 and Q null = 0.279, respectively).

Analyzing the species-level indices (Table S2), Chrysomelidae sp. and *Antiteuchus tripterus* exhibited high degree, closeness, and betweenness values, with Chrysomelidae sp. (degree = 17, closeness centrality = 0.018, and betweenness centrality = 0.219) showing higher values than *Antiteuchus tripterus* (degree = 13, closeness centrality = 0.016, and betweenness centrality = 0.091).

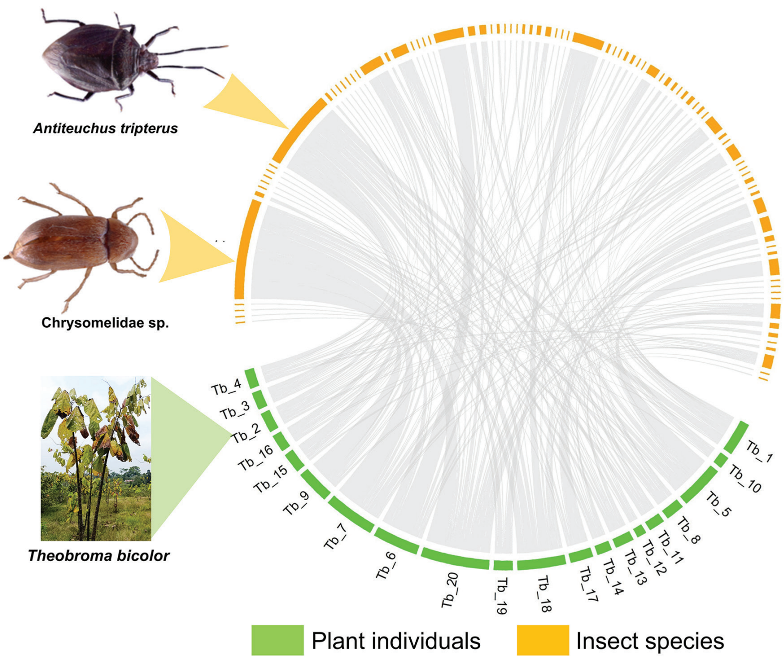

Fig. 1. Representation of interactions in the phytophagous insects (orange bars) based on individual *Theobroma bicolor* (green bars) in an agroforestry system of the Peruvian Amazon. Gray bars represent interactions and bar thickness is proportional to the number of interactions of each species.

Table 1. Network topology analysis results for phytophagous insect-based individual *Theobroma bicolor* in an agroforestry system of the Peruvian Amazon

Network descriptor value	Observed value	Null	Null SD	*P* value
Connectance (C)	0.117	0.149	0.003	<0.001
Nestedness (NODF)	16.42	24.872	1.075	<0.001
Specialization (H2)	0.339	0.122	0.011	<0.001
Modularity (M)	0.438	0.279	0.01	<0.001

Discussion

We found a high diversity of phytophagous insects from different trophic guilds and taxonomic groups associated with the *Theobroma bicolor*. Contrary to our expectations, our results showed that the structure of *Theobroma bicolor*-phytophagous insect interactions at the individual level within the agroforestry system was significantly more specialized and modular, but exhibited lower connectance and nestedness than expected by the null models. Furthermore, our study highlights Chrysomelidae sp. and *Antiteuchus tripterus* as key species, characterized by high degree, closeness centrality, and betweenness centrality values, underscoring their pivotal role in structuring the interaction network.

The plant-insect interaction network exhibited lower connectance and nestedness than expected under null models, suggesting a more specialized interaction structure. Lower connectance (C = 0.117) indicates that interactions within the network are not randomly distributed, implying a degree of host specificity among the recorded herbivorous insects. Similarly, the lower nestedness (NODF = 16.42) suggests that interactions are not hierarchically structured, which corroborates with the patterns typically observed in plant-herbivore networks (e.g. Oliveira et al., 2020). These results suggest that the agroforestry system may provide stable niches for specialized interactions, potentially due to resource availability and environmental conditions that favor certain species (Fortuna et al., 2010). Such patterns can be interpreted as signs of ecological resilience, where niche partitioning and host fidelity reduce competition and enhance system stability, especially in diversified land-use systems (Elmqvist et al., 2003).

Conversely, the network displayed higher specialization (H2 = 0.339) and modularity (Q = 0.438) compared to null expectations. High specialization suggests that *T. bicolor* supports distinct insect assemblages, reinforcing the idea that agroforestry systems can promote biodiversity by maintaining unique interaction patterns. The observed modularity indicates the presence of distinct subgroups of interacting species (Olesen et al., 2007), possibly influenced by microhabitat heterogeneity or phenological differences among insect species (Fortuna et al., 2010; Pinho et al., 2017). This also indicates that certain insect species preferentially interact with specific plant species, leading to the formation of distinct modules within the interaction network (Lewinsohn et al., 2006). Such modularity can enhance the stability of the network by reducing the spread of disturbances across the entire system. Moreover, the dominance of specialist herbivores within modules may reflect coevolutionary patterns, whereas generalist herbivores could act as connectors between modules, potentially increasing robustness but also facilitating the spread of disturbances (Fontaine et al., 2011). This balance between specialists and generalists may be a key factor in understanding the long-term resilience and trophic dynamics of agroforestry systems.

Among the recorded species, *Antiteuchus tripterus* and Chrysomelidae sp. emerged as key components of the network, exhibiting the higher values of degree, closeness centrality, and betweenness centrality values. The greater centrality of Chrysomelidae sp. (degree = 17, closeness = 0.018, betweenness = 0.219) compared to *A. tripterus* (degree = 13, closeness = 0.016, betweenness = 0.091) suggests that it plays a more critical role in maintaining network connectivity. These species were those with the highest abundances in our study, supporting previous findings that abundant species play a key role in structuring ecological networks (Dáttilo et al., 2014). High centrality values indicate that these species act as hubs, potentially influencing the structure and stability of the interaction network (Delmas et al., 2019; Do and Choi, 2019; Melo et al., 2024). The dominance of Hemiptera (192 individuals) and Coleoptera (156) aligns with findings from other agroforestry studies, where these orders are commonly reported as primary herbivores (Harterreiten-Souza et al., 2014). The high abundance of *A. tripterus*, a known phytophagous species, suggests that it may be a key pest in agroforestry systems, necessitating further research on its potential impact on *T. bicolor*.

The observed patterns of specialization and modularity suggest that agroforestry systems harbor complex interaction networks that may contribute to ecological stability (Grilli et al., 2006). The presence of key species with strong network connectivity underscores the need for targeted monitoring and management strategies. Given the ecological role of Chrysomelidae sp. and *A. tripterus*, understanding their interactions with *T. bicolor* and potential natural enemies could inform pest management strategies in agroforestry landscapes (Harterreiten-Souza et al., 2014). These insights reinforce the idea that interaction networks can serve as indicators of ecosystem functioning, offering tools to assess how resilient or vulnerable an agroecosystem may be to biotic disturbances (Tscharntke et al., 2005). Future research should explore the temporal dynamics of these interactions, as well as the potential influence of environmental factors such as seasonality and resource availability. Additionally, examining the role of natural enemies within this network could provide insights into biocontrol potential and ecosystem functioning in agroforestry systems.

We recorded a high proportion of singleton species, which may indicate a substantial presence of rare or transient species in the system. High singleton rates are common in plant-insect interaction studies, particularly in tropical and agroforestry systems where temporal turnover and environmental heterogeneity are pronounced (Novotný and Basset, 2000; Tscharntke et al., 2005). It is also possible that some of these species are specialists with narrow phenological windows, emphasizing the need for longer temporal sampling to account for seasonality (Jordano, 2016). From a network perspective, an abundance of rare species may influence the estimation of interaction metrics and reduce the detectability of consistent ecological patterns (Dáttilo et al., 2014; Jordano, 2016). However, since we conducted monthly sampling over a six-month period, we believe that our sampling effort was substantial, and that these results simply reinforce the natural pattern of high species rarity commonly observed in insect communities from tropical ecosystems (Novotný and Basset, 2000).

In conclusion, the interactions between *Theobroma bicolor* and phytophagous insects were significantly specialized and modular. This suggests that specific insect species tend to interact with specific plant species more frequently, creating distinct modules within the interaction network. The study identified Chrysomelidae sp. and *Antiteuchus tripterus* as key species. These species have high degree centrality (many connections), closeness centrality (shortest paths to other species), and betweenness centrality (bridging different parts of the network), highlighting their crucial role in structuring the interaction network. Understanding the structure of these interactions can help in managing agroforestry systems more effectively.

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Supplementary material

Table S1. Individuals of macambo (*Theobroma bicolor*, Malvaceae) and their phytophagous insects recorded in an agroforestry system in the Peruvian Amazon

Code	Ordem_insect	Family_insect	Genus_insect	Morphoespecie	Code	Colect	Data
Tb_1	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	4.3.2024
Tb_1	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	4.3.2024
Tb_1	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C1	4.3.2024
Tb_1	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C1	4.3.2024
Tb_1	Orthoptera	Acrididae		Acrididae_sp.	Acri_sp.	C1	4.3.2024
Tb_1	Hemiptera	Pentatomidae		Pentatomidae_sp.	Penta_sp.	C1	4.3.2024
Tb_1	Hemiptera	Coreidae	*Leptoglossus*	Leptoglossus_sp.	Lept_sp.	C1	4.3.2024
Tb_1	Lepidoptera			Lepidoptera_sp.	Lepi_sp.	C1	4.3.2024
Tb_1	Lepidoptera			Lepidoptera_sp.1	Lepi_sp.1	C1	4.3.2024
Tb_2	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C1	4.3.2024
Tb_2	Orthoptera	Gryllidae		Gryllidae_sp.	Gryl_sp.	C1	4.3.2024
Tb_2	Lepidoptera			Lepidoptera_sp.2	Lepi_sp.2	C1	4.3.2024
Tb_3	Coleoptera	Chrysomelidae		Chrysomelidae_sp.1	Chry_sp.1	C1	4.3.2024
Tb_3	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	4.3.2024
Tb_3	Lepidoptera			Lepidoptera_sp.3	Lepi_sp.3	C1	4.3.2024
Tb_4	Lepidoptera			Lepidoptera_sp.1	Lepi_sp.1	C1	4.3.2024
Tb_4	Lepidoptera			Lepidoptera_sp.4	Lepi_sp.4	C1	4.3.2024
Tb_4	Orthoptera			Orthoptera_sp.	Orth_sp	C1	4.3.2024
Tb_4	Orthoptera	Gryllidae		Gryllidae_sp.1	Gryl_sp. 1	C1	4.3.2024
Tb_4	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	4.3.2024
Tb_4	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	4.3.2024
Tb_5	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	4.3.2024
Tb_5	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C1	4.3.2024
Tb_5	Coleoptera	Coccinellidae		Coccinellidae_sp.	Cocc_sp.	C1	4.3.2024
Tb_5	Coleoptera	Coccinellidae		Coccinellidae_sp.	Cocc_sp.	C1	4.3.2024
Tb_5	Coleoptera	Coccinellidae		Coccinellidae_sp.	Cocc_sp.	C1	4.3.2024
Tb_5	Coleoptera	Coccinellidae		Coccinellidae_sp.	Cocc_sp.	C1	4.3.2024
Tb_5	Coleoptera	Coccinellidae		Coccinellidae_sp.1	Cocc_sp. 1	C1	4.3.2024
Tb_5	Coleoptera	Cerambycidae		Cerambycidae_sp.	Cera_sp.	C1	4.3.2024
Tb_5	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_5	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_5	Lepidoptera			Lepidoptera_sp.2	Lepi_sp.2	C1	4.3.2024
Tb_5	Lepidoptera			Lepidoptera_sp.1	Lepi_sp.1	C1	4.3.2024
Tb_5	Lepidoptera			Lepidoptera_sp.4	Lepi_sp.4	C1	4.3.2024
Tb_6	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_6	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_6	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_6	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_6	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_6	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_7	Lepidoptera			Lepidoptera_sp.4	Lepi_sp.4	C1	4.3.2024
Tb_7	Lepidoptera			Lepidoptera_sp.4	Lepi_sp.4	C1	4.3.2024
Tb_7	Lepidoptera			Lepidoptera_sp.5	Lepi_sp.5	C1	4.3.2024
Tb_8	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C1	4.3.2024
Tb_8	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	4.3.2024
Tb_8	Coleoptera	Chrysomelidae		Chrysomelidae_sp.3	Chry_sp.3	C1	4.3.2024
Tb_9	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	4.3.2024
Tb_9	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C1	4.3.2024
Tb_9	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C1	4.3.2024
Tb_9	Hemiptera	Pentatomidae		Pentatomidae_sp.	Pent_sp.	C1	4.3.2024

Continued Table S1

Code	Ordem_insect	Family_insect	Genus_insect	Morphoespecie	Code	Colect	Data
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	4.3.2024
Tb_9	Orthoptera			Orthoptera_sp.1	Orth_sp.1	C1	4.3.2024
Tb_10	Coleoptera	Chrysomelidae		Chrysomelidae_sp.3	Chry_sp.3	C1	4.3.2024
Tb_10	Hemiptera			Hemiptera_sp.	Hemi_sp.	C1	4.3.2024
Tb_10	Orthoptera	Acrididae		Acrididae_sp.1	Acri_sp.1	C1	4.3.2024
Tb_10	Orthoptera	Gryllidae		Gryllidae_sp.	Gryl_sp.	C1	4.3.2024
Tb_11	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	5.3.2024
Tb_12	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	5.3.2024
Tb_12	Lepidoptera			Lepidoptera_sp.4	Lepi_sp. 4	C1	5.3.2024
Tb_12	Coleoptera	Chrysomelidae		Chrysomelidae_sp.4	Chry_sp.4	C1	5.3.2024
Tb_12	Coleoptera	Chrysomelidae		Chrysomelidae_sp.4	Chry_sp.4	C1	5.3.2024
Tb_13	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	5.3.2024
Tb_14	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	5.3.2024
Tb_15	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	5.3.2024
Tb_15	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	5.3.2024
Tb_15	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	5.3.2024
Tb_16	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	5.3.2024
Tb_16	Hemiptera			Hemiptera_sp.1	Hemi_sp.1	C1	5.3.2024
Tb_17	Hemiptera	Membracidae		Membracidae_sp.	Memb_sp.	C1	5.3.2024
Tb_17	Hemiptera	Membracidae		Membracidae_sp.	Memb_sp.	C1	5.3.2024
Tb_17	Hemiptera	Membracidae		Membracidae_sp.	Memb_sp.	C1	5.3.2024
Tb_17	Hemiptera	Membracidae		Membracidae_sp.	Memb_sp.	C1	5.3.2024
Tb_17	Hemiptera	Membracidae		Membracidae_sp.	Memb_sp.	C1	5.3.2024
Tb_17	Hemiptera	Membracidae		Membracidae_sp.	Memb_sp.	C1	5.3.2024
Tb_17	Hemiptera	Membracidae		Membracidae_sp.1	Memb_sp.1	C1	5.3.2024
Tb_17	Hemiptera	Membracidae		Membracidae_sp.1	Memb_sp.1	C1	5.3.2024
Tb_17	Hemiptera	Membracidae		Membracidae_sp.1	Memb_sp.1	C1	5.3.2024
Tb_17	Hemiptera	Membracidae		Membracidae_sp.1	Memb_sp.1	C1	5.3.2024
Tb_18	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	5.3.2024
Tb_18	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	5.3.2024
Tb_18	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C1	5.3.2024
Tb_18	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C1	5.3.2024
Tb_18	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C1	5.3.2024
Tb_18	Hemiptera	Membracidae		Membracidae_sp.	Memb_sp	C1	5.3.2024
Tb_18	Hemiptera	Membracidae		Membracidae_sp.1	Memb_sp.1	C1	5.3.2024
Tb_18	Hemiptera	Reduviidae		Reduviidae_sp.	Redu_sp.	C1	5.3.2024
Tb_18	Hemiptera			Hemiptera_sp.2	Hemi_sp.2	C1	5.3.2024
Tb_18	Hemiptera			Hemiptera_sp.3	Hemi_sp.3	C1	5.3.2024
Tb_19	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	5.3.2024
Tb_19	Coleoptera	Chrysomelidae		Chrysomelidae_sp.4	Chry_sp.4	C1	5.3.2024
Tb_20	Lepidoptera			Lepidoptera_sp.4	Lepi_sp.4	C1	5.3.2024
Tb_20	Hemiptera	Membracidae		Membracidae_sp.2	Memb_sp.2	C1	5.3.2024
Tb_20	Hemiptera	Membracidae		Membracidae_sp.2	Memb_sp.2	C1	5.3.2024
Tb_20	Hemiptera	Membracidae		Membracidae_sp.2	Memb_sp.2	C1	5.3.2024
Tb_20	Hemiptera	Membracidae		Membracidae_sp.	Memb_sp.	C1	5.3.2024
Tb_20	Hemiptera	Membracidae		Membracidae_sp.	Memb_sp.	C1	5.3.2024
Tb_20	Hemiptera	Membracidae		Membracidae_sp.	Memb_sp.	C1	5.3.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	5.3.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	5.3.2024
Tb_1	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C1	5.3.2024
Tb_1	Hemiptera	Pentatomidae		Pentatomidae_sp.	Pent_sp.	C1	5.3.2024
Tb_1	Hemiptera			Hemiptera_sp.2	Hemi_sp.2	C1	5.3.2024
Tb_1	Hemiptera			Hemiptera_sp.2	Hemi_sp.2	C1	5.3.2024
Tb_1	Coleoptera	Chrysomelidae		Chrysomelidae_sp.4	Chry_sp.4	C1	5.3.2024
Tb_1	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	5.3.2024
Tb_3	Coleoptera	Coccinellidae		Coccinellidae_sp.1	Cocc_sp.1	C1	5.3.2024
Tb_4	Lepidoptera			Lepidoptera_sp.4	Lepi_sp.4	C1	5.3.2024
Tb_7	Hemiptera			Hemiptera_sp.6	Hemi_sp.6	C1	5.3.2024
Tb_7	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C1	5.3.2024
Tb_11	Coleoptera	Chrysomelidae		Chrysomelidae_sp.4	Chry_sp.4	C1	5.3.2024
Tb_11	Coleoptera	Chrysomelidae		Chrysomelidae_sp.4	Chry_sp.4	C1	5.3.2024

Continued Table S1

Code	Ordem_insect	Family_insect	Genus_insect	Morphoespecie	Code	Colect	Data
Tb_13	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C1	5.3.2024
Tb_15	Hemiptera	Pentatomidae		Pentatomidae_sp.2	Pent_sp.2	C1	5.3.2024
Tb_15	Hemiptera	Pentatomidae		Pentatomidae_sp.2	Pent_sp.2	C1	5.3.2024
Tb_16	Hemiptera	Pentatomidae		Pentatomidae_sp.	Pent_sp.	C1	5.3.2024
Tb_16	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C1	5.3.2024
Tb_17	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C1	5.3.2024
Tb_17	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	5.3.2024
Tb_20	Hemiptera	Pentatomidae		Pentatomidae_sp.	Pent_sp	C1	5.3.2024
Tb_20	Hemiptera	Pentatomidae		Pentatomidae_sp.1	Pent_sp.1	C1	5.3.2024
Tb_20	Hemiptera	Pentatomidae		Pentatomidae_sp.1	Pent_sp.1	C1	5.3.2024
Tb_20	Hemiptera	Pentatomidae		Pentatomidae_sp.1	Pent_sp.1	C1	5.3.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C1	5.3.2024
Tb_20	Hemiptera			Hemiptera_sp.4	Hemi_sp.4	C1	5.3.2024
Tb_20	Hemiptera	Membracidae		Membracidae_sp.2	Memb_sp.2	C1	5.3.2024
Tb_2	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C2	6.4.2024
Tb_3	Orthoptera	Gryllidae		Gryllidae_sp.2	Gryl_sp.2	C2	6.4.2024
Tb_3	Coleoptera	Coccinellidae		Coccinellidae_sp.2	Cocc_sp.2	C2	6.4.2024
Tb_4	Coleoptera	Curculionidae	*Conotrachelus*	Conotrachelus_sp.	Cono_sp.	C2	6.4.2024
Tb_4	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C2	6.4.2024
Tb_5	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C2	6.4.2024
Tb_5	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C2	6.4.2024
Tb_5	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C2	6.4.2024
Tb_5	Lepidoptera			Lepidoptera_sp.8	Lepi_sp.8	C2	6.4.2024
Tb_5	Lepidoptera			Lepidoptera_sp.6	Lepi_sp.6	C2	6.4.2024
Tb_5	Lepidoptera			Noctuidae_sp.	Noct_sp.	C2	6.4.2024
Tb_5	Lepidoptera			Noctuidae_sp.	Noct_sp.	C2	6.4.2024
Tb_5	Lepidoptera			Noctuidae_sp.	Noct_sp.	C2	6.4.2024
Tb_5	Lepidoptera			Noctuidae_sp.	Noct_sp.	C2	6.4.2024
Tb_5	Lepidoptera			Noctuidae_sp.	Noct_sp.	C2	6.4.2024
Tb_5	Lepidoptera			Noctuidae_sp.	Noct_sp.	C2	6.4.2024
Tb_5	Lepidoptera			Noctuidae_sp.	Noct_sp.	C2	6.4.2024
Tb_5	Lepidoptera			Noctuidae_sp.	Noct_sp.	C2	6.4.2024
Tb_5	Lepidoptera			Noctuidae_sp.	Noct_sp.	C2	6.4.2024
Tb_5	Lepidoptera			Noctuidae_sp.	Noct_sp.	C2	6.4.2024
Tb_5	Lepidoptera			Noctuidae_sp.	Noct_sp.	C2	6.4.2024
Tb_5	Lepidoptera			Noctuidae_sp.	Noct_sp.	C2	6.4.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C2	6.4.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C2	6.4.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C2	6.4.2024
Tb_7	Lepidoptera			Lepidoptera_sp.4	Lepi_sp.4	C2	6.4.2024
Tb_7	Hemiptera	Delphacidae		Delphacidae_sp.	Delp_sp.	C2	6.4.2024
Tb_8	Orthoptera	Acrididae		Acrididae_sp.3	Acri_sp.3	C2	6.4.2024
Tb_8	Hemiptera			Hemiptera_sp.5	Hemi_sp.5	C2	6.4.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripteru*s	Anti_trip	C2	6.4.2024
Tb_9	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C2	6.4.2024
Tb_10	Coleoptera	Curculionidae	*Conotrachelus*	Conotrachelus_sp.1	Cono_sp.1	C2	6.4.2024
Tb_10	Hemiptera	Delphacidae		Delphacidae_sp.	Delp_sp.	C2	6.4.2024
Tb_10	Orthoptera	Gryllidae		Gryllidae_sp.3	Gryl_sp.3	C2	6.4.2024
Tb_11	Hemiptera	Pentatomidae	*Antiteuchus*	Antiteuchus_tripterus	Anti_trip	C2	7.4.2024
Tb_11	Hemiptera			Hemiptera_sp.5	Hemi_sp.5	C2	7.4.2024
Tb_12	Coleoptera	Chrysomelidae		Chrysomelidae_sp.4	Chry_sp.4	C2	7.4.2024
Tb_13	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C2	7.4.2024
Tb_13	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C2	7.4.2024
Tb_13	Hemiptera	Pentatomidae		Pentatomidae_sp.1	Pent_sp. 1	C2	7.4.2024
Tb_14	Hemiptera	Reduviidae		Reduviidae_sp.	Redu_sp.	C2	7.4.2024
Tb_14	Hemiptera	Pentatomidae		Pentatomidae_sp.	Pent_sp.	C2	7.4.2024
Tb_15	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C2	7.4.2024
Tb_15	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C2	7.4.2024
Tb_16	Coleoptera	Coccinellidae	*Hyperaspis*	Hyperaspis_sp.	Hype_sp.	C2	7.4.2024
Tb_16	Coleoptera	Chrysomelidae		Chrysomelidae_sp.7	Chry_sp.7	C2	7.4.2024
Tb_16	Orthoptera	Gryllidae		Gryllidae_sp.4	Gryl_sp.4	C2	7.4.2024
Tb_16	Orthoptera	Gryllidae		Gryllidae_sp.4	Gryl_sp.4	C2	7.4.2024

Continued Table S1

Code	Ordem_insect	Family_insect	Genus_insect	Morphoespecie	Code	Colect	Data
Tb_17	Lepidoptera			Lepidoptera_sp.9	Lepi_sp.9	C2	7.4.2024
Tb_17	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C2	7.4.2024
Tb_18	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C2	7.4.2024
Tb_18	Hemiptera	Thyreocoridae	*Galgupha*	Galgupha_albipennis	Galg_albi	C2	7.4.2024
Tb_18	Hemiptera	Thyreocoridae	*Galgupha*	Galgupha_albipennis	Galg_albi	C2	7.4.2024
Tb_18	Hemiptera	Thyreocoridae	*Galgupha*	Galgupha_albipennis	Galg_albi	C2	7.4.2024
Tb_18	Hemiptera	Thyreocoridae	*Galgupha*	Galgupha_albipennis	Galg_albi	C2	7.4.2024
Tb_19	Hemiptera	Pentatomidae	*Antiteuchus*	Antiteuchus_tripterus	Anti_trip	C2	7.4.2024
Tb_19	Hemiptera	Pentatomidae	*Antiteuchus*	Antiteuchus_tripterus	Anti_trip	C2	7.4.2024
Tb_3	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C2	6.4.2024
Tb_4	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C2	6.4.2024
Tb_4	Hemiptera	Pentatomidae		Pentatomidae_sp.	Pent_sp.	C2	6.4.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	Antiteuchus_tripterus	Anti_trip	C2	6.4.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	Antiteuchus_tripterus	Anti_trip	C2	6.4.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	Antiteuchus_tripterus	Anti_trip	C2	6.4.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	Antiteuchus_tripterus	Anti_trip	C2	6.4.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	Antiteuchus_tripterus	Anti_trip	C2	6.4.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	Antiteuchus_tripterus	Anti_trip	C2	6.4.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	Antiteuchus_tripterus	Anti_trip	C2	6.4.2024
Tb_13	Hemiptera	Pyrrhocoridae		Pyrrhocoridae_sp.	Pyrr_sp.	C2	7.4.2024
Tb_20	Hemiptera	Pentatomidae		Pentatomidae_sp.	Pent_sp.	C2	7.4.2024
Tb_20	Hemiptera	Pentatomidae		Pentatomidae_sp.	Pent_sp.	C2	7.4.2024
Tb_20	Hemiptera	Delphacidae		Delphacidae_sp.	Delp_sp.	C2	7.4.2024
Tb_1	Hemiptera	Miridae	*Deraeocoris*	Deraeocoris_sp.	Dera_sp.	C3	6.5.2024
Tb_1	Coleoptera	Elateridae	*Dipropus*	Dipropus_sp.	Dipr_sp.	C3	6.5.2024
Tb_1	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C3	6.5.2024
Tb_1	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C3	6.5.2024
Tb_2	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C3	6.5.2024
Tb_2	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C3	6.5.2024
Tb_2	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C3	6.5.2024
Tb_2	Hemiptera	Pentatomidae		Pentatomidae_sp.2	Pent_sp.2	C3	6.5.2024
Tb_2	Hemiptera	Reduviidae		Reduviidae_sp.	Redu_sp.	C3	6.5.2024
Tb_2	Coleoptera	Curculionidae		Curculionidae_sp.	Curc_sp.	C3	6.5.2024
Tb_2	Coleoptera	Curculionidae		Curculionidae_sp.	Curc_sp.	C3	6.5.2024
Tb_3	Coleoptera	Chrysomelidae		Chrysomelidae_sp.10	Chry_sp.10	C3	6.5.2024
Tb_4	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C3	6.5.2024
Tb_5	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C3	6.5.2024
Tb_5	Orthoptera	Acrididae		Acrididae_sp.2	Acri_sp.2	C3	6.5.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C3	6.5.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C3	6.5.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C3	6.5.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C3	6.5.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C3	6.5.2024
Tb_6	Coleoptera	Staphylinidae	*Palaminus*	Palaminus_sp.	Pala_sp.	C3	6.5.2024
Tb_6	Orthoptera			Orthoptera_sp.2	Orth_sp.2	C3	6.5.2024
Tb_7	Hemiptera	Reduviidae		Reduviidae_sp.	Redu_sp.	C3	6.5.2024
Tb_7	Hemiptera	Pentatomidae		Pentatomidae_sp.	Pent_sp.	C3	6.5.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C3	6.5.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C3	6.5.2024
Tb_7	Lepidoptera			Lepidoptera_sp.4	Lepi_sp.4	C3	6.5.2024
Tb_7	Hemiptera	Delphacidae		Delphacidae_sp.1	Delp_sp.1	C3	6.5.2024
Tb_7	Hemiptera			Hemiptera_sp.8	Hemi_sp.8	C3	6.5.2024
Tb_8	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C3	6.5.2024
Tb_8	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C3	6.5.2024
Tb_8	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C3	6.5.2024
Tb_8	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C3	6.5.2024
Tb_8	Hemiptera			Hemiptera_sp.8	Hemi_sp 8	C3	6.5.2024
Tb_9	Coleoptera	Coccinellidae		Coccinellidae_sp.1	Cocc_sp.1	C3	6.5.2024
Tb_9	Hemiptera	Delphacidae		Delphacidae_sp.1	Delp_sp.1	C3	6.5.2024
Tb_10	Hemiptera			Hemiptera_sp.2	Hemi_sp.2	C3	6.5.2024
Tb_11	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C3	7.5.2024
Tb_12	Hemiptera	Delphacidae		Delphacidae_sp.1	Hemi_sp.1	C3	7.5.2024

Continued Table S1

Code	Ordem_insect	Family_insect	Genus_insect	Morphoespecie	Code	Colect	Data
Tb_13	Coleoptera	Chrysomelidae		Chrysomelidae_sp.6	Chry_sp.6	C3	7.5.2024
Tb_13	Hemiptera	Pyrrhocoridae		Pyrrhocoridae_sp.	Pyrr_sp.	C3	7.5.2024
Tb_13	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C3	7.5.2024
Tb_14	Coleoptera			Coleoptera_sp.	Cole_sp.	C3	7.5.2024
Tb_14	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C3	7.5.2024
Tb_14	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C3	7.5.2024
Tb_15	Coleoptera	Chrysomelidae		Chrysomelidae_sp.11	Chry_sp.11	C3	7.5.2024
Tb_15	Coleoptera	Coccinellidae		Coccinellidae_sp.1	Cocc_sp.1	C3	7.5.2024
Tb_15	Coleoptera	Chrysomelidae		Chrysomelidae_sp.4	Chry_sp.4	C3	7.5.2024
Tb_16	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C3	7.5.2024
Tb_17	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C3	7.5.2024
Tb_18	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C3	7.5.2024
Tb_18	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C3	7.5.2024
Tb_18	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C3	7.5.2024
Tb_18	Coleoptera	Buprestidae		Buprestidae_sp.	Bupr_sp.	C3	7.5.2024
Tb_19	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C3	7.5.2024
Tb_19	Hemiptera			Hemiptera_sp.2	Hemi_sp.2	C3	7.5.2024
Tb_20	Hemiptera	Reduviidae		Reduviidae_sp.1	Redu_sp.1	C3	7.5.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C3	7.5.2024
Tb_20	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C3	7.5.2024
Tb_20	Coleoptera	Chrysomelidae		Chrysomelidae_sp.5	Chry_sp.5	C3	7.5.2024
Tb_7	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp,2	C3	6.5.2024
Tb_7	Hemiptera	Pentatomidae		Pentatomidae_sp.	Pent_sp	C3	6.5.2024
Tb_9	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C3	6.5.2024
Tb_20	Coleoptera	Chrysomelidae		Chrysomelidae_sp.12	Chry_sp.12	C3	7.5.2024
Tb_20	Coleoptera	Coccinellidae		Coccinellidae_sp.1	Cocc_sp.1	C3	7.5.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C3	7.5.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C3	7.5.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C3	7.5.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C3	7.5.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C3	7.5.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C3	7.5.2024
Tb_20	Hemiptera			Hemiptera_sp.4	Hemi_sp.4	C3	7.5.2024
Tb_20	Hemiptera			Hemiptera_sp.4	Hemi_sp.4	C3	7.5.2024
Tb_1	Hemiptera	Membracidae		Membracidae_sp.4	Memb_sp.4	C4	9.6.2024
Tb_1	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C4	9.6.2024
Tb_2	Hemiptera			Hemiptera_sp.2	Hemi_sp.2	C4	9.6.2024
Tb_3	Hemiptera	Delphacidae		Delphacidae_sp.2	Delp_sp.2	C4	9.6.2024
Tb_3	Coleoptera	Chrysomelidae		Chrysomelidae_sp.1	Chry_sp.1	C4	9.6.2024
Tb_4	Hemiptera	Reduviidae		Reduviidae_sp.	Redu_sp.	C4	9.6.2024
Tb_5	Lepidoptera			Lepidoptera_sp.7	Lepi_sp. 7	C4	9.6.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C4	9.6.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C4	9.6.2024
Tb_7	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C4	9.6.2024
Tb_7	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C4	9.6.2024
Tb_7	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C4	9.6.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C4	9.6.2024
Tb_7	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C4	9.6.2024
Tb_8	Coleoptera	Chrysomelidae		Chrysomelidae_sp.4	Chry_sp.4	C4	9.6.2024
Tb_8	Coleoptera	Chrysomelidae		Chrysomelidae_sp.4	Chry_sp.4	C4	9.6.2024
Tb_8	Hemiptera			Hemiptera_sp.2	Hemi_sp.2	C4	9.6.2024
Tb_9	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C4	9.6.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C4	9.6.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C4	9.6.2024
Tb_10	Hemiptera	Delphacidae		Delphacidae_sp.1	Delp_sp.1	C4	9.6.2024
Tb_11	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C4	10.6.2024
Tb_12	Orthoptera	Gryllidae		Gryllidae_sp.3	Gryl_sp.3	C4	10.6.2024
Tb_13	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C4	10.6.2024
Tb_13	Coleoptera	Coccinellidae		Coccinellidae_sp.	Cocc_sp	C4	10.6.2024
Tb_14	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C4	10.6.2024
Tb_14	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C4	10.6.2024
Tb_14	Coleoptera	Chrysomelidae		Chrysomelidae_sp.4	Chry_sp.4	C4	10.6.2024

Continued Table S1

Code	Ordem_insect	Family_insect	Genus_insect	Morphoespecie	Code	Colect	Data
Tb_15	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C4	10.6.2024
Tb_15	Coleoptera	Buprestidae		Buprestidae_sp.	Brup_sp.	C4	10.6.2024
Tb_16	Hemiptera	Reduviidae		Reduviidae_sp.	Redu_sp.	C4	10.6.2024
Tb_17	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C4	10.6.2024
Tb_17	Hemiptera	Membracidae		Membracidae_sp.3	Memb_sp.3	C4	10.6.2024
Tb_18	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C4	10.6.2024
Tb_18	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C4	10.6.2024
Tb_18	Hemiptera	Coreidae	*Leptoglossus*	Leptoglossus_sp.	Lept_sp.	C4	10.6.2024
Tb_20	Coleoptera	Buprestidae		Buprestidae_sp.	Brup_sp.	C4	10.6.2024
Tb_1	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C5	27.7.2024
Tb_2	Lepidoptera			Lepidoptera_sp.4	Lepi_sp.4	C5	27.7.2024
Tb_2	Lepidoptera			Lepidoptera_sp.4	Lepi_sp.4	C5	27.7.2024
Tb_3	Coleoptera	Chrysomelidae		Chrysomelidae_sp.14	Chry_sp.14	C5	27.7.2024
Tb_3	Coleoptera	Chrysomelidae		Chrysomelidae_sp.4	Chry_sp.4	C5	27.7.2024
Tb_4	Hemiptera	Reduviidae		Reduviidae_sp.	Redu_sp.	C5	27.7.2024
Tb_6	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C5	27.7.2024
Tb_6	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C5	27.7.2024
Tb_6	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C5	27.7.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C5	27.7.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C5	27.7.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C5	27.7.2024
Tb_7	Hemiptera			Hemiptera_sp.8	Hemi_sp.8	C5	27.7.2024
Tb_8	Hemiptera	Reduviidae		Reduviidae_sp.	Redu_sp.	C5	27.7.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C5	27.7.2024
Tb_11	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C5	28.7.2024
Tb_13	Coleoptera			Coleoptera_sp.	Cole_sp	C5	28.7.2024
Tb_14	Hemiptera	Membracidae		Membracidae_sp.1	Memb_sp.1	C5	28.7.2024
Tb_16	Coleoptera	Cerambycidae		Cerambycidae_sp.1	Cera_sp.1	C5	28.7.2024
Tb_16	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C5	28.7.2024
Tb_16	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C5	28.7.2024
Tb_18	Hemiptera	Reduviidae		Reduviidae_sp.2	Redu_sp.2	C5	28.7.2024
Tb_19	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C5	28.7.2024
Tb_19	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C5	28.7.2024
Tb_15	Coleoptera	Chrysomelidae		Chrysomelidae_sp.8	Chry_sp.8	C5	28.7.2024
Tb_15	Coleoptera	Chrysomelidae		Chrysomelidae_sp.15	Chry_sp.15	C5	28.7.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C5	28.7.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C5	28.7.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C5	28.7.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C5	28.7.2024
Tb_20	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C5	28.7.2024
Tb_20	Hemiptera	Membracidae		Membracidae_sp.1	Memb_sp.1	C5	28.7.2024
Tb_20	Hemiptera	Membracidae		Membracidae_sp.1	Memb_sp.1	C5	28.7.2024
Tb_20	Coleoptera	Chrysomelidae		Chrysomelidae_sp.13	Chry_sp.13	C5	28.7.2024
Tb_20	Coleoptera	Cerambycidae		Cerambycidae_sp.2	Cera_sp.2	C5	28.7.2024
Tb_20	Coleoptera	Cerambycidae		Cerambycidae_sp.3	Cera_sp.3	C5	28.7.2024
Tb_1	Coleoptera	Lampyridae		Lampyridae_sp.	Lamp_sp.	C6	28.8.2024
Tb_1	Coleoptera	Lampyridae		Lampyridae_sp.	Lamp_sp.	C6	28.8.2024
Tb_1	Hemiptera	Reduviidae		Reduviidae_sp.	Redu_sp	C6	28.8.2024
Tb_2	Hemiptera			Hemiptera_sp.7	Hemi_sp.7	C6	28.8.2024
Tb_3	Lepidoptera			Lepidoptera_sp.1	Lepi_sp.1	C6	28.8.2024
Tb_6	Lepidoptera			Lepidoptera_sp.1	Lepi_sp.1	C6	28.8.2024
Tb_6	Lepidoptera			Lepidoptera_sp.1	Lepi_sp.1	C6	28.8.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	28.8.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	28.8.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	28.8.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	28.8.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	28.8.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	28.8.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	28.8.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	28.8.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	28.8.2024
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	28.8.2024

Continued Table S1

Code	Ordem_insect	Family_insect	Genus_insect	Morphoespecie	Code	Colect	Data
Tb_6	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	28.8.2024
Tb_6	Hemiptera	Membracidae		Membracidae_sp.1	Memb_sp.1	C6	28.8.2024
Tb_6	Coleoptera	Chelonariidae	*Chelonarium*	Chelonarium_sp.	Chel_sp.	C6	28.8.2024
Tb_7	Coleoptera			Coleoptera_sp.1	Cole_sp.1	C6	28.8.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C6	28.8.2024
Tb_7	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C6	28.8.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C6	28.8.2024
Tb_9	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C6	28.8.2024
Tb_11	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C6	29.8.2024
Tb_11	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C6	29.8.2024
Tb_11	Hemiptera	Membracidae		Membracidae_sp.1	Memb_sp.1	C6	29.8.2024
Tb_11	Hemiptera	Membracidae		Membracidae_sp.1	Memb_sp.1	C6	29.8.2024
Tb_13	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C6	29.8.2024
Tb_13	Lepidoptera			Lepidoptera_sp.8	Lepi_sp.8	C6	29.8.2024
Tb_14	Hemiptera			Hemiptera_sp.7	Hemi_sp.7	C6	29.8.2024
Tb_15	Lepidoptera			Lepidoptera_sp.1	Lepi_sp.1	C6	29.8.2024
Tb_18	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C6	29.8.2024
Tb_18	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C6	29.8.2024
Tb_18	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C6	29.8.2024
Tb_18	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C6	29.8.2024
Tb_18	Hemiptera	Pentatomidae	*Antiteuchus*	*Antiteuchus_tripterus*	Anti_trip	C6	29.8.2024
Tb_18	Hemiptera	Membracidae		Membracidae_sp.	Memb_sp.	C6	29.8.2024
Tb_18	Hemiptera	Membracidae		Membracidae_sp.4	Memb_sp.4	C6	29.8.2024
Tb_18	Thysanoptera	Phlaeothripidae		Phlaeothripidae_sp.	Phla_sp.	C6	29.8.2024
Tb_18	Hemiptera	Thyreocoridae	*Galgupha*	*Galgupha_albipennis*	Galg_albi	C6	29.8.2024
Tb_18	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C6	29.8.2024
Tb_18	Coleoptera	Chrysomelidae		Chrysomelidae_sp.	Chry_sp.	C6	29.8.2024
Tb_18	Coleoptera	Chrysomelidae		Chrysomelidae_sp.2	Chry_sp.2	C6	29.8.2024
Tb_18	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	29.8.2024
Tb_19	Lepidoptera			Lepidoptera_sp.1	Lepi_sp.1	C6	29.8.2024
Tb_19	Lepidoptera			Lepidoptera_sp.1	Lepi_sp.1	C6	29.8.2024
Tb_19	Lepidoptera			Lepidoptera_sp.1	Lepi_sp.1	C6	29.8.2024
Tb_19	Lepidoptera			Lepidoptera_sp.1	Lepi_sp.1	C6	29.8.2024
Tb_19	Lepidoptera			Lepidoptera_sp.1	Lepi_sp.1	C6	29.8.2024
Tb_19	Lepidoptera			Lepidoptera_sp.8	Lepi_sp.8	C6	29.8.2024
Tb_20	Hemiptera	Reduviidae		Reduviidae_sp.	Redu_sp.	C6	29.8.2024
Tb_20	Hemiptera			Hemiptera_sp.2	Hemi_sp.2	C6	29.8.2024
Tb_20	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	29.8.2024
Tb_20	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	29.8.2024
Tb_20	Coleoptera	Chrysomelidae		Chrysomelidae_sp.9	Chry_sp.9	C6	29.8.2024
Tb_20	Coleoptera	Curculionidae		Curculionidae_sp.1	Curc_sp.1	C6	29.8.2024
Tb_20	Coleoptera	Curculionidae		Curculionidae_sp.1	Curc_sp.1	C6	29.8.2024

Table S2. Degree, closeness centrality and betweenness centrality values of phytophagous insects recorded in an agroforestry system in the Peruvian Amazon

Morphospecies	Degree	Closeness centrality	Betweenness centrality
Chrysomelidae_sp.	17	0.018	0.2191
Antiteuchus_tripterus	13	0.016	0.0911
Galgupha_albipennis	10	0.015	0.0746
Reduviidae_sp.	9	0.016	0.0820
Chrysomelidae_sp.2	8	0.015	0.0679
Chrysomelidae_sp.4	8	0.014	0.0412
Hemiptera_sp.2	7	0.015	0.0706
Lepidoptera_sp.1	7	0.014	0.0527
Pentatomidae_sp.	7	0.015	0.0527
Lepidoptera_sp..4	6	0.015	0.0425
Membracidae_sp.1	6	0.014	0.0208
Coccinellidae_sp.1	5	0.015	0.0652
Delphacidae_sp.1	4	0.012	0.0150
Delphacidae_sp.	3	0.013	0.0265
Buprestidae_sp.	3	0.013	0.0154

Continued Table S2

Morphospecies	Degree	Closeness centrality	Betweenness centrality
Chrysomelidae_sp.9	3	0.013	0.0102
Membracidae_sp.	3	0.013	0.0074
Lepidoptera_sp.8	3	0.012	0.0033
Pentatomidae_sp.1	2	0.012	0.0081
Gryllidae_sp.	2	0.011	0.0078
Chrysomelidae_sp.3	2	0.011	0.0067
Lepidoptera_sp.2	2	0.012	0.0033
Pentatomidae_sp.2	2	0.011	0.0031
Gryllidae_sp.3	2	0.011	0.0025
Coccinellidae_sp.	2	0.011	0.0021
Leptoglossus_sp.	2	0.012	0.0019
Membracidae_sp.4	2	0.012	0.0019
Hemiptera_sp.8	2	0.011	0.0019
Coleoptera_sp.	2	0.011	0.0012
Hemiptera_sp.7	2	0.011	0.0011
Hemiptera_sp.5	2	0.011	0.0002
Membracidae_sp.2	1	0.012	0.0000
Hemiptera_sp..4	1	0.012	0.0000
Curculionidae_sp.1	1	0.012	0.0000
Cerambycidae_sp.2	1	0.012	0.0000
Cerambycidae_sp.3	1	0.012	0.0000
Chrysomelidae_sp.12	1	0.012	0.0000
Chrysomelidae_sp.13	1	0.012	0.0000
Chrysomelidae_sp.5	1	0.012	0.0000
Reduviidae_sp.1	1	0.012	0.0000
Lampyridae_sp.	1	0.011	0.0000
Acrididae_sp.	1	0.011	0.0000
Deraeocoris_sp.	1	0.011	0.0000
Dipropus_sp.	1	0.011	0.0000
Lepidoptera_sp.	1	0.011	0.0000
Hemiptera_sp.3	1	0.011	0.0000
Phlaeothripidae_sp.	1	0.011	0.0000
Reduviidae_sp.2	1	0.011	0.0000
Noctuidae_sp.	1	0.011	0.0000
Acrididae_sp.2	1	0.011	0.0000
Cerambycidae_sp.	1	0.011	0.0000
Lepidoptera_sp.6	1	0.011	0.0000
Lepidoptera_sp.7	1	0.011	0.0000
Coleoptera_sp.1	1	0.011	0.0000
Hemiptera_sp.6	1	0.011	0.0000
Lepidoptera_sp.5	1	0.011	0.0000
Chrysomelidae_sp.1	1	0.011	0.0000
Chrysomelidae_sp.10	1	0.011	0.0000
Chrysomelidae_sp.14	1	0.011	0.0000
Coccinellidae_sp.2	1	0.011	0.0000
Delphacidae_sp.2	1	0.011	0.0000
Gryllidae_sp.2	1	0.011	0.0000
Lepidoptera_sp.3	1	0.011	0.0000
Curculionidae_sp.	1	0.010	0.0000
Acrididae_sp.3	1	0.010	0.0000
Pyrrhocoridae_sp.	1	0.010	0.0000
Chrysomelidae_sp.6	1	0.010	0.0000
Conotrachelus_sp.	1	0.010	0.0000
Gryllidae_sp.1	1	0.010	0.0000
Orthoptera_sp.	1	0.010	0.0000
Chrysomelidae_sp.11	1	0.010	0.0000
Chrysomelidae_sp.15	1	0.010	0.0000
Chrysomelidae_sp.8	1	0.010	0.0000
Orthoptera_sp.1	1	0.010	0.0000
Chelonarium_sp.	1	0.010	0.0000
Orthoptera_sp.2	1	0.010	0.0000
Palaminus_sp.	1	0.010	0.0000

Continued Table S2

Morphospecies	Degree	Closeness centrality	Betweenness centrality
Gryllidae_sp.4	1	0.010	0.0000
Cerambycidae_sp.1	1	0.010	0.0000
Chrysomelidae_sp.7	1	0.010	0.0000
Hemiptera_sp.1	1	0.010	0.0000
Hyperaspis_sp.	1	0.010	0.0000
Lepidoptera_sp.9	1	0.010	0.0000
Membracidae_sp.3	1	0.010	0.0000
Acrididae_sp.1	1	0.009	0.0000
Conotrachelus_sp.1	1	0.009	0.0000
Hemiptera_sp.	1	0.009	0.0000