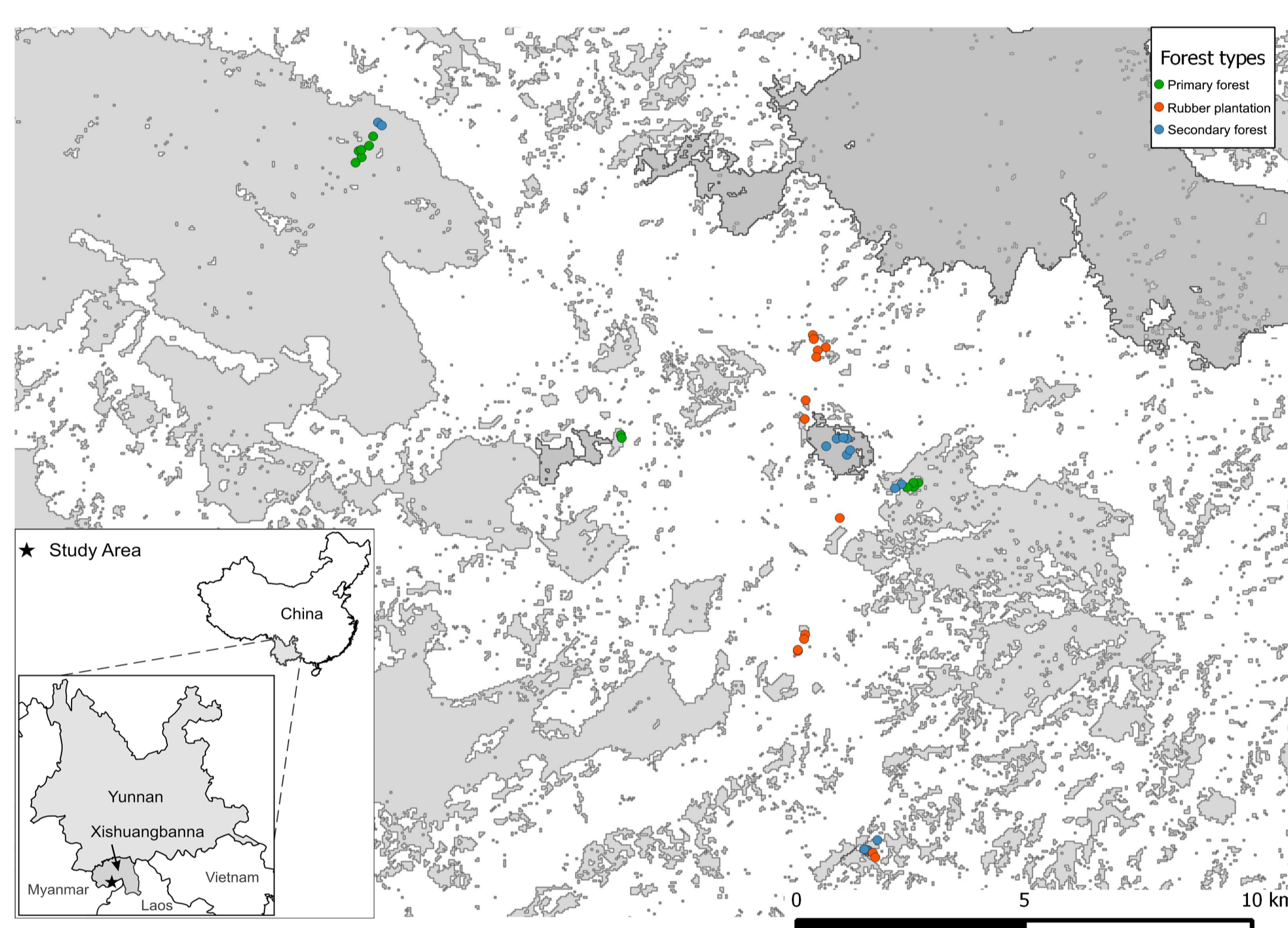


## Abstract

We studied the response of leaf litter inhabiting ants across different sites of primary (12 sites) and secondary forest (14 sites) and rubber plantation (14 sites), collected with Winkler extraction. In total, over 20000 specimens for 61 genera and 237 morphospecies were collected. Secondary and primary forests were the most diverse habitats with respectively 143 and 119 species while 103 species were collected in rubber plantation. At the site scale, species richness of secondary forests and primary forests was similar, but the average number of species collected in rubber plantations was significantly lower. The composition of ant community within rubber plantations was also more distinct from the composition of primary and secondary forests. Our findings indicate that habitat transformation strongly affect ant communities, probably due to the frequency of disturbance observed in such habitat.

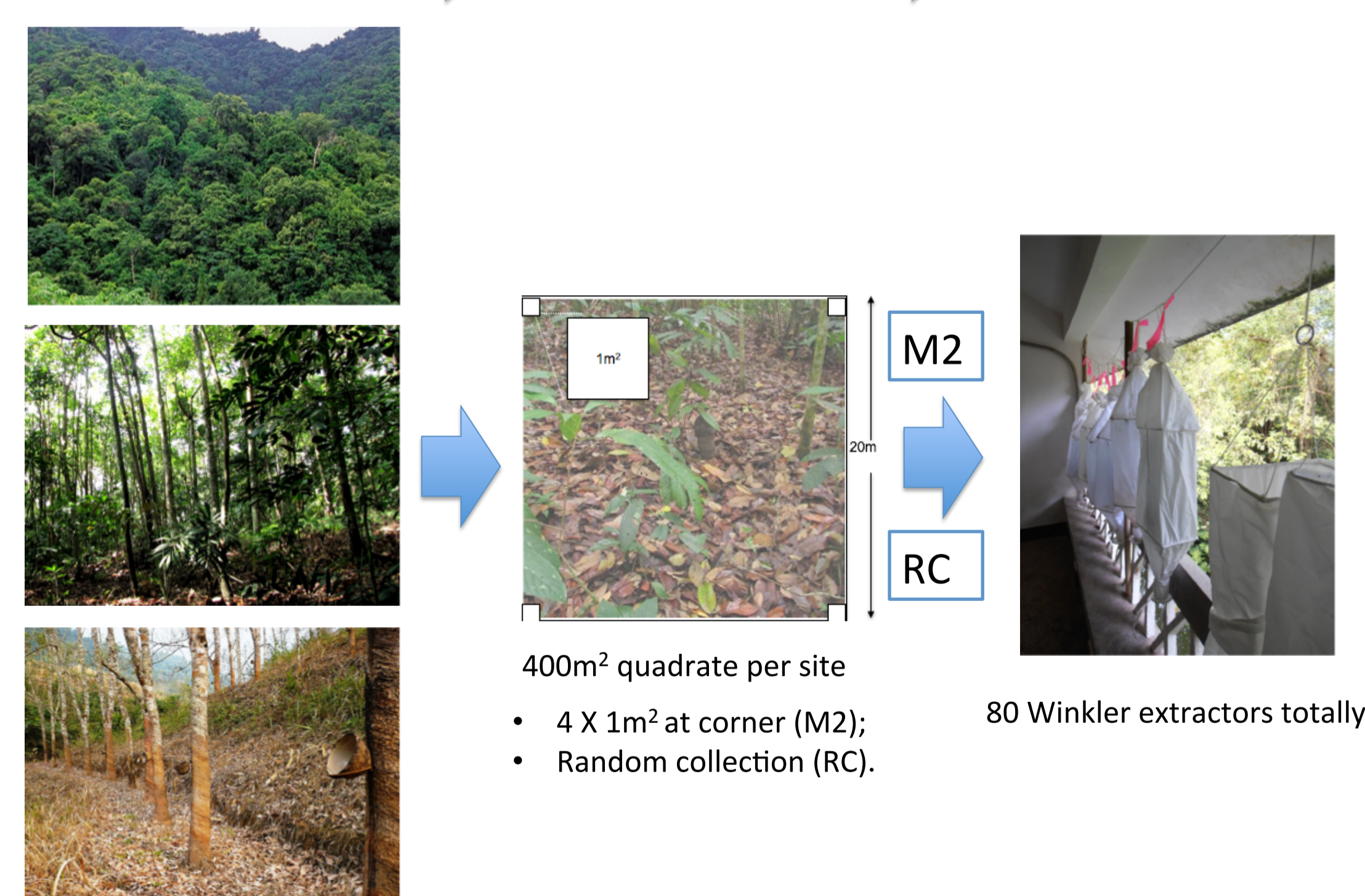
## Study site and method

### 1. Xishuangbanna, Yunnan, China (21°55'N, 101°15'E).



### 2. Sampling method

Habitat choosing → Leaf litter sifting → Winkler extraction



## Results

### 1. Species richness overview

Table 1 Summary of total abundance, observed and estimated species richness,  $\alpha$ -diversity and  $\beta$ -diversity among sites (Whittaker's w measure).

	Primary forest	Secondary forest	Rubber plantation
Number of sites	12	14	14
Total abundance	6145	7474	5915
Observed species richness	121	144	103
Estimated species richness	139	169	126
Species richness / site	32.1±5.4	33.1±7.4	24.8±4.2
$\beta$ -diversity among sites	0.58	0.61	0.59

### 2. Generic richness

Table 2. Species richness by genus collected during this study.

Genera	No. of species	Genera	No. of species	Genera	No. of species
<i>Pheidole</i>	21	<i>Pristomyrmex</i>	3	<i>Echinopla</i>	1
<i>Strumigenys</i>	21	<i>Pseudolasius</i>	3	<i>Emeryopone</i>	1
<i>Tetramorium</i>	14	<i>Tapinoma</i>	3	<i>Gesomyrmex</i>	1
<i>Pachychondyla*</i>	10	<i>Technomyrmex</i>	3	<i>Iridomyrmex</i>	1
<i>Camponotus</i>	10	<i>Discothyrea</i>	2	<i>Kartidris</i>	1
<i>Crematogaster</i>	10	<i>Lepisiota</i>	2	<i>Lophomyrmex</i>	1
<i>Carebara</i>	9	<i>Myrmecina</i>	2	<i>Lordomyrma</i>	1
<i>Leptogenys</i>	9	<i>Myrmoteras</i>	2	<i>Meranoplus</i>	1
<i>Polyrhachis</i>	8	<i>Ponera</i>	2	<i>Myopias</i>	1
<i>Aenictus</i>	7	<i>Preholepis</i>	2	<i>Mystrium</i>	1
<i>Hypoponera</i>	6	<i>Recurvidris</i>	2	<i>Odontomachus</i>	1
<i>Monomorium</i>	6	<i>Rhoptromyrmex</i>	2	<i>Odontoponera</i>	1
<i>Nylanderia</i>	6	<i>Acanthomyrmex</i>	1	<i>Oecophylla</i>	1
<i>Pheidologeton</i>	5	<i>Acropyga</i>	1	<i>Plagirolepis</i>	1
<i>Tetraponera</i>	5	<i>Anoplolepis</i>	1	<i>Platythrea</i>	1
<i>Anochetus</i>	4	<i>Bannapone</i>	1	<i>Probolomyrmex</i>	1
<i>Dolichoderus</i>	4	<i>Cardiocondyla</i>	1	<i>Proceratium</i>	1
<i>Paraparatrechina</i>	4	<i>Catalatus</i>	1	<i>Solenopsis</i>	1
<i>Aphaenogaster</i>	3	<i>Chronoxenus</i>	1	<i>Vollenhovia</i>	1
<i>Cerapachys</i>	3	<i>Diacamma</i>	1		
<i>Gnamptogenys</i>	3	<i>Dilobocondyla</i>	1		

\*The species of *Pachychondyla* are currently under revision to reflect recent changes in the genus. You can find all the ant species with photos collected in Xishuangbanna in my website: <http://congliu0514.wordpress.com>

### 3. Common and exclusive species

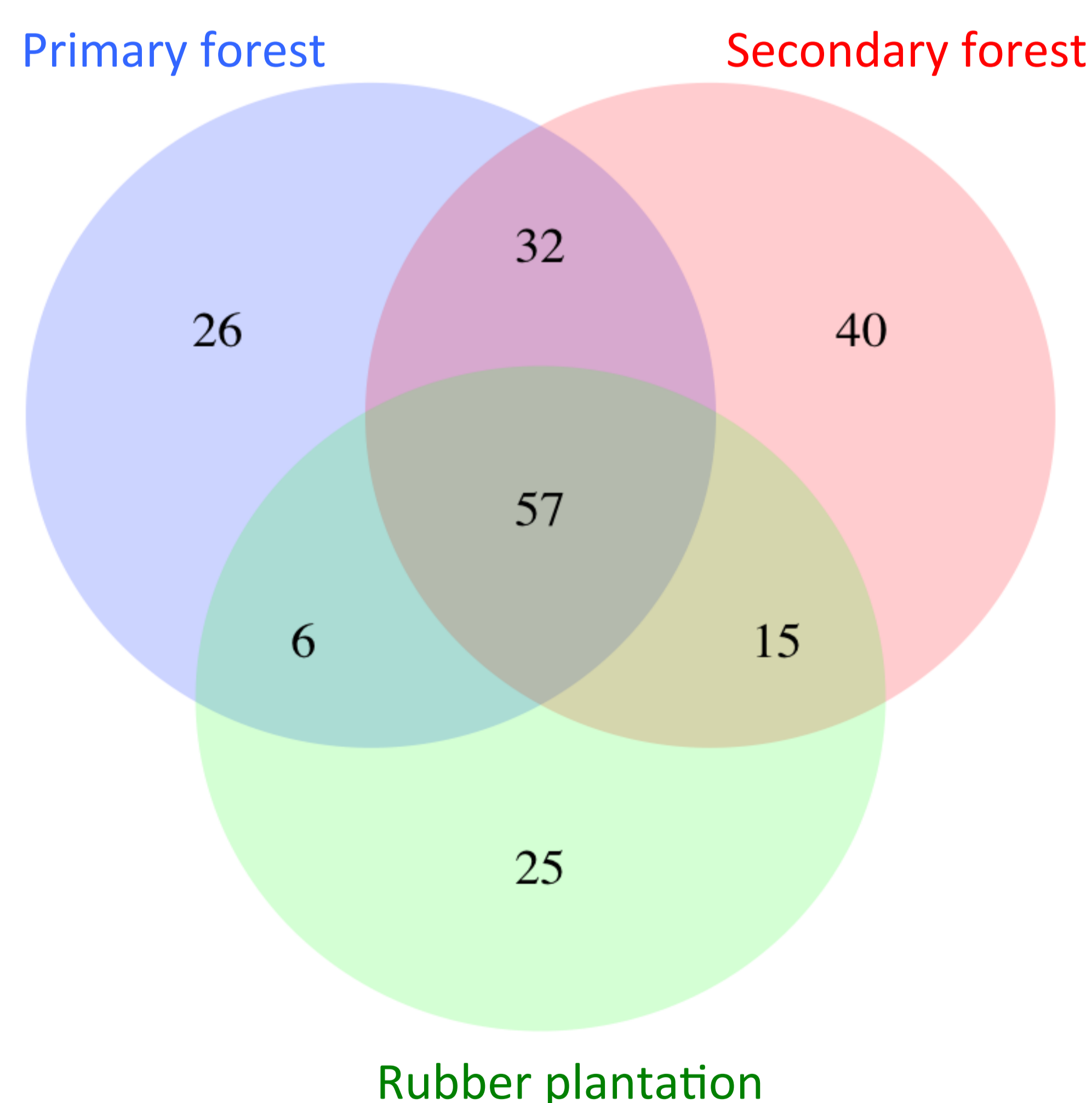


Figure 2 Venn diagram of species richness in 3 habitats.



Figure 3 Some exclusive species inhabited in 3 habitats.

### 4. Number of exotic species

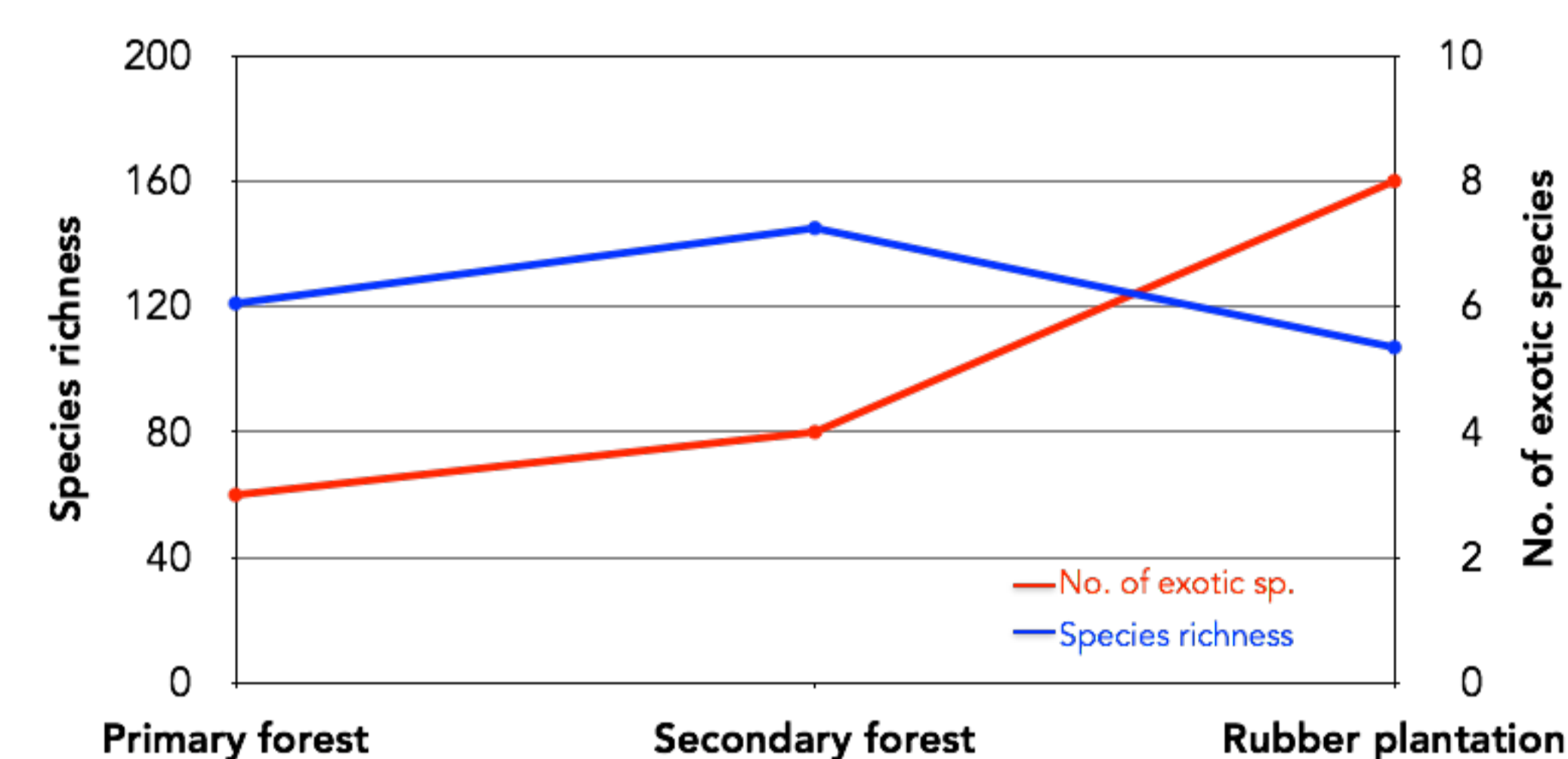


Figure 4. Number of exotic species and species richness in 3 habitats.

### 5. Community composition

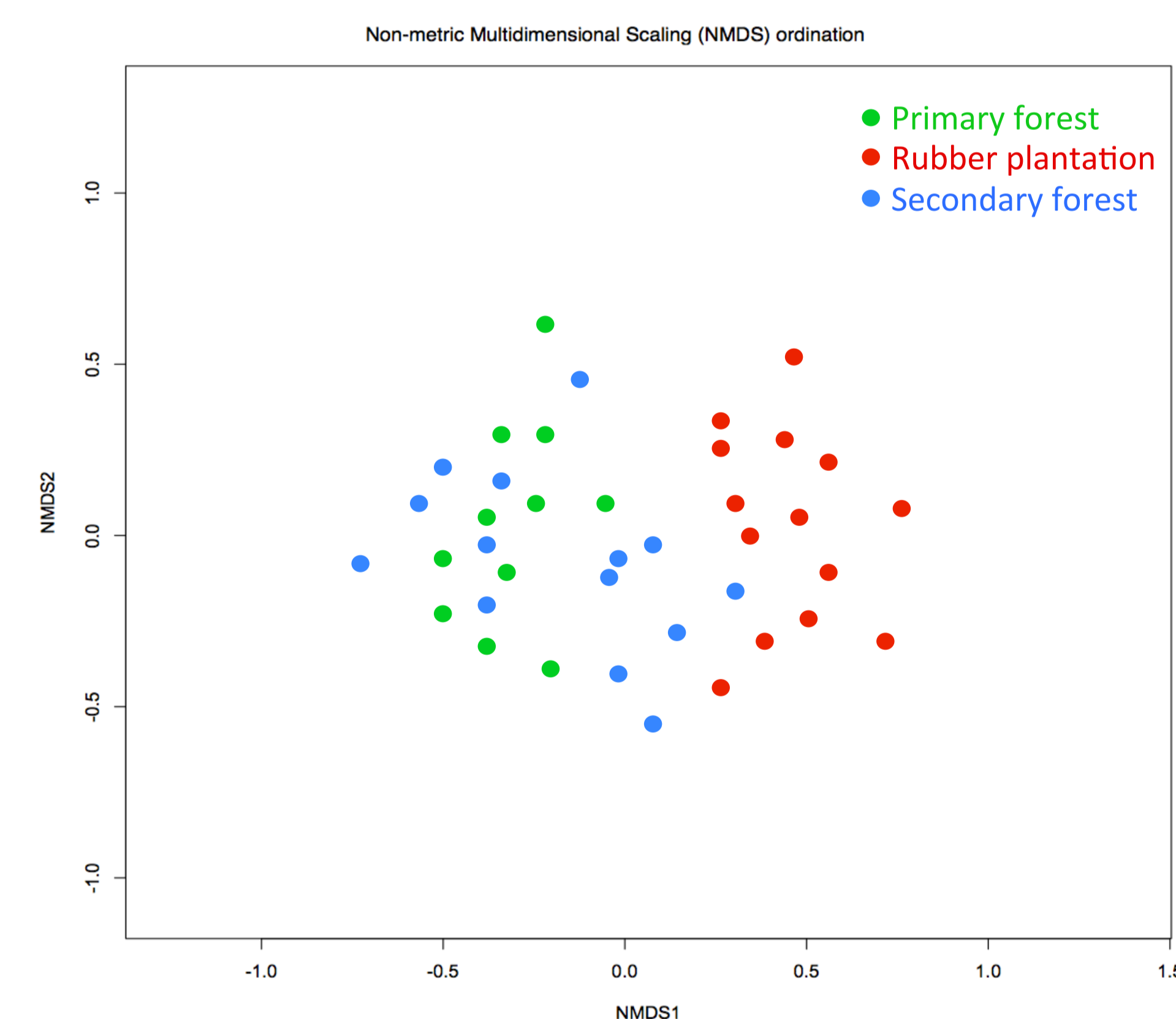


Figure 5. Non-metric multidimensional scaling (NMDS) ordination of community structure among 3 habitats.

## Conclusions

1. Ant fauna in natural habitat (PF and SC) is more diverse and heterogeneous than in the agricultural habitat (RP);
2. Ecological specialists species were only found in less disturbed habitat, while species collected within agroecosystems can be classified as generalists;
3. Rubber plantation have more exotic species than primary and secondary forest.
4. Despite the lower number of species collected within rubber plantations, this habitat still host a large number of ant species.

## Acknowledgements

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