



**Host specificity of bark beetles
(*Curculionidae: Scolytinae &
Platypodinae*) in lowland rainforests
of Papua New Guinea**

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Almost nothing is known about the number of bark beetle species living in New Guinean rainforests and about the host plants they use.

That is why we reared bark beetles from artificially killed trees to determine their host specificity and community structure.



Methods

We sampled in primary and secondary forests in Madang Province



Target Trees

8 species sampled.

closely related:

2 genera and 3 species of Moraceae

Ficus pachystemon, *Ficus nodosa*, *Artocarpus communis*

more distantly related:

5 species from different families

Sterculiaceae, Lauraceae, Apocynaceae, Myristicaceae,
and Sapotaceae



Methods

We killed the trees and left them standing in the forest until they were dry and infested with bark beetles.

Then we cut the trees and took timber samples to the lab.



Tree Parts



Branches



Twigs



Trunk



Roots



Methods



We used these extractors to collect bark beetles emerging from the timber samples.



Methods

Specimens reared from the extractors were sorted to species and labeled.



Methods

All data were added to our database.

Microsoft Access - [Main: Form] **Identification Guide**

File Edit View Insert Format Records Tools Window Help

Identification Guide Observations Glossary **Tribus** Xyleborini

Species Code: **Scol017** Genus: **Leptoxyleborus** Species: **sordicauda**
 Tribus: Xyleborini

Distinguishing Characteristics
 Large and clearly visible flat part of the elytras, extending to the first third of the elytras. The area out of the plate with shallow ridges and furrows, prominent especially at the top.

Similar Species

Similar Sp.	Lv	Hosts	Habitat
Scol032	1	ART	xylem
*	1	NOD	Feeding ?



Photo 1 of 2

Biology: spanandrous Photo Index: 1

View Other Data View Taxonomy Large Photo

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Identification Guide Observations Glossary **Family** Scol023

Species Code: **Scol023** Genus: **Xyleborus** Species: **perforans**

Distinguishing Characteristics:

Number of Hosts: **14** Number of Specimens: **3759**

Hosts	#	Localities	#
LIT	(819)	Ohu	(3759)
PT2	(677)		
LI2	(381)		
MYR	(360)		
NOD	(231)		
ALS	(223)		
AL2	(220)		
MY2	(193)	1	(301)
LI3	(163)	2	(928)
PAS	(152)	3	(780)
N02	(147)	4	(132)
POU	(132)	5	(206)
ART	(37)	6	(219)
PTC	(24)	7	(332)
		8	(167)
		9	(113)
		10	(37)
		11	(301)
		12	(243)

Month	#	Caterpillars	#
		Unknown	(3759)

Remarks: spanandrous Photo Index: 1

Hide Other Data Large Photo

Form View CAPS NUM

Results

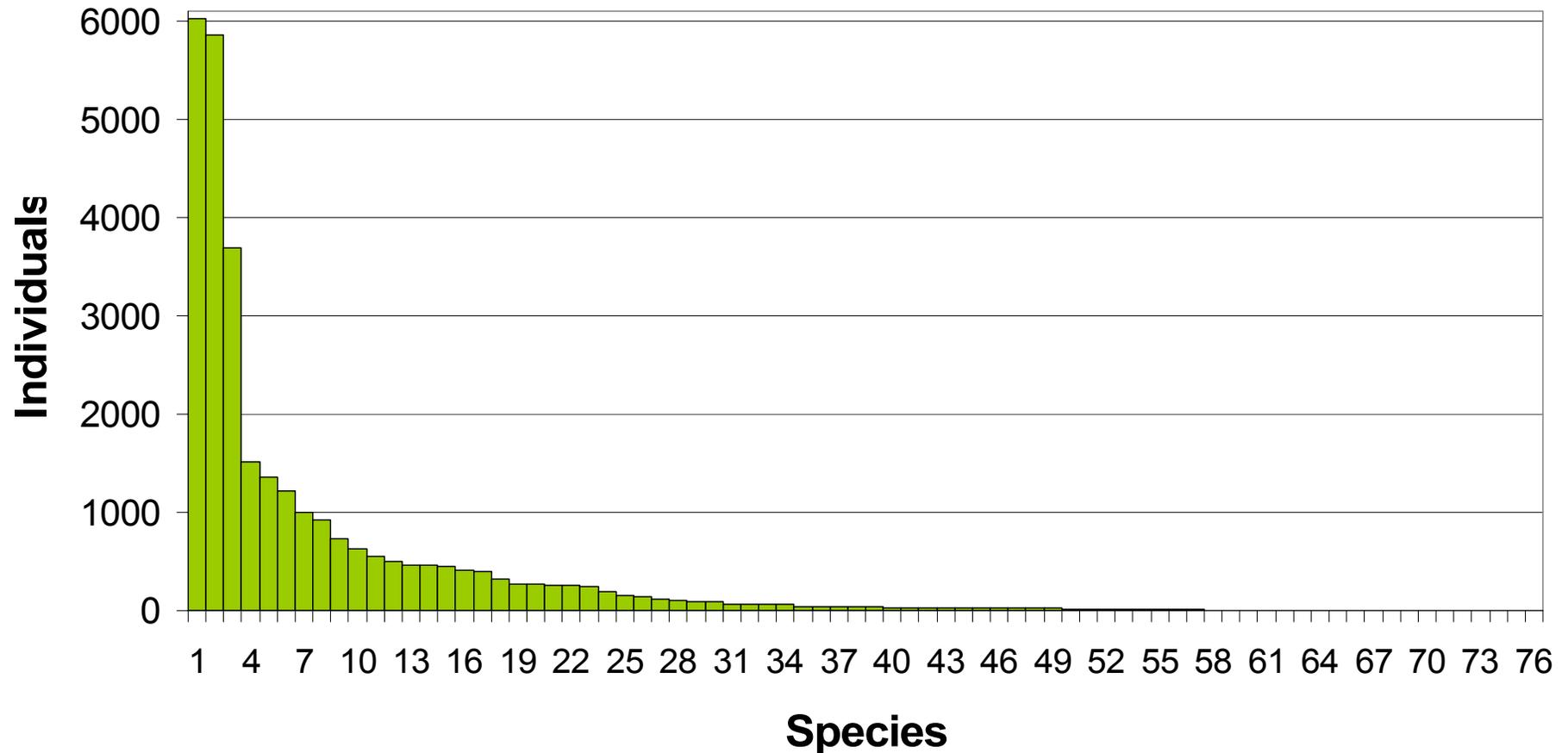
30,000 Individuals

77 Species



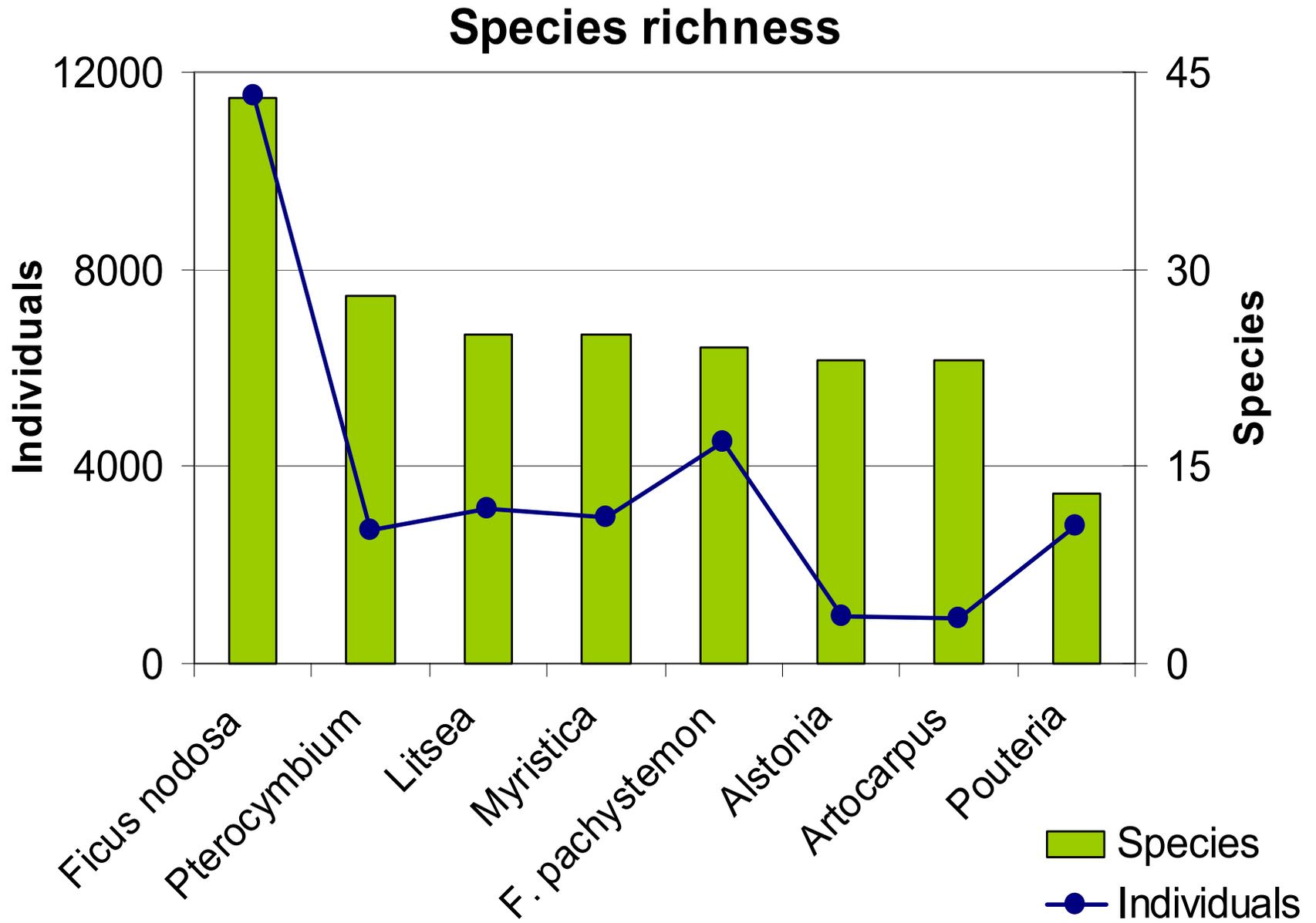
Results

Species abundance for all trees



We found that only three species were very common, while most of the other 74 species were very rare.

Results



Results

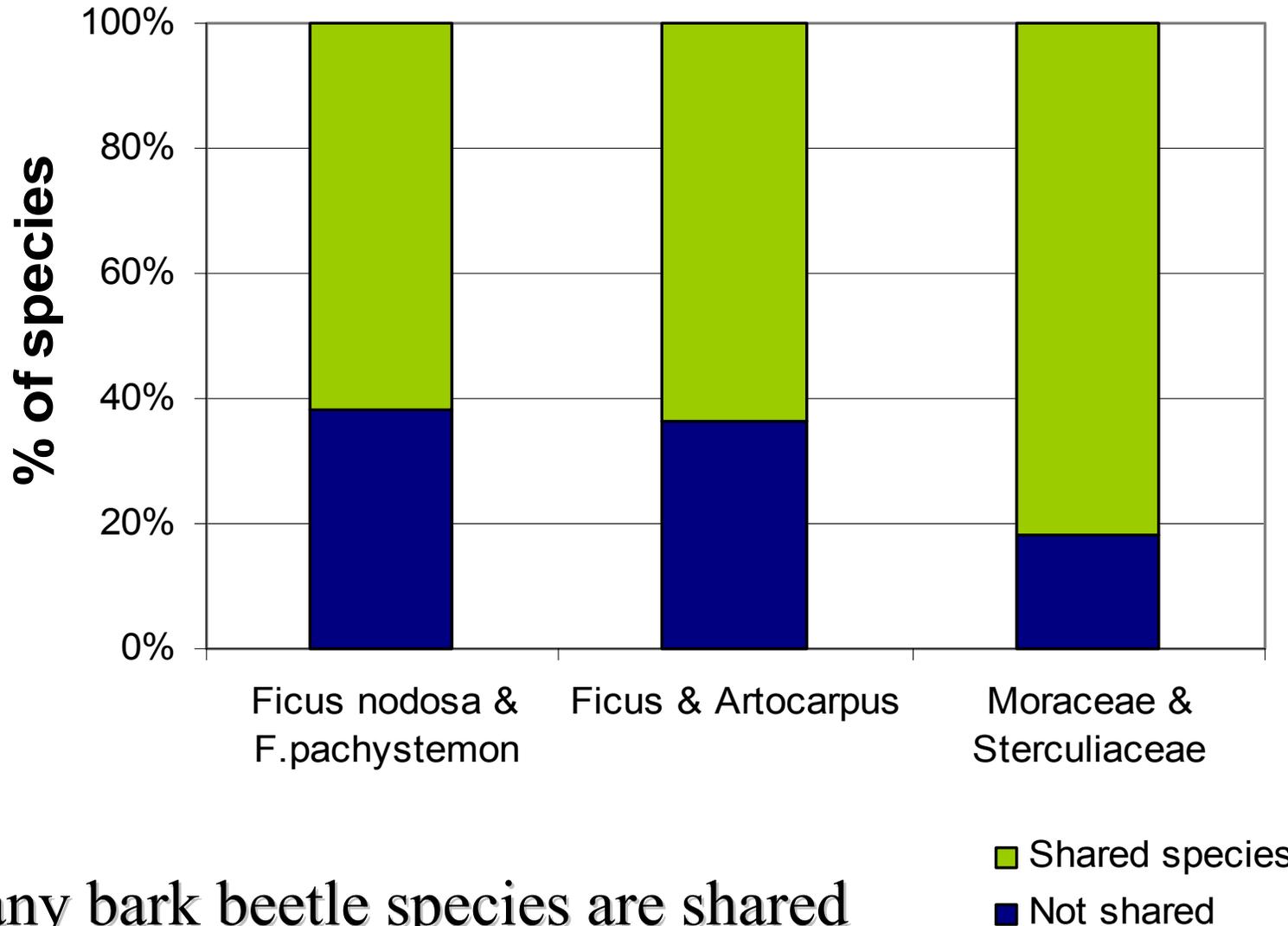
Host range



Only 6 bark beetle species were reared from just one host tree, while remaining 29 species had from 2 to 8 hosts

Results

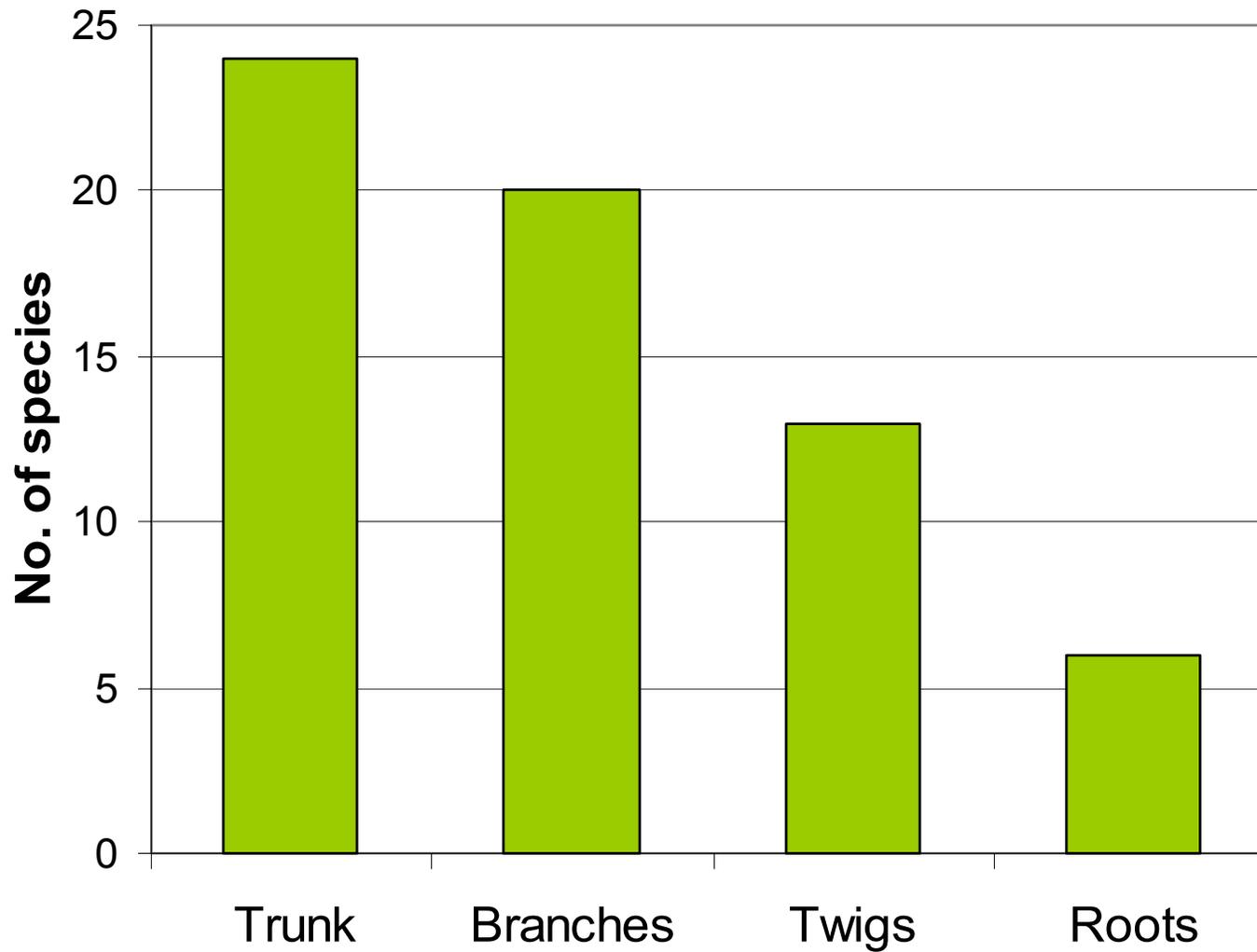
Overlap in bark beetle species between different hosts



Many bark beetle species are shared between different host plant species, genera and families.

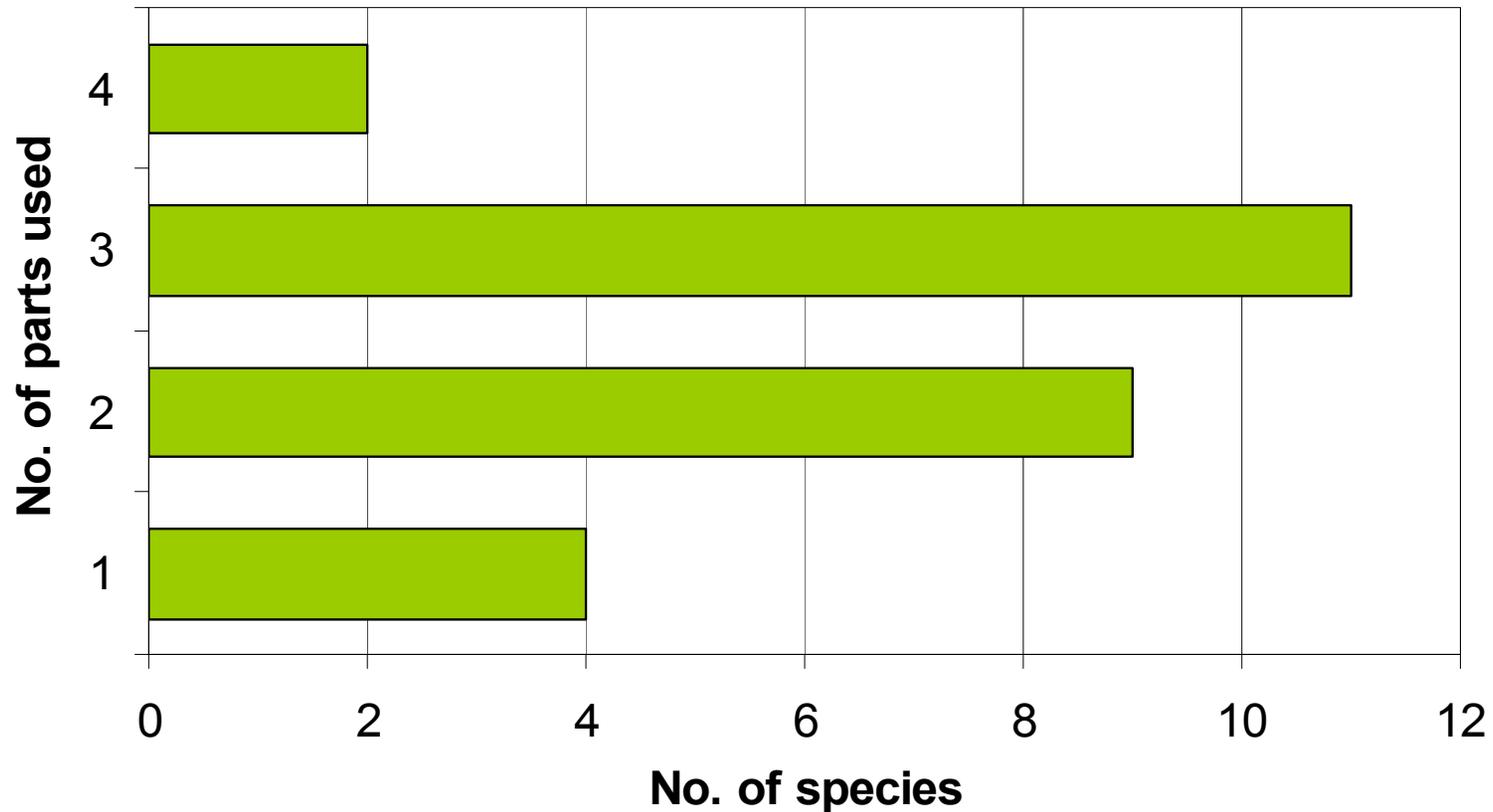
Results

Host part preference



Results

Host part specificity



Bark beetles are generally feeding on more than one part of the tree. They were most often found using three parts of the host tree: trunk, branches and twigs

Conclusions

Bark beetle communities in PNG:

- have a few very common species while most of the species are rare

Bark beetle species in PNG:

- are not specialists as they mostly feed on more than one host tree species, genus and family
- are not restricted to only one part of the host tree



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