



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

*Martin Mogia, Mark Andreas,
 Jiří Hulcr & Gregory Setliff
 Parataxonomist Training Center
 Madang, PNG*



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



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



Roots



Trunk

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.

Identification Guide

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Identification Guide Observations Glossary

Tribus Host Code 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

Photo Index: 1

Biology: spanandrous

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Identification Guide Observations Glossary

Family Category Code 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

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Results

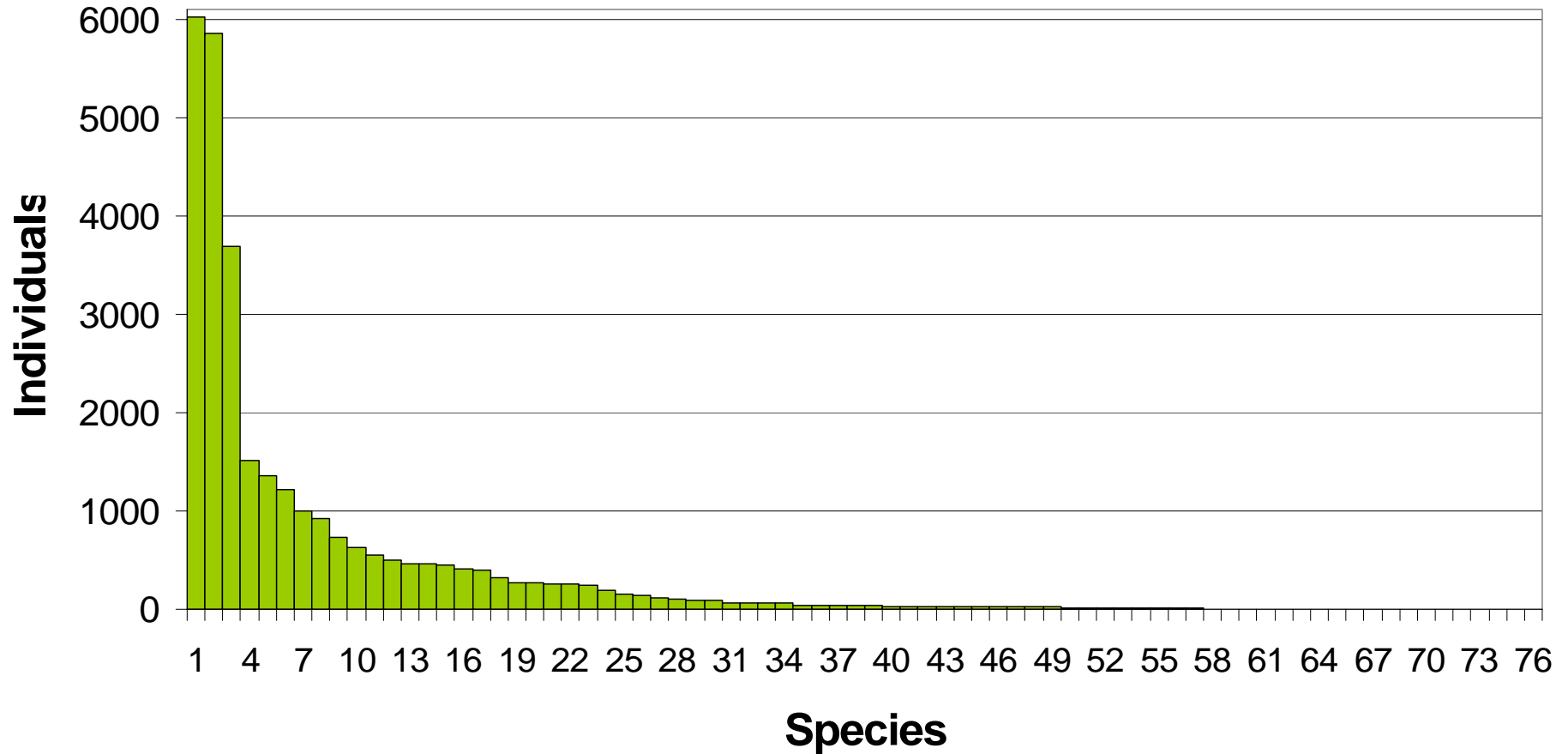
30,000 Individuals

77 Species



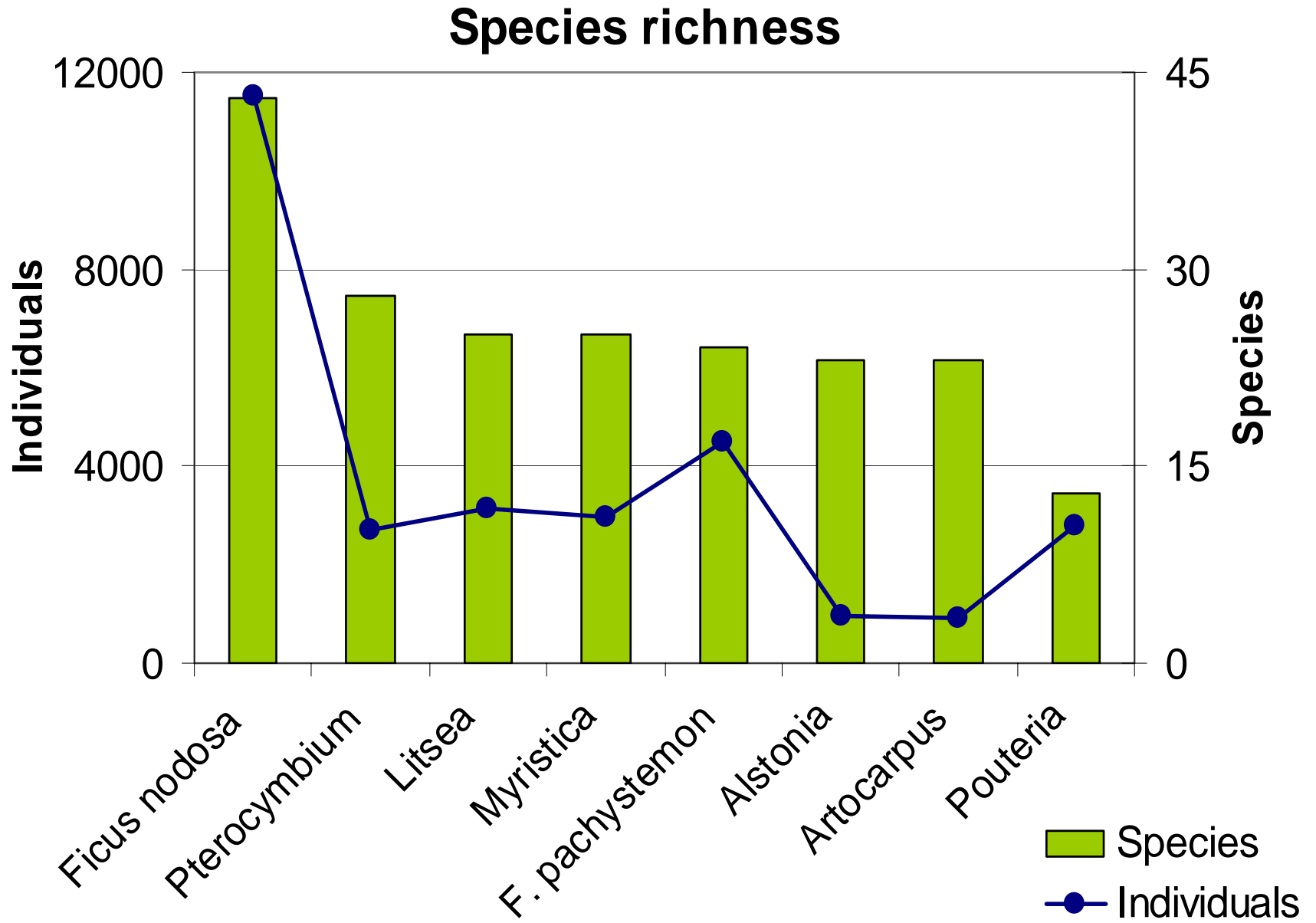
Results

Species abundance for all trees



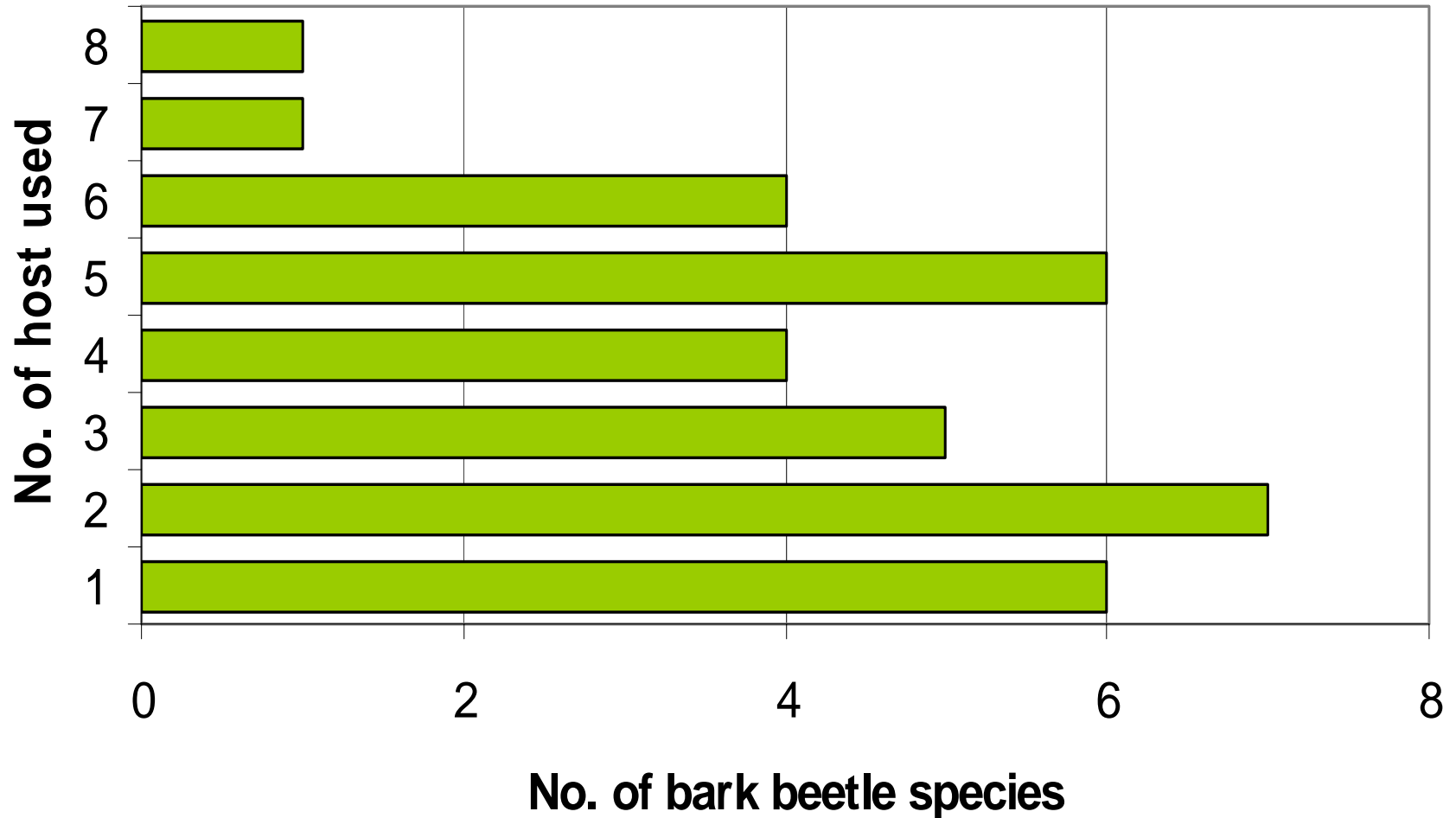
We found that only three species were very common, while most of the other 74 species were very rare.

Results



Results

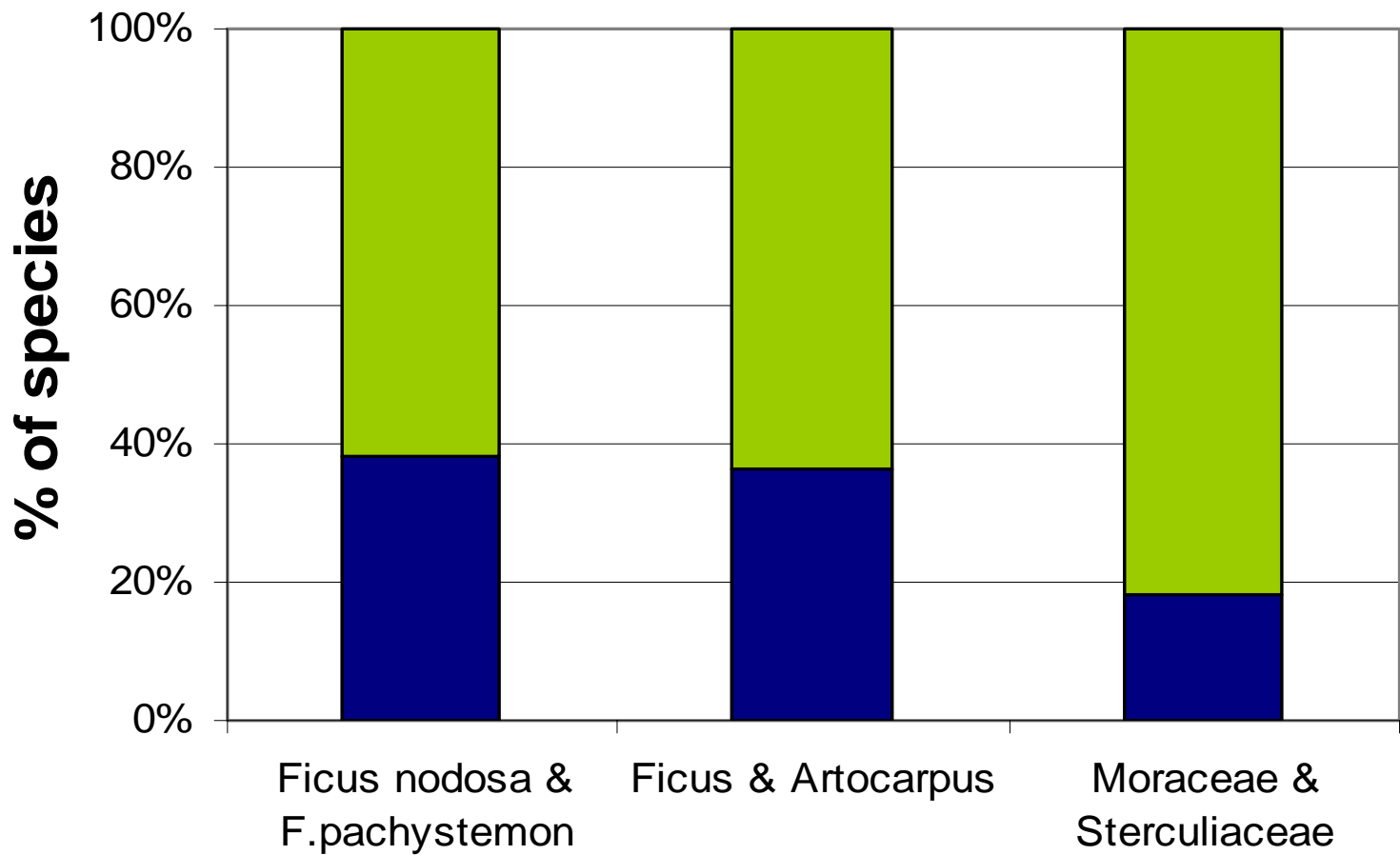
Host range



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

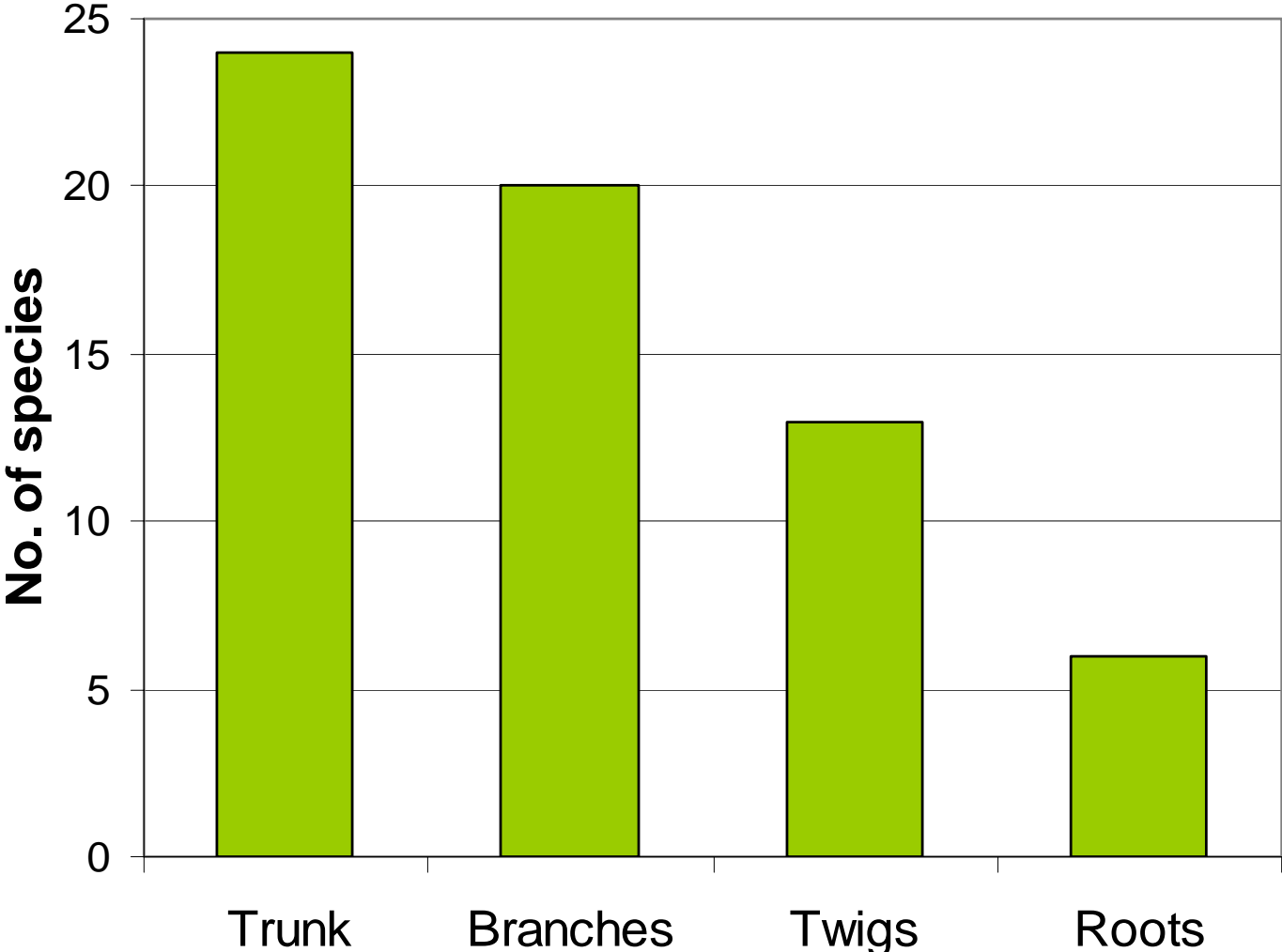


Many bark beetle species are shared between different host plant species, genera and families.

- Shared species
- Not shared

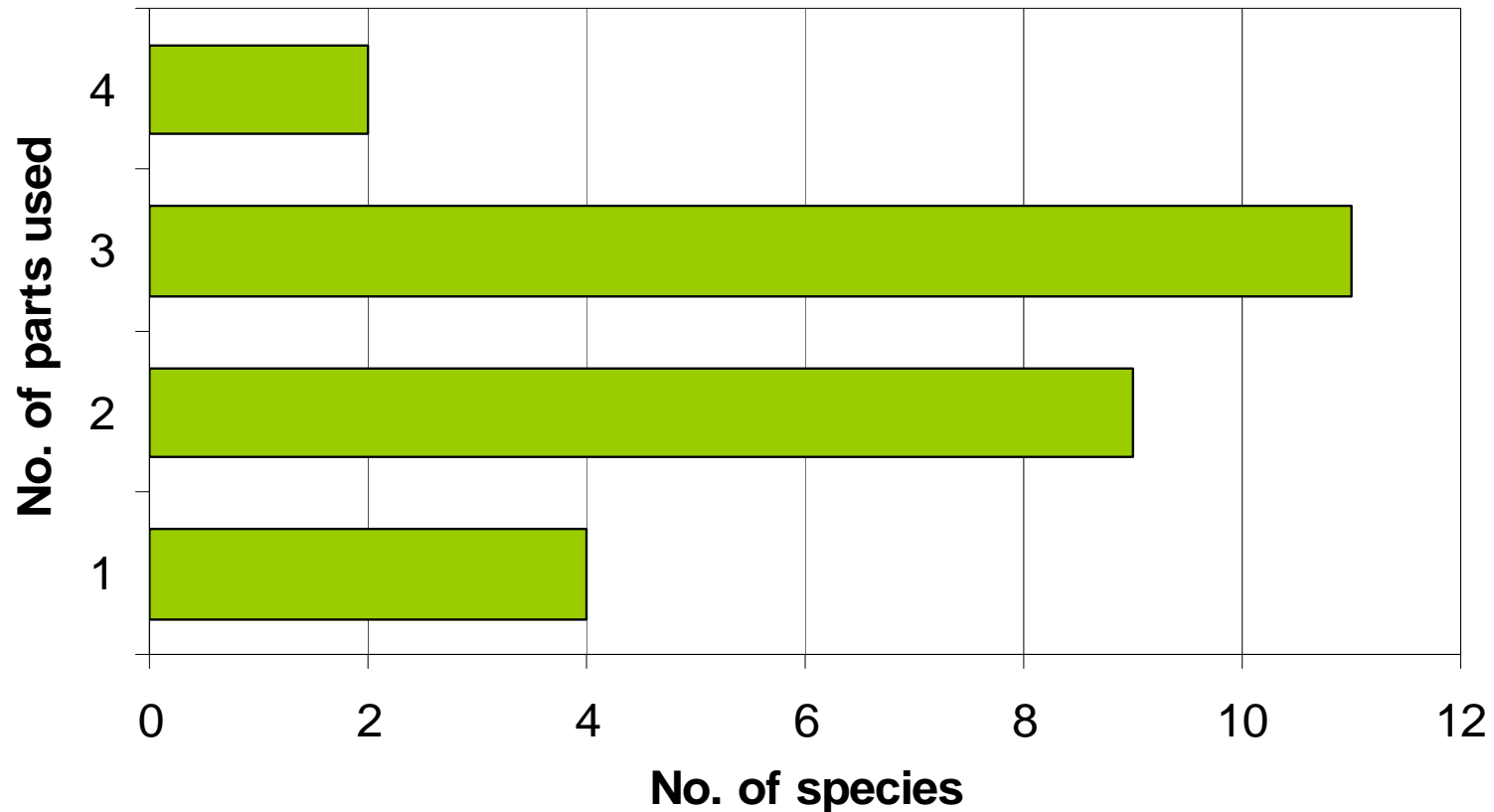
Results

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

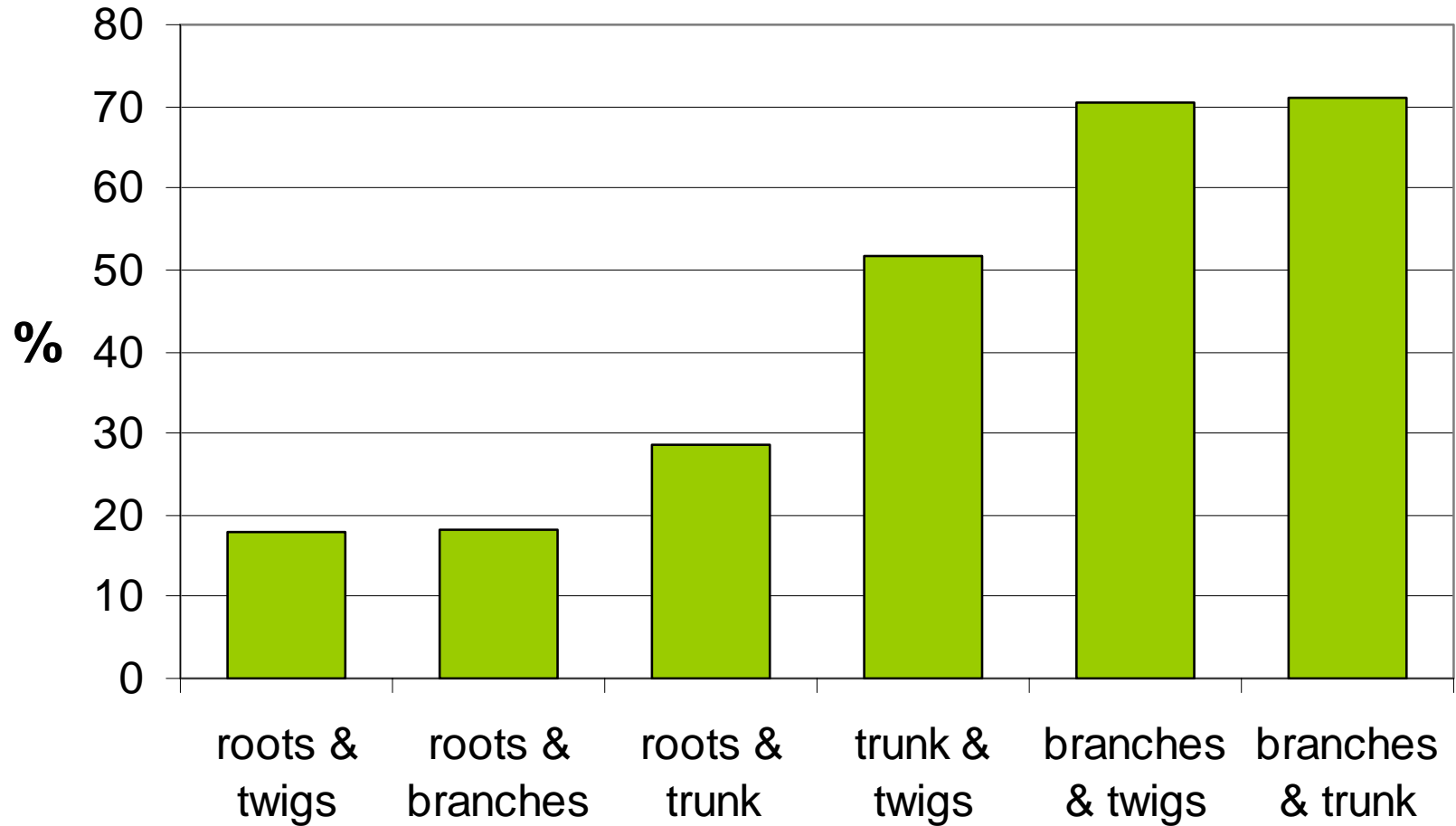


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Results

Percent of shared species between tree parts



Target Trees

Ficus nodosa (Moraceae)

Ficus pachystemon

Artocarpus communis

(5 other families)

Litsea timoriana

Alstonia brassii

Pterocymbium beccarii

Myristica sp.

Pouteria sp.

