



Host Specificity of Leaf Beetle  
Larvae (Chrysomelidae) in the  
Lowland Rainforest of Papua New  
Guinea

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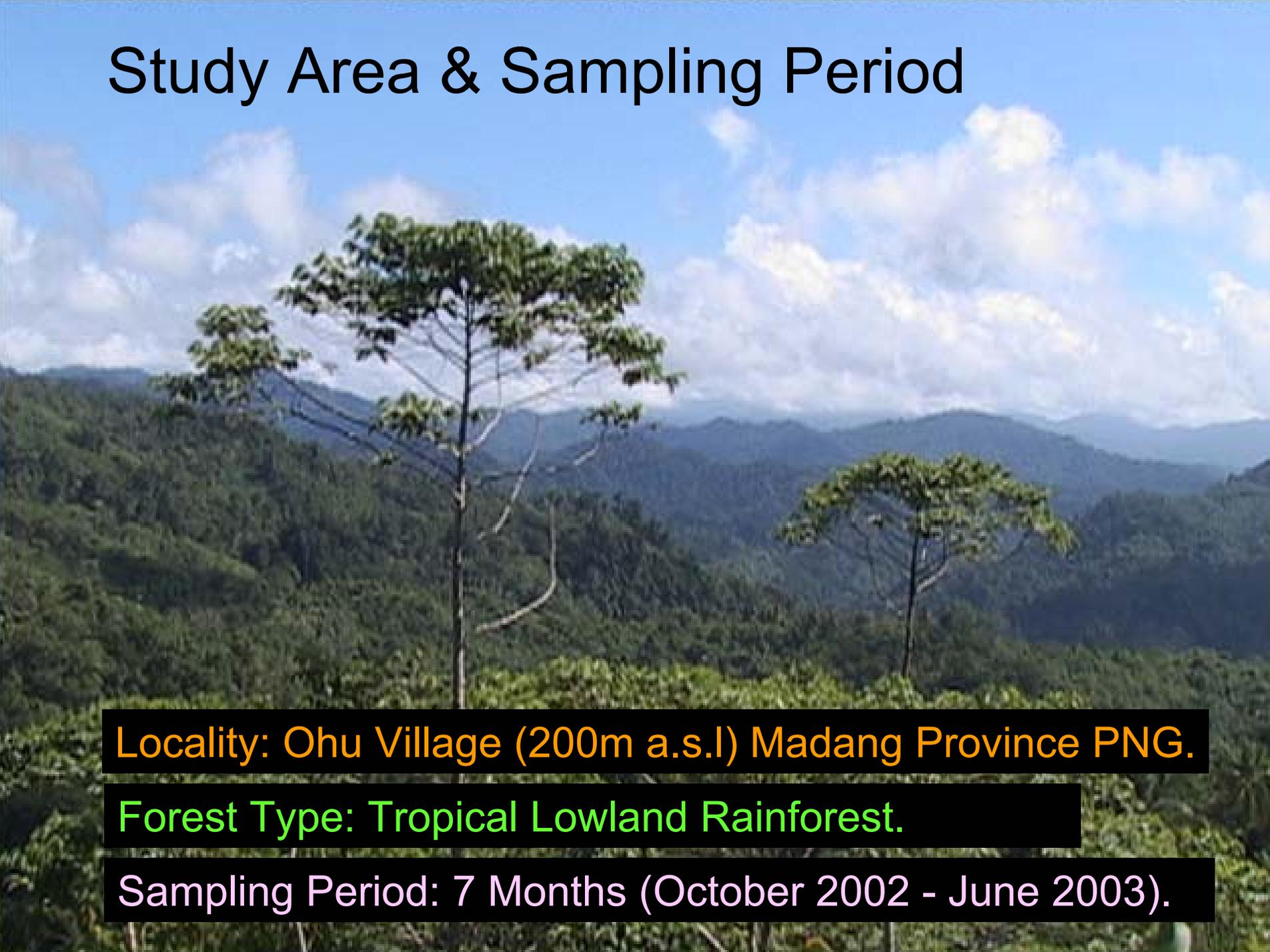
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# Study Area & Sampling Period



Locality: Ohu Village (200m a.s.l) Madang Province PNG.

Forest Type: Tropical Lowland Rainforest.

Sampling Period: 7 Months (October 2002 - June 2003).

# Chrysomelid Beetles

- Herbivorous insects feeding on living plants.
- Past studies on Chrysomelid Beetles in Madang showed that only adults were found feeding on leaves while host preference & host specificity of larvae is unknown.
- This project aims to study the host preference & host specificity of the larvae feeding on the roots of selected trees in the Tropical Lowland Rainforest in PNG.



# Studied Trees

9 species (4 trees per species) from 5 families.  
Total = 36 trees



1. *Artocarpus communis* (Moraceae)
2. *Ficus pungens* (Moraceae)
3. *Ficus hispidoidea* (Moraceae)
4. *Macaranga aleuritoides* (Euphorbiaceae)
5. *Macaranga densiflora* (Euphorbiaceae)
6. *Homalanthus novo-guineensis* (Euphorbiaceae)
7. *Leucosyke capitellata* (Urticaceae)
8. *Sterculia shumanianna* (Sterculiaceae)
9. *Neuburgia corynocarpa* (Loganiaceae)



# Methods

## 1. Trap Settings



## 2. How Insects are Trapped



## 3. Trap Monitoring & Collection



# Species Identification & Databasing



The screenshot shows a software application titled "Identification Guide" with a menu bar (File, Edit, View, Insert, Format, Records, Tools, Window, Help) and a toolbar. The interface is divided into several sections:

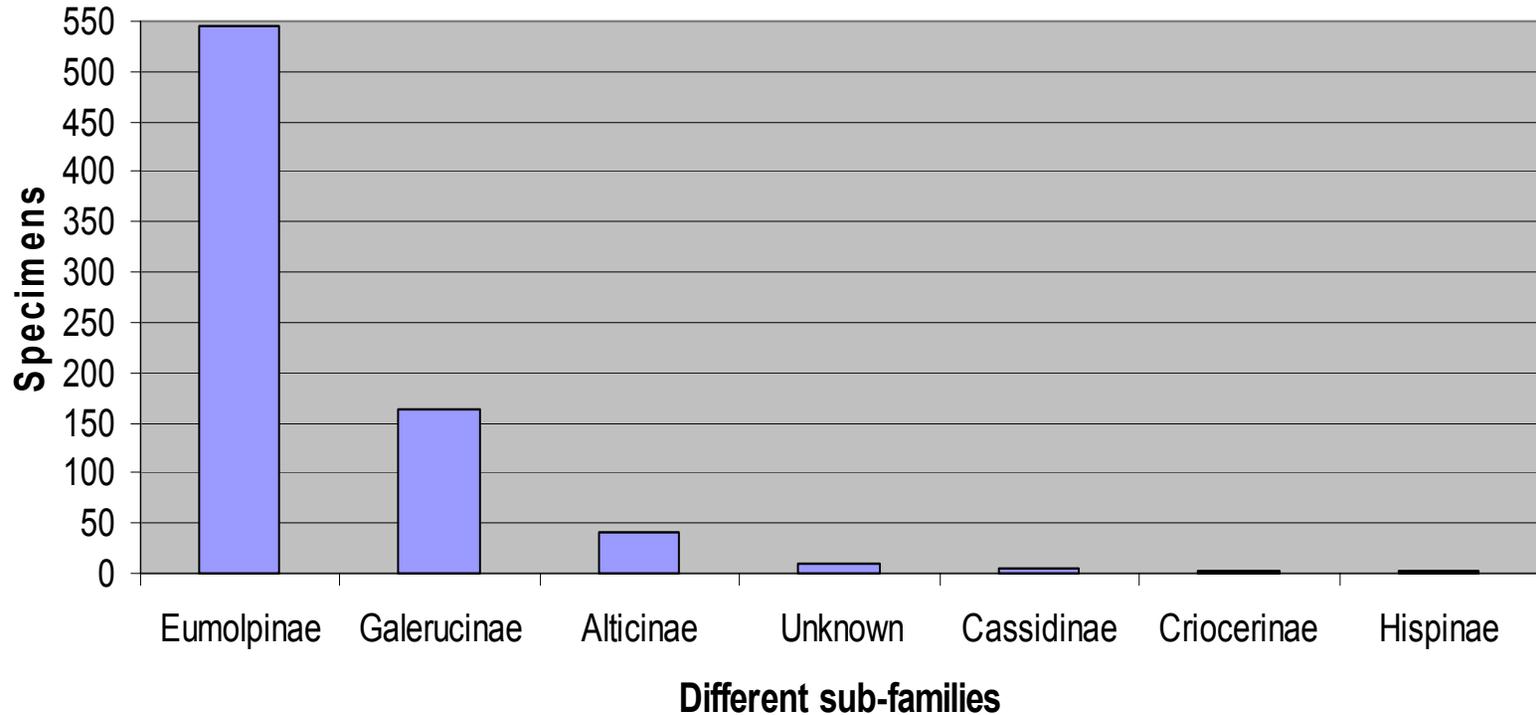
- Navigation:** Radio buttons for "Identification Guide" (selected), "Observations", and "Glossary".
- Search:** A dropdown menu showing "CHRY021".
- Species Information:** Fields for "Species Code: CHRY021", "Genus: Rhyparida", and "Species: fruhstorferi".
- Distinguishing Characteristics:** Text describing the species: "Brown-green metallic. Wider individuals are females. General aspect of pronotum very shiny. Legs sometimes yellowish. Punctuation on the pronotum distinct but sparse (not dense as in CHRY001). Punctuation on the vertex and pronotum distinct."
- Similar Species:** A table with columns for "Similar Sp.", "Lv", "Ficus", "Euphorb", "Rubiac", and "Families".
- Caterpillars:** A table with columns for "Caterpillar" and "Lv".
- Measurements:** A table for "Spec: 1" through "10" with rows for "Length" and "Width".
- Photo:** A large image of a dark beetle, labeled "Photo 1 of 2".
- Remarks:** A text area for notes, with a "Photo Index: 1" label.
- Buttons:** "Add", "View Similar Species", "View Caterpillar", "View Taxonomy", "View Other Data", "Large Photo", and navigation arrows.

- In the laboratory all samples are mounted & identified down to species level with the help of a specialist based in Bishop Museum in Hawaii.
- All new species are digitally photographed & entered into the computer database.

# Results & Discussions

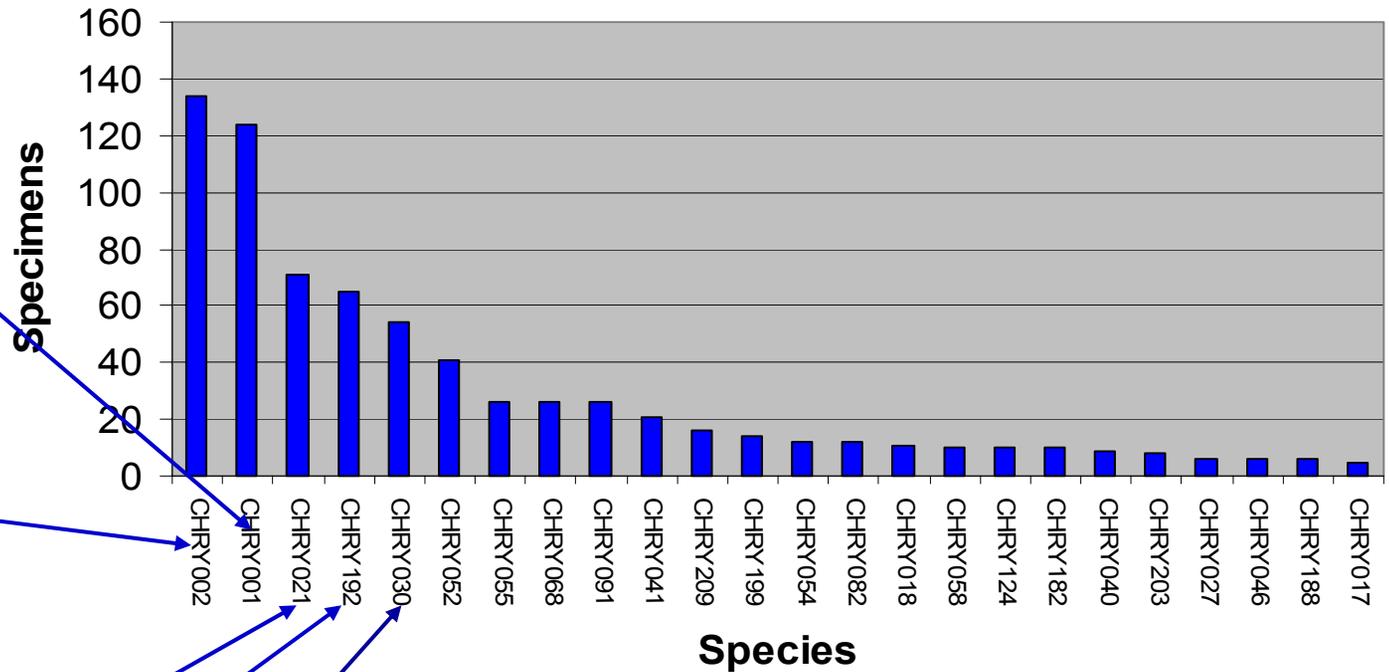
- In the 7 months period of study, 769 samples were collected from 68 different species from 6 sub-families of *Chrysomelid* Beetles.

## Species Abundance



Like adults, larvae of Eumolpinae is more dominant sub-family in the root feeding Chrysomelid community.

## Species Abundance (Individuals)



CHRY 001 – *Rhyparida coriacea*

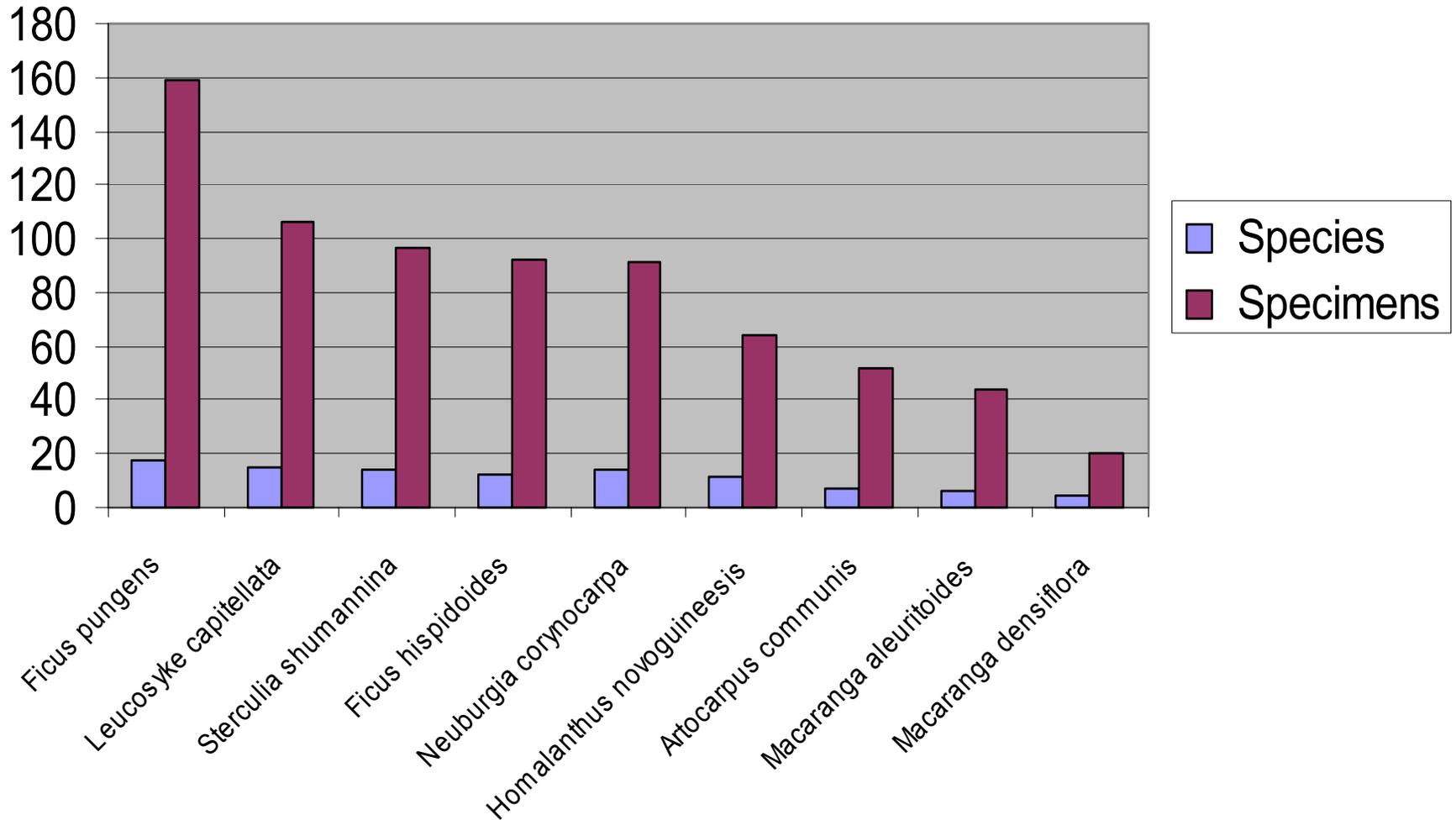
CHRY 002 – *Rhyparidella sobrina*

CHRY 021 – *Rhyparida frustoferi*

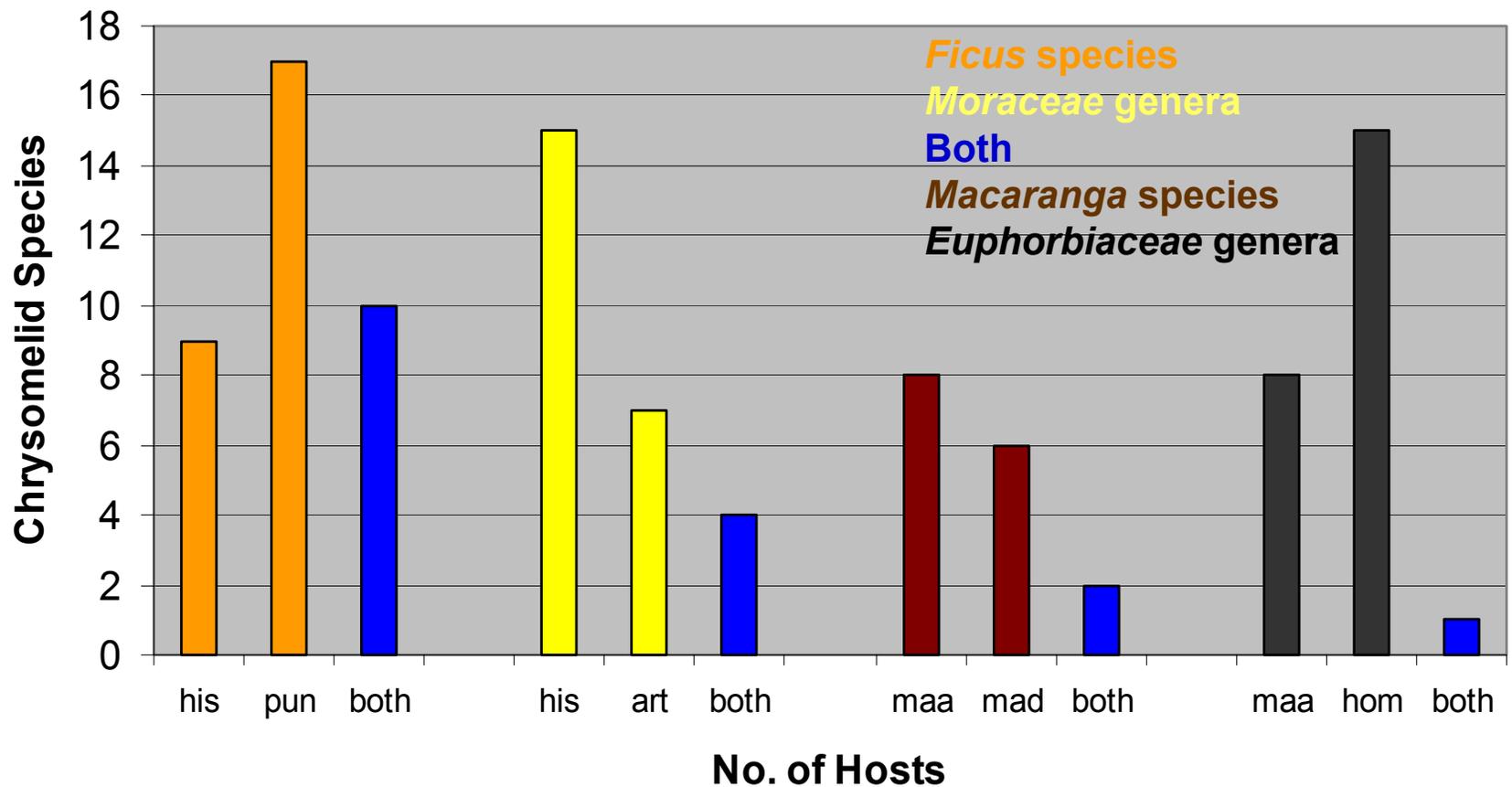
CHRY 192 – Unidentified

CHRY 030 – *Stethotes laterallis*

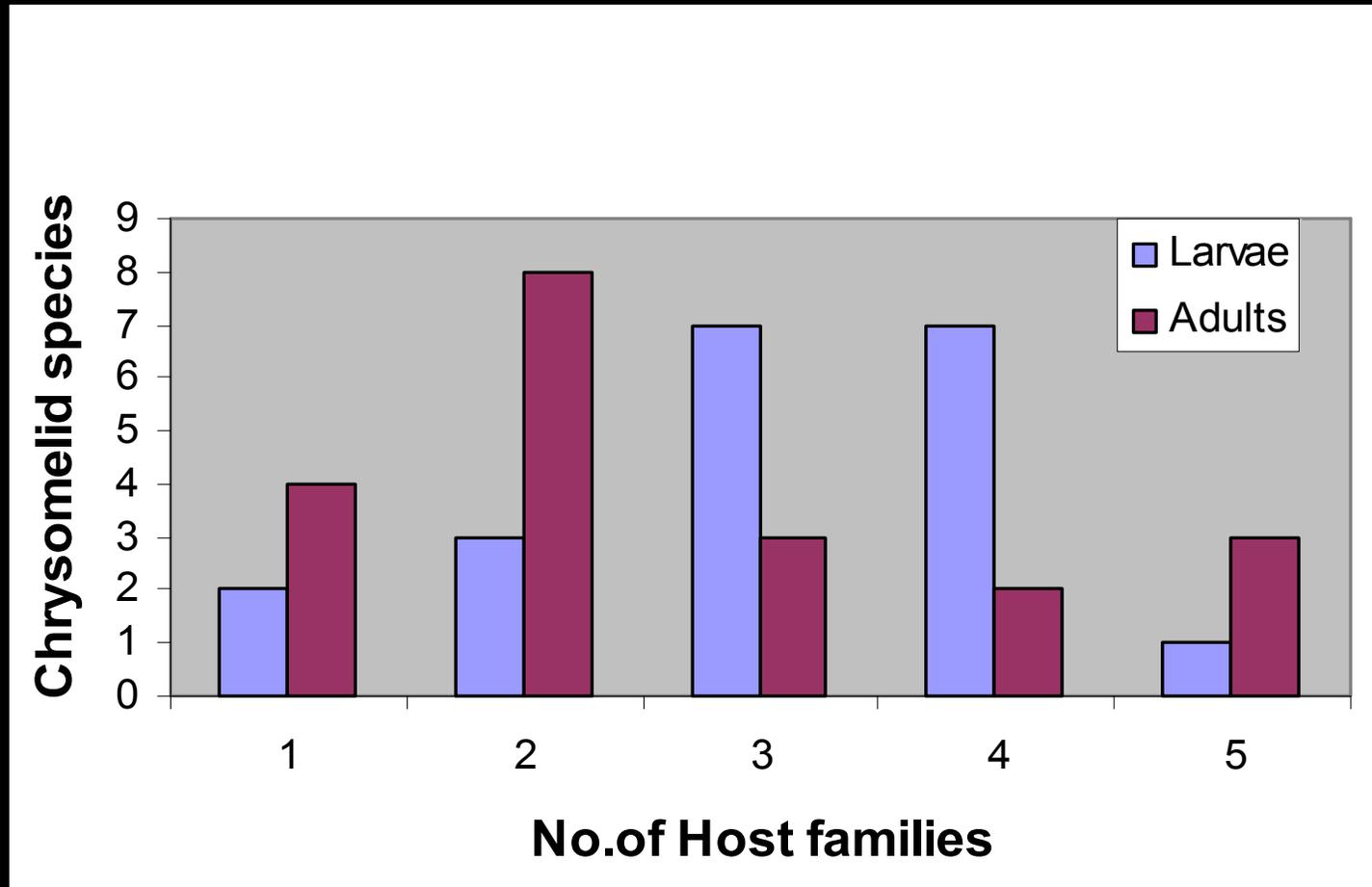
# Distribution of Species & Specimens on studied Trees



# Host Range of Larvae on *Ficus* species, *Moraceae* genera *Macaranga* species & *Euphorbiaceae* genera.

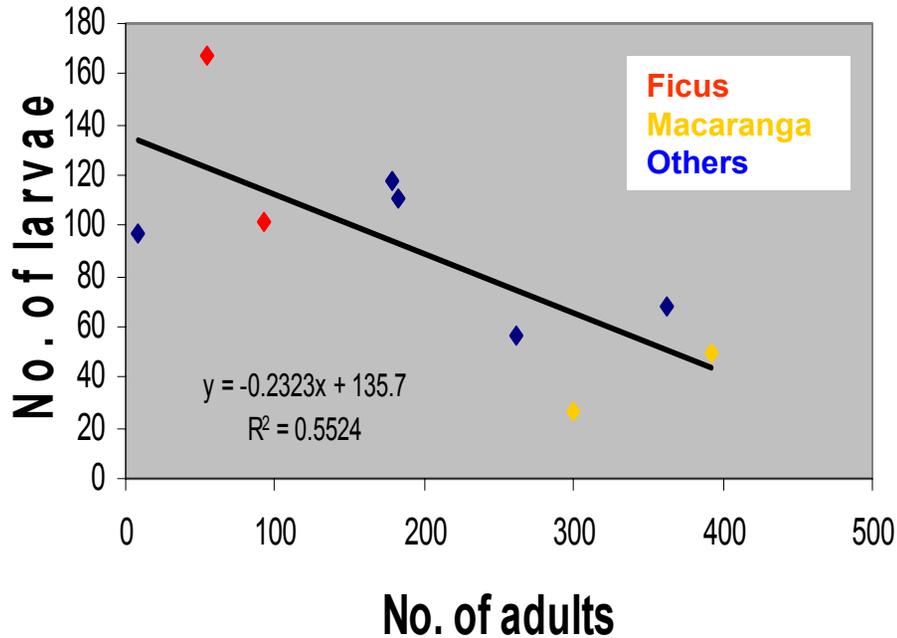


# Comparison of Host Range of both Adults & Larvae on 5 families of studied trees.

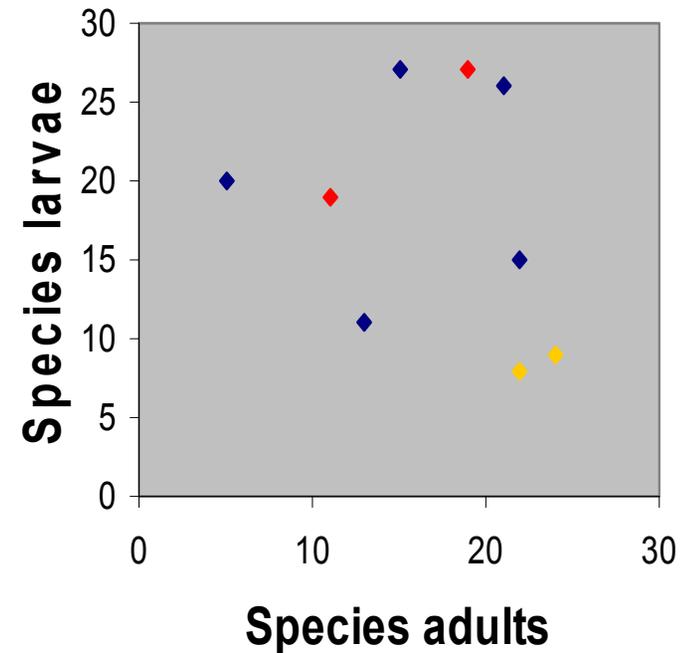


Most of adults feed on 2 host families (Euphorbiaceae & Moraceae) while most of larvae feed on 3 to 4 families (Moraceae, Euphorbiaceae, Urticaceae & Sterculiaceae)

# Relationship between species richness & abundance of Chrysomelid larvae & adults on studied trees.



Negative co-relation between No. of adults & No. of larvae.



No relationship between adult species & larvae species.

# Conclusion

The study showed that both adults & Larvae of the same species of Chrysomelid Beetles showed different host preference for the studied trees. They seemed to be host generalists but none of the species feed on all 9 trees.



# Acknowledgements.

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