



Phoretic Mites associated to ambrosia beetles (Curculionidae: Scolytinae) on avocado (*Persea americana*) in Mexico



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Avocado crop in Mexico

- ▶ Mexico is the main avocado producer in the world.
- ▶ 50% of Mexican avocado is exported.
- ▶ Benefits of this production is about 2,227 millions dollars.





Scolytinae



Subfamily
Scolytinae
(Coleoptera:
Curculionidae)



Bark
Beetles



Ambrosia
Beetles

- Ecological and Economic importance

Wood, 2007; Batra, 1967.

Ambrosia beetles and fungi pest present in avocado Trees



Xyleborus glabratus

Euwallacea spp.

Raffaelea lauricola

Fusarium ambrosium
and *F. euwallaceae*

Carolina del Sur and
Florida

Israel

Mortality
10-90%

60% de 7000ha

Lauracea

Avocado Crop



Phoretic mites in Scolytinae

- ▶ There are 250 species of mites associated to this group of beetles.
- ▶ In the galleries they feed on fungivores , Predators (nematods, other mites, eggs and larvae of scolitins), Detritivores .
- ▶ Main studies have been done in forest ecosystems.



Athias-Binche, 1994; Hofstetter *et al.*, 2015; Hofstetter, 2011.



General Objective

- ▶ To study mite species associated to ambrosia beetles in logs of avocado orchards from different States in the country: Michoacan, Colima, Puebla, Veracruz, Jalisco and State of Mexico.



Phoresy in mites

Adults
emerging

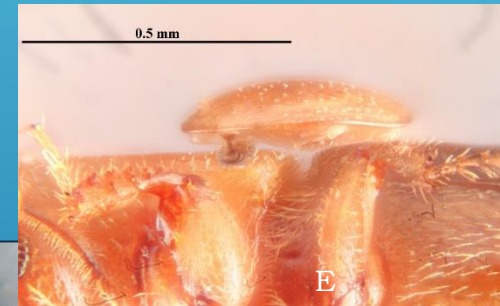
Infesting
Adults



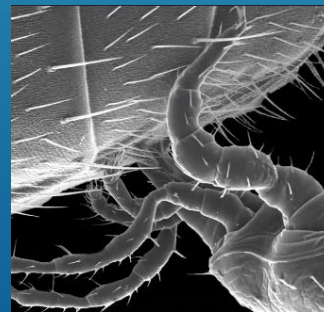
Insect
with mites

Phoretic
nymphs

Active
forms



Anal suction cups





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SHORT NOTE



Mites associated with ambrosia and bark beetles (Curculionidae: Scolytinae) in avocado orchards in Michoacan, Mexico

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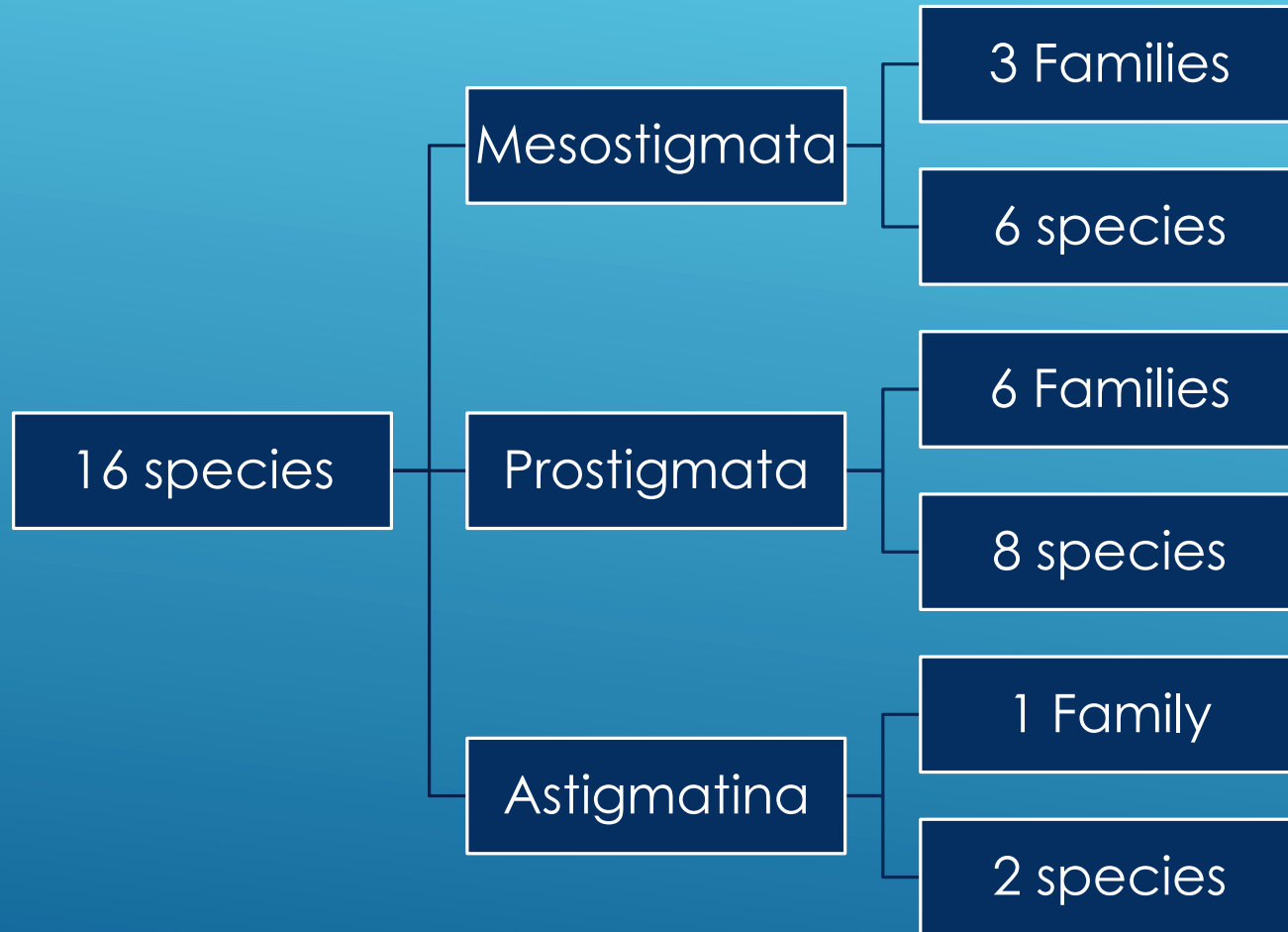




Methodology



Results





Mites associated to *Microcorthylus vescus*





Mites associated to *Monartrum exornatum*



MITES ASSOCIATED TO AMBROSIA BEETLE

Monarthrum exornatum

- *Trichouropoda* sp.1
- *Proctolaelaps* sp.1
- *Proctolaelaps bickleyi*
- *Mexecheleles virginiensis*
- *Eutogenes foxi*
- *Elattoma abeskoun*

It was the ambrosia beetle with the highest number of mites





Conclusions

- ▶ The insects were collected through trapping (different types of traps) and infested logs that are placed in emergency chambers.
- ▶ Avocado orchards have been visited in the states of Colima, State of Mexico, Puebla, Michoacán, Colima, Veracruz, and Jalisco.
- ▶ A total of 23 species of ambrosial scolitins from 10 genera have been recorded with phoretic mites.
- ▶ 16 species of mites have been found, from 10 families of three of the largest groups of mites (Mesostigmata, Prostigmata and Astigmatina).
- ▶ The most abundant families were Melicharidae, Ascidae, Pigmephoridae. Some are recorded for the first time as phoretic species of ambrosiales such as Scutacaridae and Cunaxidae. Currently, other states of the country are working, so the diversity of these groups will increase.
- ▶ The mites found present varied saprophytic habits, predators, fungivores