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ENTOMOGENOUS PARASITIC CASTRATION ON NEOTROPICAL SPECIES: MODELS ON MALPIGHIACEAE FROM RIO DE JANEIRO RESTINGAS

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Plant gall develop in different organs, induced by a variety of organisms, such as insects, nematodes, bacteria, fungi and algae.

Not all predation or parasitism relationship in a plant forms a gall. For example, miners are not gallers



Miner in a leaf of *Byrsonima sericea* (Malpighiaceae).

Vieira®

Galls can occur in leaves...





Vieira et al. unpublished data

Galls induced by Cecidomyiidae in leaves of *Dalbergia ecastophyllum* and *Inga* sp (Fabaceae).

Or they can occur in branchs...



Vieira et al. unpublished data

Galls induced by Hymenoptera in branches of a liana, *Stigmaphyllon ciliatum* (Malpighiaceae).

Or in many organs of the same plant...





Vieira et al. in press

Galls induced by Cecidomyiidae in leaves and branches of a shrub, *Eugenia rotundifolia* (Myrtaceae).

Galls can be formed in plant buds...

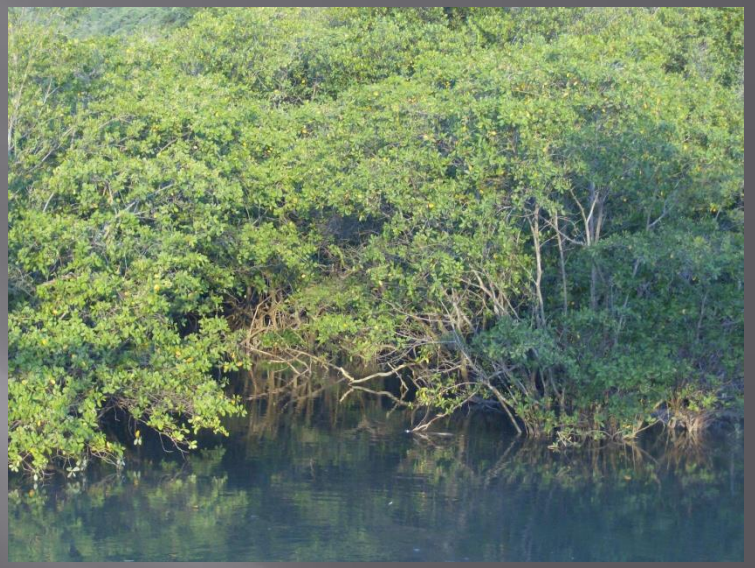


Vieira et al. in press

Galls induced by Cecidomyiidae in vegetative buds of a shrub, *Neomitranthes obscura* (Myrtaceae).

Galls can occour as tropical rain forest, cerrados, mangroves and restingas.







Restingas or salt marshes are coastal environments formed by the retraction of the sea portions, followed by the formation of sandy spits and lagoons systems.









Malpighiaceae in restingas of Rio de Janeiro





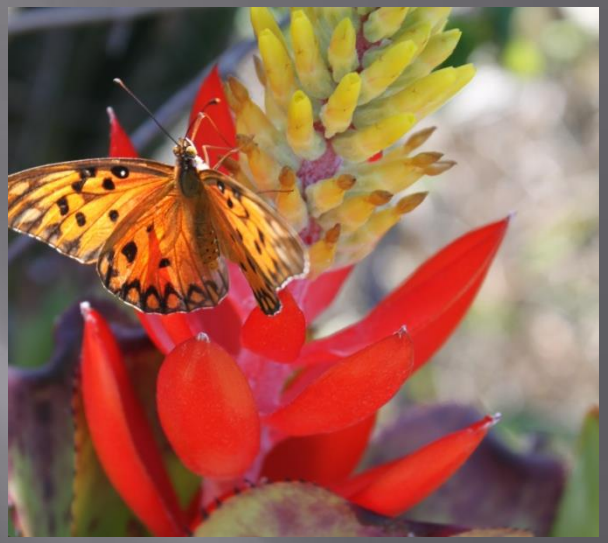


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Flowers of *Heteropteris chrysophylla*, *Stigmaphyllon paralias* and *Peixotoa hispidula* (Malpighiaceae).

Relationship among insects and plants...









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Parasitic castration...

The term is introduced by Gard (1888) and the author refers to the incapacity of floral development by the action of midges, preventing proper formation of fruits and seeds.

The reproductive organs of the plants are considered very sensitive to the action of gall makers, depending on the level of the induced changes the parasitic castration may occur preventing the sexual reproduction of plants.

In restingas, Maia (2001) cited at least 13 galls found in reproductive structures in different botanical families, affecting flowers and fruits. For Malpighiaceae, the autor indicates the occurrence of floral galls induced by Cecidomyiidae in three species.

Study case 1 – *Niedenzuella acutifolia*





Vieira et al, in press

Study case 1 – *Niedenzuella acutifolia*

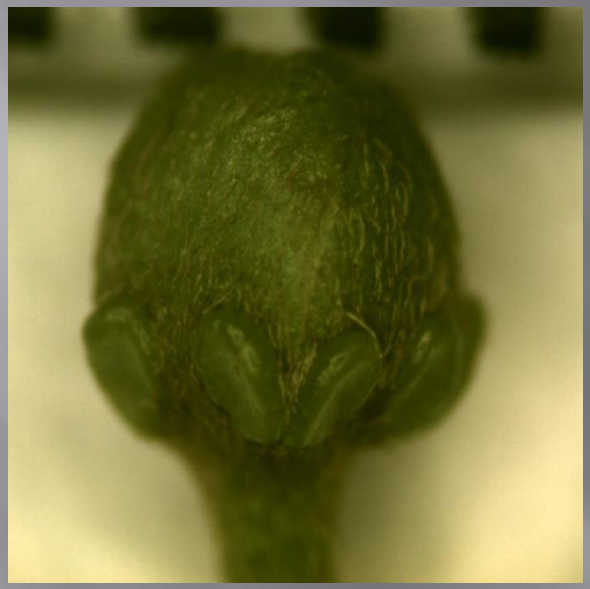


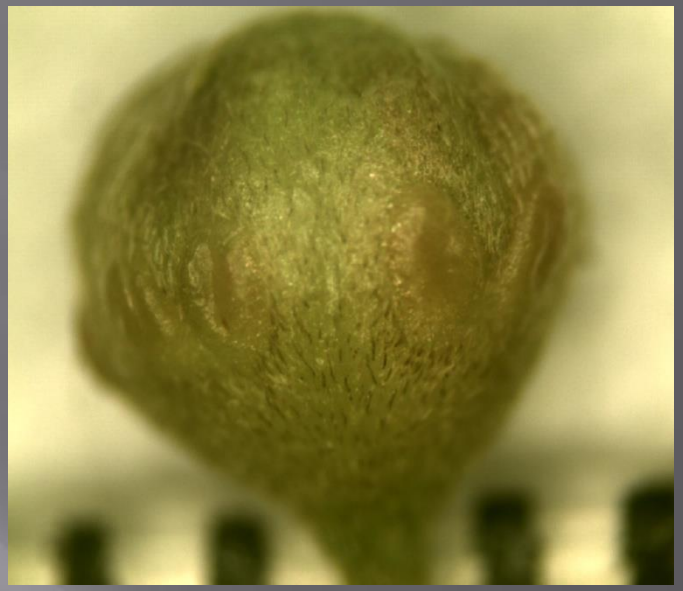




Vieira et al, in press

Study case 1 – *Niedenzuella acutifolia*









Vieira et al, unpublished data

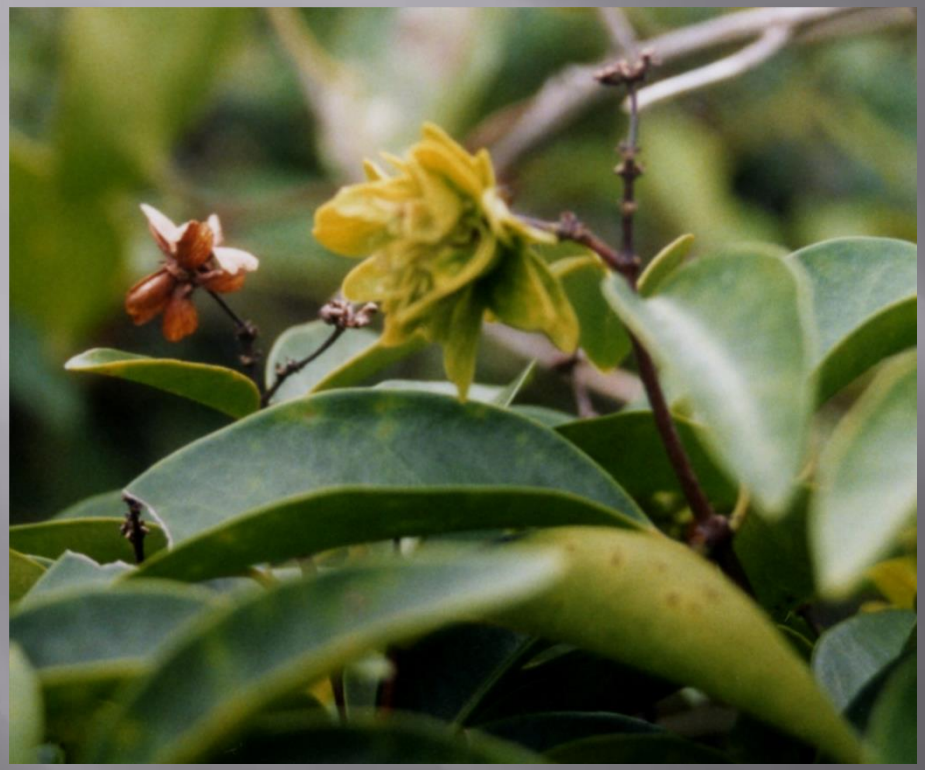
Study case 1 – *Niedenzuella acutifolia*





Vieira et al, in press

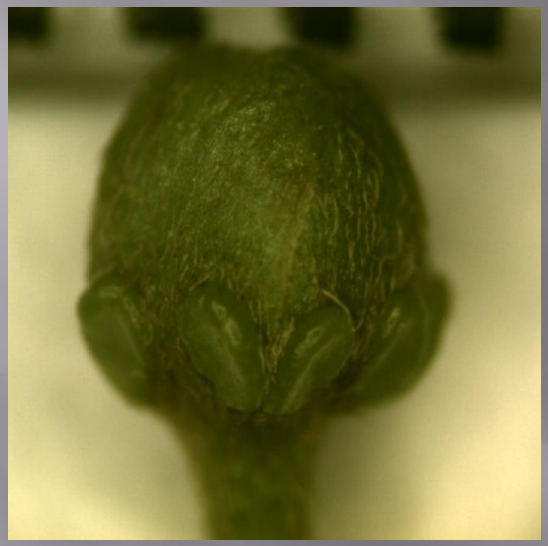
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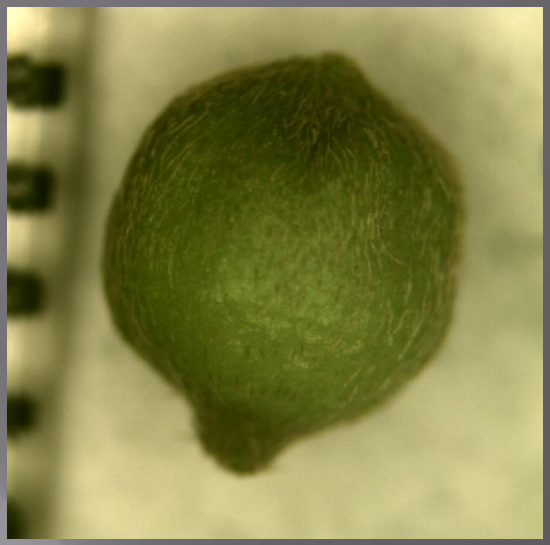




Vieira et al, in press

Study case 1 – *Niedenzuella acutifolia*









Vieira et al, unpublished data

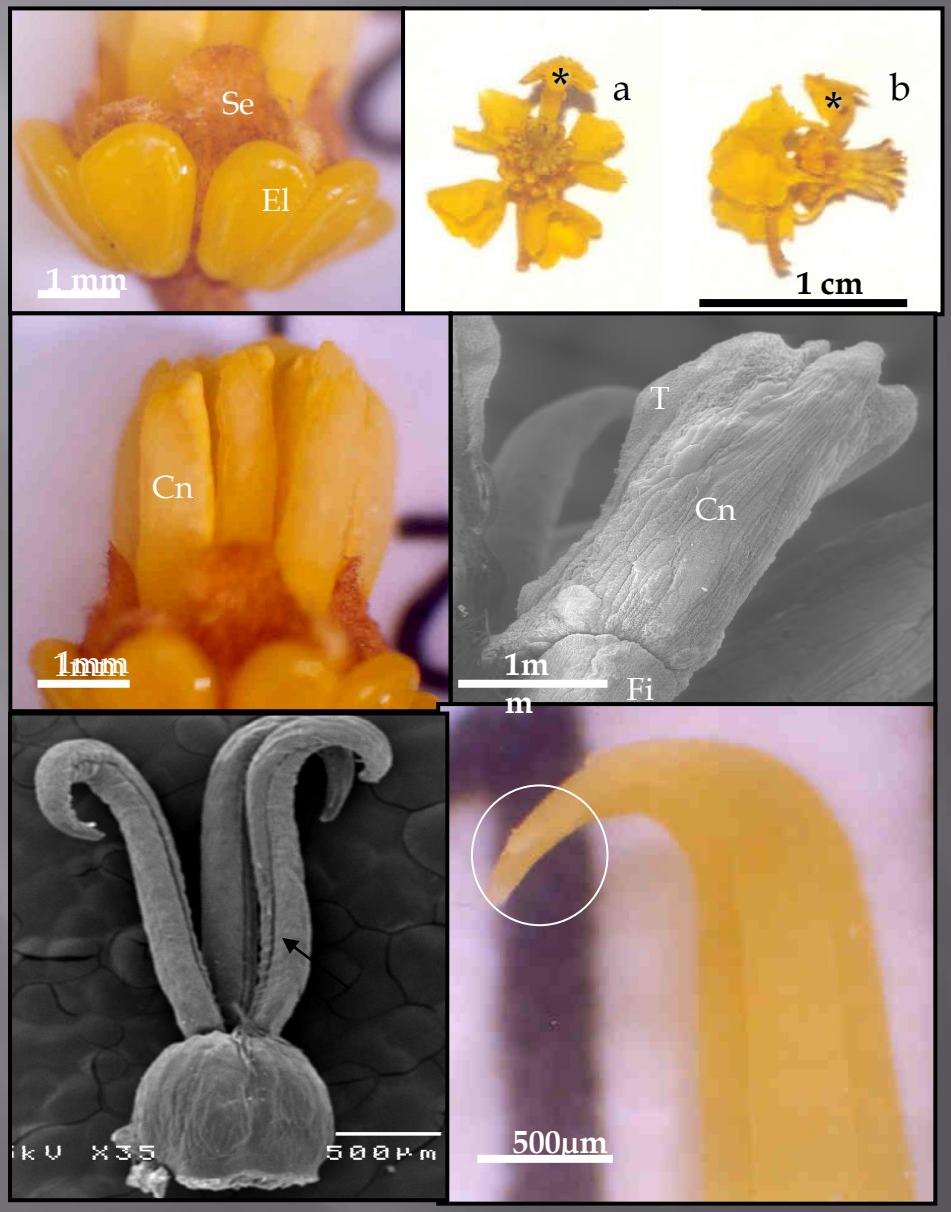
Study case 2 – *Byrsonima sericea*





Vieira, 2014

Study case 2 – *Byrsonima sericea*



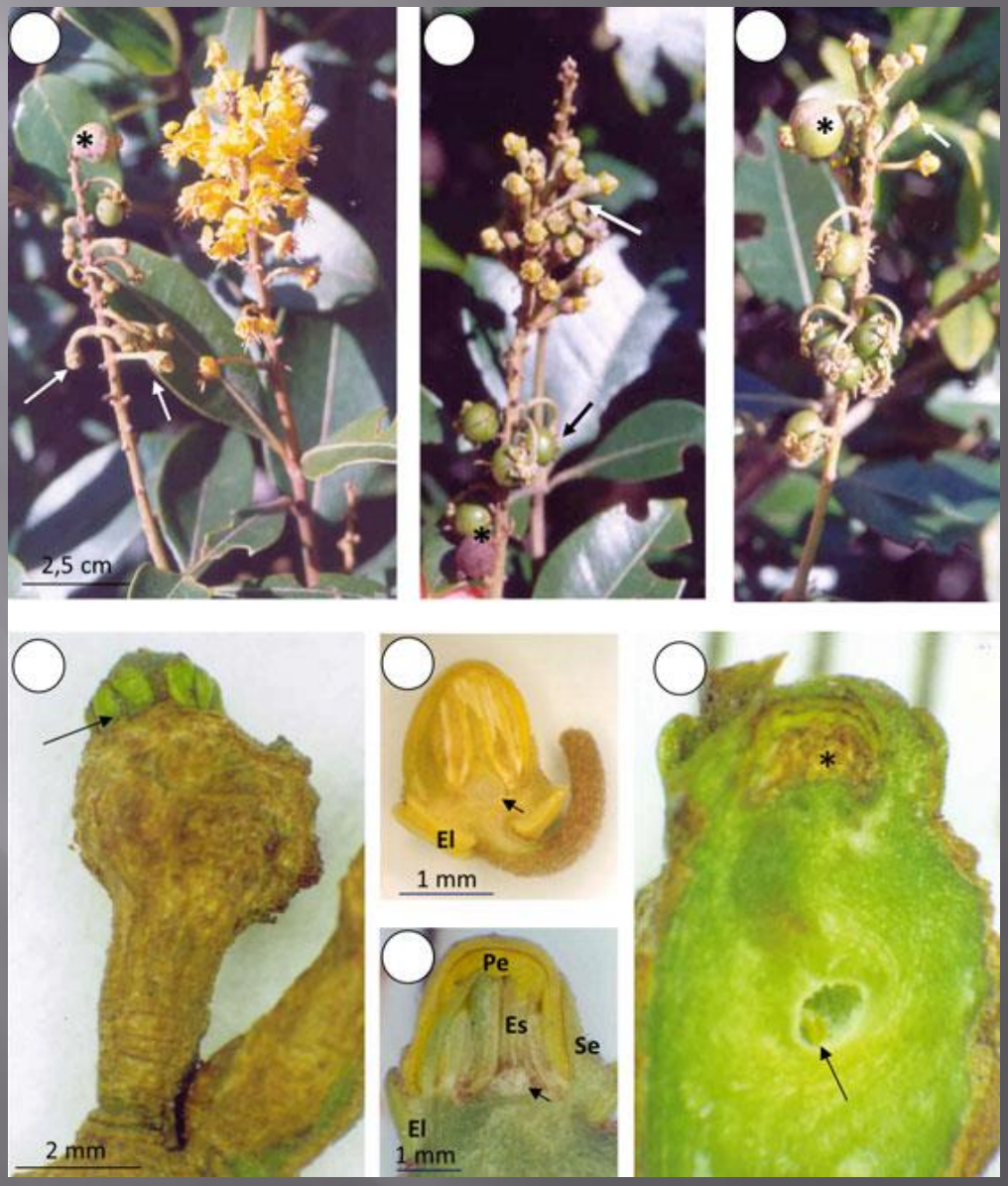
Vieira, 2005

Study case 2 – *Byrsonima sericea*



GUIMARÃES, A. L. A. ; CRUZ, S. M. S. ; **VIEIRA, A. C. M.** . Structure of floral galls of *Byrsonima sericea* (Malpighiaceae) induced by *Bruggmanniella byrsonimae* (Cecidomyiidae, Diptera) and their effects on host plants. Plant Biology (Stuttgart), v. 16, p. n/a-n/a, 2014

Study case 2 – *Byrsonima sericea*



Guimarães et al, 201

Study case 2 – *Byrsonima sericea*



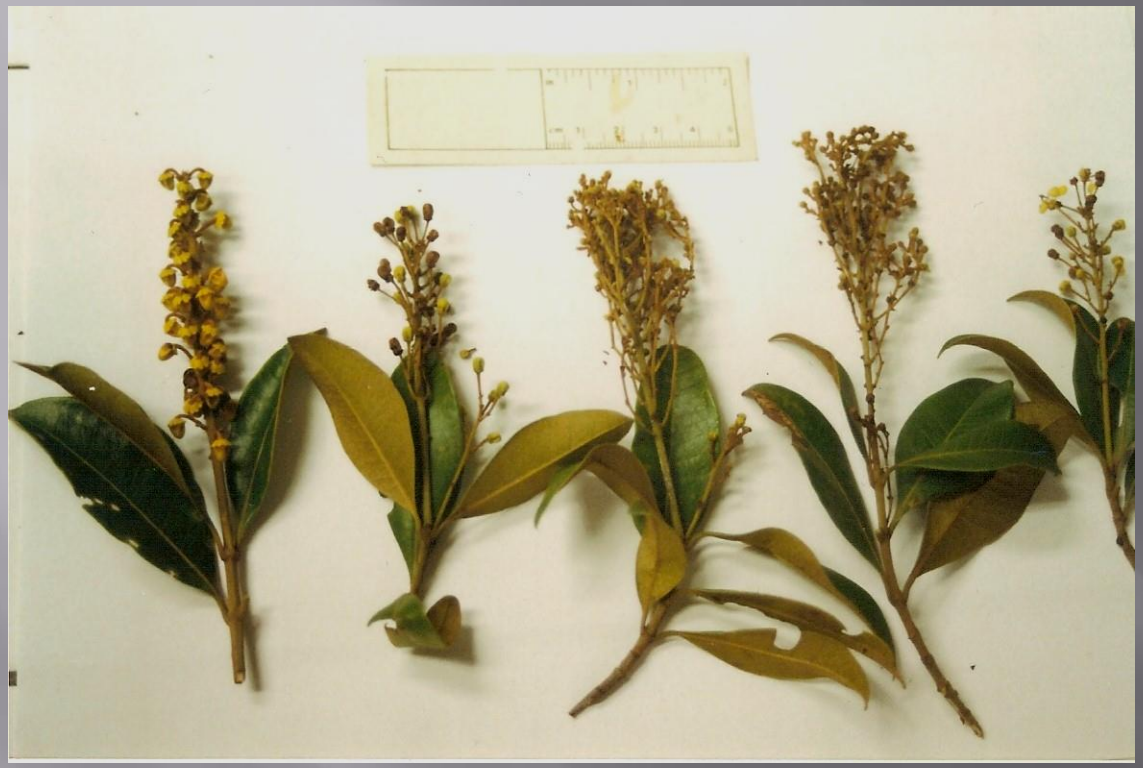
Vieira, 2005

Study case 2 – *Byrsonima sericea*



VIEIRA, A. C. M.; KRAUS, J. E. . Biologia e estrutura da galha do pedicelo de Byrsonima sericea DC. (Malpighiaceae) induzida por Lepidoptera. Revista Brasileira de Biociências, v. 5, p. 402-404, 2007.

Study case 2 – *Byrsonima sericea*





GUIMARAES, A. L. A. ; SANTIAGO-FERNANDES, L. D. ; NEUFEULD, P. M. ; **VIEIRA, A. C. M.** . Structure and development of witches broom galls in reproductive organs of Byrsonima sericea (Malpighiaceae) and their effects on host plants. Plant Biology (Stuttgart), v. 17, p. 493, 2014.

Study case 2 – *Byrsonima sericea*







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Study case 2 – *Byrsonima sericea*





Vieira et al, unpublished data

Conclusions

•Parasitic castration is not a single regular phenomenon for all affected plants.

•The relationship between each type of inductor and this plant is so unique and has particular characteristics.

•Each case must be studied under morphological, ontogenetic and anatomical understanding to all stages of the event.

•Field work is essential in neotropical regions to identification of new floral galls.

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