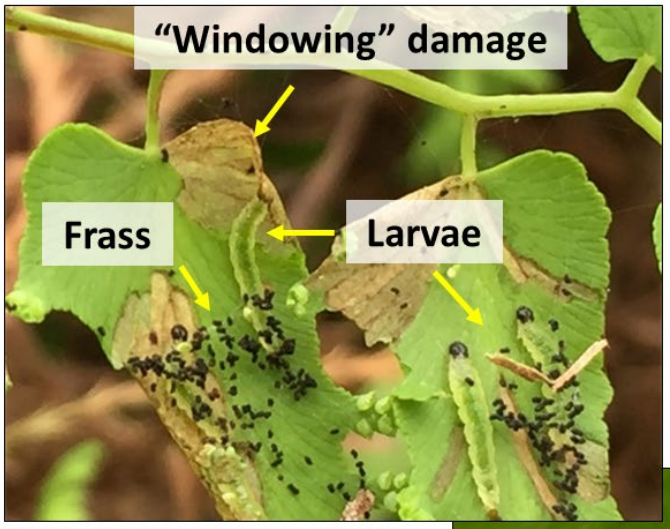
Identifying biocontrol agents of Old World climbing fern (*Lygodium microphyllum*)

Brown Lygodium Moth *Neomusotima conspurcatalis*

This species is a defoliating moth that feeds on the plant's leaflets in its larval stage. Feeding damage can be recognized by the "windowing" pattern of damage in which the green surface layer of the subleaflet is consumed, although this pattern can be caused by other factors too (i.e., sun exposure, water stress, temperature stress). The presence of the moth larvae's frass (excrement), which will appear as a web of small black pellets, is a definitive sign of feeding damage. And, of course, if you see the larvae you know you have an active population. To our knowledge, no other species in Florida feeds on the leaflets of *L. microphyllum*. The adult moths are harder to identify in flight, although if you are in a dense infestation and see moths flying around, chances are it might be *N. conspurcatalis*.



Releases

Neomusotima conspurcatalis is released by spreading Lygodium debris infested with larvae and pupae around an invaded area. Handfuls of the debris are nestled among the Lygodium foliage, usually in dense, shady spots when possible. Release numbers will depend on the colony production in a given week, but often range from 1,000-10,000 individuals.

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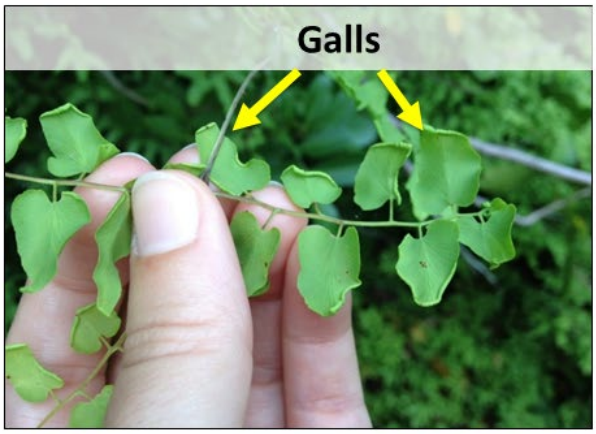
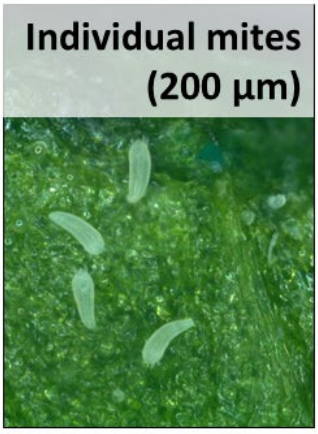
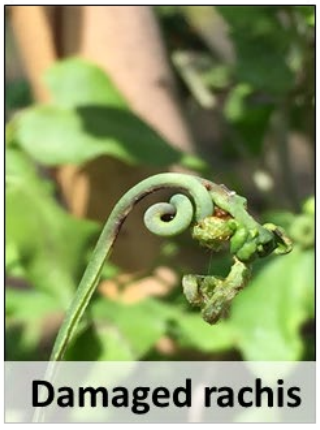
Lygodium Mite *Floracarus perrepae*

These mites are microscopic (~200 µm), but their presence can be reliably identified in the field. The mite forms marginal leaf roll galls on the subleaflets where it completes its lifecycle and leads to leaf necrosis. A good field diagnostic is to test the strength of the roll; *galls will be firm and not unroll*. The mite also attacks the apical meristems of the extending *L. microphyllum* rachises, often causing a lateral rachis to form and a subsequent loss of apical dominance. This can stunt growth of the main rachis and produce many new, clustered subleaflets that ultimately inhibits upward climbing.







Releases

Releases are conducted by placing mite infested plants amongst the Lygodium foliage. We typically place whole plants in their pots (1 gal, mite numbers range 1,000-10,000 per plant) to allow the mites to exit galls after completing development. In some cases, we will cut the infested, aboveground portion of the potted Lygodium and nestle the debris within the Lygodium foliage. We try to position the material high up on the infestation to allow mites to fall onto the new foliage or disperse in the wind. Avoid placing in water.

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