Predators of Harrisia Cactus Mealybug

2nd Taskforce Meeting

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Puerto Rico
Native Natural Enemies

- **Diptera: Chamaemyiidae**
  ***Leucopina bella* Loew**

- PR-04 - 3, kept 1
- Note: All females.
- Determined May 12, 2008 by Stephen D. Gaimari
  (Associate Insect Biosystematist, California Department of Food and Agriculture)

- **Biology:** Chamaeyiidae is a small family of acalyptrate flies with less than 200 species described worldwide. The larvae are predators and are often used in BC of aphids, and scale pests.

Puerto Rico
Native Natural Enemies

- ***Diomus* sp?** (Coleoptera: Coccinellidae)
- Collected by: A. Segarra
- Sample PR-01 5 specimens – pointed
- Sample PR-02 5 specimens – pointed
- Sample PR-03 4 specimens – pointed

- Specimens shipped to the Natural History Museum, London on April 8, 2008.

Exotic Natural Enemies Barbados

- **Diptera: Cecidomyiidae,**
- ***Diadiplosis coccidivora* Cockerell**
- Shipped 20, kept 3
- Determined January 18, 2008 by Raymond J. Gagne (Retired Research Entomologist, SEL)
- **Biology:** eggs are laid near the base of the mealybug host, larvae tunnel underneath the host and feed on the eggs or developing coccid nymphs.
- Note: First insect we are requesting permits for entry into quarantine. Seems to be easily reared in Barbados.

Exotic Natural Enemies Barbados

- **Coleoptera: Coccinellidae: Diomus sp.**
- Shipped 6 SEL Identification Report on Lot# 0800249
- Identified by: Natalia Vandenburg
- (ARS Systematic Entomologist)
- Group needs revision; adults not identifiable to species. **Diomus sp. 'group F'** according to R. Gordon's South American revision of this genus. I was unable to key it any further due either to the fact that the particular species doesn't occur in South America, or due to problems with the key
- The reported prey of Diomus, group F include: Planococcus citri, Phenococcus herreni, Phenococcus grenadensis, Phenococcus madeirensis, and Phenococcus manihoti. Most of the species lack prey associations (N. Vandenburg, pers. comm. email)
- 5 specimens shipped to Natural History Museum, London, April 8, 2008.

Exotic Natural Enemies Barbados

- **Coccinellidae: Hyperaspidini: *Hyperaspis sp.* 9**
- Determined February 7, 2008 by Natalia J. Vandenberg

- Group now under revision. Note: Hyperaspis (sens. lato). I reviewed a manuscript by Gordon and Canepari last year. I know that the genus Hyperaspis will be subdivided into several closely related genera. I don't know Where this one will be placed in the revised scheme, possibly it will remain in Hyperaspis. Last I heard the paper was not yet published. The USNM material has been returned, but this species is not among our holdings. Email: The reported prey of Hyperaspis species include various scales, mealybugs and aphids; from the list in Gordon 1985 I recognize the same 2 genera of mealybugs (Phenococcus and Planococcus).
- Shipped 6 pointed specimens to Natural History Museum, London April 8, 2008

Species of *Diomus* and *Hyperaspis* recorded in Barbados*

Coccinellid species	Prey
Diomus spp. (3 species)	Sugarcane thrips (Fulmekiola serrata)
Diomus sp.	Icerya purchasi
Diomus sp. nr. ochroderus (Mulsant)	Toxoptera aurantii
Diomus ochroderus (Mulsant)	Orthezia insignis, Sipha flava, T. aurantii, Aphis spp., Aleurothrixus floccosus, Aleurodicus cocois and A. dispersus
Diomus thoracicus (Fabricius)	Sipha flava, Aleurocanthus woglumi, Coccus viridis, Geococcus coffeae, Lepidosaphes beckii, Pulvinaria urbicola and Aphis spp.
Hyperaspis festiva ab. apicalis Weise	Rhopalosiphum maidis
Hyperaspis trilineata Mulsant	Saccharicoccus sacchari

*Bennett, F.D. and Alam, M.M (1985) An annotated check-list of the insects and allied terrestrial arthropods of Barbados. CARDI.

Exotic Natural Enemies Barbados

- ***Anagyrus* sp? (Hymenoptera: Encrytidae)**
- Shipped 12 specimens – alcohol to Natural History Museum, London
- Biology: Primary parasitoid of mealybugs
- Currently unclear as to whether parasitizing H. pungens, as individuals were not isolated in gel caps, rather they were aspirated from mass collections.

Classical Biological Control

- Challenges
  - Exotic natural enemies are unprecedented in the US and it's territories.
  - Studies will have to be conducted to confirm they attack H. pungens and other closely related hosts.
  - Permit for Release will have to be reviewed by NAPPO panel. (EA & FONSI)
  - Quarantine facility will have to hold and rear over multiple generations before release
  - $$'s