

## Whitefly Project Update – October 15, 2012

Catharine Mannion, Ph.D.  
Associate Professor and Extension Specialist  
University of Florida, IFAS, Tropical Research and Education Center  
18905 SW 280<sup>th</sup> Street, Homestead, FL 33031  
[cmannion@ufl.edu](mailto:cmannion@ufl.edu) 305-246-7001 x220

### Brief Summary

1. Predatory beetles released at 17 locations – 2,390 released to date;  
Parasitic wasps released at 7 locations – 320 released to date
2. One beetle predator and two parasitic wasps have become established, however, the impact on the whitefly infestations will take time
3. Beetle predators appear to be more negatively impacted by the insecticide used for whitefly control.
4. Overall, whitefly populations have decreased on Key Biscayne, but there still remains some hot spots with moderate to severe whitefly. These “hot spots” may also fluctuate.
5. Many of the insecticide treated locations show improvement
6. The situation on Ridgewood has been particularly difficult due to the high infestations, the high number of preferred trees, the severe pruning impacting insecticide application and stressing the trees, and now the potential of a disease. Results are variable on Ridgewood as there are trees that have little to no whitefly to trees that remain heavily infested.
7. Whitefly populations will naturally decline during the winter months due to cooler temperatures.
8. Evaluations will continue through May 2013.

### Natural Enemy Release

The purpose of this project is to enhance the presence of natural enemies to control the Rugose spiraling whitefly through releases of known natural enemies and to ultimately determine the impact of these natural enemies on the whitefly infestation. As per the protocol, some of the releases would occur on trees that have been treated with an insecticide and others that have not. The purpose for this was to help determine if the insecticide used for control of the whitefly has a negative impact on the natural enemies. There have been releases of two natural enemies; a predatory beetle (*Nephaspis oculatus*) and a parasitic wasp (*Encarsia guadeloupe*).

The first release of the beetle occurred on May 29, 2012 followed by releases on eight subsequent dates through October 9. The total beetles released to date are 2,490 over

17 locations listed below (Table 1). The total parasitic wasps released to date are 320 (Table 2). The trees that are primarily targeted are gumbo limbo and palms and on occasion a few others have been included (i.e. Bird of Paradise, black olive).

To date, the predatory beetle has been established at half the release sites and one additional location where there was no release. All the locations that did not have an insecticide treatment (except two) had beetle establishment. There appears to be little to no establishment of predatory beetles on trees treated with insecticide. It is important to note that populations of beetles fluctuate greatly. Evidence of establishment is based on their presence over a period of time.

To date, parasitic wasps have established at all sites sampled which also includes some sites in which there were no releases. It appears that the parasitic wasps are less affected by the insecticide. Fewer wasps were released at fewer sites. The wasps were released at 7 sites but have been recovered from 17 sites indicating that they are spreading to new locations. Although the emphasis was on the release of one type of parasite, it is likely that a second parasite was also released. Both of these parasites have been established. Recently a third parasite has been recovered but not yet been identified. These are excellent results and a good indicator that these wasps are established and spreading to new areas of infestation.

Using predators and parasites for pest control can ultimately provide a long-term, biologically based solution. But it also requires patience. Thus far, the release of parasites and predators is successful in that there is establishment of one predator and two parasites. These populations should grow, but unfortunately it takes time for the populations to grow enough to show the impact they have on the pest population.

**Table 1. Predatory Beetle Release**

Location	No. Beetles Released	Location	No. Beetles Released
MM 2.2 Crandon Blvd.	100	599 W. Enid (I)	20
MM 2.0 Crandon Blvd.	135	261 Island Dr.	20
Church on Harbor Dr.	125	699 Glenridge	200
701 Harbor Lane (I)	210	CVS at Crandon & W. Wood	250
Cape FL Dr, black olive (I)	210	Library on Crandon	50
Vacant lot 741 Harbor Dr.	160	375 Redwood	50
724 Ridgewood (I)	120	240 Cypress (I)	75
773 Ridgewood (I)	345	Rickenbacher Beach	25
265 Ridgewood (I)	395		

Sites treated with an insecticide are marked with an (I).

**Table 2. Parasitic Wasp Release**

Location	No. Wasps Released	Location	No. Wasps Released
701 Harbor Lane (I)	50	724 Ridgewood (I)	50
Vacant lot 741 Harbor Dr.	25	773 Ridgewood (I)	50
599 W. Enid (I)	60	265 Ridgewood (I)	60
Harbor Plaza Median	25		

Sites treated with an insecticide are marked with an (I).

## Whitefly Infestation

Although there has been periodic sampling and observation from May 25 to date, the most intensive evaluations were conducted on September 11, 25 and October 9. Select plants at each location were evaluated for level of infestation (0 = no infestation to 5 = severe infestation) (Table 3). On September 25, in addition to the ratings, a sample of 20 leaves were randomly collected from each tree and the total number of live whitefly immatures were counted under the microscope. The locations in which the infestation worsened are highlighted in pink. Slightly more than half of the locations continue to have moderate to heavy infestations of the whitefly. Most of the locations had moderate to heavy live whitefly (Table 3). All locations treated with insecticide (Table 3), except one, have low infestations and most of these had lower levels of live whitefly. It is not surprising that the locations that we are seeing establishment of predators and parasites still have moderate to high whitefly infestation because of the time it takes for these natural enemies to have impact. The locations with the highest percentage of parasitism were at 701 Harbor Lane, vacant lot at 41 Harbor Drive, and on the tropical almond tree at the library.

Although there have been several high infestation areas, **Ridgewood** has been one of the worst. We are not completely sure why this street in particular has been so bad. It is an area that likely became heavily infested before any action was taken. It also has many gumbo limbo trees which are one of the preferred hosts of the whitefly. This was complicated by severe pruning of the trees shortly after an insecticide application which likely removed most of the insecticide. Throughout this project we have seen improvement on some trees while others remain infested. We know that the predatory beetles are not establishing, however, the parasites are establishing. Many of the gumbo limbo trees have been retreated with insecticide. Another, newer, complication is the presence of canker. Additional stress such as this can potentially cause additional problems with the whitefly and its management. On October 1, we evaluated several locations on Ridgewood (676 to 797). Trees from 676 to 690 had heavy infestations while most other trees from 691 to 797 (with a few exceptions) had

moderate to low infestations. The Ridgewood locations used in this project currently have little to no whitefly. It is unclear why some trees that have received repeated insecticide application continue to have severe whitefly (i.e. 749). Although this situation does exist, it is not across the board for all the trees. In those situations, it is recommended that the Chemical Company, the Arborist and the University revisit those trees to consider potential options.

**Table 3. Whitefly Infestation Rating**

Location	Insecticide	Infestation Rating 9-11-12	Infestation Rating 9-25-12	Infestation Rating 10-9-12	Total Live Whitefly (20 leaves)
mm 2.2 Crandon Blvd.		2	3	5	3086
mm 2.0 Crandon Blvd.		3	4	4	5545
church on Harbor Drive		5	5	5	4484
Harbor Plaza Median		1	1	0	1
701 Harbor Lane	Yes	4	4	4	2091
Cape Fla. Drive	Yes	2	1	1	304
vacant lot, 741 Harbor Dr		1	1	1	124
724 Ridgewood	Yes	1	1	1	553
773 Ridgewood	Yes	1	0	0	0
599 W. Enid	Yes	2	4	2	1336
261 Island Drive		1	1	-	0
265 Ridgewood	Yes	1	0	1	0
699 Glenridge		4	4	3	1032
CVS, Crandon Blvd		2	3	3	681
Library (gumbo limbo)		3	1	5	1114
Library (tropical almond)		1	3	1	143
375 Redwood		2	4	3	2422
240 Cypress Dr.	Yes	2	2	3	369

### Future Expectations

Evaluations of whitefly infestations and presence of natural enemies will continue through May 2013. Whitefly infestations, in general, naturally go down during the winter as temperatures cool which will also impact the natural enemies. A key period will be next Spring when temperatures warm. At that time, it will be important to assess if and where any insecticide applications should be made and to determine the presence of natural enemies.

## Release Sites of the Predatory Beetle



## Release and Recovery Sites of the Parasitic Wasp

