

Integrated Pest Management (IPM) of the Tawny Crazy Ant, *Nylanderia fulva* (Mayr)¹

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Tawny Crazy Ants Summary

- Cannot be controlled by spraying alone.
- Become a nuisance to people by rapidly crawling on them and spoiling the enjoyment of their property and recreational areas (Figure 1).
- Do not sting but can nip with chewing mouthparts.
- Are known to cause electrical shortages and may damage expensive equipment.
- Decrease ecosystem diversity by displacing other species (LeBrun et al. 2013).
- Have been observed to cause considerable damage in organically grown crops in some Caribbean islands, although there are no reports of agricultural damage in Florida. In Columbia, Zenner-Polanía (1990) reported infestations in coffee plantations intercropped with banana and plantain trees used as shade.
- In Columbia, Zenner-Polanía (1990) also reported that the large number of ants caused death in small animals due to asphyxia. Larger animals also were attacked “around eyes, nasal fossae and hoofs.”



Figure 1. Dead tawny crazy ants outside a screened patio.
Credits: UF/IFAS

Distribution

The tawny crazy ant:

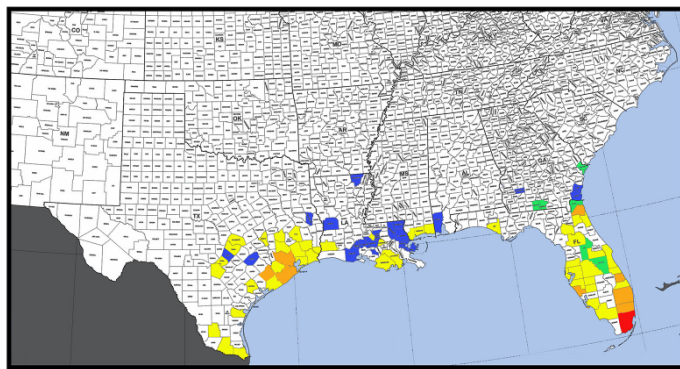
- Has predictably spread throughout the state of Florida over the last few years and now can be found in some parts of at least 26 counties as well as other southern states (Figure 2).

1. This document is ENY-2006 (IN889), one of a series of the Department of Entomology and Nematology, UF/IFAS Extension. Date first published: July 2011. Revised September 2016. Please visit the EDIS website at <http://edis.ifas.ufl.edu>. Originally published July 2011 as **Integrated Pest Management (IPM) of the Caribbean Crazy Ant, *Nylanderia* (=Paratrechina) *pubens* (Forel)** by Dawn Calibeo and Faith Oi. Major revision September 2016 with John Paige III and Michael Bentley.
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- Are an invasive species with probable origins in South America.



Distribution of *Nylanderia fulva* in US

■ First record from US, 1953 ■ US county records by 2004 ■ US county records, 2004-2012
 ■ US county records, after August 2013 ■ US county records, 2015 and after

Figure 2. Distribution of the tawny crazy ant in the United States. Credits: Used with permission, J. MacGown, Mississippi Entomological Museum (http://www.mississippientomologicalmuseum.org.msstate.edu/images/antphotos/Nylanderia_fulva_distributionMap.jpg)

Field Identification

Tawny crazy ants are named for their reddish-brown color and their manner of locomotion (they zip around quickly and erratically). They are medium-sized ants (<1/8 inch) in length and monomorphic (“one-size”) (Figure 3). Tawny crazy ants have a one-segmented petiole. A detailed taxonomic description can be found in Sharma et al. (2014). They are most notorious for their huge colonies. Home-owners have reported that “the ground is moving” in areas of heavy infestation. Tawny crazy ants do not form mounds in the landscape, although they can tunnel in sandy soil (Bentley et al. 2015), contrary to previous reports.



Figure 3. Tawny crazy ants with brood and penny for scale. Credits: USDA ARS CMAVE

If identification assistance is needed please contact your local UF/IFAS Extension office (<http://sfyl.ifas.ufl.edu/map/index.shtml>) or our Insect ID laboratory (<http://entnemdept.ufl.edu/insectid/>).

General Management Facts

- **Relying on a single control tactic for this ant will result in failure.** Our data indicate that a single insecticide spray lasts <1 week with an average of 2 to 3 days before ants begin to return.
- An integrated pest management (IPM) approach provides more satisfactory results, but does not promise 100% control due to the invasive nature of this ant.
- IPM is a dynamic process that uses multiple control tactics. It starts with correct pest identification and monitoring.
- An IPM Decision Flow Chart and Specific Approaches for this pest ant are provided in the flow chart below (Table 1).
- The timing of product applications is as important as the product chosen.
- Management of this ant will most likely require the services of a professional pest control company that practices IPM.
- Ant activity will subside when the weather starts to cool but, expect the ants to reinvade next year. The predictable pattern of reinvasion is why it is important to keep records of where this ant was found on a property.
- 100% eradication of this ant is not probable in areas where it is established; however, population suppression is possible.
- For reasons that are unclear, within about 10 years after establishment, tawny crazy ant populations subside and other ant species return.
- There is a legal limit as to how often products can be used, so please do not ask your pest control operator to do “extra” treatments.

Integrated Pest Management

If you live in an area with tawny crazy ant activity, sanitation in combination with inspection and monitoring will be ongoing and important in suppressing ant activity. Start monitoring around February. Thin slices of Vienna sausage placed 10 to 20 feet apart are effective in monitoring by drawing out ants that may not be readily visible (Figure 4).



Figure 4. Tawny crazy ants on thin slice of Vienna sausage after a few minutes at a heavily infested site.

Credits: UF/IFAS

After determining the presence of the tawny crazy ant and depending on the severity of the infestation, a **possible treatment protocol** may include placing granular and liquid baits on the perimeter of the property, treating the lawn with a granular contact insecticide, treating trees and shrubs with a systemic insecticide to manage honeydew-producing insects, and administering a spot or perimeter treatment of the structure. Always follow the label. Applications can be done simultaneously with sanitation and exclusion tactics.

Sanitation

“Harborage” is a place where insects live and breed. The most important thing a homeowner can do is to eliminate as much harborage as possible, including leaf litter and branches. Homeowners should not just pile these up, but should get them off the property. Zenner-Polanía (1990) has anecdotal evidence from coffee plantations that the number of nests decreased by 23% just by removing plant debris from the property. Removing debris also will increase the effectiveness of product applications because there will be fewer “pesticide-free” zones.

OUTDOORS

- Schedule regular trash pick-up. Keep trash cans clean and stored away from the home.
- Remove leaf litter, fallen branches, and other yard debris.
- Keep hedges and trees trimmed so that they do not touch the home.

INDOORS

- Eliminate or reduce possible food, water, and nesting sources.

- Remove trash regularly and keep trash receptacles clean.
- Do not leave dirty dishes in the sink.
- Clean up spills immediately.
- Place food items in the refrigerator or in sealed containers.
- Pick up pet food bowls when your pet is not eating.

Exclusion

To prevent ants from entering a home, walk around the outside of the home and locate potential entry points (cracks, crevices, spaces around windows and doors) (Figure 5). Locate indoor entry points, paying particular attention to windows, doors, and plumbing and utility penetrations. Use an appropriate sealant. Replace door thresholds and weather stripping as needed. If you can see light from the outside while you are standing inside, it is enough of a gap for ants and other pests to enter.



Figure 5. Tawny crazy ants after treatment outside patio and on sliding door track. A possible entry point.

Credits: R. Bernal

Insecticides

Always follow the use directions on the label. The label is federal and state law. Control of this species requires the use of **all** aspects of IPM. It is not unusual that multiple insecticide products are used **in addition** to sanitation and exclusion. Since some products do not work together; consult a pest-management professional who can implement an effective IPM program.

BAITS

Think of baits as a first line of defense. Examples of baits can be found in Table 2. Insecticidal baits can be very effective in suppressing large ant colonies because baits exploit food sharing behavior (trophallaxis) in ants. Granular insecticidal baits should not be confused with granular contact insecticides. Granular baits require ingestion; granular contact insecticides simply require contact with

the product. Insecticidal baits can be formulated as granular, liquid, or containerized products.

Baiting Tips

- Before applying bait to large areas, it is important to make sure that the ants are feeding on the bait by placing a small amount of bait where ants are present and simply observing whether the ants will feed on it.
- Extend the longevity of your granular bait. Protect it from Florida's harsh environment or landscape irrigation by protecting it in an ant bait station or other secured box (Figure 6).
- Station placement is important. Consider elevating stations in low-lying areas to avoid flooding, or simply place stations where they will not be subject to flooding.
- Some baits will mold and become unpalatable in protected stations. Our research demonstrated that placing 2 to 4 oz. of MaxForce® Complete* (Bayer Environmental Science) granular bait in rodent boxes (Figure 6) extended the palatability of the bait to at least a month during the summer. (*Not an endorsement.)



Figure 6. Example of protecting granular bait (center tray) from harsh weather, rain or irrigation in a rodent station that locks. Dead ants in surrounding trays.

Credits: UF/IFAS

- During the hot summer months, many ants prefer liquid baits.
- Our research demonstrated it is possible to achieve a ~50% reduction in ants by applying baits early in the season, starting with a MaxForce® Complete, then by adding MaxForce® Quantum-dilute liquid bait in additional locations in June. Other granular and liquid bait combinations also may be effective.

Additional Considerations

- Expect to see ants after the application of any bait because it will take at least a few hours to days for the toxicant to spread.
- Do not disturb the foraging ants because they will stop picking up the bait and sharing it.
- Do not use other insecticides or strong household cleaners in the areas where the baits have been placed because this will contaminate the bait and make it unpalatable to the ants.

Generally, baits are formulated for protein-feeders, sweet-feeders, and oil-feeders. Baits for oil-feeders are predominantly directed toward fire ant control and are not represented below. Bait particles also need to be an appropriate size for the ants to pick up. Table 2 provides examples of each of these kinds of baits.

Baits for indoor use can be in the form of a plastic bait station that is placed on surfaces where ants are found, or as a gel or paste that is applied to cracks and crevices using a syringe-like device. Insecticidal baits are effective against some species of ants, but at this time, we do not know of any over-the-counter products that are effective against the tawny crazy ant. Always follow the instructions on the label when using any form of insecticide.

CONTACT LIQUID AND CONTACT GRANULAR INSECTICIDES

Insecticides are often erroneously categorized as “repellent” or “non-repellent.” Truly **repellent** insecticides will deter ants from entering the home; however, these products actually cause ants to die quickly upon contact. Quick kill provides very little opportunity to transfer the toxicant to other ants. These products are often used around windows, doors and other openings.

Look for products that contain active ingredients in the pyrethroid class of chemistry: permethrin, allethrin, cyhalothrin, etc. There are many insecticides with these active ingredients that can be purchased by homeowners and pest management professional for temporary relief.

A pest management professional may also apply slower acting, so-called “**non-repellent**” insecticide sprays to areas where ants are active. These insecticides are generally slower acting and have the advantage of being transferred easily from ant to ant. This allows more ants in the colony to be exposed to the insecticide. Because non-repellent insecticides will not deter ants from entering openings around windows and doors, homeowners and pest

management professionals should be aware that more ants may die inside the home. Examples of professional products are listed in Table 3.

Additional Considerations

- Do not apply liquid and granular products in areas where baits are applied. They will contaminate the bait, rendering it ineffective.
- Pay careful attention to the bases of trees and shrubs. Zenner-Polania (1990) found 80% (64 of 80) tawny crazy ant nests around the bases of trees.
- A tremendous number of ants will die after a perimeter treatment with a contact insecticide, often covering the treated area. Use a blower or broom to remove the dead ants. Do not hose down the area with water, which will wash away the treatment.

Frequently Asked Questions about Tawny Crazy Ants and Their Control

1. What might I see a pest control professional do?

- Treat landscape plants
- Spread insecticidal granules that kill ants by contact
- Spray liquid insecticides around the perimeter of your house
- Apply baits that ants will consume and share with other ants
- Apply crack and crevice insecticidal products on the inside of homes or buildings

2. What can't my pest control professional do?

- Treat other people's property
- Put pesticides down sewers
- Make "off-label" applications

3. What should homeowners do and expect?

- Make sure you have a correct identification for this ant.
- Be a good neighbor and eliminate food, water, and shelter that encourages colony growth.
- De-clutter and remove debris and unneeded items from the property.
- Establish regular trash removal.

- If you have taken pest control measures, please do not hose the ants off the pavement area. You will wash away your treatment. Use a blower instead.
 - Prepare to pay for monthly (or more frequent) pest control service.
 - Be cautious about "self-treating," especially if you have hired a professional because your efforts may counteract what your pest control professional has already done. For example, if you spray an insecticide over a bait, you will render the bait ineffective.
4. How cold does it have to get before I can expect some relief from this ant?

Observations from our field work indicate that when temperatures reach about 50°F, activity significantly slows. In the laboratory, Bentley et al. (2016) found that the critical thermal minimum—the temperature at which the ant stops moving—is about 45°F. If you are curious about how hot it has to be, the thermal maximum (when ants started twitching) was ~106°F.

5. Why is this ant so invasive?

Good question. Part of the answer lies in the tremendous number of queens associated with colonies—another reason that spraying only is generally ineffective and baiting is more effective. This ant is simply a better competitor for resources when it moves into a territory. We will have more to report on in the future.

6. Is it true that this ant can detoxify fire ant venom?

Yes, which is another reason this ant is so dominant. (LeBrun et al. 2014 contains details.)

7. Is this the same ant as the Caribbean crazy ant, Raspberry crazy ant, brown, or hairy crazy ant?

Most would say yes. In order to conclude that ants with these different common names are *Nylanderia fulva*, Gotzek et al (2012) used morphometric and molecular data of ants collected from Florida, Mississippi, Texas, Paraguay, St. Kitts, US Virgin Islands, Anguilla, Barbados, St. Lucia, St. Vincent, and Rio de Janeiro, Brazil. Zhao et al. (2012) used molecular comparisons to conclude that the samples of ants from Texas and Florida were the same, but they did not assign the ants to the species *Nylanderia fulva*. We do have records of closely related *N. pubens* in Florida.

If You Are a Pest Management Professional

We have developed door hangers that contain a space for your company logo at the front. You may download for printing at:

Commercial printing:

http://schoolipm.ifas.ufl.edu/crazy_ant_door_hanger_COMMERCIAL%20PRINTER.pdf

Printing on your own laser printer:

http://schoolipm.ifas.ufl.edu/crazy_ant_door_hanger_PRINTABLE.pdf

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Table 1. IPM Decision Flow Chart.

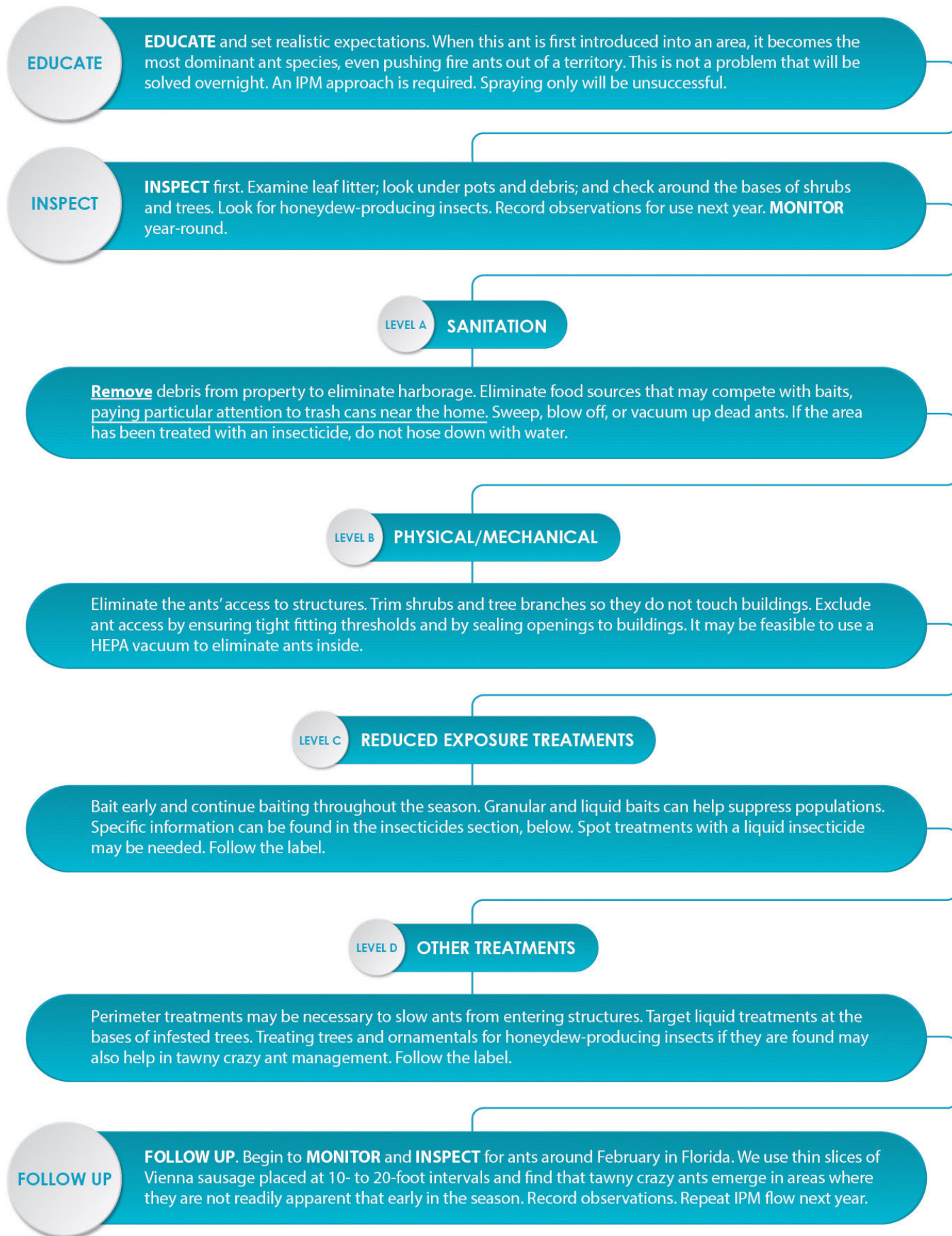


Table 2. Examples of professional product baits based on feeding preference.

Feeding preference	Trade name (manufacturer), active ingredient*	Formulation
Protein	Advance® Carpenter Ant Bait (BASF), abamectin B ₁	Granular bait
Sweet	MaxForce® Quantum (Bayer), imidacloprid Advance® Liquid Ant Bait 381B (BASF), borax	Liquid bait
Combination protein, oil and sweet	MaxForce® Complete (Bayer), hydramethylnon	Granular bait

*Not an endorsement.

Table 3. Examples of professional products used as sprays and contact granular applications based on “quick-kill,” “non-repellent,” or combination categories. Read labels carefully because they may have changed to accommodate concerns with pesticide runoff and pollinator protection.

Category	Trade name, (manufacturer), active ingredient*
Non-repellent, liquid	Alpine® WSG (BASF), dinotefuran
Non-repellent, liquid	Phantom® (BASF), chlorfenapyr
Non-repellent, liquid	Termidor® ¹ (BASF), fipronil
“Quick-kill” pyrethroid, liquid	Demon® MAX (Syngenta), cypermethrin
“Quick-kill” pyrethroid, liquid	Suspend® SC (Bayer), deltamethrin
“Quick-kill” pyrethroid, liquid	Talstar® P(FMC), bifenthrin
Combination, liquid	Temprid® (Bayer), imidacloprid, β-cyfluthrin
Combination, liquid	Transport® GHP Insecticide (FMC), acetamiprid, bifenthrin
Non-repellent, contact granular	Top Choice®, (Bayer) restricted use product, professional use only.
“Quick-kill” pyrethroid, contact granular	Talstar® XTRA (FMC), bifenthrin

¹ Read label carefully for limitations to number of applications as related to the rate selected
*Not an endorsement