



Pillbugs, Sowbugs, Centipedes, Millipedes and Earwigs¹

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Pillbugs and Sowbugs

Pillbugs (Figure 1), and sowbugs (Figure 2), are common crustacea, belonging to a group of animals called isopods and are found throughout Florida. They are wingless, oval or slightly elongated arthropods about half an inch in length and slate-gray in color with body segments resembling armored plates. Both pillbugs and sowbugs feed primarily on decaying organic matter although occasionally they may damage the roots of green plants. Their normal habitat is outdoors, but they occasionally wander inside where they do no damage.

Sowbugs are often called woodlice and possess two tail-like appendages, seven pairs of legs, and well-developed eyes. They are incapable of rolling into a tight ball.

Pillbugs or "rolly-pollies" lack the tail-like appendages and can roll into a tight ball.

Habits and Biology

The habits, biology, and control of sowbugs and pillbugs are similar. Both animals are slow-moving, crawling arthropods. They require high moisture and



Figure 1. Pillbug. Credits: J. Castner, University of Florida

are most active at night. When resting during the day, they may be found under trash, rocks, boards, under decaying vegetation, or just beneath the soil surface. A heavy infestation indoors usually indicates a large population outdoors. Mulches, grass clippings, and leaf litter often provide the decaying organic matter they need to survive.

Breeding can occur throughout the year in Florida. The female carries the eggs in a brood pouch on the underside of her body. Often there are 7 to 200 eggs per brood. The eggs hatch in 3 to 7 weeks and

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Figure 2. Sowbug. Credits: J. Castner, University of Florida

the young remain in the pouch another 6 to 7 weeks. Once the young leave the pouch, they never return. Some species produce only one brood per year, but others may produce 2 or more. Individuals may live up to 3 years.

Centipedes and Millipedes

Centipedes and millipedes are commonly seen in yards and occasionally enter homes. Neither centipedes nor millipedes damage furnishings, home, or food. Their only importance is that of annoying or frightening individuals.

Centipedes (Figure 3) are many-legged animals and belong to a group of animals called Chilopods. They are usually brownish, flattened animals with many body segments. Most of the body segments have one pair of legs. Centipedes are fast runners and may vary in length from one to six inches. They have one pair of antennae or "feelers" that are easily seen. Centipedes have poorly developed eyes and are most active at night. They are active predators and feed mainly on insects and spiders. All centipedes have venom glands to immobilize their prey. The jaws of the smaller local species cannot penetrate human skin; however, the larger species may inflict painful bites.

Centipedes are usually associated with damp, dark places such as under stones, leaf litter, logs, bark, or soil crevices. Indoors they may be found in closets and bathrooms where there is high humidity.



Figure 3. Centipede. Credits: J. Castner, University of Florida

Centipedes usually lay 15-55 eggs clustered together in the soil although the eggs of some species are laid singly. The eggs hatch soon after they are deposited. The female will usually guard the eggs and the newly hatched young. Young centipedes closely resemble the adults and require 3 years to mature. Centipedes are rather long-lived and individuals may live up to 6 years.

Millipedes (Figure 4) are commonly known as "thousand leggers" and belong to a group of arthropods called Diplopods. Millipedes are worm-like, cylindrical animals with many body segments. Most of the body segments bear two pairs of legs. Millipedes tend to coil up tightly when disturbed and some species can secrete a foul smelling fluid. Millipedes feed on decaying vegetable matter and are often found under stones, flower pots, boards or similar debris where there is abundant moisture. Occasionally after rains or during cold weather, large numbers of millipedes may migrate into buildings. They can climb foundation walls and enter homes through any small opening. These pests are generally more troublesome in wooded or newly developed areas where decaying vegetation provide excellent food and breeding conditions.

Female millipedes can lay from 20-300 eggs singularly or in clusters in the soil. The eggs hatch in a few weeks, and the young go through 7 to 8 stages before maturing to adults.



Figure 4. Millipede. Credits: J. Castner, University of Florida

Earwigs

Earwigs (Figure 5), are beetle-like, short-winged, fast moving insects about one-half to one inch in length. They are usually dark brown and have a pair of pincer-like appendages at the tip of the abdomen. They have chewing-type mouthparts and slow development.

Earwigs are active at night. They usually hide in cracks, crevices, under bark or in similar places during the day. They are usually scavengers in their feeding habits, but occasionally feed on plants.

The name earwig is derived from an old superstition that these insects enter peoples' ears. This idea is entirely unfounded because earwigs are harmless to man. Some species have scent glands from which they can squirt a foul-smelling liquid. This is probably used for protection; however, it makes them very unpleasant when accidentally or purposely mashed.

The striped earwig adults are dark brown with light tan markings. The males are large and robust with stout pincers. The females are somewhat smaller and lighter in color than the males. These earwigs are in areas having sandy or clay soils, and live in subterranean burrows or under debris. They are usually found outdoors unless populations are large or other conditions are adverse. They enter structures in search of food, a more suitable environment, or just by accidental meanderings.



Figure 5. Earwig. Credits: P. M. Choate, University of Florida

Because of their nighttime activity, they remain in the soil or under debris during the day. Heavily thatched lawns or mulched flower beds are among their preferred daytime habitat. At night they collect in large numbers around street lights, neon lights, lighted windows, or similar locations where they search for food. Favorite foods include armyworms, aphids, mites, and scales. They also forage on food scraps or dead insects.

The female lays about 50 tiny eggs in a subterranean burrow. The eggs hatch into nymphs in about 7 days and the nymphs feed on their egg case. The female continues to care for the young, grooming and manipulating them in the burrow throughout the first nymphal stage. The young nymphs are about one-eighth inch long and could be very easily confused with termites.

In about seven days, the nymphs molt into the second stage, and they are released from the burrow

by the female. At this time the female loses her maternal instincts and many times will devour the nymphs before they can hide. During later stages, the nymphs tend to be cannibalistic. After passing through 6 nymphal stages, the earwig becomes an adult. The life cycle egg to adult usually averages 56 days.

Control

Indoors

Sowbugs, pillbugs, centipedes, millipedes, and earwigs cause no damage inside the home. Simple mechanical control, such as a broom and dustpan, can be used to remove the pest from the house. If these pests become a serious nuisance, elimination of hiding places, food material, and moisture sources will reduce the infestation. Be sure to check potted plants for pest activity before bringing them indoors.

Insecticides can be applied for control of these pests as crack and crevice or spot treatments to infested areas or areas where the pests enter the house. Table 1 lists the insecticides labeled for crack and crevice or spot treatment of centipedes, earwigs, millipedes, pillbugs, and sowbugs. Sometimes it is advantageous to apply an aerosol space treatment of insecticide to kill pests that are exposed. These products can be directed at the pest to kill it quickly. Space treatments typically do not provide residual activity. Table 2 provides a list of insecticides labeled for indoor space treatment. Pests that enter the house may enter through voids. Table 3 lists insecticides labeled for treatment of voids. Be sure to check the label of the insecticide container to determine whether the specific pests and sites of application are listed.

Outdoors

A large indoor population of these pests indicates large numbers are surrounding the structure. Removal of breeding sites and harborages will aid in control. Compost piles and decaying vegetation should be removed from areas close to the house. Mulch should be only 2-4 inches deep so it remains dry most of the time.

These pests can be caught in pitfall traps, such as jars or tin cans buried at ground level. They can be baited with an appropriate food. These pests cannot easily climb the sides of the container and are trapped. The trap can be cleaned periodically, and the trapped pests destroyed.

It is sometimes necessary to control these pests with outdoor insecticide applications. These applications can be made as either barrier treatments to prevent pests from entering the house or as broadcast treatments to control pests in infested areas of the landscape. Barrier treatments are usually applied to the walls and soil immediately surrounding the house. It is typical to make barrier applications 3 feet up the wall and 6 feet out depending on the label. Additionally, treatments should concentrate on steps, damp areas, and cracks between sidewalks that provide guidelines for pest movement. It may also be necessary to treat mulched flowerbeds and the base of shrubbery. Products registered for outdoor barrier treatments are listed in Table 4. Broadcast treatment may also be applied to infested areas of the landscape. Table 5 lists products labeled for outdoor broadcast treatment of centipedes, earwigs, millipedes, pillbugs, and sowbugs. Proper scheduling of applications may increase the efficiency of control. Applications should be made late in the afternoon or early evening because most of the pests are active at night. Because of the moist conditions and high organic matter in areas of treatment, it is usually necessary to apply treatments at regular intervals to maintain control. Be sure to read and follow all directions on the label.

Table 1. Products labeled for crack and crevice or indoor surface treatment of centipedes, earwigs, millipedes, pillbugs, and sowbugs.^{1,2}

Common Name	Homeowner Trade Name ¹	Commercial Trade Name ¹
Acephate		PT Orthene Crack & Crevice Pressurized Residual (C, E, M) ²
Beta-Cyfluthrin	Bayer Power Force Carpenter Ant & Termite Killer Plus (C, M) ²	
Bifenthrin		Talstar F Insecticide/Miticide (C, M, P) ² Talstar Termiticide/Insecticide (C, E, M, P) ²
Boric Acid		PT Perma Dust Pressurized Boric Acid Dust (C, E, M) ²
Cyfluthrin	Bayer Advanced Home, Home Pest Control Indoor & Outdoor Insect Killer (C, E, M, P) ²	PT Cy-Kick Crack & Crevice Pressurized Residual (C, E, M) ² PT Cy-Kick CS Controlled Release Cyfluthrin (C, E, M) ² Tempo 20 WP (C, E, M, P) ² Tempo SC Ultra (E, M, P) ²
Cypermethrin		Cynoff EC (C, E, M, P) ² Cynoff Power Spray (C, E, M, P) ² Cynoff WP (C, E, M, P) ² Cynoff WSB (C, E, M, P) ² Prevail FT Termiticide (C, E, M, P) ²
Deltamethrin		DeltaDust (C, M) ² Suspend SC Insecticide (C, E, M, P) ²
Disodium Octaborate Tetrahydrate		NiBor-D (C, E, M) ²
Lambda Cyhalothrin		PT 221L (C, E, M) ²
Permethrin		Dragnet SFR Termiticide/Insecticide (C, E, M, P) ²
Prallethrin		PT ULD SPy-300 (E) ²
Prallethrin, Esfenvalerate, MGK-264 synergist	Ortho Roach, Ant & Spider Killer (E, S) ²	
Propetamphos		Catalyst (E, P) ²
Pyrethrins		PT Tri-Die Silica & Pyrethrum Dust (C, E, M, P) ² PT ULD BP-300 (C, E, M, P) ²

Table 1. Products labeled for crack and crevice or indoor surface treatment of centipedes, earwigs, millipedes, pillbugs, and sowbugs.^{1,2}

Common Name	Homeowner Trade Name ¹	Commercial Trade Name ¹
Pyrethrins and Others		PT 565 Plus XLO (C, M, S) ² PT Microcare CS Controlled Release Pyrethrum (C, E, M, P) ² PT Tri-Die Pressurized Silica & Pyrethrin Dust (C, E, M, P) ² PT ULD BP-100 (C, M, E) ²
Pyrethrins, MGK-264, Permethrin	Ortho Ant-B-Gon	
Pyrethrins, PBO		PT P.I. Contact Insecticide (C, M) ² PT ULD BP-50 (C, E, M, P) ² Pyrenone 100 (E) ² Synerol Insecticide (E) ²
Pyrethrins, PCO		Pyrenone 50 (E) ²
Tau-Fluvalinate		Yardex Supplemental Labeling (E, M) ²
Tralomethrin		Saga WP Insecticide (C, E, M, P) ²
<p>¹ Read label carefully to insure pest, site, and commodity are listed prior to applying product. Some product labels are very restrictive.</p> <p>² C = Centipedes, E = Earwigs, M = Millipedes, P = Pillbugs, S = Sowbugs</p>		

Table 2. Products labeled for indoor space treatment of centipedes, earwigs, millipedes, pillbugs, and sowbugs.^{1,2}

Common Name	Homeowner Trade Name ¹	Commercial Trade Name ¹
Prallethrin		PT ULD SPy-300 (E) ²
Pyrethrins		PT ULD BP-300 (C, E) ²
Pyrethrins and Others		PT 565 Plus XLO (C, M, S) ² PT Pro-Control (E) ² PT Pro-Control Plus (E, P) ² PT ULD BP-100 (C, E, M) ²
Pyrethrins, PBO		PT P.I. Contact Insecticide (C, M) ² PT ULD BP-50 (C, E, M, P) ² Pyrenone 100 (E) ² Synerol Insecticide (E) ²
Pyrethrins, PCO		Pyrenone 50 (E) ²

Table 2. Products labeled for indoor space treatment of centipedes, earwigs, millipedes, pillbugs, and sowbugs.^{1,2}

Common Name	Homeowner Trade Name ¹	Commercial Trade Name ¹
¹ Read label carefully to insure pest, site, and commodity are listed prior to applying product. Some product labels are very restrictive. ² C = Centipedes, E = Earwigs, M = Millipedes, P = Pillbugs, S = Sowbugs		

Table 3. Products labeled for voids treatment of centipedes, earwigs, millipedes, pillbugs, and sowbugs.^{1,2}

Common Name	Homeowner Trade Name ¹	Commercial Trade Name ¹
Acephate		PT Orthene Crack & Crevice Pressurized Residual (C, E, M) ²
Boric Acid		PT Perma Dust Pressurized Boric Acid Dust (C, E, M) ²
Deltamethrin		DeltaDust (C, M) ² Suspend SC Insecticide (C, E, M, P) ²
Disodium Octaborate Tetrahydrate		NiBor-D (C, E) ²
Pyrethrins		PT Tri-Die Silica & Pyrethrum Dust (C, E, M, P) ²
Pyrethrins and Others		PT 565 Plus XLO (C, M, S) ² PT Tri-Die Pressurized Silica & Pyrethrin Dust (C, E, M) ²
Pyrethrins, PBO		PT P.I. Contact Insecticide (C, M) ²
¹ Read label carefully to insure pest, site, and commodity are listed prior to applying product. Some product labels are very restrictive. ² C = Centipedes, E = Earwigs, M = Millipedes, P = Pillbugs, S = Sowbugs		

Table 4. Products labeled for outdoor barrier treatment of centipedes, earwigs, millipedes, pillbugs, and sowbugs.^{1,2}

Common Name	Homeowner Trade Name ¹	Commercial Trade Name ¹
Acephate		PT Orthene Crack & Crevice Pressurized Residual (C, E, M) ²
Beta-Cyfluthrin	Bayer Power Force Carpenter Ant & Termite Killer Plus (C, M) ²	

Table 4. Products labeled for outdoor barrier treatment of centipedes, earwigs, millipedes, pillbugs, and sowbugs.^{1,2}

Common Name	Homeowner Trade Name ¹	Commercial Trade Name ¹
Bifenthrin	Ortho Home Defense Perimeter & Indoor Insect Killer (C, E, M, P, S) ² Ortho Termite & Carpenter Ant Killer (E, M, S) ²	Talstar CA Granular Insecticide (C, M, P) ² Talstar EZ Granular Insecticide (C, M, P) ² Talstar F Insecticide/Miticide (C, E, M, P) ² Talstar GC Granular Insecticide (C, M, P) ² Talstar PL Granular Insecticide (C, M, P) ² Talstar Termiticide/Insecticide (C, E, M, P) ²
Carbaryl	Ortho Bug-B-Gon Multipurpose Insect Killer Ready-to-Use Granules (E, M, S) ²	
Carbaryl, Metaldehyde	Ortho Bug-Geta Plus (E, P, S) ²	
Cyfluthrin	Bayer Advanced Home, Home Pest Control Indoor & Outdoor Insect Killer (C, M) ² Bayer Advanced Lawn & Garden Multi-Insect Killer (C, M, P, S) ² Bayer Power Force Ant Killer Ready-to-Use Granules (C, M, P, S) ² Bayer Power Force Multi-Insect Killer Ready-to-Spray (E, P, S) ² Bayer Power Force Multi-Insect Killer Ready-to-Spread Granules (C, M, P, S) ² Bayer Power Force Multi-Insect Killer Ready-to-Use (E, P, S) ² Bayer Power Force Multi-Insect Killer Ready-to-Spread Granules (C) ²	PT Cy-Kick Crack & Crevice Pressurized Residual (C, E, M) ² PT Cy-Kick CS Controlled Release Cyfluthrin (C, E, M) ² Tempo 20 WP (C, M, P) ² Tempo SC Ultra (M, P) ²
Cypermethrin		Cynoff EC (C, E, M, P) ² Cynoff Power Spray Insecticide (C, E, M, P) ² Cynoff WP (C, E, M, P) ² Cynoff WSB (C, E, M, P) ² Prevail FT Termiticide (C, E, M, P) ²
Deltamethrin		DeltaDust (C) ² DeltaGard G (C) ²
Esfenvalerate	Ortho Bug-B-Gon Multipurpose Insect Killer (P, S) ² Ortho Bug-B-Gon Multipurpose Insect Killer Ready-to-Use (P, S) ²	
Lambda Cyhalothrin		PT 221L (C, E, M) ²

Table 4. Products labeled for outdoor barrier treatment of centipedes, earwigs, millipedes, pillbugs, and sowbugs.^{1,2}

Common Name	Homeowner Trade Name ¹	Commercial Trade Name ¹
Malathion	Ortho Malathion 50 Plus Insect Spray (E) ²	
Permethrin	Ortho Bug-B-Gon Multipurpose Insect Killer Ready-Spray (E, M, P, S) ²	Astro Insecticide (C, E, M, P) ² Dragnet SFR Termiticide/Insecticide (C, E, M, P) ²
Prallethrin, Esfenvalerate, MGK-264 synergist	Ortho Roach, Ant & Spider Killer (E, S) ²	
Pyrethrins		Kicker (C, M, P) ² PT Tri-Die Silica & Pyrethrum Dust (C, E, M, P) ²
Pyrethrins and Others		PT Microcare CS Controlled Release Pyrethrum (C, E, M, P) ² PT Tri-Die Pressurized Silica & Pyrethrin Dust (C, E, M, P) ²
Pyrethrins, PBO, Silica Gel		Drione (C, E, M) ²
Tau-Fluvalinate		Yardex Supplemental Labeling (E, M) ²
<p>¹ Read label carefully to insure pest, site, and commodity are listed prior to applying product. Some product labels are very restrictive.</p> <p>² C = Centipedes, E = Earwigs, M = Millipedes, P = Pillbugs, S = Sowbugs</p>		

Table 5. Products labeled for outdoor broadcast treatment of centipedes, earwigs, millipedes, pillbugs, and sowbugs.^{1,2}

Common Name	Homeowner Trade Name ¹	Commercial Trade Name ¹
Beta-Cyfluthrin	Bayer Power Force Carpenter Ant & Termite Killer Plus (M) ²	
Bifenthrin	Ortho Lawn Insect Killer Granules (C, E, M, P, S) ²	Talstar CA Granular Insecticide (C, M, P) ² Talstar EZ Granular Insecticide (C, M, P) ² Talstar F Insecticide/Miticide (C, M, P) ² Talstar GC Granular Insecticide (C, M, P) ² Talstar PL Granular Insecticide (C, M, P) ² Talstar Termiticide/Insecticide (C, E, M, P) ²
Carbaryl, Metaldehyde	Ortho Bug-Geta Plus (E, P, S) ²	
Cyfluthrin	Bayer Advanced Home, Home Pest Control Indoor & Outdoor Insect Killer (M) ²	Tempo 20 WP (C, M, P) ² Tempo SC Ultra (M, P) ²

Table 5. Products labeled for outdoor broadcast treatment of centipedes, earwigs, millipedes, pillbugs, and sowbugs.^{1,2}

Common Name	Homeowner Trade Name ¹	Commercial Trade Name ¹
Deltamethrin		DeltaGard G (C) ²
Esfenvalerate	Ortho Bug-B-Gon Multipurpose Insect Killer (P, S) ²	
Malathion	Ortho Malathion 50 Plus Insect Spray (E) ²	
<p>¹ Read label carefully to insure pest, site, and commodity are listed prior to applying product. Some product labels are very restrictive.</p> <p>² C = Centipedes, E = Earwigs, M = Millipedes, P = Pillbugs, S = Sowbugs</p>		