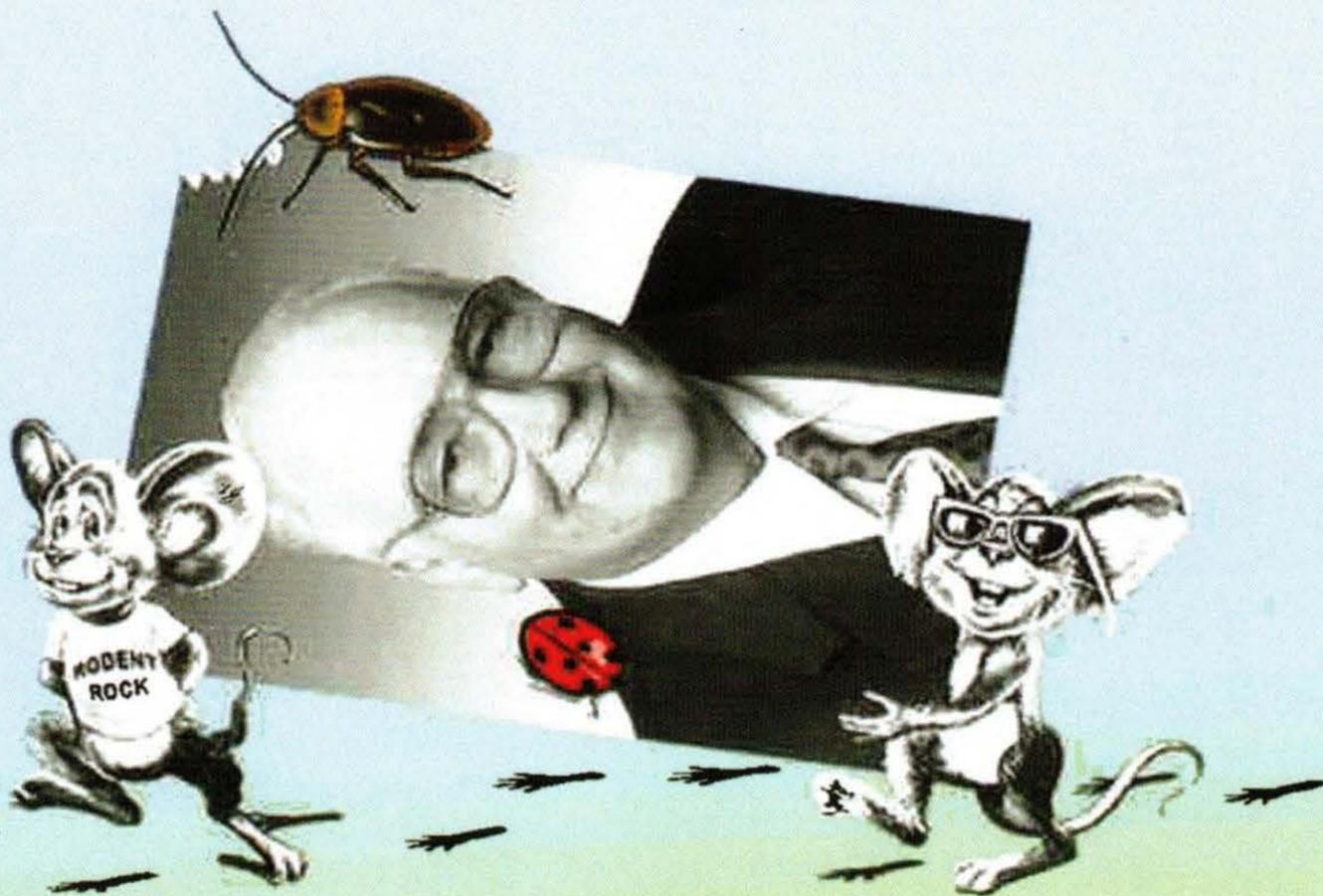


Lyle L. Townsend



**Nuts & Bolts of Rodent
Control & Bugs & Other Stuff:
Volume II**



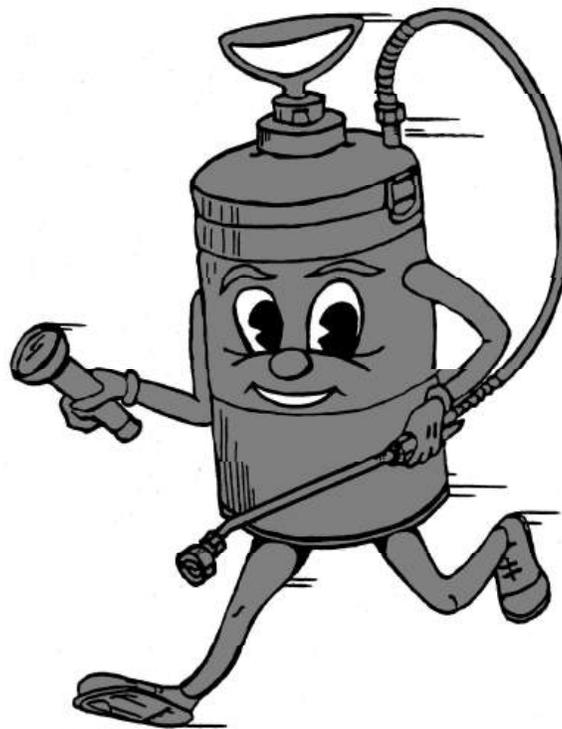
“U Do It”

**Yoursel Pest Control Manual
(SAVE MONEY AND DO IT RIGHT)**



Lyle Townsend-Author

Townsend Pest Control



**Nuts & Bolts of Rodent
Control & bugs & other stuff.
Volume II**

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About the Author

Lyle Townsend has been in the pest control business since 1967. He purchased his company from his uncle shortly after high school. Lyle has a masters license issued by King County Washington Health Department, and is the 38th licensee in the history of Seattle, Washington, and a Washington State trappers license. He held a State of Washington Applicators license until 2005, After transferring his operation to Las Vegas, Nevada and obtained a state Principal license and is still active in pest control to the present. He has been lecturing on pest control around the country for various suppliers and state associations from as early as 1971. During the 90's Lyle invented several different tools for pest controllers such as a bait station that he calls the "Rodent Rock" The station simulates a landscape rock that can be used outside to blend into the landscape without changing the esthetics. He also invented a special Mole trap that is accepted in most states for its ability to eliminate moles without being a hazard to the user. It's called the Annie Missile mole trap. He holds several patents on pest control equipment that he has invented over the years.

During Lyle's career he has studied IPM and made many advances on its use in pest control that has made procedures quick and easy to eliminate rodents and other pests with the use of less toxicants.

Dedication

Dedicated to my Father who is now passed away. He was in the pest control business for 37 years, and while I was a teenager he made a lasting impression on me on always trying to help his fellow man. He was always willing to go out of his way to show his competitors alike his methods and help them to understand how to deal with people.

You may be able to use low odor materials or baits. There are three main types of service that we do, initials, one time treatments, and maintenances. The initial service is usually the first service we provide for a customer. The maintenance is the follow up service we provide to prevent the pest problem from returning and to continue the warranty. We usually do the initial first, since customers generally already have a pest problem when they call us. After the initial we may offer a customer a maintenance program that will help prevent future pest problems and continue their warranty to the next scheduled maintenance. In this scenario, if the customer skips a maintenance the warranty is then voided. If they get a problem later, there will be a one time charge to take care of the current pest problem and re-establish the warranty. To figure out a one time charge, take the initial price less the maintenance price. This is the one time charge to reestablish the previous warranty.

If a customer calls us requesting a preventative maintenance and they don't have any pest problems inside, we can start the outside maintenance before we do an initial service. However, if they get a problem inside there will be a one time inside charge to take care of the current problem and to establish a warranty. From then on, as long as they continue the maintenance, they will have warranty for that specific problem.

Always ask the customer lots of questions! This is very important in determining where, why and how to treat each situation.

Price all jobs using the current price sheet. Any variations from the price sheet must be pre-authorized by management.

The weather can sometimes affect the way we do our services. If it is raining and you are to be spraying the ground, you should use granules that are designed to slowly dissolve after the rain stops. However, granules should never be placed on concrete or wood surfaces. Only place granules on soil, grass, or bark areas. You can usually spray the foundation since it is usually dry, then granulate out farther from the structure. If you are treating the actual house, you can usually still treat in the rain since the undersides of overhangs, eaves, etc. are generally dry. If this is not the case reschedule the job for another day. If the rain is possible to happen but has not yet occurred, then you can add an adjuvant to the mix so it will dry and cause the chemical to adhere to the surface without washing away in the rain.

Any holes that you drill in a wall inside, or outside, must be filled with caulking unless otherwise instructed by either the customer or by management. If you patch the holes with caulking, be sure to ask the customer if they have some house paint that you can use to touch up the holes. You can match the paint with a sample paint from the hardware store by taking the cable cover on the house with you. Be sure to block the opening during its removal. The time you spend on a job is very important. You will generally have plenty of time to do all of your jobs. However, if you feel that you can't finish all of your jobs, call the office and let them know ahead of time. There may be a job that is better to reschedule than another. If you think that you are going to be late to a job, call the customer and let them know ahead of time. Never rush through a job! Average maintenance job should average twenty five to thirty minutes. Larger jobs based on what you are doing may run longer in time.

ANTS

Argentine ants, Odorous house ants, Pharaoh ants, Little black house ants, Thief ants, Ghost ants, Carpenter ants, Thatch ants, Pavement ants, Moisture ants (Cornfield ants) Fire ants.

Argentine ants

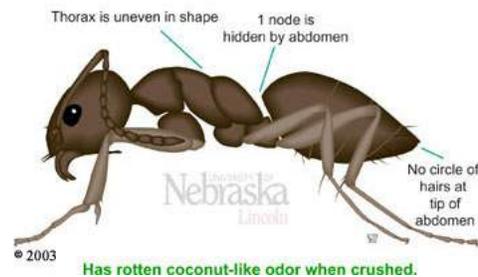
Argentine ants vary in color from light brown to dark brown. Approximately 7 mm, or approximately 1/4 inch.

They have 2 nodes on the center area (pedicel)

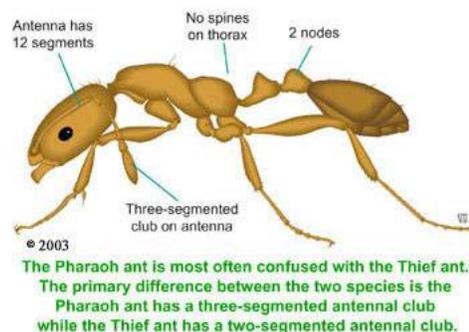
Granules on and around mound nest. Or Termidor spray or Alpine WSG works well.



Odorous house ants are very similar to the Argentine ant except they have only one Node and is more rounded. Use Alpine WSG inside or Termidor outside



Pharaoh ants, have two nodes and are yellow in color to very light in color. They are approximately 2 millimeters or 1/16th of an inch long. Use Alpine WSG inside, and Termidor outside as needed.

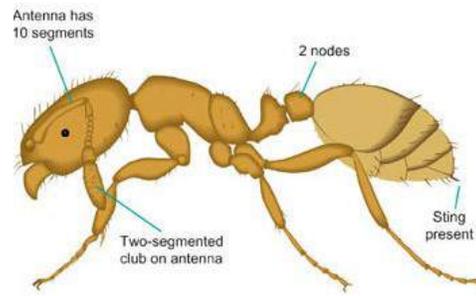


Ants

Little black house ants are approximately 2 millimeters long, Black and shiny, and dwell inside walls as well as near water outlets such as kitchen and bathroom sinks. They are omnivores but are especially attracted to sweets. Use Alpine WSG in area of ant traffic. Allow 14 days for control.



Thief ants are very small approximately 2 millimeters long, they look very similar to the Pharaoh ant. But have different life styles when inside a home. They are light in color & have 2 nodes on the pedicel. To control them use Alpine WSG where ever they are found. Alpine WSG works well along base boards and backsplashes.



Ghost ants have only one node and a dark head and thorax, with a light brown abdomen. Use Alpine WSG in areas you find them.



Ants

Carpenter ants have a smooth rounded thorax and a single node. They range from 10 millimeters to as much as 3/4" long. For the most part they invade wood stumps, and house studs and framing. Use Termidor outside, inside use Alpine WSG.



Thatch Ants build mounds of grass, twigs, and other debris found in the yard. Their nests can be as much as three feet deep under ground. Treat with Taurus or Termidor on surface and dig up while treating the ants.



Thatch ant mounds have eggs and larva in the base of the mound, so it is necessary to dig the mound out completely, saturating the insects and larva as you go. Thatch ants can bite so you should work quickly to avoid being bitten. Use Demand CS or Taurus, or Termidor at maximum allowable rate.



Ants

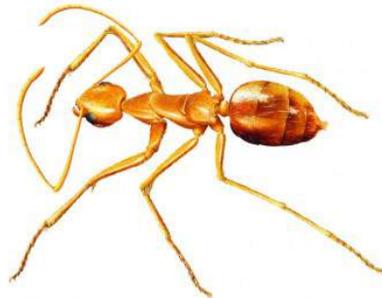
Pavement ants generally live under and between pavement. You can find small mounds of sand or dirt at their entry ways. Use Taurus or Termidor to the cracks where they are trafficking. Try to force the material down through the cracks to reach their nests. The ants are approximately 1/8" in length. Use Alpine WSG on walks that are away from the house.



Moisture ant (cornfield ant) These ants feed on rotted vegetation such as harvested corn fields, debris laying on wet soils, in decaying stumps, in shower stalls that have lost the sealing grout between the tiles around a shower stall. Concrete wood form boards, and areas where ever there is wood to ground contact with moisture in the wood. You can correct this problem by drying out the wood and treating it with Termidor or Taurus, then sealing off the leaks that lead to the wood. It may be necessary to remove the tile to replace the wood members. Have the client contact a licensed Contractor for the repairs.



Crazy ants have very long antennae & long legs. They make quick erratic movements. They are reddish brown and are approximately 1/8" long. They can be controlled with Termidor or Taurus or Alpine WSG.



Ants

Fire Ants get their name by the fiery bite they cause. They range from 1/8 “ to 1/4” in length. They will build their nests in dry patch areas of lawn but will live in any kind of soil. Use Termidor or Taurus. Treat the mounds well to reach down to the actual nest. You can also use fire ant granules to destroy the nest, or Alpine WSG



Treating mounds with bait granules. Spread the granules evenly around the mound. It may take additional treatments if the ants are not foraging for food. You can also use Alpine WSG spraying as you dig up the mound and saturate the nest.



Bats

Bats are feared by most homeowners. The pictured bat is called a mouse eared Bat.

It is dark in color and covered with fur. Large ears and is rather small like a mouse. Do not pick up a bat that is on the ground as it most likely is rabid. Customers generally call when they find one roosting on the wall of a porch. They are somewhat sluggish during the day and can be removed and disposed of by using a pole and a cardboard glue pad on the end. Simply push on the bat and it will be stuck on the board and can be safely removed and disposed of. (do not leave it in the customer's garbage!) Triple bag it and take it with you in the truck and dispose of it in a dumpster. Sometimes a customer will call saying they have rats on the porch so when you come on a service call look for feces generally in the corner of the porch. Where you see the feces look strait up and you may see feces on the wall. Check the feces by wearing a throw away type glove and roll the feces between your thumb and index finger. If it crumbles then it is Bat feces. Hanging a sheet of 6 mil plastic with lathe boards from the top of the porch wall to down at least 5 feet in any areas the bats like to perch if it is windy then install some fish weights at the bottom of the plastic sheet. If there are small voids along the ceiling of the porch, they should be either sealed by 1/4" round wood, or seal the opening with caulking.



Bedbugs

Bedbugs are blood feeders. With the modernization of travel and the improvement of roads throughout the United States our country has become very mobile. Bedbugs can be brought into our state by means of hitching a ride in moving vans, cars, motor homes, trains, buses, suitcases and any cargo that is shipped in freight, and passenger airlines. With this in mind we must look at the possibility that any Bedbug that is out there surely can be found anywhere in the USA including our own state. Bedbugs require a blood meal, but can go without eating for up to 6 months. They have a simple life cycle. They lay their eggs in undisturbed areas and once the eggs have hatched they become nymphs. While they are growing larger it is important that they have a blood meal to grow to the next size. As an adult they are approximately 3/16" long and are reddish brown with an oval shape. They are not known to carry disease however they can cause irritating itching that when scratched can lead to bacteria causing an additional infection. To correct the infestation you must first take all the clothes and bedding in that room whether they have been washed or not, and put them in large plastic bags, then place a small canning jar which has a sealable lid with a quarter slice of a Vapona strip and put holes in the lid to allow the fumes of the strip to circulate throughout the bag. Seal the bags with Zip ties and set the bags aside for 36 hours. Proceed to treat the seams of the mattress with Bedlam from an aerosol can. Treat in the corners of the ceiling with the same product. Spray with bedlam in cracks along window and door frames, closet rails and any other areas such as bathrooms in the same bedroom. Remove all items from the bathroom and store in sealed plastic bags. Next step is to treat the box springs that holds the mattress in place. Lift the box springs up on one side on its end and insert small slits in the under side thru the dust screen, then inject a wide cone spray into throughout the interior of the box spring using Demand SC at max rate (.06%)

Treat the bed frame at all cracks and crevices along with the head board.

After the bed and frame are complete the next item to do is to treat inside and outside cracks of the dresser and nightstand, as well any other furniture in the room at all cracks and crevices using either Bedlam and or Demand CS.

If there is carpet secured at the baseboards, you should treat as a crack and crevice method making sure to spray enough material with the Demand CS to reach down behind the tack strip.

After the bed and frame are complete the next item to do is to treat inside and outside cracks of the dresser and nightstand, as well any other furniture in the room at all cracks and crevices using either Bedlam and or Demand CS.

If there is carpet secured at the baseboards, you should treat as a crack and crevice method making sure to spray enough material with the Demand CS to reach down behind the tack strip.

Bedbug

After all the rooms that are infected, treat along baseboards throughout the house. Treat the davenport and foot rests. Be sure to make sure any flame like gas stoves, hot water tanks that are in the house are shut off. Turn off AC unit thermostats No need to treat the garage unless Bedbugs have been found there. The final step is to use a ULD machine using PT100 or PT300 throughout the house. Have the house ventilated for 2 to 4 hours minimum when the customer returns.

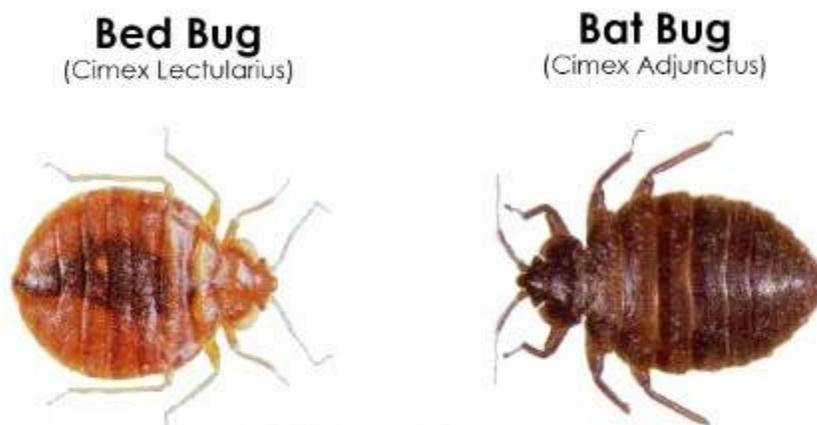


Adult Bedbug



Bedbug bites on skin

Bat Bug



Bat bug

The first important thing to look at is where are most of the bugs found? Bedbugs will be more in the lower areas of a room such as baseboards, closet floors, bedding, bed frames, and dresser drawers. The bat bugs are found in most cases around ceiling fixtures, ceiling vents, and other items that are mainly high on the walls, or ceiling. Bats generally are accessing the attic and the Bat bugs with them are venturing away from the bats in search of more hosts. If they are Bat Bugs you will need to check the attic/roof for roof accesses and treat with a dust such as Delta dust, or ULD such as Demand CS at max rate in the attic or voids such as cathedral ceilings. You will also want to treat the rooms below the same as though they were Bedbugs as well.

Bees and Wasps

Bees and Wasps

This includes the following: Honey bees (Killer bees) Africanized, Yellow Jackets, Bumble bees, Hornets, Mud dauber wasps, and Polistes wasp. The best way to eliminate these insects is to treat the nest directly, if possible.

Honey bees are a social animal which means they all live in a group and work together with their own individual duties. The queen starts out together with a male and inseminated by him and begins to lay eggs for her first brood of workers. The male eventually leaves and dies. The first eggs hatch and become larvae and are fed by the queen with her nourishment in her body. They then transform into a pupae in a silken case, then metamorphous (physically change into an adult). Because they are only nourished by the queens own nourishment in her body, they come out smaller than a normal size. Some of them become workers and foragers to provide food for the new growing colony. Some of them become hive builders, and some are soldiers to protect the group from outsiders, and some become nurse maids to take care of the larvae while they are maturing. After a period of time the queen produces royal eggs which can potentially become new kings, and queens that eventually leave the hive to make new colonies. If you approach honey bees on bushes or flowers they are foraging for food or building materials for the hive, They are not a threat to you or your client as long as they are not at the hive location. If you approach a hive they can be very aggressive as they feel you are a threat to the queen of which is there to propagate the colony.

If you are trying to control a swarm but it is in an isolated area where there is no imminent danger to people around, you can explain that the swarm is only the queen resting and may leave an hour or two later or maybe as long as a day later, however if the customer wants it eliminated regardless of the danger then proceed with caution. First thing I recommend that a drop cloth or



Honey Bee



Bee Swarm



Bee Hive

bucket be set under the swarm before you spray because any dogs or cats in the area may try to eat the bees of which can be toxic to them. Upon completion of the treatment clean up any bees that are left on the ground. Second step, mix up 1 cup of liquid dish soap with one gallon of water. Put on a bee outfit that will protect you from the bees stinging when you apply the solution to the swarm. Using a hand can pump up sprayer gently spray with a fan tip or cone nose orifice all around the outside layer of the swarm. Wait a minute and then spray it again only with more force until the bees drop off. Continue to spray the swarm all around it until all of the bees have dropped off. If the swarm has been eliminated and you still have a few bees flying around, don't worry as the queen is dead and the left over bees will die without any more activity.

A swarm can be found on a tree limb or on the side of a house or simply on the ground the procedure is basically the same but be sure the bees are dead and cleaned up before you leave.

There may be some returning and flying around the area that the nest or swarm was, but don't worry about it. Tell your customer to stay away from the area until they are gone.

Bee hives can be found almost anywhere, such as inside a wall of the house, inside the attic, inside a out building, in a meter box, hanging from an eave on the house, or limb of a tree, or even attached to an abandoned auto mobile, or under a storage building. The first thing is to look for their flight pattern go to and from the hive. Once you have located either the actual hive or if it can not be found then find the entrance to the hive such as a hole in the wall or compartment opening and apply Delta dust until the hive or opening is covered sufficient enough to allow the bees to track it in on the hive. If it is not practical to use Delta dust then you can use Pyrethrum fogging (such as in an attic). After 2 days go back and check for activity. If possible remove the hive and any honey found. It may be necessary to hire a contractor that specializes in repairs to put things back the way you found them. See Lyle for alternate ways to remove Honey bees from an attic, and walls. If you find the bees in a meter box inject into the hole that opens the meter cover with Delta Dust. You can treat either with soapy water on a hanging hive, or wasp & bee spray, or any pesticide labeled for that purpose. Under a storage building use Taurus at the entry point. After a day or two Return to check if the bees are still actively going into or leaving from the site.

Polistes wasps (paper wasp) build an upside down nest made of paper they make from shaving particles off from a tree or wood structure. These nests and wasp can be easily sprayed and removed without any protective clothing on as they die very fast using wasp spray from an aerosol can. Simply point and aim and pull the trigger. They will drop immediately and you can scrape off the feather weight like nest. Remove the nest and put in a garbage can. You can deter new nests from forming by using any residual and repellent like spray that has wasps on the label.



Mud Dauber wasps are somewhat docile and solitary, however to a homeowner they frighten the people.

Simply spray with wasp & bee freeze aerosol can once. Then with a putty knife remove the nest and place in the garbage. You can deter new nests from forming by using any residual and repellent spray that has wasps on the label.



Bee and Wasp protective clothing

Don't take chances wear the protective clothing !



Birds

Pigeons (Rock dove)



Pigeons can be controlled in many ways depending on where they are nesting or just loafing.

1. Netting them off of an area.
2. Using Ledge sliders.
3. Trapping with cages.
4. Toxic feeders (should only be used in areas that are inaccessible to children and pets.) Use Avitrol with corn 1 to 19 parts, or max rate at 1 to 5 parts in a dormer feeder with 1/8 " mesh on the bottom of the feeder. Be sure to attach bottom of feeder with screws into inserts on the roof tile or other roofing materials, and a place where there would be no chance of the corn coming off the roof.

Pigeons can carry disease and parasites of which it is important to disinfect the area where they are nesting. You should clean up any area that have feces dropped by them. Pigeons can be deterred by loud sounds of distressed birds, or plastic owls, or fake snakes ,but can only work for a short time before they realized that the sound, or fake predator item is not a threat to them.

Bird Control

The two most common birds we control are the Starlings, and Pigeons. They are not protected as of this date, but that can change later down the road.

Starling



Starlings have long beaks and various colors on a generally dark brown body. They can make various sounds such as imitating other birds and animals. For the most part we find them living in areas that have openings they can access such as bird block vents that are at the eaves of a roof line. The easiest method of control is to wait for them to fly out of the access , then screen off the opening with 1/4" galvanized screen.

Bird Block vents



Pigeons

Bird Control

Netting off areas that Pigeons nest



First locate the nesting areas, and remove nests and clean the areas. Disinfect the areas with simple green or sterifab. Next drill holes with a 3/16 masonry bit approximately every 6 inches along where you want the net to be. Next install plastic inserts and eye screws. Next run a 1/8 inch stainless cable around through the eye screws. (if the tile is Spanish tile make sure there is an eye screw in the lower part of the tile to avoid the birds from going under the cable.) Next install a 4 inch turnbuckle using ferrule clamps to the cable Next using 2 inch black colored bird netting, and attach the netting to the cable with hog rings.



**Hog ring
applicator**

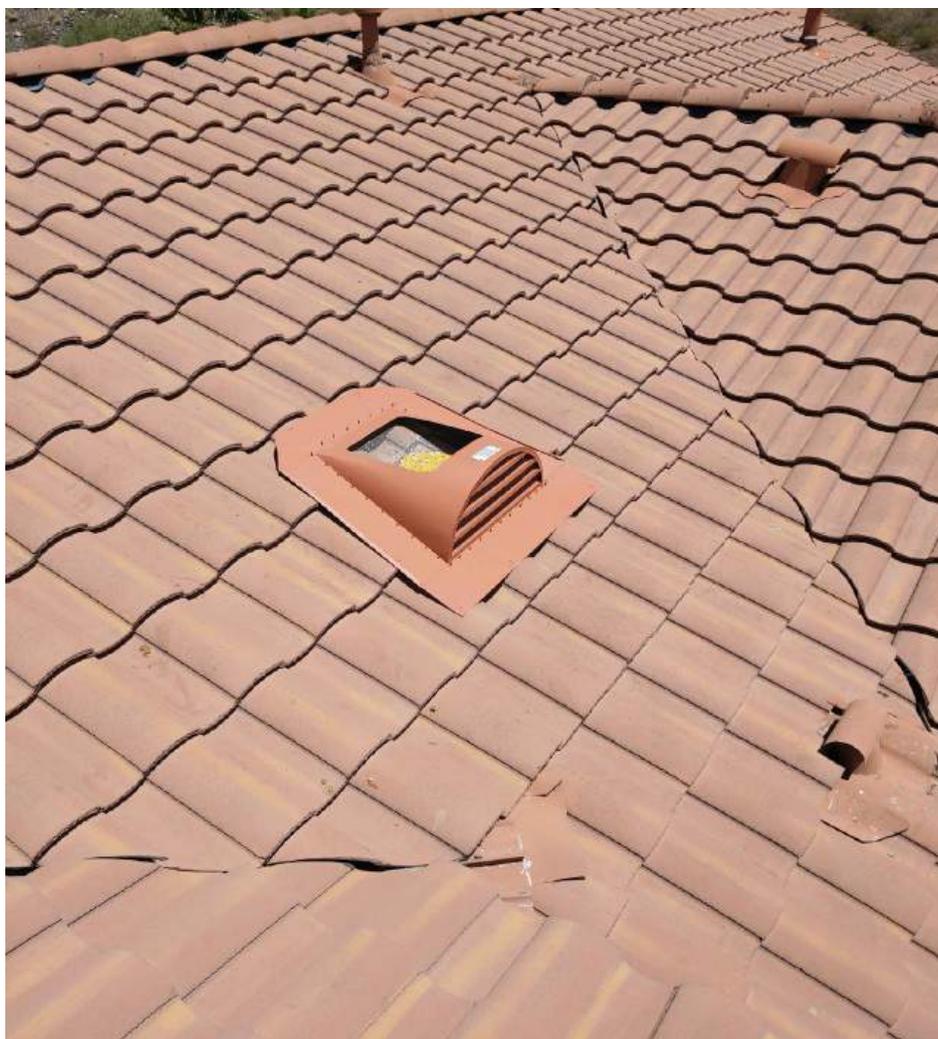


Pigeons

Bird control

The picture below is a bird feeder which should only be used for loafing pigeons. (non nesters, just visiting pigeons.)

The feeder has a 1/8" or smaller screen on the bottom that will drain any rain that gets into the feeder. The station should only be placed on a roof, and preferably in the where the birds conjugate. The feeder should be affixed to the tile roof with inserts. Place Avitrol whole corn bait at the ratio of 1 part Avitrol to 19 parts clean corn, or a rate of 1 to 5 parts with clean non poisoned whole corn. Caution should be taken to avoid any corn from falling off the roof.



German Cockroaches

There are many kinds of cockroaches throughout the world, and quite notably they can carry many diseases that plague mankind, such as Leprosy, food poisoning, Urinary track infections, Gastroenteritis, Gas gangrene, Diarrhea, Pneumonia, and Actinomycetoma. These problems can be avoided by eliminating the cockroaches from the home or restaurants, or commercial establishments.

The most common cockroach is the German Cockroach. This roach is of the tropical areas of the world and have spread out by commerce throughout the planet. It thrives in moist areas such as kitchens, bathrooms, food preparation areas and where ever moisture occurs inside of a structure. The German roach does not fare well outside due to the temperatures and dry areas found outside. Preparation for treatment should include all kitchen food storage or food preparation areas should be void of dishes, pots, pans and food items.

Nothing should be left in cabinets, counter tops, sinks, drawers prior to treatment. If items are left on the kitchen table and covered they will be ok. All baseboards throughout the dwelling should be clear of toys, shoes, pet dishes, magazines etc. all pets, and aquariums should be contained or removed. Air supply should be turned off and raised off the floor such as aquariums and covered. Treat with Alpine WSG for best results using a sprayer devoted to only non repellent products. Use max rate on label but no higher. Instruct customer to allow all surfaces to dry that have been treated. Any person or animal that has respiratory or allergic reaction to chemical should be out for 24 to 48 hours. Things can be put back after dry time of at least 2 to 4 hours. Shelf paper can be used but do not wash counter tops or cabinet drawers or cabinets until roaches have been eliminated.

Turkistan Roach, Oriental Roach

All of these roaches can be treated the same. They are not an inside roach, but tend to be near water such as pools, and irrigation boxes. Spray the perimeter of the dwelling and inside the irrigation boxes and water meter.

German Cockroach



Turkistan



Oriental



Crickets

Jerusalem Cricket



The Jerusalem Cricket average size you will encounter is approximately 2 inches in length. This cricket is omnivorous (wide variety of foods) , climbs well but cannot fly. It will bite humans, but only when threatened. Its life span is approximately 6 months then mate, and then dies. This cricket lives for the most part underground, however during mating season will stay above the ground. The area around the house foundation should be treated up 3 feet on the siding and concrete foundation with

Demand CS at maximum rate with water as the carrying base.

Crickets

Field Crickets



Field Crickets live under rocks, fallen trees, tall grass, and under firewood for the most part. They require fresh water so they will be most likely will be found around pet water dishes, or over watered plants and grass. They can jump approximately 3 feet away when disturbed. When you hear their chirping it is the male rubbing its wings to attract a female. They are nocturnal and are attracted to lights at night. During the day they will stay hidden under foliage. They have a simple metamorphous as egg, nymph , adult. The cricket lives on an average of about 3 months. They hatch from an egg in the spring and as a full grown insect are anywhere from 1/2" to 1" in body length. If they access the house they can feed on cotton, wool, silk, and fur. They can and do carry disease that can be transferred to humans but it is not life threatening. Full grown crickets can bite but they only do so when handled. Use Demand CS .06 % at max rate sprayed where they are found. Generally around the foundation of a house or building and along baseboards inside when found there. Sometimes they will be living inside the hollow void of the garage walls. Injecting between each wall stud and under the base of the siding will fix the problem.

Fabric Pests



Webbing Clothes Moth

The Webbing Clothes Moth is the most common fabric damaging moth in Nevada. It has a golden color to its wings, with a fringe of hair like along the ends of the wings. This moth is rather small in comparison to other moths. It is approximately to 3/8 inch in length. This moth shuns light and can be found generally in closets, that are undisturbed, or in boxes or chests that have woolen fabrics that have been stored for 2 plus years. To correct this infestation it is necessary to remove and either have the stored items fumigated such as in garbage bags with a Dichlorvos strip in a glass jar with a lid and holes approximately 1/8th inch in the lid for at least 72 hours. The container should (depending on whether it will not stain the object) with a pyrethrum based spray.)

Case Making Moth

The Case Making Moth has spots on its forewings that if examined closely can be seen but sometimes very light. The Case Making Moth is smaller than the Webbing Clothes Moth. The Case Making Moth is approximately 1/4" in length, and is a mixture of brown and gray on the wings. When the larva stage develop they spin a silken sack that they carry along until it is ready to go into the Pupa stage. The sack is then completed and closes the larva inside while it is developing into the adult moth. This sack is covered with the same fibers that the larva is feeding on, so it is sometimes hard to see. The food source can be any item that is natural, or has been soiled with natural material such as skin, food, etc. Follow the same procedure that the Webbing Clothes Moth is corrected.

Fabric Pests

Carpet beetles are often found on window sills and in clothing such as any natural substance material like wool, leather, items made from feathers, mounted animal heads, dead rodents, and clothes that are synthetic but have been soiled, and other places that have deposited natural things such as skin that comes off a person's body. (We get a new set of skin on our bodies approximately every 30 days) carpeting, throw rugs, food like oat meal, grains, wheat that have been opened but not used for 6 months or longer. Dried fruit, nuts, and dog or cat food containers that have been opened but not used up and have been left for 6 months or more. When carpet beetles have been discovered you should question your client if they have experienced any mouse or rat problems in the past. It can be the source of the infestation from either the poison bait that was not finished by the rodents, or the Carpet beetle is living off the carcass of the dead rodents. You should check the clothes closet for evidence of feeding on wool suits, and ask that they be cleaned during your service. Wool or items that have been soiled with organic substances and put away in boxes or dresser cabinets should be checked for any evidence of the Carpet beetle. Treatment should be targeted to cracks and crevices only as the carpet beetles will not be in an open area such as the middle of a room.

You will want to treat all the baseboards throughout the house and all the cracks and crevices in areas that are not disturbed very often. Treat the joint between the carpet and tile floor. If you find evidence of them in food cabinets such as wheat products, you should have the customer decide if they want to super heat the food. (20 minutes in the oven at 140 degrees, or simply throw the infected food out.

Preparation required before treatment

1. Move items away from the walls about 6 inches except large heavy furniture.
2. Move items away from the walls in the closets such as shoes, shoe boxes, toys, etc.
3. Check any stored clothes for evidence of them.
4. Check any hanging clothes for evidence of them.
5. Remove pets from treated areas & turn off fish air intake tubes and place above the treated baseboards at least 2 ft up from the baseboards. Cover tank with a cloth, or plastic sheet, or newspaper.
6. Children (babies, toddlers, and all pets) should be removed from the house for a minimum 2 to 4 hours, and if the pets or children have a respiratory condition they should be out for a minimum of 24 to 48 hours.
7. Treat with a heavy stream all baseboards throughout the house. Use aerosols that have the correct label on any furniture that is infested.
8. Clothing that is infected should be cleaned.
9. Any trophy heads that are infected should be treated by fumigation, such as Vapona strips placed in large bags containing the trophy heads. They should be kept in the bags and sealed with tie straps at least 48 hours. Then remove them from the bag to be placed where they can be on display.

Varied Carpet Beetle



Black Furniture Beetle & Larva stage



FLEAS

Fleas originate from the outside. When a flea becomes an adult it begins looking for a host. After a flea has found a host they stay on the host, feed on the blood, and lay eggs for the rest of their adult life, which is about 2 to 3 weeks. The eggs are non-sticky and fall off the host onto the floor or ground. In a few days they will hatch into the larval stage. All flea stages can be found throughout the house but the majority of the population is located where the pet spends most of its time. When treating for fleas, you should treat all floor surfaces inside, and the yard out to approximately 10 feet, and other areas that the pet frequents outside to make sure you get complete control of the situation. Be sure to check under furniture cushions and lightly treat those areas with an IGR and adulticide aerosol as well. When treating for Fleas it is important that you use an insect growth regulator along with an adulticide.



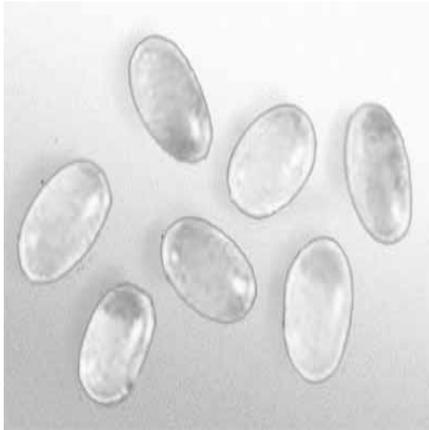
REQUIRED PREPARATION: (Preparation should be done by the customer)

Vacuum under cushions of the sofa and cushioned chairs, along baseboards, the entire carpeted areas and around the pet bed areas and wash any pet bedding. Place a Vapona strip inside the vacuum to kill the adult fleas that have been vacuumed. Empty the vacuum into the garbage. Pick up everything off of the floor or ground (inside and outside) that is not furniture or rugs. Example: magazines, toys, shoes, pet dishes, etc. It is not necessary to move dog houses or plants and do not stack items on couch or upholstered chairs because they will be treated. Flip up bedspreads so you can treat under the bed, and walk-in closets or closets that the pet enters will also be treated. In those areas pick up shoes and long dresses or clothes off of the floor. Cover fish tanks and turn off any air pumps. Raise pumps above floor at least one foot. Remove all birds for a minimum of 24 hours. All other pets should be out until house floors are dry and the house has been ventilated well. Plan for your customer to be out of the house 2 to 4 hours to allow ample time for surfaces to dry. It is recommend that the pet be treated or bathed for fleas the same day. (Not by us.) The customer should Vacuum upon returning often for the next 30 days. If the customer has allergies, they should vacate the house until the house has been well ventilated.

Fleas

This will stimulate the adult fleas to hatch out of the pupa stage and come in contact with the recently treated surfaces. Use an adulticide and an IGR (Insect growth regulator) Spray any dog runs and dog houses outside. Recommend outside maintenance to continue control.

Caution should be observed to only use aerosol cans of spray for furniture to avoid stains on the wood portions and cloth portions. Avoid spraying wall paper and wood walls as this can stain them. Be careful to spray lightly on dark colored surfaces to avoid activating any wax that is on the floor. Automobiles that transport the animals should also be treated with a flea aerosol that has both an adulticide as well as a insect growth regulator. Be sure that the vehicle is not used until completely dry inside as well as ventilated.



eggs



larva

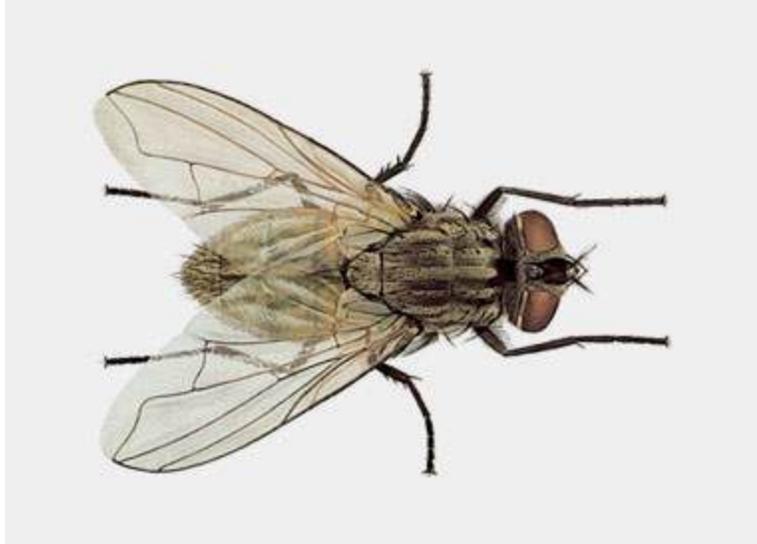


Pupae



adult

flies



House fly

This fly is one of the most common flies in a house. This fly is approximately 1/4 inch in length and the thorax has 4 distinct dark lines running down from the head to the abdomen. Dog feces are one of the most common food sources outside for this fly. It is important to remind the customer that the feces should be policed up each day to lessen the problem inside. Other sources such as fermenting garbage in the kitchen and compost piles outside should be looked at as a source as well. This fly can carry several diseases such as Cholera, diarrhea, dysentery, tuberculosis, and ophthalmic as well as parasitic worms. The cure can be obtained by using sanitation methods, and spraying the infected areas outside and using an aerosol spray inside. Screens on the doors and windows will help and telling the customer to keep doors and windows closed when not in use. If the customer wants quick relief then a temporary solution would be to use a fly trap machine, or an organic trap seen on the right.



flies



**Fannia or Lesser house fly, or little house fly
It goes by all these names.**

It is approximately 3/16" long. It has 3 dark lines on it's thorax that run to the start of the abdomen. They seldom rest on surfaces and fly aimlessly around the center of a room. This fly can cause intestinal myiasis in humans, and occasionally may pass harmful pathogens to man.

They have been found feeding on stored bacon, dried fish, and fecal from various live stock. They also can be found around garbage cans and compost piles. Use the same procedures that are used for the House Fly.

Flies



Fruit Fly

Fruit Flies are very small flies with red eyes. They are approximately 1/8th of an inch long. Fruit flies are a common pest in households and restaurants; they are attracted to fresh fruits as well as those that are fermenting. They lay their eggs near or on the surface of fermenting materials such as fruits and vegetables. Other sources include dishwater in sinks, sour mops, or drain pans under refrigerators, floor drains, and excess slop water that seeps into cracks and crevices under baseboards and other places when scrubbing the floors. These sources contain small particles of food that make them a perfect place for fruit flies to breed. Seeing fruit flies inside is usually a definite sign that there is some fermenting material near by. The most effective way to eliminate the flies is to find what they are breeding in and, or attracted to, and throw it out. Usually it is a piece of fruit or garbage that just missed the garbage can. Glue boards with a few drops of vinegar work well to attract and trap fruit flies. The use of aerosol canisters with pyrethrum works well. Be sure to clean up the material they are breeding in as well.

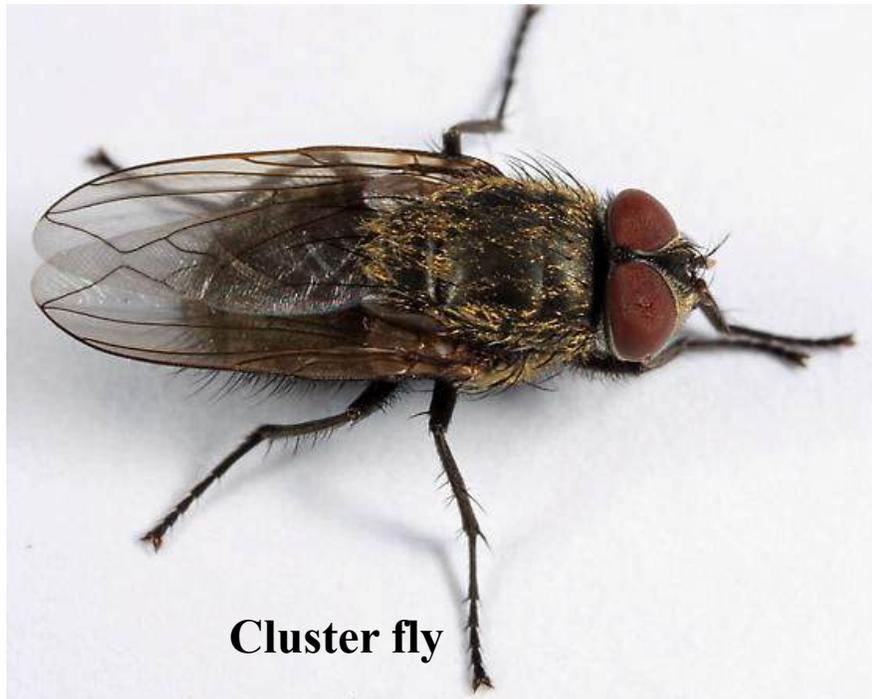
Flies



Bottle flies

Black, Blue and Green Bottle Flies. These flies are large robust metallic looking flies. They all lay their eggs in the eyes of a dead carcass such as but not limited to dead rodents, birds etc. On occasion they will also lay eggs in fermenting garbage. Bottle flies are a signal that something else is wrong such as an ingress of unwanted animals in the attic or crawlspace that have died. Check both areas and when you find the source, remove it and disinfect the location

flies



This fly over winters in a void such as a wall of a house, or an attic in the late summer or early fall.

In the springtime it lays its eggs in the ground at a grassy area where early grubs, worms, or beetle larva are present. The egg hatches on the larva or worm and immediately burrows into the subject and starts to feed from the inside out. Once the larva or worm is dead, the larva pupates in the soil and becomes a cluster fly. This procedure continues each year until the grass has been treated with an insecticide that kills the larvae for the next cycle in the next year. Identification is the wings are closed at the tips and a golden (yellow) hairs are on the thorax section. For a temporary fix of the problem you can treat the attic with Pyrethrum with a ULD fogger and treat with a pyrethrum material that is in a compressed air can under the base of the stucco wall area.

The cluster fly is not considered as a filth fly nor does it spread disease, however they can be quite a nuisance in large numbers in the house.

Flies

Drain Fly

Drain flies often breed in floor drains, sinks, bathtubs, and shower drains. Their breeding can be found in areas of water with bacteria buildup. These flies can carry and transmit diseases as a result of being in sewage drains. This fly is approximately 2 cm long (1/13th inch long) Their wings are heavily coated with hairs that make them appear to be moths. (they are sometimes referred to as Moth flies.) They are attracted to lights inside of a house at night, and can be found on window sills. Most of the breeding takes place in the fall of the year. The method of correction is to place a drain moth pesticide such as Bio-Gel that is carried by a pesticide distributor into the drains that are infected.



Fungus Gnat

These gnats are very small, approximately 1/16" to 1/8th inch and can be identified by their dark grey wings. They live approximately 30 days They generally breed in rotting and moist soil either in an atrium or plant pot. Turning the soil and drying it out, and using less water, and be less frequent watering can help with the control. This Gnat feeds on fungus and if the fungus can be eliminated so will the Gnat. Control them with white vinegar and a small amount of dish soap. Placing small rocks on top of the soil will help as well.

Flies

Phorid Fly or Humpback Fly



This fly is approximately 1/16 inch in size and has gray to brown eyes. They are attracted to stagnated water. Look for signs of a plumbing leak or water line that is broken coming from the street. Look for standing water in a crawlspace or moist soils in the crawlspace. This fly is attracted by moist decaying matter. Check roof gutters for built up silt. Check for water-logged gardens or yard. The correction is to eliminate the stagnant water. ULD or fogging will give some relief as will electric Fly Light Traps. It is a slow process to correct the problem because it may take several months to dry out an area. Often corrective measures such as putting pea-gravel in the crawlspace with a vapor barrier over it. Ventilate crawlspace. Check water meter when all known outlets are turned off. If all the fixtures are off and the meter is still running then there is a leak somewhere in the pipes that needs to be repaired.

Flies

Marsh Fly



There are several species of this fly throughout the world. This picture is a common one in our area. Its larvae are aquatic and have a complete life cycle. The larvae feed on slugs and snails while going through their molting. They are found wherever water is abundant such as ponds, slow moving rivers, swimming pools, and over watered lawns. Keeping swimming pools chlorinated and preventing foliage from being over watered is the best method of control. Having said this, sometimes the numbers are so great that they will set on house siding during the daytime for the warmth. You can spray the siding to eliminate the current flies, but I recommend an ongoing outside maintenance on a regular basis to maintain the control.

Flies

Midges



Midges are similar in appearance and size as a mosquito but without the long proboscis (mouth) found on mosquitoes. Midges are aquatic during the larva stage and the adults are attracted to moist conditions. They are night flyers and attracted to light. The midges we have in our area do not bite. When they are seen it is generally in very large numbers. Their life spans are from one to two weeks. The correct method would be using a heavy ULD machine outside where they are. Chemical of choice is Pyrethrum such as PT100. For better long lasting control is to keep the moisture down on foliage and keep the water in the pool properly cleaned and maintain the correct level of Chlorine in the pool.

Mosquitoes

The two most encountered mosquitoes in our area are the Aedes and the Culex mosquitoes. Both of these are a serious threat to our health and well being. The Aedes carries the Zika virus, and the Culex carries the West Nile Virus. Both of the mosquitoes are aquatic in the larva stage. They can breed in unclean swimming pools that are rarely serviced. They also can breed in any body of water that is stagnant such as a pond or an irrigation ditch. During the night and at dusk they are most active feeding on blood from people and animals. During the daytime they are resting in any sheltered area such as dry culverts, rockeries, hollow logs, And tall grass or weeds. To control them it is important to change their breeding by maintaining swimming pool cleanliness and using chorine or even liquid soap in any stagnant water. There are other control chemicals such as abacus briquettes from a supplier. The use of a repellent on people such as DEET can be helpful. The scientist say that the mosquitoes prefer type O blood, as opposed to type A and B blood. Female mosquitoes need a blood meal to lay eggs. Male mosquitoes feed on plant nectar as opposed to blood.



Aedes albopictus



Culex nigripalpus

Occasional invaders



Ladybird beetle

This beetle is commonly called a Lady bug. It is a good insect to have in your garden as it eats other harmful insects that attack different plants, however in large numbers it can be a nuisance to people. In the winter they can over winter in crawlspaces under the house and in attics, and wall voids. In the spring they can come up through the floors where there are openings such as heat registers and overhead recessed lighting. Using pyrethrum sprays in cylinders or ULD machines for large voids under the house or attics treat to eliminate the populations.

Occasional Invaders



Silverfish



Firebrat

Silverfish are somewhat flattened and gray to silver in color, and firebrats are more brownish and have a hump on their back. They can be found throughout the house including living rooms, bedrooms, bathrooms, kitchens, garages and even attics. However, they usually prefer warm areas like furnace rooms, hot water tank rooms, and areas near skylights. They are defined as a paper product pest because they will often attack old books, magazines, maps, and even hair from our bodies. Barber shops can also have this pest as a result of body hair left in cracks and crevices. They have also been found attacking fabrics such as cotton and linen. Usually they enter buildings via cardboard boxes, books or papers, which are brought in from infested areas. However, they can also enter structures directly from the outside. During the daytime they usually prefer to hide in small cracks and crevices. When searching for food they can roam quite some distance, although when a good food source is found they will usually remain near by. They can live inside walls as well, and especially an exterior wall. Dusting with silica jell or drione will fix it.

Occasional Invaders



Springtail insects

Springtails are not a serious problem but they can be a nuisance. These small insects are a problem when they are in large numbers. Getting rid of springtails requires finding any moist areas of the house such as under a sink with a leak or overwatered house plants. Pyrethrum sprayed on to the soil will help to keep the numbers down. These insects can be dark brown, or translucent in color. Springtails are wingless insects that are about 1/16 inch long. They have a tail-like appendage underneath their body and when disturbed use this tail to propel themselves 3 to 4 inches into the air. Springtails lay their eggs grouped together in moist soil, are typically harmless and feed on decaying organic matter. When checking out the problem look for mold or fungi of which they feed on.

Occasional Invaders



Centipede



Millipede

All of these arthropods are associated with moisture. They are all found in and around high moisture areas such as piles of leaves, loose bark, in rotting logs, under rocks, grass clippings, and mulch. In some cases they can infest homes thus becoming a nuisance. Inside, they are usually found in damp basements, bathrooms, closets or near potted plants. Eliminating their sources of harborage is a key element in eliminating and preventing an infestation. Over watering the flower beds outside of entry areas to the house can also trigger infestations. These arthropods can inflict pain on your skin. I do not recommend you handle them without some kind of prong for capturing them.

Drying out the area is recommended, and using an insecticide that will prevent them from returning may be of help. Installing round aggregate around areas such as sliders and doors help.



Earwig



Sow Bug

Occasional Invaders

Book lice or Psocids



Most Psocids or Book lice can be found in the indoor areas, They can breed in damp locations such as around water areas like leaky plumbing pipes or on over-watered house plants. They do not bite however they can become a nuisance when in large numbers. They feed on mold and sometimes are found on book shelves, in old books that have mold on the pages because of the lack of fresh air. To correct the problem the area that they are found in should be dried, or use of Silica Jell, or Delta Dust. Fixing any plumbing leaks if they exist is also a good remedy. These insects are very small, approximately $\frac{1}{32}$ th of an inch. Translucent to gray in color.

Occasional invaders

Cicadas (pronounced as sic-kay-das)



Adult



Nymph shedding outer skeleton

Cicadas live underground from 13 to 17 years and then emerge from the soil leaving a hole approximately 1/2" to 3/4" inch as they come out. They have bright large orange eyes and are approximately 3/4" long. They come out in the spring-time and find a tree or fence to climb up on and shed their outer skeleton covering. They at that time have wings and the males make a mating call for the females. After mating the females puncture a hole into the limbs of a tree and lay hundreds of eggs in the holes. When the eggs hatch the nymphs crawl down or drop to the ground and burrow into the soil to live approximately 13 to 17 years and the cycle repeats. They do not bite and after mating die. There is no need to spray any chemicals as they are not considered a pest.

Occasional invaders

Darkling Beetle



There are over 20,000 different species of Darkling Beetles throughout the world. Darkling Beetles do not fly as their wings are fused together. The larva stage of the beetle is called a Mealworm. They feed on grain, and any decaying animal, or plant matter. They have a complete life cycle. They are nocturnal spending their time in activity during the night. Some of the Darkling Beetles can live 3 to 4 months while other species can live up to 10 years. They are considered a nuisance pest but do not harm people or pets. The use of Demand CS at maximum rate of .06% around the foundation, and eliminating decaying matter such as mulch and decaying wood piles at the same area will greatly reduce the populations.

Occasional invaders

False Chinch Bug



False Chinch Bugs can get up to approximately 1/4" in length and they enjoy and thrive in hot and dry areas and near watered vegetation. For the most part they do not cause significant damage to foliage. When they become massive in numbers the spot areas that they thrive in can be treated with Demand CS at max rate of .06%. They do not bite. Their eggs are generally laid at the base of plants outside. They have a simple metamorphous. They can be found around sprinkler heads and leaky water hoses.

Conenose, Kissing Bug, also called Assassin Bug



Chagas Disease is a direct cause of a bite by the Conenose or Kissing Bug. This disease can cause heart disease in people. This insect is a blood piercing and sucking animal that can infect the host with serious consequences. Conenose Bugs can hide inside a home in furniture or cracks in the floor or bed frames. These insects generally attack people by biting them on the face at night. Treating the inside of the house at all cracks of the home with Demand CS .06% can eliminate them.

Mediterranean Flour Moth, Spider Beetles, and Almond Moths



Mediterranean Flour Moth



Spider Beetle



Almond Moth



Indian Meal Moth



Saw tooth grain beetle

Merchant beetle

Pantry Pests

These pest and others are also known as stored food product pests. They all attack stored food products. These products include grain, dried fruits, seeds, nuts, biscuits, chocolate, dry dog food, bird seed, flour, Cereals, beans, corn, dried noodles, and many other stored products. Infestations can occur in homes by bringing home food products from the store that are already infested. They can also be in stored food that has been opened in the past but not consumed for several months. Dry pet food and bird seed can also be the source of an infestation, especially since these products are usually not in sealed containers. To eliminate these pests from a structure, you will need to find the products in which they are infesting and remove them, and treat the cabinets or areas they are located in. If you are dealing with a stored product pest that has a pheromone trap available, set them out to attract and kill the remaining adults. If you find them coming out from under the kitchen cabinets, the customer may have a mouse problem as well because mice will transport food and store it in a place that may not be accessible for the customer to remove. It may be necessary to remove the base cabinet kit plate and remove any stored food left by mice. You also may need to address a mouse problem. To help prevent re-infestation, make sure you explain to the customer that food products, spices, pet food or bird seed should be contained in tightly sealed containers and not stored for periods longer than 3 months. A helpful tip to your client, that if they need a longer period to save the food that putting the item in the freezer will also prevent a re-infestation to occur.

Pantry pests

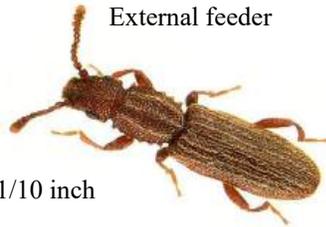
Drug Store Beetles, Sawtooth Grain Beetles, Red Flour Beetles, Confused Flour Beetles, Rice Weevils, Granary Weevils, Indian Meal Moth, Angoumois Moth, Cigarette Beetles, Lesser Grain Beetles, Warehouse Beetles, Larder Beetles, and Khapra Beetles.

Drugstore Beetle



External feeder 1/10 inch

Sawtooth Grain Beetle



External feeder

1/10 inch



External feeders



Internal feeder
Rice Weevil adult



Internal feeder

Granary Weevil



External Feeder

Indian Meal Moth



Internal feeder

Angoumois Moth



External Feeder

Cigarette Beetle



Scavenger feeder

Lesser Grain Beetle



External Feeder

Warehouse Beetle



External Feeder

Larder Beetle



Khapra Beetle

Scavenger feeder,

It is important to find the food that is infected. Look for webs with food hanging from it, and food that has been ground to a fine powder. Check all containers for evidence except canned goods. Even unopened containers like cake mix, etc. If it has not been opened it can be heated in the oven or microwave to kill any eggs that may be in it.

One of the problems that always bothered me was many of the companies baited in attics, and crawlspaces, and inside the garages, and even inside the kitchen. I know some of the time one can get lucky and nothing bad becomes of this practice, but sometimes it can backfire and a rat will die under a kitchen cabinet, or in a wall or in the ceiling, and between floors. This can lead to a horrible smell and an unhappy customer. In the 70s I happened to pick up a state pest control manual and it explained IPM. (Integrated Pest Management) It's approach was very simple. It described how you could change the environment so the rats will not be interested in the area for harborage. Closing off openings in the bottom of the house, and using wall guards on the outside of the top of the house to prevent the rodents from making access to the attic made total sense to me, so I began to approach the problem in that fashion. The roof guards at the top if the house allows the rat to leave for food, but won't allow it to go back to the attic.

RAT CONTROL TECHNIQUES USING IPM

This book is on commensal rodents. Commensal rodents are rodents that share our dinner table with us, because man is the only animal on earth that wastes food. If we purchase and open a product that is to be refrigerated, but fail to consume it, most of us throw it away in two to three weeks whether it is bad or not. All other animals would consume it in any state of its freshness.

IPM

IPM stands for Integrated Pest Management. IPM is controlling rats and mice with more than just toxicants, such as using mechanical devices, removing harborage sites, eliminating food and water sources, and changing the environment to be less attractive to rodents.

I started learning about IPM at a very early age. When I was about sixteen years old, my father had been a pest controller for about ten years at that time. One day, Dad and I were in the backyard at our home talking, when all of a sudden he saw a rat in our yard. A four-foot chain link fence enclosed our yard. Just about the time he saw the rat, I saw it too. Immediately my father took chase, with me right on his heels. The rat knew he was in serious trouble, so he bolted across the yard, with Dad and myself in hot pursuit. Just as the rat reached the fence he ran right through it. Dad having anticipated the fence was already in the air jumping and clearing the fence by an easy margin. As he landed, he landed on top of the rat. Dad turned to me with a grin, and said, son that's one dead rat! That's IPM.

Another example of: IPM happened after I was in the business for about ten years. I got a call from an elderly lady who must have been in her 80's. She told me that she had a big rat in her desk at home, and wanted me to remove it. I thought she was crazy, but I wasn't very busy that day so I agreed to come out and if nothing else, show her she was wrong. When I arrived and introduced myself, she brought me to the desk, and said, the rat is in this top drawer. I slowly opened the drawer only to expose the backend of a very large rat. I was in total shock. Incidentally, that's when I discovered that if the rat can't see you, he thinks you can't see him either. I told the lady that she and her husband would need to leave the house so I could work without them being in my way. They left, and then I went out to my truck and got an ice pick, and a broom handle, and secured the ice pick to the end of the handle. I then went over to the desk and carefully opened the drawer. The rat was out so fast, I didn't even get a good look at him. Over the next hour I was chasing the rat from room to room, knocking lamps over, and turning furniture upside down. I finally took my shirt off because of all the sweating. After a few more minutes the rat came wobbling out from under a recliner chair, and then with all the energy I could muster I nailed the rat. That's IPM.

WHY CONTROL RATS?

There are many reasons we would want to control rats but the most important reasons I think we should control rats is, rats contaminate and damage our food, water, and dry goods. Rats can carry disease. Rats can cause electrical fires when they chew on wiring in attics, and wall voids. Rats think of wiring as grass that they can make a nest with. Finally, and probably the most important reason of all, people fear them and lose their feeling of well being. Sometimes you need to experience an unwanted pest in your own home to get the true flavor of what your customer is really feeling when they call for your help.

About 30 years ago during Christmas time, my wife Annie had purchased a bag of wild rice for a friend of hers, and had wrapped it up, and put it under our Christmas tree. The next day, which was on a Sunday we were all going out for breakfast, when she noticed wild rice was scattered all around her package. She asked everyone if they had broke the package open, but everyone denied it. After breakfast we came back in, and she went to clean up the spilled rice only to discover there wasn't rice scattered anymore. She said who cleaned up the rice? Nobody confessed, so I went over to examine the package and realized that a rat had been chewing on the package. Well, after doing an inspection around the house, I found that our builder had screened our house foundation vents with aluminum screen and the rat had chewed a hole right through one of them, and had come out into the kitchen via our stove exhaust base cabinets. I fixed the vent, and because my wife was so stressed from the issue, I set out at least 30 rat traps. The next morning I had caught the rat. At that time, I realized even though I had been a

pest controller for over 35 years, I too was very nervous about a rat running loose in my house while we were in bed.

WHAT'S IN IT FOR ME?

Over the many years that I have been in the pest control business I have come through many economic changes that affected many of my friends. Our economy has had great ups, and some bad downs, but one thing has always been constant, and that is, the pest control business has always thrived. I'll be bold and go so far as to say the pest control industry as a whole has never fell on hard times. I think the reason is simple. The rodents, and other pests that seem to grow larger in numbers like our populations, do not know that times are bad. People always seem to have discretionary monies to spend on our industry because they fear pests. While it is true, only about 15% of the population pays or hires a professional, that seems to be more than enough to keep us all in business and smiling on the way to the bank.

While insect control has elevated, and lowered populations as the seasons change, over the last ten years rodent populations have increase at an alarming rate. When I first got into pest control most of our rodent jobs were primarily in the winter, however now it is truly a year round task.

Rodents will always be here, so eliminating them from our cities and communities is only on a temporary basis, so selling exclusion repairs to your customer, and placing them on an on going maintenance service is not only good for your bottom line, but will also make our neighborhood environments safer, with less disease, and more sanitary for our children and pets to live in.

FIVE STEPS TO SUCCESSFUL RODENT CONTROL

There are two kinds of rats, smart, and stupid, or dominant and submissive. The dominant always gets the females, and the best food, and the best shelter. If you did nothing but set a trap down, you're bound to catch a few stupid ones! If you don't change the environment the dominants will not be eliminated.

One day I received a call from a single lady who said she thought she had a smell that seemed to be a dead rat under her house. When I came out and went under her home, I too could smell this odor, but after looking around I found that it was a leak in her natural gas line that had recently been installed for her fireplace flames. I called the fire department and they came out with a gas tester and found that the natural gas concentration inside the house was well above the level of safety. I then called the people who installed the line and they came out and fixed the line.

A few years ago, I got a call from an elderly lady who was having a tea party with two other ladies. It seems while they were visiting, one of them heard chewing sounds coming from the bedroom next to where they were having tea. I came out while the ladies were all still there. They took me to the room where the chewing sounds were coming from, and I too could hear it. I determined the sounds were coming from the top of the wall above the bed, so I took my shoes off and stood on the bed next to the wall. I thought if I pounded on the wall the rat, chewing would stop, so I gave it one good knock, and all three ladies were standing in the doorway watching me as I knocked. To my surprise, my hand went right through the wall. Unfortunately it was a yellow jacket nest ready to break through. Even though I was standing on the bed, and the ladies were in the doorway, I was the first one out of the room. So, be sure about a sound before you take action.

Rats & Mice



5 steps to controlling rats & mice

- 1. Identify the animal**
- 2. Locate the animal**
- 3. Determine the cause why the animal is there.**
- 4. Develop a solution to correct the problem**
- 5. Instigate the solution**

When I was a young boy of 16 years old, my father had been in the pest control industry for about 10 years at that time, and on Saturdays sometimes he would let me ride along with him on his pest control route. On days that he would do rodent work I would tag along and help him carry his box of bait and on occasion he would have me pick up and refresh the bait in the boxes that were used back then. Most of them were either home made of wood, and some were made of prefabricated cardboard that he would buy from his suppliers. This was a few years before EPA existed, and before there was any real government standards that the pest control companies had to follow. Back then everyone basically made up the procedures as they went. Speaking from the experience I have had over the years, I would say we have come a long way in truly protecting our environment, and reducing unnecessary risks that our forefathers dealt with. As I got into my 20s I became very active in pest control with my uncle whom also **owned** a pest control company. Shortly after I went to work for him, he passed away, and I purchased the business from his estate. That was 53 years ago.

THERE ARE FIVE STEPS TO CONTROLLING RODENTS

1. Identify
2. Locate
3. Determine the cause
4. Develop a solution
5. Initiate the solution

STEP 1. IDENTIFY A RAT INFESTATION

A sign that a rodent could be in a home is an abundance of Bottle Flies flying inside the house. Most generally Bottle Flies are only around an area where something such as a dead carcass exists. Other signs would be to actually see the rodents, smell, or hear the rodents inside a wall such as gnawing sounds. You might find gnaw marks on items such as at door entries, gnawed through water pipes to dishwashers, or refrigerator ice makers. Rodents also at times might chew water hoses in your client's automobile. Other signs such as shredded debris behind seldom-moved furniture, or workbenches. Rodents can cause frayed electrical wiring in the attic. Odors coming from heat registers in the floor, or even dogs and cats becoming excitable for no apparent reason can also be a clue to determining a rodent infestation. Most of the time, the rat will not be present, so you may need to identify the infestation by the feces left behind. Most rat feces will be dark brown to almost black in color. The feces will be from 3/8" to 3/4" long, and approximately 1/8" to 1/4" thick. You can determine the age of a dropping by its color. If it is dull in color, it's an old one. If it is shiny, it's a fresh one. You can identify a rat infestation by how stored items have been damaged with urine marks, or chew marks on them. Dusty hot water tanks or dry dusty crawlspaces can also help you to identify a rat infestation. Tunneling in blown insulation of the attic looks like a snowplow came through. It is generally 4" to 6" deep and 3" to 4" wide. (Squirrel tracks are approximately 8" deep, and 6" wide.) Sometimes a change in water pressure can cause pipes to vibrate, or shake, and make your client think they have a rodent problem. Check for signs of birds, raccoons, or squirrels that may have invaded your client's home. Check for bushes, trees, or even a loose cable wire against the house that might brush against the siding causing your client to mistake the noise for a rat problem. Ask your customer what prompted them to call you? Have they heard sounds, and if so, what time of day or night? Have they smelled any unusual smells, if so where and when? Do the smells appear when the furnace turns on, or is it consistent all of the time? Have they had any natural gas fixtures installed or repaired recently?

STEP 2. LOCATE THE RAT ACTIVITY.

Inspect inside the house, garage, attic, crawlspace, storage shed, and the exterior of the house. You should always wear gloves and a good dust mask, or respirator when entering a crawlspace, or attic to prevent air borne particles from contaminating you. Several diseases can be air borne such as, Murine Typhus, Bubonic, Jaundice, Histoplasmosis, and others. Always check below the siding for any holes or cracks that may allow rats to enter the walls. Be sure to wear gloves when checking below the siding to avoid being bitten by spiders.

STEP 3. DETERMINE THE CAUSE OF THE RAT INFESTATION.

Always ask your customer lots of questions. Sometimes customers forget to replace the batteries in their smoke alarms and when the batteries are worn down far enough, they begin to make a chirping sound that could make your client think it's a rat caught in a wall, or ceiling. Do they own a pet? I find that the majority of my customers that have a rat infestation also have a pet. Where do they feed the pet? Where do they store the pet food? Do they have a cat or dog door? Do they store bird feed? Do they store food in the garage or on the back porch such as onions, potatoes, or other garden vegetables? Do they feed the birds, or squirrels? Do they feed the neighborhood cat? Do they have any fruit trees, or vegetable gardens? Where do they put their garbage cans or bags? Do they leave any windows open, or overhead garage doors, or garage service doors open during the day or night? Many people leave their garage overhead door up 4" to 6" for ventilation or for their pet cat to come and go as it pleases. Do they do any composting outside? Do they police up any pet feces in the yard or in the garage? Have they done any remodeling in the last year? Sometimes remodeling may not be complete, and rats are getting in that way. When did they first start hearing or seeing evidence of rodents?

Check for nesting areas outside such as tall grass, rubbish, low decks, dense bushes, rockeries, ground covering type plants, ground burrowing from rats, trees overhanging the house, or wood piles that are just loosely piled on the ground.

Sometimes you'll find customers that never throw anything away, both inside the house as well as outside. To really get control of the problem, you need to tell them the problem will persist until they clean up the clutter. Of course, do it in a diplomatic way, but be firm about the situation. You can offer to do the clean up, but with a charge. Generally the charges should be at least \$100 per hour plus dump fees.

STEP 4. DEVELOP A SOLUTION

Sometimes your customer has called you because of a strong odor in the house. If you determine it is from a dead rodent, this should be your first priority. If the rodent can be found, it should be removed and the surrounding area should be disinfected by means of a chemical neutralizer, and disinfectant. If the rodent is in a place where it cannot be located, or removed such as in a wall or between the ceiling and a second floor above the room, you can attempt to eliminate the odor by injection of a neutralizer into the cavity, or use an ozone machine. An ozone machine sends out a negative charge in a molecular size that attaches itself to the odor molecule that has a positive charge. It then becomes heavier than air and falls to the floor, or ground, and out of the air patterns that we can smell. All the entryways must be corrected to stop the ingress of rats that are outside. Always place your traps just inside the point of entry to the crawlspace, or attic. The rats will find them, and it will be easy to retrieve the rats, and the traps when the project is over. It is good to attach 2 to 4 snap traps on a plywood base to avoid the rat from dragging the trap in a place where you cannot retrieve it. When controlling rats, you should never use poison bait in an attic, or crawlspace, as the rats can and will eat the poison bait if it is the only thing available. The problem is however, if they eat the poisoned bait, they may die where you may not be able to retrieve the carcass. This can not only create a very bad smell, but can be a source for flies to breed in, and during the bloating period after death, the fluids from the rat can bleed through a ceiling or wall and cause a stain. Dried fruit makes a good attractant. Most of the rats found in an attic are omnivorous but prefer fruit and vegetables.

STEP 5. Initiate the solution by getting your client to approve of your proposal.

Rats

Ivy is an easy way to gain access to the attic

Cut back ivy to below the soffit area.
To prevent rodents from getting to the roof and accessing the roof to enter the attic.



Rats

Offering crawlspace and attic cleaning and sanitizing is a great way to increase revenues.



Rats

Over hanging tree limbs

Either use a tree band or remove the tree



Rats

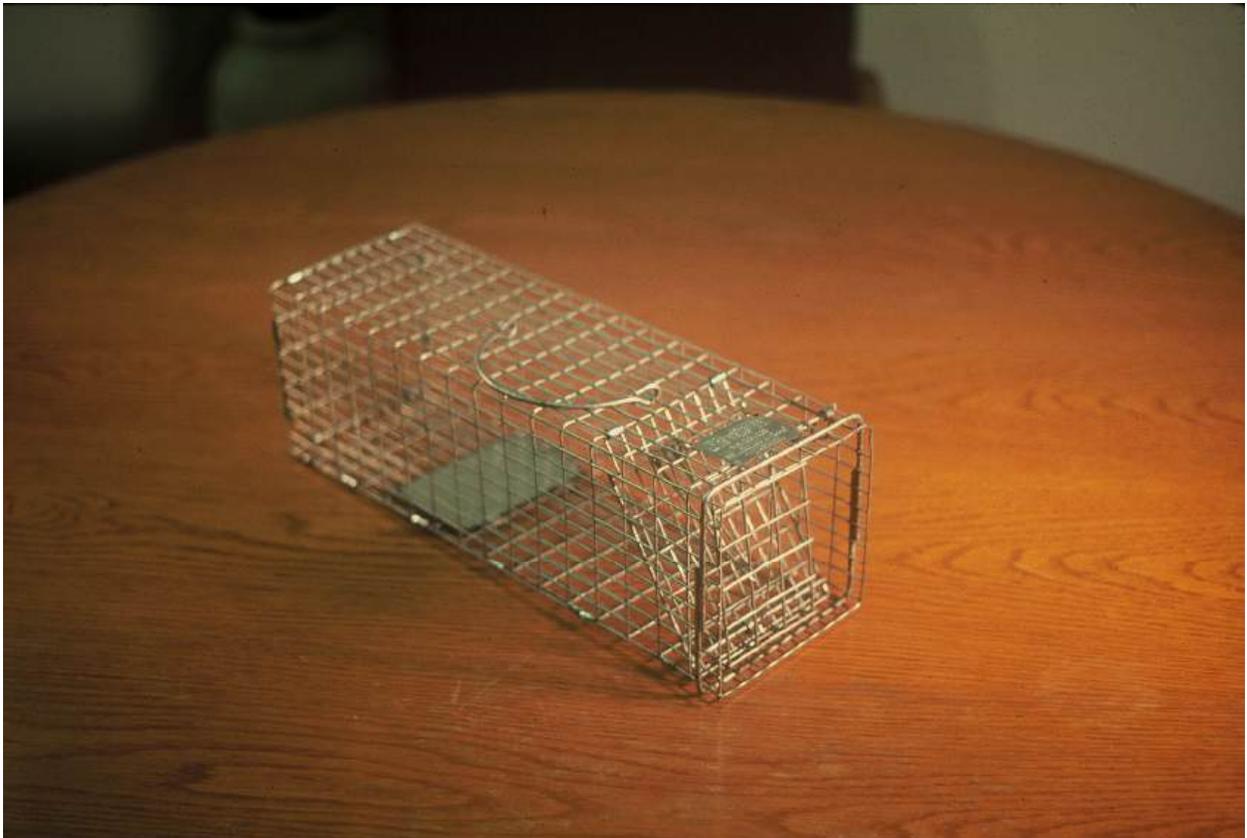
Over hanging tree limbs

Trees should be trimmed below roof line to avoid rats from accessing the roof and entering into the attic.



Rats

Using cage traps can be more publically correct to catch a rat inside of the house or office building when people are there.



Rats

Over hanging tree limbs

Tree bands are installed to prevent rats from gaining access to the roof via a tree limb.



Using a roll of clear vinyl 1/16th of an inch thick that is 12 inches wide cut a piece that will go around the tree and overlap the length approximately 6 to 8 inches past the end. Install at the top and bottom of the cut attach a plastic clip. Put the long-side of the clip next to the bark behind the vinyl and the short portion on the outside of the vinyl. Install a dab of silicone caulking on the inside of the front clip to make contact with the exterior of the vinyl.

The clips should be put on the side of the tree that faces away from view from the people.

Rats

Over hanging tree limbs

This tree needs to be trimmed to be a minimum of 2 feet away from the roof line, or 1 foot below the roof line.



Rats

Over hanging tree limbs



Rats

Here's a challenge !



Tools to get the project done

Dryer exhaust vent needs a basket cover to prevent rats or mice from entering the dryer exhaust pipe.



Rats

Tools to get the project done

Install a dryer vent basket to prevent rats & mice access to the dryer hose that leads to the interior of the house. Make a metal frame that fits the outside of the box with a hole in the top for a pin that holds the box on. To clean the basket simply pull the pin and remove the lint from the basket. Secure the metal frame by screws with inserts put into the wall through the metal. The metal frame is from a metal barge board drip cap.



Rats

Install a metal frame made from a barge board drip cap to attach the basket. Use hex screws and inserts to secure the frame. Drill a hole at the top the frame. Insert a rod with an elbow end to hold the basket secure.



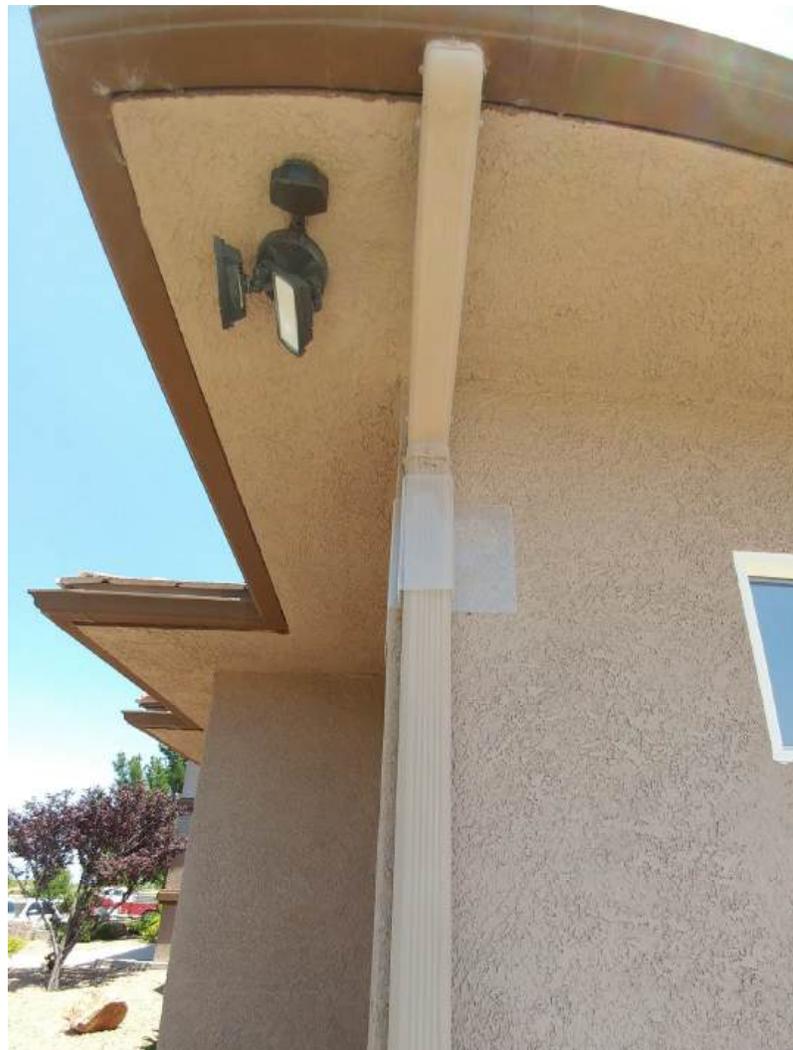
Rats

Install a tree band with growth clips, but before doing so, be sure to trim the excess off at the base of the bottom fronds, or cut limbs that overhang the roofline.



Rats

Install a downspout wrap made from Plexiglas to prevent rats from climbing to the roof line. Screen base of downspout with 3/4" galvanized screen & screws to prevent rats from going up the spout inside. The Plexiglas can be formed with a heat gun, and attached to the wall with inserts and screws.



Rats

Rat burrows can be dusted with Rozol Blue tracking, then close off burrows with pea gravel to seal in the rats



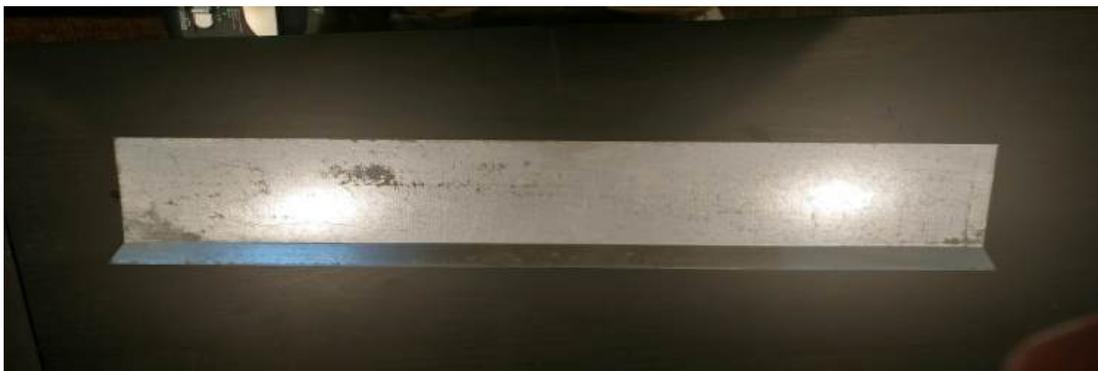
Rats

Excluding rats from BBQ

The movable round lid of the grill should have a metal angle installed along the rear side of the cover with screws on the base of the angle attached to the body of the grill to prevent rodents from entering the grill from behind. Using pan head screws with inserts, install a sheet metal stainless steel under BBQ cleanout trays to stop rats and mice from entering the tray areas. Screen any vents on the side of cabinet or in any front openings to the housing of the BBQ as well with 1/4 inch mesh.



Angle metal for rear opening on BBQ lid



Rats
Use Safe ladders
Ladder with Leg levelizers



Rats

Tools to get the project done

Heat strip box for heating up sheet Plexiglas and forming the Plexiglas in various shapes.



Rats

Tools to get the job done

Rope and harness use



Rats

Use respirators and throw-away gloves to avoid contamination in attics or crawlspaces



Rats

Tools to get the project done

Install a flat sheet metal 10” by the length of the flat roof with 20 gauge galvanized steel, to prevent rats from going over the roof from the ground. This same sheet metal can be used to stop rats from climbing over a fence or a free standing cement block wall. (Take caution to put a downward bend on the end of the edge to prevent injuries to anyone on the other side of the wall.) Secure the metal with screws and inserts.



Rats

Tools to get the job done

Ledge trap designed to catch rats running along a fence or wall ledge . Do not use bait on this as they will smell it and stop to check it out. Rats always follow the same odor trail left by other rats. You can catch rats in the same area over and over. The rear shield protects the neighbors from getting caught with their fingers in the traps. This Ledge trap can be screwed into the face of the wall and removed when the rats have all been caught. Be sure to secure the traps to the wood base of the station.



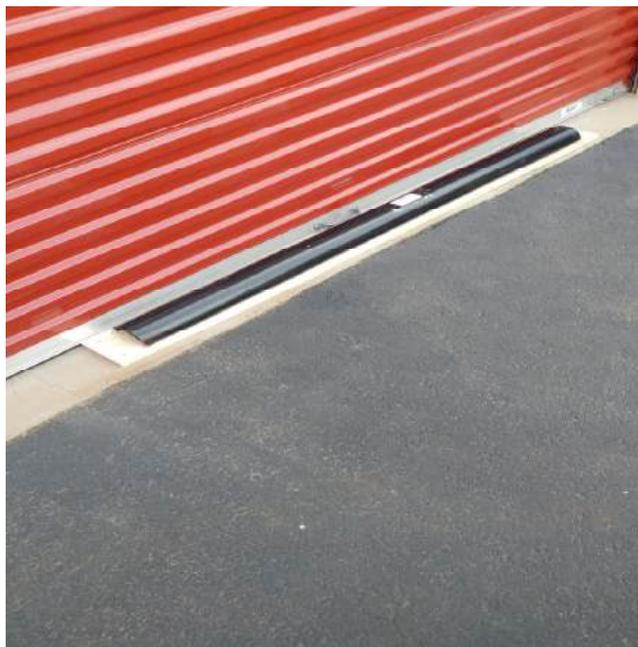
Tools to get the job done

Rats are able to climb over walls and access the yard, and when they do, install a **Vertical Fence Wall Guard** that will keep them out for good. The guard should be 8" tall and have an L shape at the bottom of 4 inches wide, and run it the length of the fence. It should be made from 20 gauge galvanized steel. Over lap the ends by 2 inches. Drill into the top of the fence wall and insert screws to secure the guard.



Rats

Tools to get the project done



Tracking tube

A tracking tube with tracking powder such as Rozol Blue Start with one by eight wood 6' long. Cut 6" PVC pipe in half length wise 5 'long. Drill 1/2 inch hole in center of tube for installing dust with bulb duster into the half tube. Place water proof label on top. Secure tube to board with silicone cement, attach on both ends of board with cement screws to surface. Mostly used in dumpster areas.

Rats

Tools to get the job done

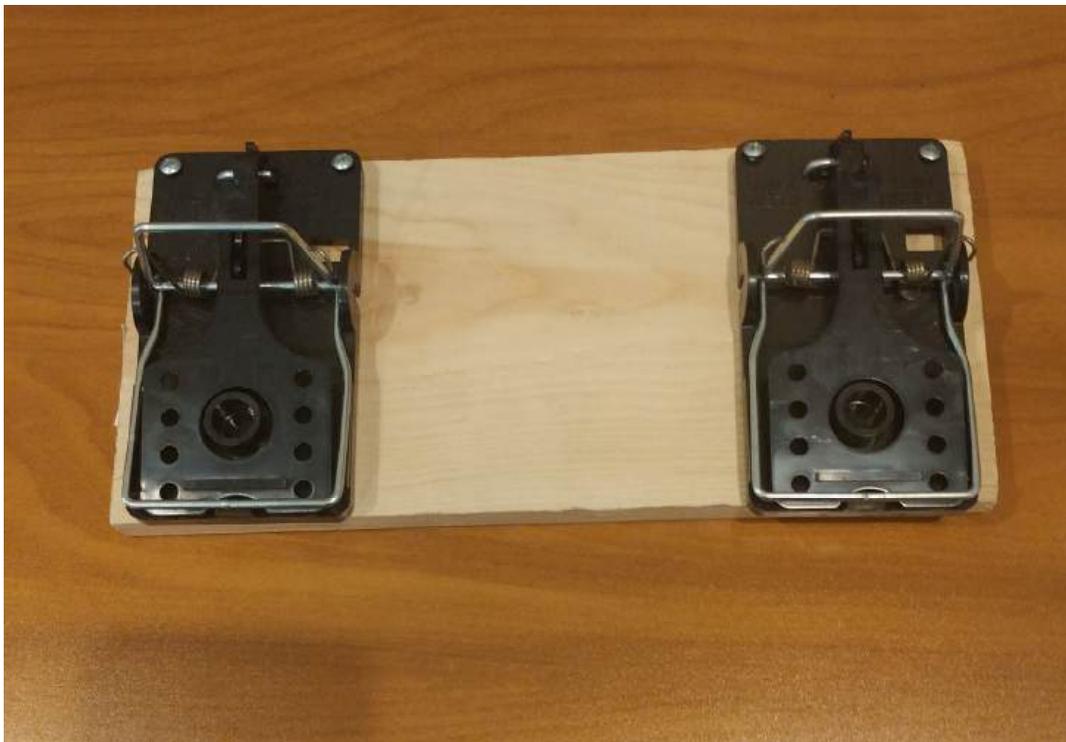
When telephone or power lines come down to the roof of your clients house, install this Horizontal wire guard and round stop to prevent it from sliding down the wire. When the rat comes down the wire this part will tip over throwing the rat to the ground. It automatically flips back into position for the next rat.



Rats

Tools to get the job done

Whether you put snap traps in the house, or in the crawlspace, or in the attic. Always put 2 traps on a board with screws, and the rat will not be strong enough to carry the traps off with a board secured to them.



Rats

Crawlspace vents through brick facing should be screened from inside the crawlspace with 1/4" galvanized steel hardware cloth.



Flies/Rats

Fly control light trap

Sometimes a customer will call with a fly problem. Bring along a fly machine because the customer may have a fly problem from a dead rodent, or some decaying matter. This should only be used indoors. (This can be a nice add on sale or service for you.



Rats

Tools to get the job done

If you get a call for a bad odor in the house, it can be from several sources. If it is a rat and you can not reach it via the ceiling or the wall, this ozone machine can remove the odors completely in approximately 2 weeks running 24/7. Be sure to read the instructions carefully, as adjusting the power too high can be overwhelming and hazardous to the occupants by excessive exposure.



**Install a wall guard where ever rats can access via
The roof by climbing up the stucco or siding.
Be sure to paint the guard same color as the house.**





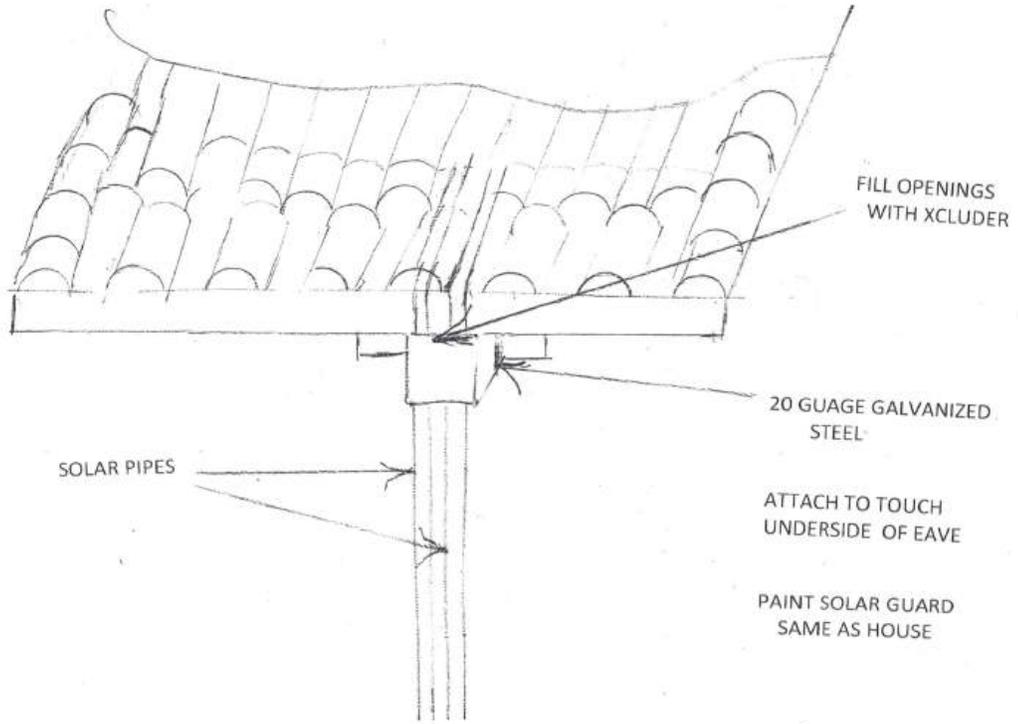
Rat guards

See the wall guards next to the arch doorway that the rats can get on the roof from both sides.



RAT CONTROL

SOLAR GUARD



Rats

Tunnel trap

Install 2 rat-E-snap traps inside under the grooves inside. Should be used inside a house in areas that children and pets cannot access the inside such as behind a couch. The bait that works well is apricots.



Below is the closed lid that is opened by a key



Rats

This bait station is used for commercial sites such as store fronts or inside commercial buildings. The station is camouflaged as an electrical Box. It works well on side walls and on floors that are clear of any foot traffic. This station should be secured to the floor or wall.



Scorpions

Scorpions (Bark or Sculptured) This animal is in the **arachnid family** (spiders) Their tail has a stinger that they use to subdue their prey and for defense. **Scorpions are very common in the southwest.** There are 23 species found in Nevada, but only one of them is considered a serious threat to man and his pets. It is called the **bark scorpion**, or sometimes referred to as the **Sculptured Scorpion**. The body is approximately 2” to 3” in length and is light brown in color. This scorpion has established itself in various locations of the southwest states. If They are in the attic they are attracted to lighting in the attic such as recessed ceiling lights , however the light fixture is too hot to pass through until the light is turned off. After the light has cooled the scorpion enters through the small openings in the fixture. When they get into the home they walk along the ceiling and down the interior walls. They can be a very serious threat to the occupants during the day and night when things are moved or disturbed where the scorpion may be hiding. Scorpions can invade a home when the doors or windows are left open, but may come in on moving boxes, or stored items in the garage and hide behind hanging pictures, and in closets. After dark they come down from the walls and other areas they can be hiding in, and become a serious problem for the occupants of the house. They climb trees outside and can be knocked off of a limb or foliage by simply a person or pet dog, or cat brushing up against the foliage. If a person is stung by a bark scorpion immediate medical attention is strongly advised. Small children, older adults, or someone with a weak immune system, and even the family pet may require hospitalization if they are stung. Control of scorpions would include the removal of debris such as piles of lumber, and old accumulation of junk items in the yard. The exterior perimeter wall of the house should be sprayed 3 feet up the wall, and the wall that separates the property from the neighbors all around the home sprayed the same way with a water based pesticide such as Lambda Cyhalothrin (Demand CS @ .06%) mix . This is very successful in killing scorpions. In addition, the attic should be fogged with the same material. All door entry areas should be sprayed from the access door out to 4’ from the door. To eliminate the scorpions from inside the house an inspection of the access doors should be done making sure there are no cracks at the base of the doors that you can see light coming through. If light is coming through then using a putty, or rubber strip to seal off the light areas. Check the garage for expansion joints in the concrete floor. If the light appears from outside while the garage is dark, use a ready to use cement mix to seal the joint with a 3” putty knife where the roll up door contacts the joint. Do not attempt to seal the side openings of the door at the guide rails. Perform spot broadcasting spray on the garage floor areas where possible. Inside the house all pets, children and adults should be out of the treatment areas until all sprayed areas are completely dry. Birds should be removed for 24 hours and if a fish aquarium exist be sure to cover the tank and turn off the air pump. Place the pump air receiver above the floor areas so as not to accidentally spray it. All toys, shoes, magazines, pet dishes, and other loose items should be moved away from the walls of the rooms and closet floors. Spray along the base boards throughout the house approximately a 4 “ wide path. Scorpions are nocturnal and travel at night. They have very poor eye sight so they tend to walk along the base boards. Always ask your client if anyone that is in the house if they suffer from upper respiratory problems. If anyone does they should be out for a minimum of 72 hours and have the house well ventilated before they come in. It’s a good idea to have them check with their doctor with the information of the products. MSDS form or the label of the product.



Pseudoscorpions

(These are not scorpions but are a member of the spider family)

The Pseudoscorpions are not harmful to people as they do not have a tail with a stinger. Their food prey are small insects. To subdue their pray they grab them with their claws and there is a toxicant in their claws that kills the prey. These tiny arthropods are not scorpions at all, but belong to the spider family. They are approximately 1/8th inch in length. There is about 2,500 species in the world. If your client wants them destroyed in the house, spray as a crack and crevice along baseboards and outside around the foundation with Demand CS at .06%. I recommend outside ongoing maintenance. They live up to 3 years.



SPIDERS

With the modernization of travel and the improvement of roads throughout the United States our country has become very mobile. Even though certain spiders are not indigenous to our area, they can be brought into our state by means of hitching a ride in moving vans, cars, motor homes, trains, buses, suitcases and any cargo that is shipped in freight. With this in mind we must look at the possibility that any venomous spider that is out there surely can be found anywhere in the USA including our own state. In the southwest there are only 4 species of spiders that that have been found thus far, are considered harmful to man. These are the Black Widow, Desert Brown Recluse, Hobo spider, and Yellow Sack spider. Black widow spiders can be found in every state in the U.S. but are more abundant in the southern states. Most adult Black Widow females are jet black in color and have two reddish triangular or hour glass design markings on the underneath of their abdomen. Their body is approximately $\frac{1}{2}$ inch in length. Brown Recluse spiders are generally found in the Gulf States. They can be found in other areas; however, it would be because they were transported in from their natural habitat via commercial and or household movement. Desert Brown recluse adults are usually tan to dark brown with a darker fiddle-shaped marking on the top of their body. The length of their body is approximately $\frac{1}{4}$ to $\frac{1}{2}$ inch in length. There are a number of different species of Black Widows and Brown Recluse spiders, which can differ a little from the descriptions above. The Hobo or Aggressive House spider is approximately $\frac{3}{8}$ to $\frac{5}{8}$ inch long, and has a chevron marking on the top of the abdomen. They look very similar to the Brown Recluse spider in size and color but do not have the dark brown fiddle-shape on them. Not only do they look similar, but their bite reacts similarly too. The Yellow Sack spider is approximately $\frac{3}{8}$ of an inch length of their body.

Spiders often enter buildings through small cracks and crevices on the structure or from firewood or other items being brought into the house. A thorough inspection of the inside and outside is recommended to determine the numbers and areas to spray. Demand SC at .06% is the best product to use spraying along baseboards inside and around window, and door frames outside and the outside foundation areas, as well as eaves of the house. Look for cobwebs that are present and remove them with a spider remover on the end of an extension pole.

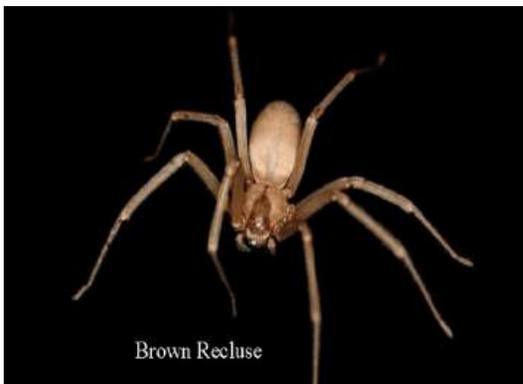
**Spiders that can be found in and
around a home.**



Black Widow spider



Hobo Spider



Desert Brown recluse



Yellow Sac Spider

Spiders

Sun Spider, Wind Scorpion, and Camel spider are all the same arachnid. (Spider)



These spiders for the most part live in burrows in the ground. They feed on other insects and arachnids. They have very large jaws and are capable of attacking rats, mice lizards, small snakes, and outside cockroaches. They do not have a venom however can cause a very bad bite that will need to be cleaned and seen by a medical service to avoid an infection.

The chemical of choice is Demand CS .06% at max rate. Spray the area they are found in.

Spiders

Tarantula

Tarantulas are found in areas near the desert. Most of the ones in our area are burrowers. They can bite but do not cause fatality to humans or pets such as dogs and cats, however the bite can be very painful for several days. The female can live up to 30 years, however the males generally live approximately 7 years. There is no need for pest control unless your client wants control. If a maintenance is requested simply spray the outside areas where they are found with Demand CS at .06% on a monthly basis.



