

CHAPTER 24

The Best Control for SPIDERS

**Little Miss Muffet, sat on a tuffet, eating her curds and whey.
Along came a spider and sat down beside her and frightened
Miss Muffet away.**

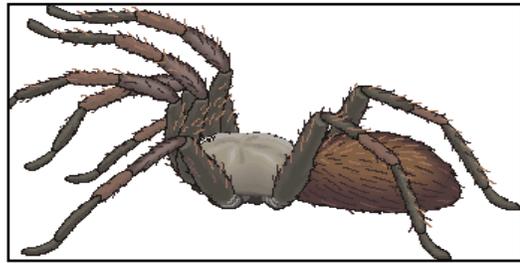
**Miss Muffet was the daughter of a British entomologist,
Thomas Muffet, who reportedly mashed common spiders to a pulp
and spoon fed them to his daughter for a remedy for the common cold!**

PEST OVERVIEW

CLASS - Arachnida

ORDER - Araneida

TYPE METAMORPHOSIS - Simple or Gradual



SPIDERS ARE SELDOM IGNORED. Their distinctive appearance, habits, and intricate webs command attention and evoke strong emotions. Given their due, spiders should be prized for their role as predators and natural regulators of insect populations, but because of their appearance and human cultural fears, when one is found to be potentially dangerous, sensationalizing it is irresistible. There are at least 40,000 species worldwide and at about 4000 spider species and about 40 families in the U. S.; they are all categorized in the class Arachnida, order Araneae. Like their arachnid relatives the mites, spiders live in all parts of the world where they quietly make their way, snaring living prey in their webs or ambushing insect prey in episodes acted out in minute jungles and deserts. Spiders are a diverse group and are the primary arthropod predators that naturally regulate many insect pests. The two-part spider shape is well known. Its head and thorax are combined to make the cephalothorax. Four legs are attached to each side of the cephalothorax. Spider eyes are in front - some have very large eyes. Like all arachnids, spiders have no antennae or wings and they have 8 legs - insects have 6. They consume up to 2 times their own body weight daily. They live everywhere - some species have been kept alive for over two years without feeding. Population densities of spiders are estimated to range from 27,170 to 5.4 million/ha for some habitats (Bristowe, 1958; Gertsch, 1979). A single house and garden may have more than 80 species.

While all spiders are poisonous to some extent, only about 50 species are known to bite humans. Spider mouthparts, located in front below the eyes, have two short needle-tipped appendages, called chelicerae. These needles, or central fangs, are connected internally to poison sacs. The fangs are used to bite prey (mostly other arthropods) and inject poison to immobilize it. Two short leg-like mouthparts help hold their paralyzed prey, while the chelicerae work back and forth tearing the exoskeleton. As blood wells out, it is sucked into the mouth cavity and ingested. Spiders keep working their prey in this way until all the juices are gone and the remainder is a dry crumbled lump. The abdomen is located behind the cephalothorax; it is sac-like, usually globular. The anal opening is located near the end of the abdomen and close by are some short appendages called the spinnerets. Silk webbing threads out from these spinnerets. Spider silk has great elasticity and can stretch 1/5 of its length without breaking. The silk is protein and is digested by enzyme cleaners that contain protease enzymes. All spiders produce silk, and they use silk in more interesting ways than most other silk producers. Spiders make silk retreats such as tubes and funnels, they make irregular cobwebs as well as the evenly spaced, spiraled great orb webs. Most spiders feed out a dragline wherever they walk and never fall off edges without catching themselves. While spiders don't have wings, they "fly". Nonetheless, by releasing a thread of silk until it is long enough for the wind to catch it and carry them off — the process is known as ballooning. Newly-hatched spiderlings use this method to leave the hatching area. Most species are nocturnal hunters, unobtrusive - often pretending to be dead when molested - most spiders in homes are usually found in undisturbed, dark or dimly lit, cool, damp places - these areas are where people are most likely to be bitten when they "bug", accidentally imprison, or crush these beneficial hunters.

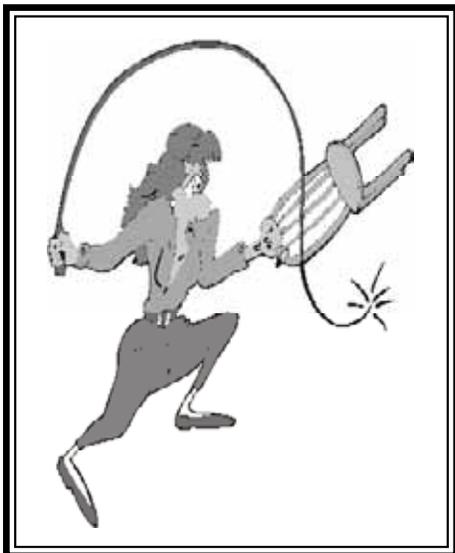
Basically only two spiders are considered dangerous to humans in the United States: the Black Widow and the Brown Recluse. In reality, these two names each represent several different species. Spiders are only distantly related to insects. Unlike insects, they have 4 pairs of legs but lack wings and antennae. Most spiders can be kept out of buildings by tight screens, weather-stripping and caulking. Keep screens and other openings in good repair. Caulk all seams around windows and doors. Indoors: Remove by vacuuming. All spiders (but one) are predators feeding primarily on insects and other arthropods but they can survive for very long periods without food. The average spider eats 100 bugs per year. You are never more than 12' from a spider. Ballooning spiderlings can ascend over 15,000' and have been sighted landing on ships sailing the mid-Pacific. Silk starts as a liquid protein which becomes a solid thread. An orb web may have 1,200 junctions, each crafted perfectly. The spider must calculate the exact length and tension of each succeeding line so the earlier ones don't go slack. Slack lines don't transmit vibrations. The standard orb web is completed in only 20 minutes at about 3 - 4 a.m. Most orb weavers rebuild their webs once a day; they take the web down and eat it to be completely recycled in their body and reused in about 30 minutes. Spiders coat their feet with an oily fluid from their mouths so they don't stick to the webs. Spiders can replace lost legs. They may be a million individuals per acre.

SOME SPIDER FACTS

- ☞ All spiders have venom, but few are lethal. A few of their bites affect humans much like a wasp sting.
- ☞ There are basically two types of spider venom. The first is cytotoxic, which is what the hobo spider and brown recluse spiders possess, and the second is neurotoxic, which is what black widow spiders possess.
- ☞ After 10 - 30 seconds of running a spider slows down by half after 1½ minutes of forced running, it collapses.
- ☞ Most spiders have eight eyes. Spiders lay eggs in clusters of 2 - 1000 eggs.
- ☞ Some of the biggest spiders can spin webs measuring up to 12 feet across. There are over 44 different spider web designs, shaped like funnels, tubes, orbs, sheets, tangles, etc.
- ☞ Nineteenth century surgeons used strands or "thread" from the banana spider's web for sutures because it was so strong.
- ☞ Some folk healers use spider webs on cuts to help stop bleeding and heal wounds.
- ☞ The Nephila spider spins webs so thick that locals use them for fishing nets.
- ☞ There are at least 40,000 known species, with about 4000 species just in the USA, but there may be over 170,000 worldwide. They have been here at least 80 million years.
- ☞ In some societies people eat spiders, finding them a great source of protein.
- ☞ The largest spider, *Theraphosa blondi*, has a body 4" long, a 10" leg span and weighs ¼ pound.
- ☞ The combined weight of all the spiders in the world would equal that of 50 million people.
- ☞ Spiders have to "pre-digest" their food by vomiting or injecting enzymes into it and then sucking up the dissolved juices. If a spider becomes too dry, its legs cannot extend - so properly install and maintain dehumidifiers and fans and/or dust with talcum powder or medicated powder or food-grade DE.

SPIDERS IN LEGEND

- ☞ The Greeks credit a woman-turned-spider with teaching them to weave. Mythology has it that a villager named Arachne challenged the goddess Athena to a weaving contest. Refusing to accept a tie, the jealous Athena destroyed her rival's tapestry and chased her from the village. Athena later killed Arachne or found Arachne dead and changed her into a spider - who promptly scurried into a tree and began weaving again.
- ☞ African-American culture features Anansi the spider as a trickster. Anansi stories can be found throughout the West Indies and in the coastal areas of South and Central America where the spider is called Anansi, Buh Nansi, Compe Anansi (which means companion) or even the more anglicized Nancy and Aunty Nancy.
- ☞ Native American folklore tells of Grandmother Spider. Taking on the protective role of the cosmic mother, she brought the sun to her people and can control its movements with her web. She helped in the creation of people, dividing and naming the clans.
- ☞ Virtually everywhere on Earth, there is one common tale, that it is unwise to kill any spider unnecessarily.

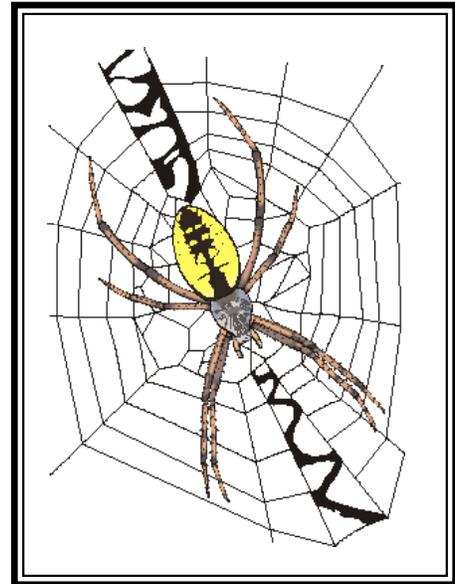


Most are harmless and are generally beneficial. Exceptions include the black widow, brown recluse and Arizona brown spider. Spiders are typically seen in unmaintained, poorly vacuumed buildings, in attics and crawl spaces, under eaves, around windows, and in shrubbery outside of buildings. Many different species of spiders may be found; some make webs to snare their prey, and others are hunters that are seen walking across our floors or climbing our walls in search of food. All spiders are predators that depend mostly on live insects for food. They are highly beneficial because they consume many pest insects such as flies, cockroaches and mosquitoes. Spiders never feed on plants or grains or fabrics. They are considered to be (visual) pests primarily because they scare or send into hysteria those of us with arachnophobia and to a far lesser degree spiders need to be controlled because of their unattractive, dust-catching webbing and occasional bites. **Arachnophobia or the fear of spiders ("creepy-crawlies") is a very real problem for some of us.** Those among us with very severe phobias may even need professional help to conquer our fears,

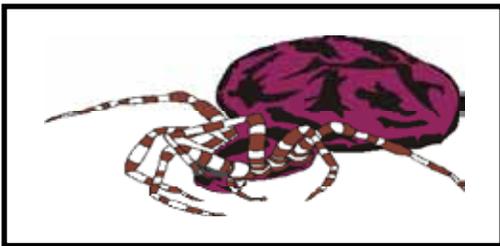
but most of all we must first want to learn the truth about these “terrible” creatures and, in order to do so, we may have to force ourselves to watch spiders at work in glass containers. Remember, spiders are very nearsighted. Most can’t see more than a few inches. If you are in front of them, they probably don’t even know it! Spiders are shy creatures that run away from pursuers whenever they can. They will usually walk over your skin and make no effort to bite, considering you just a pathway.

Dense spider webbing filled with dust and insect remains are often found in basements, crawl spaces, garages and other dark places. This debris can attract other pests such as carpet beetles, so simply vacuum up all of the eggs, webs, spiders and debris.

Only a few spiders are capable of inflicting painful venomous bites, but even these rarely do. The black widow is the most notorious biting spider, although large garden spiders have occasionally been known to cause injury to people who come too close. The brown recluse or violin spider can also inflict long-term suffering with their bites, but most of the 3,000 kinds of spiders in the U. S. are basically harmless, beneficial creatures.



General Description, Development and Habits - Several very different species of spiders may be encountered in your buildings. Each species has its own unique habits, food preferences and life spans, although it is possible to generalize on some aspects of their biology.



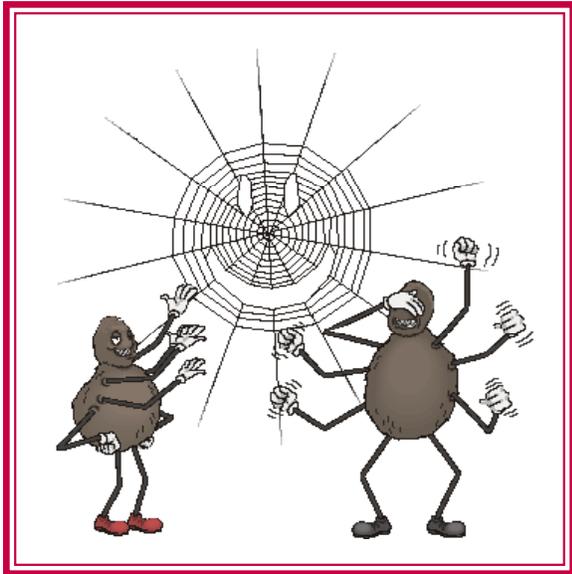
Most spiders lay their eggs in an egg sac constructed of special webbing. Egg sacs usually contain several hundred eggs, and most female spiders construct two or more of these during their adult life. Females of some species carry the egg sac with them attached to the end of their abdomen, under their bodies or in their jaws. Other species carefully position the egg sac in their web and stand guard over it. Generally, female spiders are very protective of their eggs and newly hatched young.

Eggs hatch in 2 to 3 weeks, but young spiderlings of most species remain in the egg sac for several more days. The total time between egg laying and the appearance of young spiderlings outside the egg sac is usually 3 to 4 weeks. Newly hatched spiders resemble adults but are much smaller-usually they are light-colored and have few visible or distinctive markings.

As spiderlings grow, they shed their outer body covering, a process known as molting; shed “skins” are called exuviae. The first molt takes place before spiderlings emerge from the egg sac. Spiders usually undergo six or seven molts before reaching maturity; most species found in and around buildings reach maturity within 6 months. During the winter season immature spiders do not usually complete their final molt until spring. Spiders grow larger with each successive molt and in their coloration and markings gradually become more and more like the adults.

Adult female spiders are larger and more robust than males and usually live longer. Adult females generally live for 6 or 8 months, although some species, for example large female tarantulas, may live for more than 30 years. As adults, males of all species cease feeding and concentrate their efforts on finding females for mating - their adult life-span only lasts a few months.

Spiders produce several types of silk-like webbing from glands in their abdomens. Webbing is emitted through external structures at the end of the abdomen called spinnerets. Most young spiders disperse and *fly away* from their hatching area by letting out a long strand of webbing, or gossamer, which carries them aloft on air currents. Some spiderlings can travel hundreds of miles by “ballooning” in this manner.



One characteristic of some spiders is the web they construct to catch prey. Some are symmetrical orbs constructed between supporting structures, such as those made by garden spiders. Others are irregular jumbles known as cobwebs; these are constructed by such species as the black widow and the long-bodied cellar spiders. Other species make sheet or funnel webs to entice and capture prey. Not all spider species construct webs; many roam in search of food or hide among flowers or foliage and are adept at jumping on and overpowering prey.

All spiders inject a paralytic venom into their prey through hypodermic-like fangs. Spiders also use their fangs to defend themselves from their enemies; this is the cause of most spider bites. Only two spider groups are considered to be dangerous to man: the black widow and/or the brown recluse or fiddle-backed spiders. If bitten, be sure to capture and take the suspect spider along with you to the (nearest) hospital or doctor for proper identification.

Initial Control Note: Physical removal of spiders by vacuuming or sweeping is more effective than most types of spraying volatile, synthetic pesticide poisons because spiders are unaffected by these dangerous poisons (unlike people and pets) unless these toxins are directly sprayed on either them or their webs. Then what - are you going to leave the resulting mess up as a Halloween decoration? No, we are obviously going to vacuum the web, (dead) spider, and eggs all up at some point anyway - so why spray poison?

SPECIFIC SPIDER EXAMPLES



BLACK WIDOW SPIDERS

Latrodectus spp.

Class - Arachnida, Order - Araneae

Family - Theridiidae

Metamorphosis - Simple/gradual

Eggs - Usually 200 - 400 (but as many as 900) eggs are laid in batches in a white silken ball approximately 1/2" in diameter which is attached to the nest and tended by the female as it eventually turns pale brown.

Spiderling - Normally hatches in 8 - 10 days; resembles the adult except for lighter markings on the abdomen and legs and smaller in size. They spin silk strands and use them to kite, balloon or float off into the wind. Most spiders overwinter as immature specimens.

Adults - Fertile males and females. Most die in July.

DESCRIPTION - There are 5 different black widow spider species in the U. S. Named for an old wives' tale that the females eat the male after breeding; this rarely happens, however.

Adult (Female) - Usually shy and retiring, jet black, but may occasionally have light streaks on upper side of her abdomen. Usually has a hourglass-shaped (or occasionally just a round blob, or even more than one spot) bright red or dark yellow or orange in color on the underside of her globular abdomen. Body about 1/2" long, legs 1-1/2" - 1-3/8" long. She constructs an irregular, tangled web of coarse silk with a tunnel in the center and hangs it in an upside-down or inverted position. The web can extend from only a few inches to several feet. After the victim is secured and covered with silk, she injects saliva or protease enzymes which dissolves all of the protein tissue. All the body fluids are then sucked out and the hollow cadaver is thrown to the ground. They

are 3 times the length and up to 30 times the weight of the male and occasionally do live up to their name by eating their lover. The female may eat most of her own young when they hatch. Females avoid light in sheltered areas and usually spin their webs at night. She likes trash piles.

(Male) - About 1/3 as small as his mate and has greatly swollen pedipalps. Usually has light streaks on his abdomen and may have red or yellow marks on the upper side of the abdomen. **Males are not poisonous or strong enough to inflict a bite.**

Web - Black widows frequently construct their coarse, irregular webs near ground level in protected outdoor areas. The web has no particular pattern and has a small central location where the Black widow retreats to await the ensnaring of its prey. They eat only live (paralyzed) prey.

Spiderlings - Reddish-brown in color with light and dark stripes on the abdomen and legs, go through the first molt in the sac - usually 4 - 9 molts or instars to maturity with each instar having different coloration and/or color patterns and are poisonous if ingested until they are 18 days old - then they lose their poison.

Egg - 185 to a maximum of 917 eggs are deposited in white-grayish (then pale brown) silken balls or sacs about 3/8" - 1/2" in diameter attached to the nest and guarded by the female. Incubation period ranges from 8 - 30 days. If liquid comes out when you squeeze the egg sac, you have eggs in the sac.

Note: Mud dauber wasps paralyze these and other spiders and store them in their mud cells for their larvae to devour. The best time to vacuum the interior is December and January and then as needed.

NATURE OF INJURY - The most seriously venomous spider in North America. The venom is a neurotoxin, that is, it acts on the nervous system as do most synthetic *residual* pesticide poisons. The venom is 15 times more potent than that of a rattlesnake. The major symptoms are increased body temperature and blood pressure, profuse sweating and nausea. If not caught in time the bite can cause convulsions and death.

HARBORAGE POINTS - Almost always remains outside - occurs around rocks, tire and wood piles, utility boxes, under bark, corners, storage areas, seldom-used clothing, shoes, heat tunnels, boiler rooms, attics, storerooms, in outdoor toilets, garages, cellars, ventilators, etc. as well as any other locality where it has ready access to insect population. Normally found near the ground. They live in attics, crawls and elsewhere.

TREATMENT FOR THE BITE - The neurotoxic venom from the bite is not always felt, but usually there is a sharp, initial pain, or pain may develop in a few minutes to an hour, so look for a slight local swelling with 2 tiny red spots; pain is almost immediate and can last 1 - 3 hours; also look for fever, high blood pressure, sweating and nausea. Respiration and general muscular activity may eventually become affected, and the reaction may escalate into convulsions especially if the victim is sensitive to the venom, very young, ill or very old. Call a doctor or go directly to a hospital emergency room immediately. Never attempt self-treatment. Some persons, especially small children, are very sensitive to such toxins; there is antitoxin available. Treatment for black widow spider bites often requires months of professional care.

CONTROL - Black widows and other spiders may be controlled by good housekeeping indoors and outdoors, including tight-fitting doors and screens, elimination of all visible trash and debris, removal of webs by sweeping including the crushing of the spiders and egg sacs and/or by careful vacuuming of webs and all infested areas. Put 2 tablespoons of talcum powder or baking soda in the bag first. Routinely remove clutter and clean with Safe Solutions, Inc. Powdered Cleaner with Enzyme or Safe Solutions, Inc. Enzyme Cleaner with Peppermint and/or borax. Properly install duct or carpet tape. Night inspections with a flashlight of suspected outdoor hiding areas will reveal most black widows that hide during the day - vacuum up these pests and then dispose of properly. Dust corners, cracks and crevices lightly with Comet®, talcum powder or medicated body powder or food-grade DE. Change exterior lighting to one less attractive to insects. Reduce moisture with air conditioning, dehumidifiers and/or vents. Replace lighting with yellow bulbs or sodium vapor lights. Spray Not Nice to Bugs®.

SPECIFIC EXAMPLES

BLACK WIDOW

Latrodectus mactans (Fabricius) Genus *Latrodectus*

The Black Widow Spider, one species *Latrodectus mactans*, is distributed over the eastern and southern United States. Two very similar species overlap that range and extend into the western and northwestern states. Their venom is 15 times more toxic than rattle snake venom.

Female Black Widows have large, round, shiny black abdomens usually decorated with two touching red triangles on the belly. They hang upside down in the web, especially at night, and the red hourglass is obvious. Sometimes dull red dots appear on the back, and occasionally the triangles don't touch, but this 1/2 inch or larger, shiny black spider is unmistakably unique and eye catching. Male Black Widows are small, white and streaked with yellow and red; they are not dangerous. Their venom contains an unusual feature: a vertebrate-active neurotoxin that enables them to capture small reptiles, e.g., lizards and snakes, and which causes severe cramping and pain in humans.

Black widow females are not aggressive but will give full attention to anything that disturbs the web. They weave tangled webs of coarse silk in dark, quiet locations. Mature females are so large they can hardly crawl. While you probably will not be called on for Black Widow spider control, you may well run into these spiders when inspecting crawl spaces, mailboxes, porches, garages, and sheds for other pests. Black Widow spiders can be found in stacked pots or baskets, mailboxes, firewood piles, rodent burrows, water meters, stacked boards, under bricks and stones. Usually the spiders are outside, but they may be brought inside, or the young may move inside on ground floors. Western Black Widows are likely to be found outside in bird nests, on low plants and in grape arbors. Move cautiously when vacuuming any potential spider harborage. Even male spiders may be killed if they venture too close to the female. Wear gloves and long sleeves and pants.

Black widow bites are immediately painful. The pain at the site of the bite increases during the first half hour following a bite. Two small red marks from the fangs will be noticeable on the skin. After the first half hour other symptoms such as headache, dizziness, shortness of breath, abdominal and back pain set in. Death seldom results from Black Widow bites to healthy adults; children and the elderly, however, are vulnerable. **All bite victims should receive hospital or at least medical treatment as soon as possible.**

Habitat Alteration

Eliminate all potential harborage sites carefully and thoroughly, e.g., woodpiles, debris, boards, stones, etc. Routinely and thoroughly vacuum inside, especially in the spaces between furniture/objects and walls. Outside vacuum all voids and undisturbed areas, especially around utilities, pipes and exterior lights. Seal or fill in or caulk all cracks, crevices and gaps or other openings. Screen and patch around doors and windows.

Intelligent Pest Management® Control

Carefully inspect and vacuum up any exposed individuals and webs since they do not normally leave their webs or wander once they have become established in the summer. Use a flashlight at night. Remove the bag, seal it quickly and properly dispose of it when you finish "hunting."



A control method found in nature is employed by mud dauber wasps; they paralyze spiders and store them in their mud cells for their larvae to devour. One spider wasp family is known to provision its burrows with spiders. These predators are particularly active in the western states so do not harm the spider, wasps or mud daubers.

Representative species of other widows

Latrodectus bishopi (Kaston) - The red widow, found only in southern & central in Florida.

Latrodectus geometricus (Fabricius) - The brown widow, found only in southern Florida.

Latrodectus hesperus (Chamberlin and Ivie) - The western widow, found only in western U. S. and Canada.

Latrodectus variolus (Walchenaer) - The northern widow, found in same areas as the black widow and in the northern U. S. and Canada.

BROWN RECLUSE OR FIDDLEBACK SPIDERS

Loxosceles spp.

Class - Arachnida, Order - Araneae

Family - Loxoscelidae, Metamorphosis - Simple/gradual

Egg - Deposited in 1 - 5 off-white round silken egg sacs, approximately 1/3" in diameter. Hatches in 24 - 39 hours. About 40 - 50 spiderlings hatch from each case.

Spiderlings - Resembles adult except smaller in size.

Adult - Fertile male and female. 11 closely related species in the southern and midwest U. S. usually 1/4" - 1/2" in length, occasionally with leg spans greater than a quarter, tan to dark brown with a darker fiddle-shaped marking on the top of the cephalothorax. Only have three pairs of eyes, whereas most spiders have eight.

TYPE MOUTHPARTS - Piercing-sucking. Venom from all species of *Loxosceles* can cause necrotic lesions.

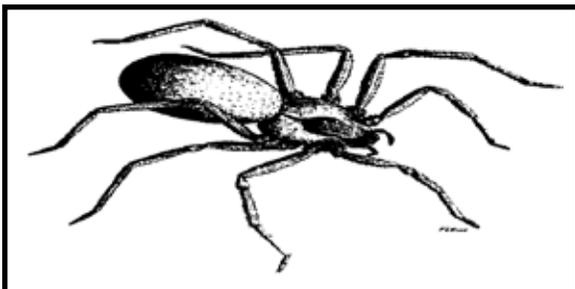
Adult - All brown to tan in color, can be identified by the distinctive fiddle- or violin-shaped mark on the upperside of the cephalothorax. About 1/4" - 1/2" inch long. Both male and female are venomous.

DISCUSSION

This spider gets its common name from its color and reclusive habitats, or from the dark fiddle-shaped marking on the top of its cephalothorax. The brown recluse and Arizona brown spiders both have a body an average of 1/3" long and an overall span, including legs, of 1" or more with six eyes arranged in three groups of pairs or diads arranged in a semicircle. They normally are found in remote and isolated locations under pieces of wood, dead cacti and dark seldom used areas of buildings. The Arizona spider does not appear to thrive in irrigated areas but may be brought into homes on wood or cactus skeletons from the desert. The Arizona brown spider and all 11 closely related U. S. species are capable of inflicting painful bites on humans, but the effects of the Arizona brown spider bites are reported to be less severe than those of the brown recluse spider found in the more easterly states. **Persons bitten by any spider should consult a physician.** Treatment will be more correct if the biting spider is preserved for positive identification. Control of all these poisonous spiders must include routine sanitation and web removal, controlling the spider's food source and the killing or removing of all the spiders. Start by removing all possible harborages, e.g., throwing away old boxes, clothing, building materials and any other unwanted items. Anything that must be kept should be stored at least 6 to 12 inches off the floor. In closets, items should be stored neatly and any items that are not worn should be very carefully removed. Thorough vacuuming around windows, corners of rooms, closets, pictures, under furniture and storage shelves should be regularly done. Mop regularly with diluted Safe Solutions Enzyme Cleaner with Peppermint and/or borax. To prevent bites, shoes, gloves and other infrequently worn clothing should be shaken before attempting to wear them. Bedding and towels should also be checked when removing them from the linen closet. Note: Brown recluse spiders prefer to feed on ants and roaches and can survive over a year without any food or water. Their web is often the size of a golf ball up to a tennis ball in size; it is made up of as fluffy, irregular webbing with a white egg sac. Brown recluses tend to leave exuviae (molted skins) with the legs spread-eagled attached to a wall or horizontal structure. Adult males may be found in the web with the adult female. Usually only the males wander and a bite. They may cohabit burrows with desert rodents, a/k/a the "brown spider" or "fiddleback spider". Lightly dust with medicated body powder or food-grade DE.

BROWN RECLUSE SPIDER

Loxosceles reclusa (Gertsch), Family Sicariidae



The brown recluse spider is shy, sedentary and builds an irregular web that is often not even recognized as a spider web. Females lay eggs in flattened egg sacs that are frequently attached to the underside of objects. Mating in this species occurs from February to September. Up to 40 spiderlings may hatch from a single egg sac. A single female may produce up to five egg sacs in a summer. Females can live up to four years, males less.

Indoors, the brown recluse can usually be found in infrequently disturbed areas away from light sources, such as behind pictures, beneath or behind furniture, in boxes, in clothing, among stored papers, between the corrugation of boxes, under food sacks and behind old boards leaning against walls.

The natural habitat of the brown recluse includes the underside of rocks, loose bark, and crevices in decaying logs (Hite et al. 1966). However, many outdoor hiding areas provided by the activities of man are frequently inhabited by the brown recluse spider. For example, a survey of piles of junk in Kansas, piles of old tires and inner tubes, furniture, old boards, and trash were found to be inhabited by the brown recluse. Once the debris/harborage was removed and the natural vegetation returned to the area, the colony was eliminated. Brown Recluse Spiders will nest under insulation and cedar shakes. There are at least 13 species in the U. S.

One specific example, *Loxosceles reclusa* is a dusky-tan or brown spider with the widest range of any recluse spider in the United States. It ranges from the eastern U. S. to central Texas, north to Oklahoma, Kansas, Iowa, and south through Illinois, North and South Carolina, northwestern Georgia, and Alabama, with a few collections in adjacent states where they have been transported in luggage and clothing that has not been used household furnishings. Other species of recluse spiders live in the southwestern states particularly in desert areas. This spider lives outdoors in the southern part of its range and primarily indoors throughout the rest of its distribution. It is commonly found in older homes in the Midwest. The Brown Recluse is smaller than the Black Widow (usually only 1/4-1/2" in body length); it has an oval abdomen rather than a round one. The abdomen is uniformly tan to brown without marking. A dark fiddle-shaped mark is obvious on the cephalothorax - the broad base of the fiddle begins at the eyes and the narrow fiddle neck ends just above the attachment of the abdomen. Legs are long, the second pair longer than the first. The Brown Recluse makes a fine, irregular web. In undisturbed areas the web is not used to trap prey, but only to hide in. It commonly wanders in the evening in indoor infestations. Routinely vacuum under and around water heaters. They live up to 2 years in temperatures from 40° - 110° F. Females have lived 297 days without food or water. See Moth Crystals in Chapter 11.

Bites. Recluse spiders normally avoid parts of rooms where human activity is prevalent, remaining where there is no activity and in closed or unused rooms. Even though indoor infestations can be large, household inhabitants are seldom bitten. Bites can be expected when guest rooms are suddenly put into use or when stored clothing is brought out for use. Male (brown recluse) spiders do most of the biting. **Brown Recluse bites are sharp but not initially painful like those of the Black Widow, but a small, white blister is quickly raised, broken, and surrounded by a red welt. An hour or more may pass; then there may be intense pain. The depressed center of this raised, red circle (the size of a dime to a quarter) turns dark within a day. The dead tissue regularly sloughs away, and the bite area scars over in one to eight weeks. Death seldom occurs, but the bite is debilitating and psychologically traumatic. Seek medical attention immediately.** The brown recluse spider can live for months without food. They are found most often in basements, kitchens, bathrooms, water heater and clothing closets, attics and storage places. Look also in barns, garages, outbuildings, woodpiles and feed storage buildings. The spider is delicate. After biting, it frequently can be found lying where it was slapped by the victim. It should be killed and taken to the physician along with the victim for positive identification. Other biting arthropods can produce lesions resembling the bite of the Brown Recluse Spider. A foreign species of recluse spider, *Loxosceles rufescens* (Dufour), is imported from Mediterranean Europe and North Africa. While this spider closely resembles *L. reclusa* and has successfully infested several locations in the middle Atlantic states and in the southeastern states and sporadically from New York to Illinois (at least for short periods) its bites do not result in trauma like those of *L. reclusa* and have been noted to be far less venomous. Other representative species of brown recluse include *L. arizonica* (Gersch & Mulaik) found in Arizona; *L. deserta* (Gersch) found in the southwest; *L. devia* (Gersch & Mulaik) found in Texas, *L. laeta* (Nicolet) found in Massachusetts and California and *L. unicolor* (Keyserling) found in Arizona, New Mexico and Texas. *L. laeta* is dangerous and may become an occasional problem in areas where products are frequently shipped from South America. **Most bites occur when putting on old clothing or rolling on the spider while laying in bed.** Some people who think they have been bitten have a Mercer orn MRSA staph infection.

Treatment of Bites. See a physician immediately if possible. If not, clean the wound with an antiseptic cleaner. Then apply bentonite clay to the site and apply an ice pack to the site. Monitor the bite area; if a blister forms and pops, carefully clean and dress the wound to prevent infection. Apply bentonite clay as needed. Administer pain killers to provide relief. Evacuate immediately so the injured person can be treated at a medical facility to minimize tissue damage.

Inspection - Recluse spiders should be sought near places where bites occur and/or:

- ☞ Carefully look along walls in uninhabited rooms, under and behind furniture and water heaters, in the far reaches of storerooms, in unused closets, under stairs and in hanging clothing that has not been used during the current season. Be sure to carefully look in pockets.
- ☞ Concentrate on areas outside daily human traffic patterns. Homes and buildings that have been unoccupied for months or longer are particularly susceptible to increased spider populations. Monitor with rodent glue boards or mats or double-sided carpet tape or duct tape placed sticky-side up. Consider removing all cedar shakes.
- ☞ Outdoors, in the more southern and western part of its range, this spider may be found in cracks between the soil and structure foundations, door stoops and in window wells. Look in and under cedar shake roofs, bait stations, under debris, flat rocks, wood and trash piles, loose bark, etc.
- ☞ Outside of their range, inspect around luggage, trunks and furniture brought from southern Europe, the Mediterranean or North Africa. American personnel who have lived overseas in these areas some times introduce *L. rufescens* in returning household goods.
- ☞ Look in and under shake roofs, bait stations, under debris, rocks, wood piles, bark, etc.
- ☞ All boxes inside the home, attic, basement, garage, and/or crawlspace should be taken outside and inspected by someone wearing longsleeves and gloves with a vacuum handy.

Habitat Alteration

- ☞ Recommend careful mopping with enzyme cleaners or soaps and vacuuming, especially of seldom-used rooms, sheds, closets and the area around the water heater. All indoor clutter and stored items should be removed or vacuumed and "straightened up." **Dispose of all unneeded clothing and stored junk.**
- ☞ Inspect winter clothing that has hung in hallways or unused closets through the spring and summer. Store them in plastic bags. Tightly seal all cardboard boxes. Shake all clothing before wearing.
- ☞ In the evening, reinspect spaces disturbed by mopping and vacuuming. Vacuum and/or kill all moving spiders. Note: Each female can lay up to 300 eggs.
- ☞ Pick up and remove all debris, firewood, and items laying on the ground. Establish an 18" vegetation-free area around the entire building. Caulk or seal all cracks, weather-strip all doors and windows. All vents should be screened. Monitor with glueboards. Inspect at night with a red light.

Intelligent Pest Management® Control

Males are easier to flush out; females hide in deep, dark spaces and reproduce at an alarming rate. They feed on dead insects. Add some to glue boards and/or sticky duct tape traps.

- ☞ Clean up all exterior debris on a routine basis. Vacuum or steam clean regularly.
- ☞ Routinely clean and spray with Safe Solutions Not Nice to Bugs® or Safe Solutions Enzyme Cleaner with Peppermint and/or borax. Sprinkle talcum or Comet® or medicated body powders or food-grade DE in seldom used areas and into all cracks and voids, electrical outlets, under and on insulation and all sill boxes and even in wall voids.
- ☞ Carefully and thoroughly vacuum. Then vacuum again in the evening. Vacuum all electrical outlets and boxes. Then dust them with food-grade DE.
- ☞ Caulk and seal all cracks and crevices, particularly in spaces outside daily human traffic patterns. Dispose of unneeded clothing, papers and other litter. Replace cedar shakes.
- ☞ Install fans, dehumidifiers, air conditioners and/or plenty of glue boards or duct tape (sticky-side up) or double-sided carpet tape.

Follow-up - Use plenty of duct tape (sticky-side up) or mouse glue boards (blunder traps) in suspected and/or known infestation areas, along walls in attics, crawls, basements, heat tunnels, store rooms, garages, boiler rooms etc. For every 50 males you trap, there are about 70 females still hiding. Spiders not removed or killed by the traps/caulking/sealing/vacuuming will wander. Warn occupants to be wary of immediate use of rooms not normally in use. They should watch carefully for spiders one or two days following controls; and continue vacuuming. Monitor daily, and, if indicated, recaulk and vacuum the entire structure thoroughly several times. Inspect inside all electrical boxes, switches and outlets and under all insulation. (Synthetic pyrethroid poisons may prevent web-building for a time, but so will white vinegar with coconut oil and they are a lot safer.) **Recent**

medical research suggests bites from members of the genus Tegenaria or “hobo spiders” may also cause similar reactions to recluse spider bites.

Spiderlings - Same as adult except smaller in size

LENGTH OF LIFE CYCLE - Usually about 1 - 2 years, but 4 - 5 years is not uncommon.

HABITAT - This spider gets its name from its reclusive inside habits, so it is found in sheltered, dimly lit places where insects might occur such as in barns, garages, crawl spaces, outdoor toilets, basements, etc. The female spins an irregular web in these undisturbed areas to hid in. The web is not used to trap prey. Fairly common in the south and central U. S.; scattered elsewhere. They can detect chemical sprays and avoid them.

HARBORAGE POINTS - Occurs around rocks, wood piles, barns, utility boxes, storage areas, boots, shoes, tires, clothing, heat tunnels, boiler rooms, attics, in outdoor toilets, garages, cellars, ventilators, etc. as well as any other locality where it has ready access to insect populations. Normally found near the ground.

NATURE OF INJURY - The Brown Recluse *Loxosceles reclusa* (Gertsch and Mulaik) is one of the few spiders of the south and central United States whose bite is poisonous to man. It is one of several species of *Loxosceles* (e.g., *Laeta*, *Gaucho*, *Reclusa*, and *Rufescens*) known to be venomous, but probably the venoms of all of species of this genus are toxic. The bite of the mature female, as in almost all spiders, is more potent than that of the male. Although the bite of *L. reclusa* usually does not produce such serious and immediate reactions as does the systemic bite of the widow spiders (*Latrodectus spp.*). A disease, now called necrotic arachnidism or loxoscelism, is caused by it's bite. Reactions to the bite vary from mild to very severe. Some victims may not even feel the actual bite, but within a few hours the bitten part usually becomes swollen and painful, and blisters may form on the skin around the bite. The skin at the bite site begins to turn purple, and eventually becomes black and dry as the cells die. Within a few weeks the blackened area flakes away, leaving a circular pit in the skin which fills with scar tissue. The sloughed off area, often quite large, may persist for several weeks, and healing takes place very slowly over a period of several months. A skin graft may be required to prevent a permanent scar. Reaction in some persons may be much less severe, consisting only of a local and temporary irritation of the skin, but in others it may be much more severe. In some patients, systematic disturbance of a general nature has been indicated by a rash resembling that of scarlet fever. In a few persons, the venom of the brown recluse spider has caused the destruction of many red blood cells, a very serious complication, signaled by the appearance of bloody or dark-colored urine, according to Gorham (1970). The venom of *Loxosceles* contains powerful cytotoxins, neurotoxins, and haemotoxins. No specific antivenom is available. The administration of corticosteroids within 24 hours gives some relief. Otherwise, no effective treatment has been found to arrest the necrosis before it has run its course or to promote healing after the dead tissue has sloughed. Treatment is directed at controlling the symptoms and limiting the amount of tissue destruction. **See your physician immediately.** <http://www.brownrecluse.com>

TREATMENT FOR THE BITE - Even though the initial pain may be less than a bee sting - Call a doctor or go to an emergency room immediately. Never attempt self-treatment. Place ice over site of bite until you see the doctor. Bring the spider if possible. The anti-toxin treatment does not work very well if you wait. **Go now!**

An alternative treatment for a brown recluse spider bite is to take the essential oil basil, or the basil plant oils, and administer it **BOTH** internally (as a tea) and externally.

Step 1: Clean the wound, and put basil oil on the bite area (or oil from the basil plant itself) and tape a cotton pad over the wound. Change this pad 3 or 4 times a day.

Step 2: Several times a day make a basil tea and drink it. Again, either basil oil or the oil from a basil plant can be used to make the tea.

As part of the spider bite, it is possible gangrene will be present. The essential oil generally used for gangrene is Lavender Oil. Mix the external use oils like this: 2 drops lavender oil to 4 drops basil oil. I have no basis for this formula other than the fact that the lavender oil is mainly for gangrene prevention; thus it is slightly less important than the basil oil. If you think a different ratio would work better, by all means use it. If gangrene does start to appear, then, obviously, use a lot more lavender oil and see a medical doctor.

Another possible major treatment for brown recluse spider bites is Tahitian Noni Juice. Like basil oil, Tahitian Noni Juice can be taken internally and can be applied directly to the wound. Drink at least ¼ bottle a day. Then, whenever you change the bandage, put on a Noni Juice bandage for 20 minutes. In other words:

1. Put on a basil oil bandage,
2. Take it off as part of changing the bandage 3 or 4 times a day,
3. Before putting on a new bandage, put on a Noni Juice bandage, but only for 20 minutes.
4. After 20 minutes, remove the Noni Juice bandage; put on a new basil oil bandage until the next changing.

Other Items

Other items that The Cancer Tutor notes at <http://www.cancertutor.com/Other02/recluse.html> with regard to brown recluse spider bites are: MSM (internally and externally), high dose vitamin C (internally and externally), charcoal compresses (external only) and plantain poultices (external only several times a day for 20 minutes at a time). I have also seen mention of colloidal silver, however, since the problem with a brown recluse spider bite is chemical, and because colloidal silver works because of electrical issues (e.g., it does work on skin cancer), the Cancer Tutor does not know how this could work on spider bites.

BROWN RECLUSE AND BLACK WIDOW SPIDER CONTROL NOTES

1. **Control black widows and brown recluse or violin spiders by steam cleaning or by thorough, regular vacuuming** of floors, baseboards and accumulations of debris indoors, particularly in bed rooms, closets, storerooms and where children play. Black widows seek dark crevices for their webs. Violin or recluse spiders hide in shoes, clothing and bedding left on the floor during the day, as well as in boxes and piles of paper left on or near the floor. **Routinely clean, spray or mop with diluted Safe Solutions, Inc. Enzyme Cleaner with Peppermint and/or borax or with Safe Solutions, Inc. Powdered Enzyme Cleaner.**
2. **Inspect for black widow spiders at night with a flashlight with a red filter**, both indoors and out, checking the small crevices and corners these spiders prefer around foundations, woodpiles, sheds and other outbuildings. **Vacuum them up**; never touch them with your hands.
3. **If you think you have been bitten by venomous spider, catch and save the specimen**, even if it is partially destroyed, for later identification, especially if your bite requires medical care.
4. **When webbing is found, either vacuum or sweep them down, which will also eliminate spiders, spiderlings and egg sacs, etc.** This will help you determine your degree of control on future visits.

HOBO SPIDERS FORMERLY CALLED AGGRESSIVE HOUSE SPIDERS, Family Agelenidae, e.g., *Tegenaria agrestis* (Walckenaer)

The Hobo Spiders or the aggressive house spiders are in the genus *Tegenaria*. Since 1982, many brown recluse spider bites in the Northwest were shown to actually be hobo spider bites. Only one native species, *Tegenaria chiricahuae*, occurs in the United States, but at least six introduced species of *Tegenaria* now occur in the United States. *Tegenaria agrestis* was first introduced into the ports of Seattle in the late 1920s and has been moving south ever since. They originally came from Europe where they are most common in homes. These spiders as a group are often referred to as funnel-web spiders. They build funnel shaped webs in dark, moist areas such as basements and crawl spaces, and sit in these webs and wait for prey to walk by. Generally, these spiders are yellow to pale tan in color with long legs. These spiders occur in highest frequency in July through September and reproduce during this period. Females produce an egg sac that is placed near the opening of the funnel in their webs. (Note: Look for females at ground level; they prefer not to climb.) Eggs hatch the following spring.

Although the bite of these species is not considered to be as dangerous as that of either the brown recluse or widow spiders, it can cause a similar ulceration or lesions of the skin as the brown recluse and may involve systemic reactions. The venom is a necrotic type that can cause tissue death and sloughing of the skin next to the bite. The wound can require up to 6 months to heal. Dogs and cats are also bitten, with some deaths occurring. The species that cause the worst bite reactions are found in the northwestern United States; *Tegenaria agrestis* occurs from Idaho to Vancouver and Winnipeg in Canada. It builds a web at or near ground level, and rarely

climbs up vertical surfaces (Akre and Catts 1990). This spider is called an aggressive house spider because it will bite with little provocation if cornered or threatened. This may be related to their hunting strategy and may increase the likelihood that humans will be bitten by these spiders.

This common funnel-weaving spider is found in the northwestern United States, e.g., Washington, Oregon and Idaho. The adult female body is about 7/16 - 5/8 inches long; it has a dull tan ranging to medium brown color with darker markings on its oval abdomen. This spider makes thick webs with the funnel neck back in a wall crevice and the wider mouth opening into a room. They are usually found only in moist areas of basements, garages or cellars, in ground level window wells, and so forth. From June to November males wander all over looking for females to mate with and may enter the ground floor of buildings each day. Immature spiders wander about in spring looking for web sites. The spider has been given its name because it readily bites when touched or pressed. The bite, not initially painful, resembles the bite of the Brown Recluse Spider (not found in the Northwest) and other bites that result in ulcerating lesions. A close relative is distributed in the northeastern United States but is not aggressive. These cellar-dwelling, funnel-weaving spiders were introduced from Europe where they are not commonly found in structures. This spider has a 2-year life cycle. Mating occurs in autumn.

The giant house spider (*Tegenaria gigantea*) keeps the hobo spiders outside while it lives inside European homes.

Inspection - The funnel web is easy to see in moist basement areas. It is open at both ends with one end expanding outward into a broad, slightly curved sheet around debris.

Habitat Alteration

- ☞ Tighten and close up spaces around entrances. Hobo spiders can be found in tall and/or matted grass and in any hole, crack, opening or crevice that will support funnel formation. Look in retaining walls, soil and concrete cracks, foundation openings, railroad ties and landscape timbers, firewood, rocks, decks, etc., especially if they are raised above the ground.

Intelligent Pest Management® Controls

- ☞ Routinely vacuum funnel, webs, eggs and spiders. This is the only way to get the females who hunt out of their funnel webs.
- ☞ Routinely clean, spray and/or mop with diluted Safe Solutions Enzyme Cleaner with Peppermint and/or borax or Safe Solutions Powdered Enzyme Cleaner. Lightly dust with Comet® or medicated body powder or food-grade DE. Spray Not Nice to Bugs®.
- ☞ Properly place glueboards and/or double-sided carpet tape or duct tape sticky-side up to catch the wandering males.

FAMILY: ANYPHAENIDAE - They are usually found hunting their prey on foliage, but may enter dwellings. Their general color is yellow, darker at the anterior end; brown on the chelicerae. The tracheal spiracle is located approximately 1/2 the distance between the spinnerets and the 4th pair of legs. Size varies from 3/16" to 1/4" in the female to 1/8" to 1/4" in the male. Color patterns can vary on the different species within this family variable.

BANDED GARDEN SPIDER *Argiope trifasciata*

This orb weaver spider is usually found in gardens around houses, and in tall grass. The background color is pale yellow with black radiating lines on the abdomen. The legs are spotted. The size varies from 3/16 in. in the male to 1.0 in. in the female. Orb weavers often construct beautiful, symmetrical webs. In 1948 Hans Peters noticed that garden spiders always spun their webs at 4 a.m.

BLACK WIDOW *Latrodectus spp.*

There are five species of widow spiders (*Latrodectus*) in the United States. The combined geographic range

of these spiders encompasses the entire United States. Three of these species can generally be considered to be "black widows." Females of all these species are metallic black with reddish marks commonly forming an hourglass shape on the underside of their thorax. The most well-known species, the common black widow spider, *Latrodectus mactans*, occurs from southern New England to the southern United States. The northern widow, *L. variolus*, occurs from the mid-Atlantic states north to Canada. The western widow, *L. hesperus*, occurs west of the Rocky Mountains. Two additional species, the brown widow, *L. geometricus*, and the red widow, *L. bishopi*, are tropical species whose United States distribution is restricted to southern Florida. *Latrodectus geometricus* is another introduced species that primarily occurs in domestic situations, but its distribution is sporadic (Gertsch 1979).

Widow spiders are cobweb builders; a typical web of a widow spider is a small, tangled maze of coarse fibers that are made in dark corners or crevices. Webs are spun from an inverted or upside down position. Frequently these webs are made near ground level. These webs may not even be recognizable as an active spider web. Eggs of the widow spiders are laid in (6 - 21) sacs of silk within the female's web between April and September. A single egg sac may contain between 185 - 464 eggs. The eggs of widow spiders hatch in three to four weeks. The hatchlings are highly cannibalistic and therefore most of the young will be consumed by their siblings. Web-spinning spiders such as the widow spiders are not active outside of their webs. This is especially true of the western widow spider which creates webs primarily in cracks and crevices.

This species is perhaps the most notorious of all spiders in the United States. There is at least one local species in each state. Their venom is highly virulent neurotoxin and is known to produce fatalities, but these spiders are not aggressive and seldom bite anyone unprovoked. The widow's bite will show 2 tiny red spots; within 30 - 60 minutes a burning sensation may begin with nausea, chills, joint pain and abdominal cramping (See a doctor.). The spider is found under stones or logs, or holes in rodent burrows or in dirt embankments, in hollow stumps and trees, and in barns, brick veneer, wood piles, rural privies, and other out buildings. The body of the female is often shiny black, usually with an red or orange hourglass-shaped mark on the underside. The male is black with the abdomen narrower and white lines along the sides. The size ranges from 3/16" - 1/4" in the male to 5/16" - 3/8" in the female. The females construct an irregular cross-cross web of coarse silk with a silky tunnel in the center where she hides and waits for her prey. **Vacuum regularly and caulk.**

BROWN RECLUSE SPIDER

***Loxosceles reclusus* spp.**

The brown recluse spider is commonly found in bathrooms, bedrooms, closets, basement cellars, seldom-disturbed places and/or areas less vacuumed and trafficked and outdoors. The color varies from yellow to dark brown, with the cephalothorax lighter than the abdomen. The favorite food of this spider is silverfish followed by spiders and other insects. Look for them in attics, especially under wood shake roofs and then basements and crawl spaces. These spiders follow electrical and plumbing lines into interior rooms. A vacuum is handy for removing spiders in closets, boxes, stacked products or cluttered areas. Store items in plastic sealed bags or containers with tight-fitting lids or tape the containers' edges and seams securely. Dust with food-grade DE and install duct tape sticky-side up along walls and wherever brown recluse spiders are seen. Control their food sources. The most distinguishing characteristic of this spider is the presence of a dark violin-shaped mark on the cephalothorax. There are 6 eyes in 3 groups of 2. These spiders range in size from 3/10 to 1/2 inch in length. The bite of this spider has also been reported to have caused fatalities. The bite releases a cytotoxic venom and is followed by irritation, burning, edema, and the formation of a blister. The tissues around the bite becomes necrotic. Healing is very slow. All 13 species of *Loxosceles* in the U. S. are considered to be poisonous to man. Handle with great care. **Vacuum regularly and caulk. See <http://www.brownrecluse.com>.**

(YELLOW) SAC SPIDERS

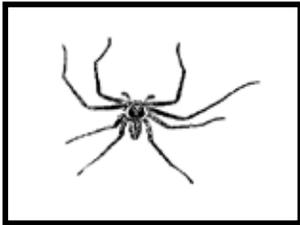
SCIENTIFIC NAMES: *Chiracanthium* spp. and *Trachelas* spp.

FAMILY: Clubionidae

These sac spiders, or clubionids, are often confused with black windows due to their similar color and markings. While these spiders are normally found living in silken retreats under items lying or piled on the ground and/or among stones and dead leaves on the ground, occasionally they will also invade buildings where they construct silken hideaways where they can rest during the day. The tracheal spiracle is located just in front of the spinnerets. The color varies greatly among the species of this family. The size varies from 1/8" to 3/8" in the female to 1/8"

to 5/8" in the male. It is believed the spiders overwinter as juveniles and in spring molt into adults. They mate in June or July, and the female lays her eggs in a silky sac under leaves or stones and then guards the nest until her young hatch. Bites of some species are like bee stings; others are poisonous to man. Note: Most bites occur at night due to their nocturnal habits of emerging at twilight from their silken retreats to hunt their prey. They are often found inside running up walls at night. In the morning they drop to the ground and construct silken sacs in protected areas to rest in. Some species bite repeatedly - without any provocation! Sometimes the venom can be cytotoxic and the symptoms mimic those of the Brown Recluse, although not as severe, e.g., systemic reactions, swelling, nausea and residual pain for days. First aid includes putting hydrogen peroxide on the wound, applying ice packs, keeping calm and taking the spider with you to see the physician. Vacuum regularly. (Don't forget your corner attachment) and properly install glue traps, duct tape or double-sided carpet tape. Lightly dust with food-grade DE. Caulk and/or seal all cracks and crevices.

THE GIANT CRAB SPIDER, *HETEROPODA VENATORIA* (LINNAEUS) (ARANEAE: SPARASSIDAE)



The giant crab spider, *Heteropoda venatoria* (L.), sometimes called the huntsman spider or the banana spider (due to its occasional appearance in marketed bananas), is a cosmopolitan species introduced into and now occurring in the U. S., in subtropical areas of Florida, Texas, and California. It has sometimes been mistaken for a large brown recluse (*Loxosceles reclusa* Gertsch and Mulaik, family Loxoscelidae), a poisonous spider, but it is neither related nor is it dangerous. Some authors place this spider in the family Heteropodidae, due to the uncertainty of the name Sparassidae (Platnick and Levi, 1973).

DESCRIPTION: *Heteropoda venatoria* is a large brown spider with a flattened body structure and very little dorsal pattern. Adult specimens have a body length of about 1", and have a leg span of 3" - 5". Adult females have a larger body size, especially the abdomen, than males. Adult males have longer legs than females, and the long male palpi have the terminal segment enlarged and the ventral sclerites exposed, as in most true spiders. Both sexes have a yellow to cream clypeus and a wide marginal band encircling the rest of the carapace, tan in females and cream in males. In addition, males have a dark, longitudinal stripe on the abdomen and a light-bordered pale area behind the eyes. The legs of both sexes have distinct black spots from each of which arises an erectile macroseta. Otherwise, the spider is not conspicuously hairy.

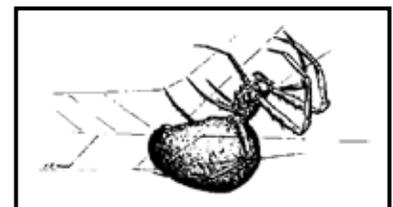
HABITS AND HABITAT: Females of *H. venatoria* make flattened, disc-like egg sacs about 1.5 cm in diameter which contain over 200 eggs. The egg sac is carried under the body, its size and shape probably causing the female to remain relatively immobile. All stages of development of juveniles and adults appear to occur simultaneously throughout the year.

This and similar species are highly valued in tropical countries because they capture and feed on cockroaches and other domestic insect pests. As with other vagrant spiders, giant crab spiders do not use webs to capture prey. Their great speed and strong chelicerae (mouthparts) are used to capture the insects on which they feed. Poison is also injected into the prey from glands extending from the chelicerae into the cephalothorax.

The flattened body enables this large spider to fit into surprisingly small cracks and crevices. This ability, along with its adaptability to human habitations, helps explain its frequent occurrence in houses, barns, sheds, under boards on the ground, and in other sheltered areas. Being cold-sensitive, these spiders cannot exist outdoors in areas with freezing winter temperatures; occasionally they occur in greenhouses and other heated buildings in temperate climates. They can be easily collected at night by using a flashlight; their eyes reflect light, appearing as blue spots on the trunks of trees and on the ground, much like wolf spiders.

COBWEB SPIDERS (THERIDIDAE)

Cobweb weaving spiders make small irregular webs. These webs are characteristically found indoors in the upper inside corners of window frames. There are many species of cobweb spiders and the Black Widow is one of them. Most all of them are smaller than the Black Widow. They have the same type of globular abdomen, but it is always dull in color and not as eye



catching. These quiet spiders hang in the web and wait for small insects to blunder onto their snares.

The problem with cobweb spiders inside buildings is that when they feed, they defecate drops of feces that dry and discolor anything they fall on. These spots are difficult to remove from painted wooden trim. Regular cleaning eliminates Cobweb Spider problems. In historically significant buildings and museums their presence should be called to the attention of building supervisors. **Vacuum regularly.**

CRAB SPIDERS

Family: Thomisidae and Philodromidae

Species of these families are frequently carried into the house on plants and among flowers. The body colors and markings of these spiders are variable and are usually camouflaged to match the colors of flowers or bark. The most distinguishing characteristics of these families are the laterigrade (crab-like) first two pairs of legs. The size of these spiders varies but most are less than 1/2" long and they do not make webs.

FUNNEL WEAVERS OR GRASS SPIDERS

Family: Agelenidae

Species of this family are common in open woods and around buildings. Generally the carapace is yellowish to brown, with a pair of wide dark bands extending back from the lateral eyes and with a thin dark marginal line on each side. The abdomen is yellowish gray to reddish brown. The anterior and posterior spinnerets are not equal in length. The size of both the male and female is approximately 1/16". In fall their webs are very visible when covered with dew.

HOUSE SPIDER

***Achaeranea tepidariorum* (C. L. Koch)**

Family - Theridiidae

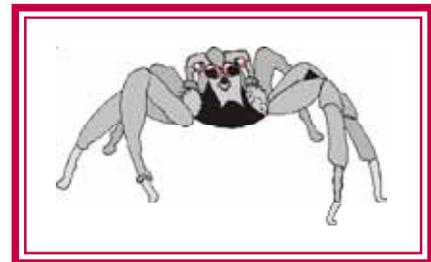
This spider is cosmopolitan and widely distributed; it has been spread by trains, ships, trucks and its own system of "ballooning" within strands of silk which carry the spiderlings (second instar) great distances. With every molt larger webs are constructed. They require lots of prey and high moisture - use a dehumidifier and vacuum to control this pest. Usually found in garages, boat houses, warehouses, greenhouses, under bridges and in barns. They will eat other spiders (3 times as large), small snakes and mice. Adult female body length is about 3/16-5/16" long with an almost spherical abdomen. Colors are highly variable. She lays about 250 eggs (range 132-442) in a silken ball or sac. The eggs hatch in 7 - 10 days. The male is much smaller than the female. Also known as the American house and/or domestic spider. The female can produce up to 17 sacs (3,760 eggs) in her lifetime. Adults may live for over a year. Web sites are routinely abandoned if they do not produce prey. They die quickly in areas with low humidity - so install and maintain a dehumidifier and/or fans. Vacuum up all visible spiders, webs, and eggs. Lightly dust with talcum or medicated body powder or food-grade diatomaceous earth (DE).

JUMPING SPIDERS

Salticus spp., Phidippus spp., Plexippus paykulli, etc.

Family: Salticidae

Jumping spiders are easily distinguished from other spiders by their four big eyes on the face and four smaller eyes on top of the head. Around the world there are probably more than 5,000 species of jumping spiders. In the U. S. there are at least 40 genera and more than 300 species. Males have striking markings, tufts and ornamentation. They are the "butterflies" of the spider world.



Jumping spiders are charming spiders that look up and watch you. Their excellent vision allows them to hunt much as do cats, spotting prey from long distances, creeping up then pouncing using their jumping ability. Although a jumping spider can jump more than fifty times its body length, none of its legs has enlarged muscles. The power for jumping probably comes from a quick contraction of muscles in the front part of the body increasing the blood pressure, which causes the legs to extend rapidly much as in the toy frogs that hop when you squeeze a bulb.

Their vision also allows communications by visual means, such as the elaborate courtship dances that males perform. They quickly respond to any movement up to 18" away.

Salticids are perhaps as old and diverse as mammals, though not many humans know their world. Many salticids are colorful, they take on a variety of body forms, and some have disguises, looking like ants and other organisms. The bright colors and elaborate forms of some jumping spider species are involved in courtship.

The most important species of jumping spiders are *Phidippus audax* (Hentz) and *P. johnsoni* because of its color likeness to the Black Widow. These spiders are 1/8" - 3/4" long with robust, (compact) relatively short legs, are mostly black with white or red markings on the dorsal surface of the abdomen with several spots; usually the central one is the largest. While usually white, some or all of these spots may be red, yellow or orange, especially in young individuals. *Phidippus formosus* has been reported to bite, but the small amount of venom secreted causes only mild irritation, e.g., localized swelling and sensitivity. They are beneficial because they hunt and pounce on flies and other insect pests and eat them. They like sunny areas.

LONG-BODIED CELLAR SPIDER

***Pholcus phalangioides* (Fuesslin), Family Pholcidae**

This is the most common spider found in cellars, barns and in damp warehouses throughout the U. S. It is found worldwide. The color is pale yellow except for a gray mark in the center of the carapace. The spider ranges from 1/4" in the male to 1/4" - 5/8" in the female with legs up to 2" in length (abdomen elongate, cylindrical and about three times longer than wide). They have 8 eyes elevated on a prominence.

OECOBIUS PARIENTALIS

Family: Oecobiidae

This spider makes a small flat web on window sills, and over cracks on the walls of buildings. The carapace is pale yellow and round in shape with the eye region not elongated. The abdomen is white or light brown. The size ranges from 1/16" in male to 1/8" in the female.

POISONOUS SPIDERS

It is important to save any biting spider so it can be identified later. Most spider bites are not likely to be dangerous, but medical care and advice should be sought in each and every case.

SHORT-BODIED CELLAR SPIDER

***Spermophora meridionalis* (Hentz), Family Pholcidae**

These spiders are found in cellars and other dark locations only in the eastern U. S. The entire body is pale yellow except for a pair of light gray spots on the head region or carapace. They range in length from 1/16" in the female to less than 1/16" in the male. They have 6 eyes in two groups of three, which are not elevated on a prominence. Use dehumidifiers, vacuums and fans.

TARANTULAS

Class - Arachnida, Order - Araneae, Suborder Mygalomorphs

Family - Theraphosidae

In the Americas the term "tarantula" refers to any of about 300 species of primitive spiders with poor eyesight belonging to the family Theraphosidae, suborder Othognatha, order Aranea. About 30 species occur in the United States. Many are among the largest of all spiders, weighing 2 - 3 oz. and with a 10" leg spread. They are typical mygalomorphs, generalized spiders whose mouth parts move up and down instead of from side to side as do most spider chelicerae. The term "tarantula" is derived from a city in Italy and truly belongs to a wolf spider of that area, *Lycosa tarentula* (Linnaeus), which is itself deeply involved in folklore. The folklore was brought to the New World by immigrants who, as soon as they saw some of the big spiders of the American tropics and deserts, called them tarantulas. There also is a genus of tail-less whip scorpions also known scientifically as "tarantula." However, in North and South America "tarantula" is so firmly established as the name of the big, hairy mygalomorphs that there is little confusion in the use of the term.

Many tarantulas have a dense covering of stinging hairs on the abdomen to protect them from enemies. These hairs can cause skin irritation for humans. Most tarantulas that are desirable as pets have a bald spot on the abdomen and do not have stinging hairs.

Tarantulas usually live in burrows in the ground. These burrows may be dug by the spider or may be those abandoned by rodents. The tunnels are lined with silk and form a webbed rim at the entrance which conceals it. The females deposit 500-1,000 eggs in a silken egg sac and guard it for 6 - 7 weeks. The young spiders remain in the burrow for some time after hatching and then disperse by crawling in all directions. Tarantulas do not occur in colonies since they do eat each other. Tarantulas are sluggish, will usually not bite until provoked and are not poisonous - but their bites are painful and can cause mechanical damage.

Tarantulas live for many years. Most species require ten years to mature to adults. Females kept in captivity have been known to live more than 25 years and have survived on water alone for 2½ years. Females continue to molt after reaching maturity and therefore are able to regenerate lost legs. Males live for only one year or less after maturity. Tarantulas have retractable claws at the end of their legs.

A tarantula can be kept as a house pet. A terrarium (an empty aquarium) with a sandy bottom provides an ideal habitat. Tarantulas can be fed live crickets or other insects.

SOUTHWESTERN TARANTULA

***Degesiella hentzi* (Girard)**

The spiders of the family Theraphosidae are the largest of all spiders in America and are commonly called Tarantulas. The Southwestern Tarantula varies in size (female body length may be 1-3/4" - 2-1/4" in length) and may be up to 10 inches long including the spread of the legs. They may weigh as much as 3 ounces. They are generally brownish in color, but the males are usually darker, almost black. The body of these spiders is very hairy. The bites of these spiders have been shown to be relatively no more harmful than a bee sting. In Arizona where tarantulas are common, there is no record of any deaths or even any serious reactions to their bites. If they have water they can live up to two years without eating. Use air conditioners, dehumidifiers and fans.

OTHER TARANTULAS

Atypus and Antrodiaetus

Both of the above are tarantulas, but are only about ½" long. Like all spiders, they have two body segments connected by a restricted waist or pedicel. The head and thorax make up the first section which is called the cephalothorax. A tarantula has jaws that project forward and move parallel to the axis of its body. Some tarantulas are only ½" long; others have 3½" bodies and a legs span of about 10". Many are kept as pets, e.g., Mexican redlegs, Mexican blacks and Hatians. They bite only rarely and their venom is usually of little harm to most people. Tarantulas are usually light to dark brown in color and their legs and abdomens are covered with hair. Despite their terrible appearance they are basically harmless. When provoked they will rear up on their back legs and look fierce and attempt to bite. They have also have specialized urticating hairs on their abdomen that are tipped with venom. The spider can brush these loose with its hind legs. If found inside, sweep the tarantula into a dust pan (or trap in a box), drop it into a large grocery bag and then release it outside (far away).

WEB WEAVING SPIDERS

Orb Weaving Spiders, Family Araneidae

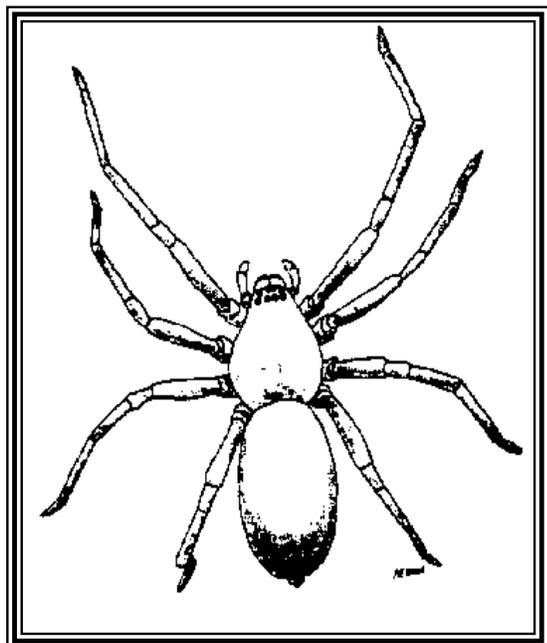
Several hundred species of orb weavers are distributed in the United States. A single orb weaving spider can make 7 different kinds of silk, each coming from a different spinneret. Usually only the large, conspicuous orange and yellow, or black and yellow, species are noticed in late summer when they build webs that extend one foot or so across on porches or small trees and shrubs. These large flat webs have many straight strands radiating out from the center and are connected with spiral thread winding around and around from the middle out to the perimeter. The spiders, often with bodies one inch long and very long legs, sit in the center of the web waiting for flying insects to be trapped. The common orb weaver, *Argiope aurantia*, can have 1,000 insects trapped in her single web. She can capture and kill prey about 200% of her own size. The large orb weavers are not aggressive towards people; if the occupant's fear is great, the webs can be knocked down or vacuumed up with the spiders and eggs.

Smaller orb weaving spiders build webs across paths in the woods. Another web builder, the Barn spider, *Araneus cavaticus*, is the prominent, non-aggressive character in the children's book, *Charlotte 's Web*.

WOLF SPIDERS - *Lycosa spp*

Family - Lycosidae

These are large, hairy running spiders with eyes in 3 rows; the first row has 4 little eyes and the 2 other rows have 2 large eyes each. They require a consistent source of moisture. They do not construct webs but hunt (basically a sit-and-wait foraging strategy) for their food usually at night. A flashlight will cause their eyes to twinkle like tiny blue diamonds on the ground. The larger species are 1" - 1½" long with a leg span of 3" - 4". Commonly found in cellars in the east. Try using glue boards to trap these spiders - they tend to stay at or near the floor level, especially along walls under furniture and other objects. Lightly dust with Comet®, talcum powder or medicated powder or food-grade DE. Use dehumidifiers.



YELLOW HOUSE SPIDER

Chirocanthium mildew

The Yellow House Spider was introduced into the United States in the late 1940's and is now common. A native species is common outdoors, and a third, introduced into Hawaii, is now common inside buildings there. These spiders are about 1/4 inch long, with legs and cephalothorax darker than the abdomen. It has been reported as being yellow, white, or greenish.

In late summer and early fall, Yellow House spiders migrate into structures and automobiles. At this time, they have not reached the adult stage, and they weave protective, white, silken cocoon-like webs in which to overwinter and molt into the adult stage in spring. The Yellow House Spider will bite if pressed or accidentally confined, e.g., during the victim's sleep. The venom has been described as causing pain and reddening at the site of the bite. In some instances a deadening of the tissue will occur, but much less severe than that caused by the Brown Recluse Spider. Children that show symptoms of spider bites (the two fang marks) may have been bitten by the Yellow House Spider. This spider, however, cannot pierce the skin of everyone; there is a very large margin of safety.

Inspection - Inspect rooms, particularly bedrooms of suspected Yellow House Spider bite victims. Inspect obvious webbing sites in the fall as a part of ongoing monitoring activities for other pests.

- ☞ Look at the angles of the wall and ceiling, door and window facings, in furniture joints, in larger cracks and crevices, in thermostats, and in other protected places.
- ☞ Look for webs inside jets and burner trains of gas appliances that are inactive during the summer-winter transition period. Other sites are gas stoves and refrigerators in recreational vehicles, gas air conditioners and through-the-wall gas furnaces. [The silken obstructions interfere with gas flow; operational failure can be an indication of their presence.]

Habitat Alterations

- ☞ Close gaps around outside entry doors and ground floor windows that may be entry points for the spider. Lightly dust with baking soda, talcum powder, medicated body powder or food-grade DE.
- ☞ Keep grass low next to building foundations to discourage wandering spiders.
- ☞ **Install and maintain dehumidifiers, air conditioners and/or fans.**

Intelligent Pest Management® Control

- ☹ Vacuum thoroughly; caulk and seal all cracks and crevices, including closets and furniture joints.
- ☹ Routinely clean, mop and/or spray with Safe Solutions, Inc. Powdered Enzyme Cleaner or their Enzyme Cleaner with Peppermint and/or borax.

SPIDERS IN BOATHOUSES - A unique but not uncommon spider habitat is in the rafter area of boathouses. Ballooning spiderlings trailing their silk threads are taken up by the wind and deposited on boathouse uprights and piers. When they crawl up into sheltered spaces, they find it is also a refuge for flying insects like flies and gnats. When they feed, their feces falls on the painted roughened decks of pleasure boats. As with the house-bound cobweb spider, these spots are extremely difficult to remove.

Habitat Alterations - This perplexing problem is abated somewhat if the spiders food source is eliminated. Locate lights so they will not attract flying insects to the boathouse. Flies and gnats do not rest in breezy areas, so fans activated at night may also help.

Control

- ☹ Vacuum thoroughly and routinely. Routinely spray with Not Nice to Bugs® and/or spray/clean with Safe Solutions. Powdered Enzyme Cleaner or their Enzyme Cleaner with Peppermint and/or 5% distilled white vinegar or borax as needed. Lightly dust with talcum or medicated body powder or food-grade DE.
- ☹ Caulk and screen wherever possible.
- ☹ Careful placement of electric fly grids outside the roof area may reduce gnats. Avoid placement that draws flies or attracts midges from distances.
- ☹ Fogging inside the roof only causes the spiders to drop out of the fogged area on their webs and return when the fog is ventilated. If you must fog - mist with diluted enzyme cleaners with peppermint.
- ☹ Do not use volatile or residual pesticide poison spray applications; the poisons are almost certain to drop on the water or on the boats and cause contamination. Spray applications of volatile, synthetic pesticides also degrade rapidly in heat and are dangerous.
- ☹ Sticky tapes or papers for fly control will liquefy in the heat of these shelters and can also drop on boats below. (Double-sided carpet tape probably will not liquefy in the heat.)

SPIDERS ON MONUMENTS - Spider buildup on buildings and monuments can cause major problems for structural maintenance. Where structures are lighted near aquatic areas in certain seasons, midges are attracted to the light and increase spider populations. Large spider populations harm limestone and marble structures and statuary with feces and webbing.

When this occurs:

- ☹ Pesticide use is never effective and is dangerous. Use only habitat alteration and vacuuming. Routinely spray with Not Nice to Bugs® and/or clean with diluted Safe Solutions Enzyme Cleaner with Peppermint and/or 5% distilled white vinegar or borax as needed.
- ☹ Locate the source of midge populations and identify their habits of emergence, laying, etc.
- ☹ Record flight times and periods. Time lights to turn off during the main flight period. Alternative placement for lighting should be considered as required for public safety.
- ☹ Vacuuming safely and quickly removes all visible invaders. Properly install carpet or duct tape.

WANDERING SPIDERS

Wolf Spiders, Family Lycosidae - The hairy, fleet, wolf spiders are very common outdoors under leaf litter, rocks, and logs. When they come inside, they normally stay on the ground floor and are active in dim light. Large Wolf spiders often frighten people. Female wolf spiders carry their spiderlings on their backs as they hunt. If handled, they give a painful bite, but it is not dangerous.

Jumping Spiders, Family Salticidae - Jumping spiders are active during the day and are common around windows where they feed on insects attracted to natural light. Jumping spiders are usually small, up to ½" in length. They have husky cephalothoraxes and are brightly colored, sometimes iridescent. They hold their front legs up in front of them when approached and move in quick rushes, jerks or jumps. They often enter buildings

from shrubs near windows, or ride in on plant blossoms.

Crab Spiders - Small crab spiders are dark or tan; some are lightly colored orange, yellow, or creamy white. Their legs extend out from their sides causing them to scuttle back and forth in a crab-like fashion. These spiders hide in flower blossoms and ambush insects. Some can even change their color to more closely align with the flower's color. Crab spiders, like jumping spiders, are often brought inside in cut flowers which they abandon when food becomes unavailable. They can be pests wherever flowers are introduced.

INTELLIGENT PEST MANAGEMENT® OF WANDERING SPIDERS, JUMPING SPIDERS AND/OR CRAB SPIDERS

If called on to eliminate wandering or nomadic spiders, the best action is to locate specimens, identify them, assure occupants that they are not poisonous, and tell occupants on how they got inside.

- ☞ Routinely vacuum and clean with diluted Safe Solutions Enzyme Cleaner with Peppermint and/or borax.
- ☞ Lightly dust with baking soda or talcum powder or Comet® or food-grade DE.
- ☞ Tighten under doors and around window screens.
- ☞ Caulk door and window frames and all wall penetrations.
- ☞ Remove vegetation and litter from the foundation, doorways, and window wells.
- ☞ Turn off house, building, or area lights that attract flying insects, especially midges.
- ☞ Advise occupants to look carefully at flowers brought in from the garden and from commercial greenhouses.
- ☞ Assure occupants that they can swat or vacuum up spiders and their eggs without harm. Pesticide application is very difficult; indoor treatment is usually effective only if the pesticide contacts the spider directly. This means you must have clear access to routinely vacuum all spider habitats. Unless efforts are made to exclude spiders (e.g., tighten gaps around entrances, and observe material being brought into the facility), spiders will reenter.
- ☞ **As a last resort sprinkle medicated body powder lightly or install duct tape sticky-side up or double-sided carpet tape.** Spray with Not Nice to Bugs®.

SUMMARY

Sanitation and habitat modification are key tactics for control of spiders indoors. This includes installing fans, dehumidifiers and/or air conditioners and routine vacuuming in corners, window sills, and attic areas, and keeping premises free of unneeded, unwanted items such as undisturbed clothing, papers, and other litter. Indoor habitat modification that creates a barrier to the movement of spiders into buildings is also a key tactic to effective spider control. So lightly dust with Comet®, baking soda or talcum powder or food-grade DE and routinely clean with diluted Safe Solutions Enzyme Cleaner with Peppermint and/or borax.

Spiders are distinctive arthropods in the class Arachnida. They have two regions to their body — the front one is the cephalothorax on which are located eyes, mouthparts and four pairs (8) of legs. The rear region is the abdomen at the tip of which is located silk spinning organs. Spiders, for the most part, live outside; some enter structures and dwellings. A few can deliver bites that are debilitating or even fatal. They spin webs in which to live or capture prey; these webs are considered unsightly indoors. For the most part spiders are beneficial to humans, capturing and eating many insect pests. Spiders have very small claws on the end of each leg and thus do not normally absorb or pick up a lethal dose of any residual synthetic insecticide poisons like insects do. In addition, spider bodies are fused together into two large body regions and are also less absorptive of insecticide poisons, so why use poisons? Spiders are adept at hiding and waiting for their prey. So remove their prey and routinely vacuum up all visible spiders, eggs and webs. Covered sticky (blunder) traps or double-sided carpet tape or duct tape (sticky-side up) properly placed can also be used to trap and monitor spiders.

INTELLIGENT PEST MANAGEMENT® CONTROL (GENERAL FOR MOST SPECIES)

Sanitation is the key method of controlling spiders in buildings. They have to eat something, and without eggs or nests there are no subsequent generations. The corners and crawl spaces of buildings should be kept free of spider webs. This may be accomplished by simply using a vacuum to remove existing webs and sealing cracks, edges of boxes and other potential harborage with caulk and/or tape. Vacuuming removes active spider webs, adult spiders, and spider egg sacs. Living spiders will desiccate quickly in the vacuum bag, but

depending on the design of the vacuum, it may be useful to add a teaspoon of talcum powder and/or to empty the bag immediately after use in order to prevent the spiders' escape. Removing litter such as newspaper and wood from the interior and the sides of buildings is also crucial for effective elimination of spiders. In addition to sanitation, creating a physical barrier to movement of spiders into buildings is also an effective management technique. Pruning branches, shrubbery and other plants away from buildings will also limit the access of spiders to buildings. Routinely clean with diluted enzyme cleaner and/or peppermint soap and/or 5% distilled white vinegar and a little coconut oil or borax.

Barriers also limit access of buildings to spiders. Caulking, repairing screens, and filling cracks and crevices around windows, doors, and foundations with materials such as expanding polyurethane foam will exclude many spiders from buildings. Common areas to inspect for holes and gaps include entry holes for plumbing and electrical lines, and window and door casings. Window and door screens should be repaired to fill in holes large enough for entry of spiders. Gaps in the wall boards and ceiling-wall interfaces should be closed, and door and window casings should be filled with caulking or a foam insulation material. Foam insulation material can also be used to fill wall voids and crawl spaces if spiders come in through these areas. Spiders can easily gain access to buildings through gaps beneath doors. Placing door sweeps and/or a piece of weather stripping under a door so that there is no gap between the bottom of the door and the floor when the door is closed will alleviate this problem. Lightly dust with baking soda, talcum powder or medicated body powder or food-grade DE.

If crawl spaces are a breeding area for spiders, the reason is usually excess moisture. By eliminating moisture in some areas, spiders can be eliminated. Placing plastic or visquine over bare soil can eliminate moisture problems in most crawl spaces. The key to many moisture problems is to increase venting. Therefore, opening up ducts under a foundation may eliminate moisture from a crawl space without allowing increased access of the building for spiders. Install and maintain dehumidifiers, air conditioners and/or fans.

Additional precautionary measures which may reduce the risk of being bitten by spiders include wearing shoes at all times, using gloves when moving rocks, wood or other debris, and shaking out sleeping bags and clothing before using them.

Turn off exterior lights at night or change to less attractive lighting, e.g., yellow or amber bug lights or sodium vapor lighting. Most spiders found indoors and around the outside of buildings are harmless to people and are often beneficial but nevertheless may sometimes need to be removed because they or their webs are (visual) nuisances. Spiders depend on live insects or other small arthropods for food, but they can survive for long periods without food. They are, obviously, most numerous in locations where insects occur. Control their food supply and you control the predator spiders. Most spiders are harmless and control may not be needed, but if *needed*, control should be mechanical, non-chemical, so spray diluted Safe Solutions Enzyme Cleaner with Peppermint and/or borax, but only to destroy only harmful species when absolutely necessary. You will have to still spray them or the webs directly and then you **still** will have to vacuum them up or use them for Halloween decorations - so why not just vacuum to begin with? Then lightly dust with talcum powder, medicated body powder, Comet® or food-grade DE.

Satisfactory management of spiders inside buildings begins by eliminating their habitat, food sources and by caulking and screening in order to keeping spiders out. Items such as firewood, cut flowers and nursery plants should be thoroughly inspected for spiders or spider eggs before being brought indoors. Eliminate the spiders' food by excluding and keeping flying insects such as flies and mosquitoes out of your buildings. Use door and window screens and insect traps, and caulk or fill all visible cracks and other openings. These techniques also help exclude the predator spiders, although most young spiderlings are so small they can easily pass through the openings of window screening and small gaps in poorly fitted doors and windows. If food is not available, however, even the spiderlings will not survive. To capture/remove the occasional spider, invert a glass or jar over it, slip an index card under the spider trapping it inside; then carry the spider outside and release it. Whenever possible, simply use a vacuum cleaner to remove spiders and webbing from ceilings, corners and behind and under furniture and appliances. **Be sure to routinely remove egg cases.** Dispose of the bag properly and promptly or open the bag outside and release the spiders.

Routine cleaning and proper sanitation will also help discourage buildup of spider infestations. Outdoors, removal of trash, old boards, debris, stones, stacking firewood away from the structure on pallets or off the ground, or virtually keeping all storage items away from the building are all necessary. In areas where basements are

present, pea gravel in the window wells will hinder spiders and other insects, which are food for spiders, from hiding there. Routinely vacuum and clean with Safe Solutions Enzyme Cleaner with Peppermint and/or borax and/or d-limonene. Spiders are also thought to feed on human dander and skin flakes - so clean!

Black widow spiders usually are found only in dark locations, so carefully look for them there, e.g., behind or under furniture, in closets, basements, attics, crawl spaces and storage rooms. When controlling poisonous spiders in inaccessible locations, open them and vacuum. Poison sprays must actually contact the spider or its webbing to be effective because these spiders are not mobile and do not usually walk over sprayed surfaces; they may even avoid treated areas, so if you can spray a spider, you can vacuum them up more easily and safely. Why spray poisons? If absolutely forced, you can spray them with spray with Not Nice to Bugs® and/or diluted Safe Solutions enzyme cleaners or dish soap or insecticidal soap and water or apply desiccants (inert dusts or absorptive powders, e.g., talcum or medicated body powder or food-grade DE) or cedar oil or Osage orange fruit or dried tomato leaves in basements, attics, wall voids, crawl spaces, store rooms, garages and other similar areas where spiders are found. Before applying a desiccant, vacuum the area to remove spiders, eggs and webbing. Apply dusts to surfaces where spiders attached their webs. Desiccants are effective in providing relatively safe, long-term control as long as they remain dry. **Follow directions very carefully.**

Remove spiders from building exteriors and statues by vacuuming, sweeping, spraying diluted enzyme cleaner or simply washing with a high-pressure stream of water. Insects are attracted to lights, therefore spiders congregate in these same areas; if possible, relocate exterior lights to attract insects away from buildings or use lights that are less attractive to insects, such as sodium vapor lights or yellow incandescent “bug” bulbs. To eliminate suitable habitats, shrubbery should be trimmed away from buildings, and debris and items stored next to buildings should be removed. **Periodic pressure spraying of building exteriors with soap and water or enzyme cleaner or peppermint soap is usually sufficient to prevent excessive spider problems and eliminate the need for any poison or chemical controls.**

FIRST AID - For any bite or sting it is important to reduce stress and help the inflicted person to relax. There is evidence that this will reduce the toxic effects of some bites and stings (Ebeling 1975). An ice cube may be applied for a short time to reduce pain at the site of the bite or sting; this does not reduce the effect of the bite, but may make the afflicted person more comfortable. **(DO NOT IMMERSE THE WHOLE LIMB IN WATER.)** If in doubt about the seriousness of a bite or sting, or if a person is bitten or stung by any of the medically important species discussed in this chapter or book - contact your local poison control center or a physician immediately. Also, collect the spider in question if possible to assist in the treatment of the bite or sting. Always see a physician if bitten by any spider. There are numerous medical conditions, e.g., MRSA, that can be mistaken for a spider bite.

The bite of most spider species is not considered to be dangerous. But, any bite or sting may elicit an unusual allergic reaction by persons who are hypersensitive to the bite or sting of a specific species. For this reason all bites must be examined to ensure the safety of those involved. A hyperallergic reaction can lead to anaphylactic shock and in very severe cases, respiratory distress may develop. It is not unusual for a person to have some pain and numbness in the same region as the site of the bite. However, if, for instance, a person is bitten on their hand and their legs begin to swell, this is indicative of a systemic reaction, and this person should receive medical attention as soon as possible. People who are known to be hypersensitive to other stinging insects such as bees and wasps are not necessarily hypersensitive to spider bites. Likewise, each spider has a very specific type of venom and a person may be sensitive to the venom of one species and not sensitive to the venom of a closely-related species. Lastly, some anti-venoms are available for treatment of some bites and stings, but their availability is variable. Contact your local poison control center for information regarding anti-venoms if dangerous spiders are a problem in your region.

TO SUMMARIZE INTELLIGENT PEST MANAGEMENT® CONTROL:

1. **Inspection** - A thorough inspection of the building is essential and many have to be made at night because most spiders are nocturnal.
2. **Proper Identification** - Accurate identification is important for both pest management and medical reasons. Place glue boards/monitoring traps in the area where the spider was seen.
3. **Prevention/exclusion** - This consists of making sure that the building is in good physical condition, and properly screened and sealed to reduce entry. Also, changing the exterior lighting to off-building locations, from mercury vapor to sodium vapor lamps or amber lights, or in the case of homes, changing

the bulbs near the entrances to yellow bulb, may be of some help in reducing insect/spider attractiveness. Install vapor barriers, vents, fans, air conditioners, and/or dehumidifiers to change the conditions conducive to infestation. Patch all holes and cracks.

4. **Sanitation** - Such practices consist of keeping the premises free of debris such as boxes, papers, clothing, scrap and lumber piles, etc.; it is wise to wear protective gloves and clothing when cleaning out such accumulations of clutter. A thorough housecleaning should be done a minimum of twice each year. Try lightly sprinkling talcum or medicated body powders or Comet® around sill boxes and openings. Routinely vacuum and clean with Safe Solutions Enzyme Cleaner with Peppermint.
5. **Mechanical measures** - The key to control is the timely mechanical removal of all visible spiders, webs, but especially the egg sacs with a vacuum, both inside and outside; then seal or wrap the bag in plastic and dispose of the bag immediately after you finish vacuuming. You can install duct tape (sticky-side up) where you want to trap them. Spray with Not Nice to Bugs®.
6. **Dehumidifiers, Fans, Air Conditioners and Ventilation** - The reduction of moisture reduces many insect infestations which limits spider food sources. Spiders like most arthropods are also very sensitive to moisture loss and will quickly leave overly dry conditions. So properly ventilate and install and maintain fans and/or air conditioners and/or dehumidifiers in basements, crawl spaces and attics.

FOLLOW-UP

When webbing is found, either vacuum or sweep it down, which will also eliminate spiders and egg sacs. This will help you determine your degree of control on future visits. Note: 1 acre may contain 2 million spiders. There are about 50 spiders for every square foot of grass. Remove or exclude the insect pests they feed on. Routinely steam clean or thoroughly wash/clean with diluted Safe Solutions Enzyme Cleaner with Peppermint and/or borax or disodium octoborate tetrahydrate. **Remember, spiders are beneficial creatures.**

Spiders - Typical First Strikes by Housekeeping & Maintenance

1. Control the lighting that attracts their food, e.g., flying insects, and reduce the humidity with dehumidifiers, air conditioners, vents, fans, sump pumps and/or vapor barriers. Control their food.,
2. Remove all trash and rubbish, e.g., wood piles, tires, trash cans, etc. from your property, especially next to the building. Then seal all cracks, crevices and other openings so the spiders can not enter; then remove all hiding places, e.g., heavy ground covers, ivy, piled items, rocks, debris and/or trash outside and then all clutter inside. Replace mercury vapor lights with sodium vapor lights and/or bug lights.
3. Vacuum up all visible spiders, webs and/or egg sacs (300 hundred spiders may be in one egg sac).
4. Routinely clean with (1 oz. per gal. water and/or spray with 1 oz. per qt. water) Safe Solutions Enzyme Cleaner with Peppermint and/or borax. Use a dehumidifier, fans and properly install vents.
5. Spray spray Not Nice to Bugs® or straight 5% white distilled vinegar with a teaspoon of coconut oil to help remove and prevent spider webs. Remove heavy vegetation, especially ivy ground covers and clutter. Remove their prey.
6. Routinely steam clean or vacuum the entire area. Do not store clothes, packages, vacuums, materials for extended periods of time without cleaning them all and/or sealing them in plastic.
7. Lightly sprinkle talcum or medicated body powder or Comet® or food-grade DE in sill boxes and along walls, etc., or draw a line barrier with Safe Solutions Chalk De-Fence™.
8. To avoid being bitten in bed, pull the bed away from the wall and do not let covers touch the ground. Wrap the bed legs with double-sided carpet tape or cover with petroleum jelly. See Bed Bug First Strikes.
9. Shake and carefully inspect anything, e.g., boots, gloves, toys, skates, clothing, before you put them on.
10. Try spraying them with rubbing alcohol or hair spray, or lightly dusting the infested areas (and webs) with Safe Solutions, Inc. food-grade diatomaceous earth (DE).
11. Replace or move artificial lights that attract spiders and their prey.
12. Place double-sided carpet tape or duct tape sticky-side up where you want to trap spiders.
13. If you still are seeing spiders, read the entire chapter.

Spider Control - At the 14th International Congress of Arachnology, held in July (1998) in Chicago, experts shared ways in which farmers might use spiders to control pests and reduce reliance on chemical pesticides. The sheer number of spider species and their diverse life-styles place them at an advantage over other agricultural predators as threats to plant-hungry pests. The spider's most notorious means of predation involves devouring its enemy. But this is not the only means, nor is it always the most effective. The mere presence of spiders can

frighten and dislodge insects. Spiders introduced into an apple orchard evicted 34 percent of the caterpillars feeding there. Insects that fall off a plant may become fodder for ground-dwelling spiders or die simply as a result of web entanglement. In a 1986 study, Keith Sunderland, of England's Horticulture Research International, estimated that spider webs cover some 50 percent of the ground area in winter wheat fields. To increase spider populations, use grass hay mulches. Despite dominance over many insect species, spiders are susceptible to the same pesticides used to control their prey. Until researchers can convince farmers to trust their crops to the jaws of spiders and other natural predators, farmers will continue to apply pesticides that do not work as well and cost far more.

Brown Recluse Control Caution - "Brown recluse spiders are difficult to control and they can become a problem in an account virtually overnight, so don't you dare walk into an account and say you can take care of the problem. The fact is, there's no guarantee you can," observed Dr. Jerome Goddard, author of the Physician's Guide to Arthropods of Medical Importance. Many experts believe that the brown recluse does not even absorb pesticide poisons through its feet. They are nocturnal, so use a red light to inspect and vacuum at night and install double-sided carpet tape or duct tape sticky-side up. Control their food, e.g., silverfish, with food-grade DE. Freeze the area during the winter at least several times. Boxes of paper may require 48 hours of freezing to kill all brown recluse spiders hiding inside. Moth balls/crystals have been used to control brown recluse infestations in attics and closets. See Chapter 11.

MRSA - Some people are blaming brown recluse spiders skin problems actually caused by MRSA or methicillin-resistant *staphylococcus aureus*. Clean with ultraviolet light to remove MRSA from surfaces.

Spider Silk - A spider's spinnerets move like fingers, spinning the silk (made of protein) into threads. Different glands can produce different silks, some sticky and some soft. Spider silk has a tensile strength far greater than steel and second only to fused quartz; it can be stretched 5 times its length before it breaks. It has been estimated that in just England and Wales spiders destroy more insects than the weight of the entire human population in that area.

Soap Note: Soaps are fairly good pestisafes™ because they "plug" and fill the insect's or arachnid's breathing tubes.

Safe Solutions, Inc.* has a liquid enzyme cleaner with peppermint that kills spiders virtually immediately. It is the only material the Author has sprayed that will quickly control spiders.

Borax - Mix a half cup of 20 Mule Team Borax in a gallon of hot water for use as a deck and cabin wash on your boat will usually keep spiders off even your sail or power boat for about a month. **Be careful not to ingest borax!**

Spiders on the World Wide Web

The Arachnology Home Page: <http://www.arachnology.be/pages/Poison.html>

The Hobo Spider Web Site: <http://www.onewest.net/~dkv/hobospider/>

The Centers for Disease Control and Prevention (CDC) Report on Necrotic Arachnidism, Pacific Northwest 1988-1996: <http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/00042059.htm>

*Safe Solutions products may be purchased online at:

<http://www.safesolutionsinc.com>

or by telephone at: 1-888-443-8738.



