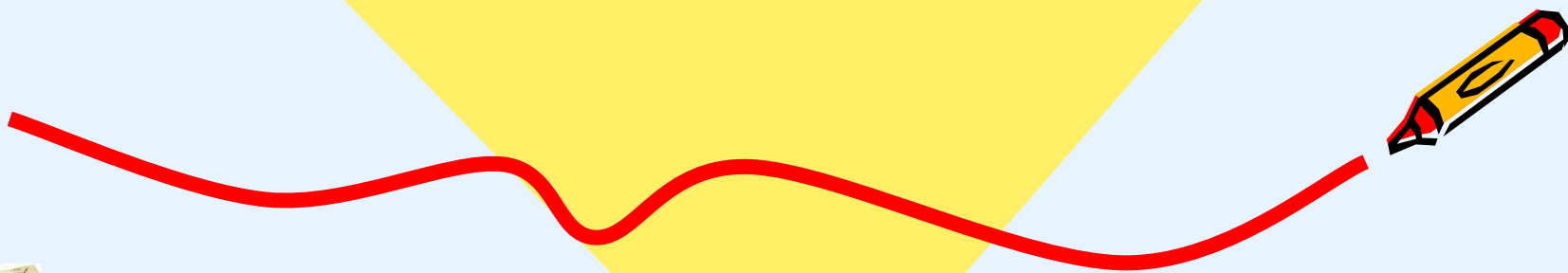


Brown Recluse and Structure Invading Spiders in Nebraska

Nebraska Extension





*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.

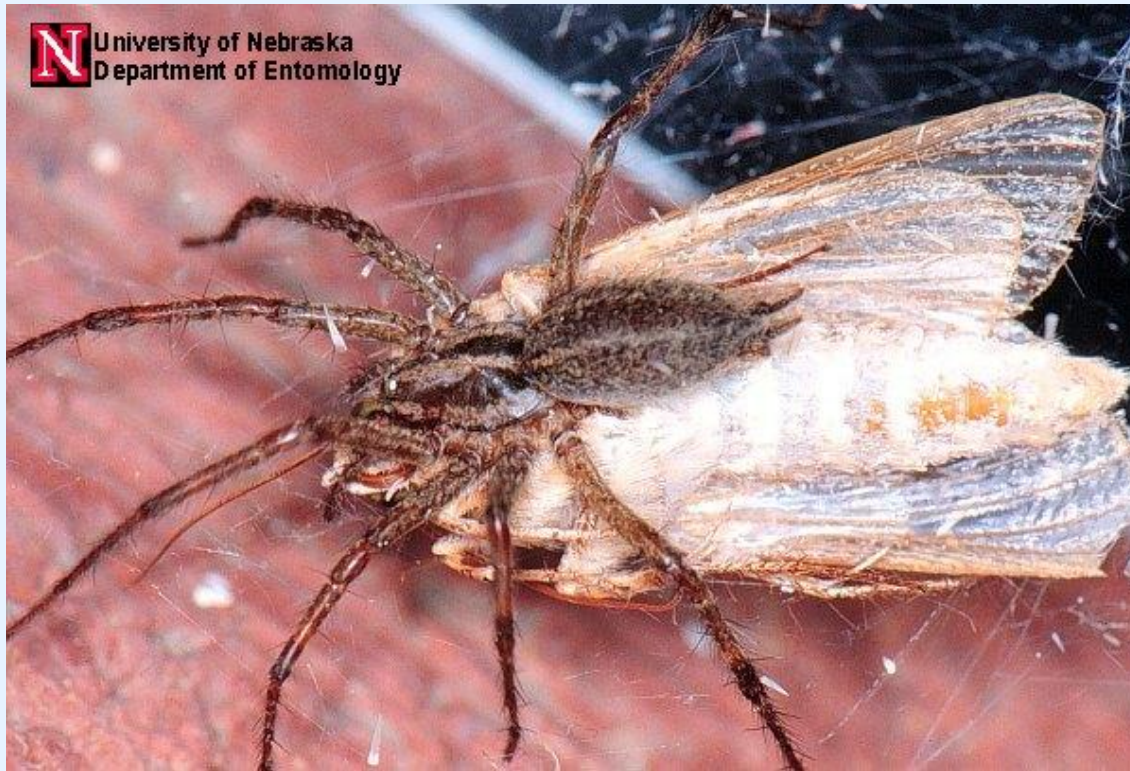


-Mother Goose-



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Most spiders are benign and beneficial predators in the outdoor environment



A Grass Spider (Funnel Weaver) and captured moth



**Barn Spider (Orb Weaver)
with Webworm Moth**



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Majority of spiders are most successful living outdoors

- ❖ It is too dry indoors for them to breed
- ❖ All spiders eat insects or other small arthropods found outdoors
- ❖ Activity increases in summer when temperatures are warm
 - Because most spiders cannot breed indoors, we call them "accidental invaders"



Spider Identification is Important

- ❖ *PCT Field Guide for the Management of Urban Spiders*
- ❖ University of Nebraska has excellent pictures of spiders on website

Check out: <http://lancaster.unl.edu/pest/resources/spiderphotos.shtml>

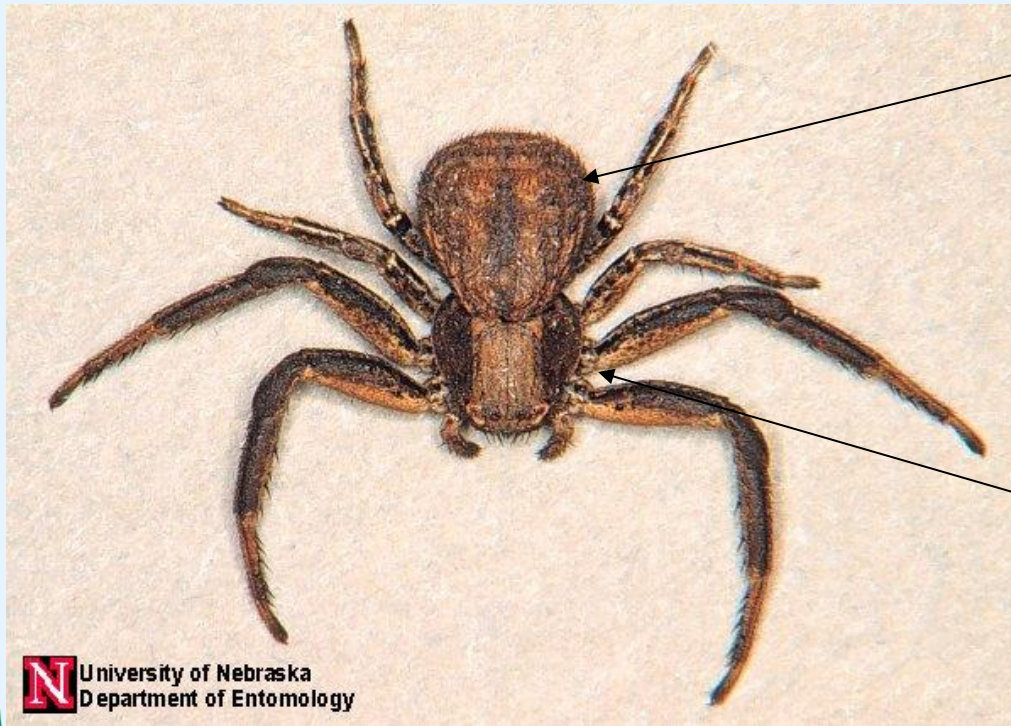


Spiders Differ from Insects

- ❖ Two body segments
- ❖ All spiders are predators and have fangs
- ❖ Spiders have no antennae, but do have appendages called pedipalps
- ❖ Spiders have 8 legs
- ❖ Spiders have 6 to 8 eyes. Eye patterns often key to identification



Spider anatomy in a nutshell: spiders have two body segments



Abdomen

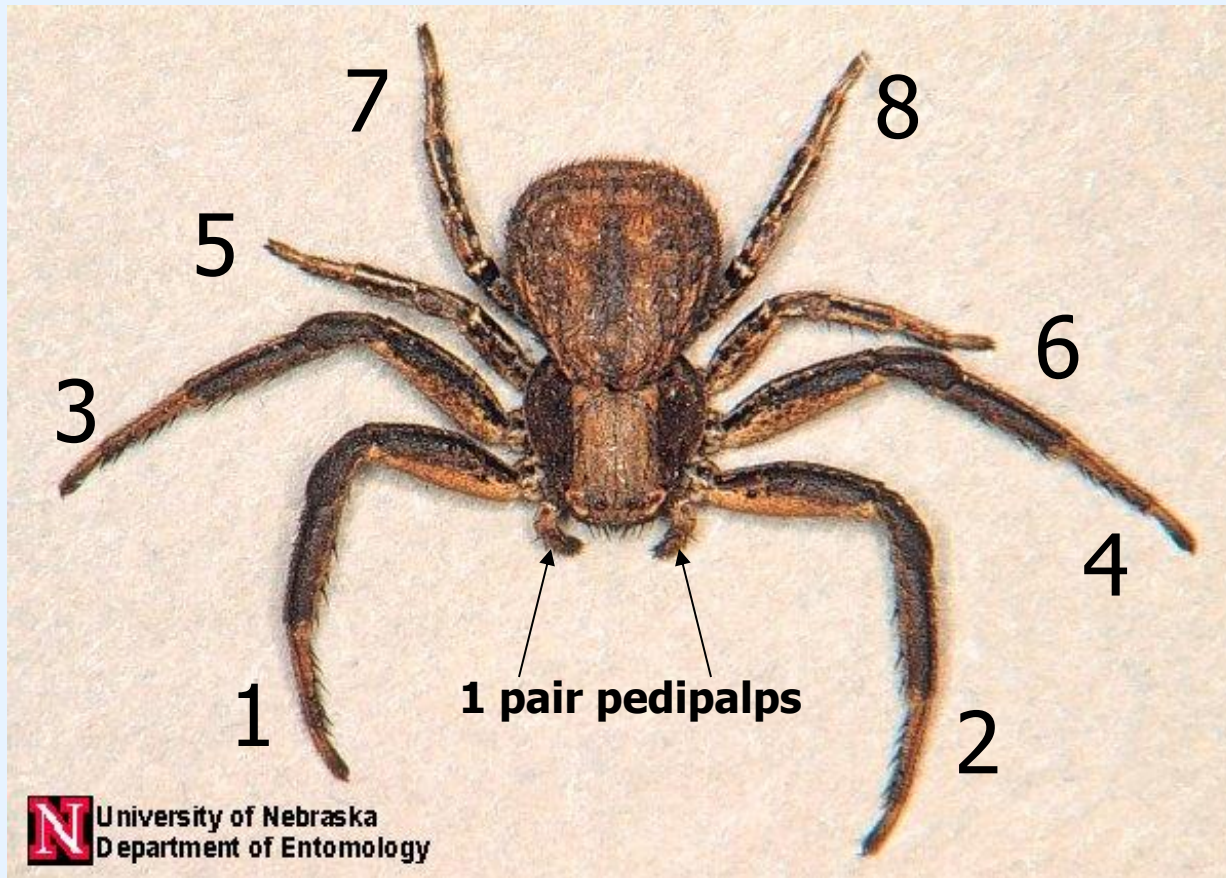
Cephalothorax

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Spiders have 8 Legs Instead of 6



Male spiders have enlarged segment on tip of "pedipalps"



- ❖ Male pedipalps are copulatory organs
- ❖ Transfer sperm to female

Pedipalps on mature male spiders look like tiny boxing gloves



Another male spider with enlarged pedipalps



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Most Spiders have 8 eyes

❖ Number and pattern of eyes is the key to identifying spiders

❖ Example:

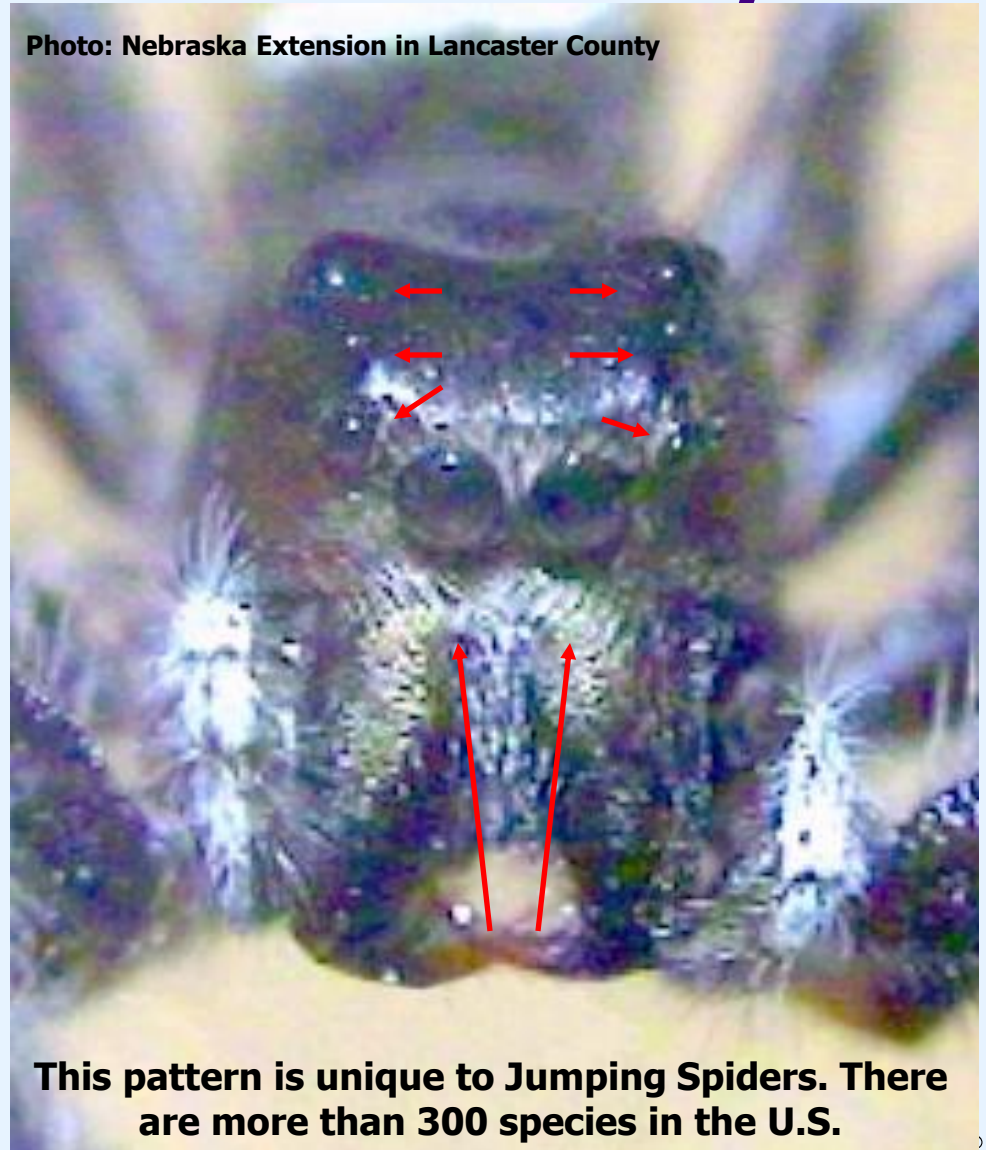
➤ Jumping Spiders

✓ 1 pair of large eyes that face forward

✓ Other eyes face to side and back



Photo: Nebraska Extension in Lancaster County



This pattern is unique to Jumping Spiders. There are more than 300 species in the U.S.

Problem Nebraska Spiders Known to Bite Humans

❖ Problem spiders:

- Brown Recluse Spiders, *Loxosceles spp*
- Sac Spiders, family Clubionidae
- Black Widow, family Theridiidae



Brown recluse



Photo: CDC

Black widow



Yellow sac spider

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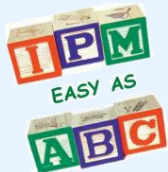
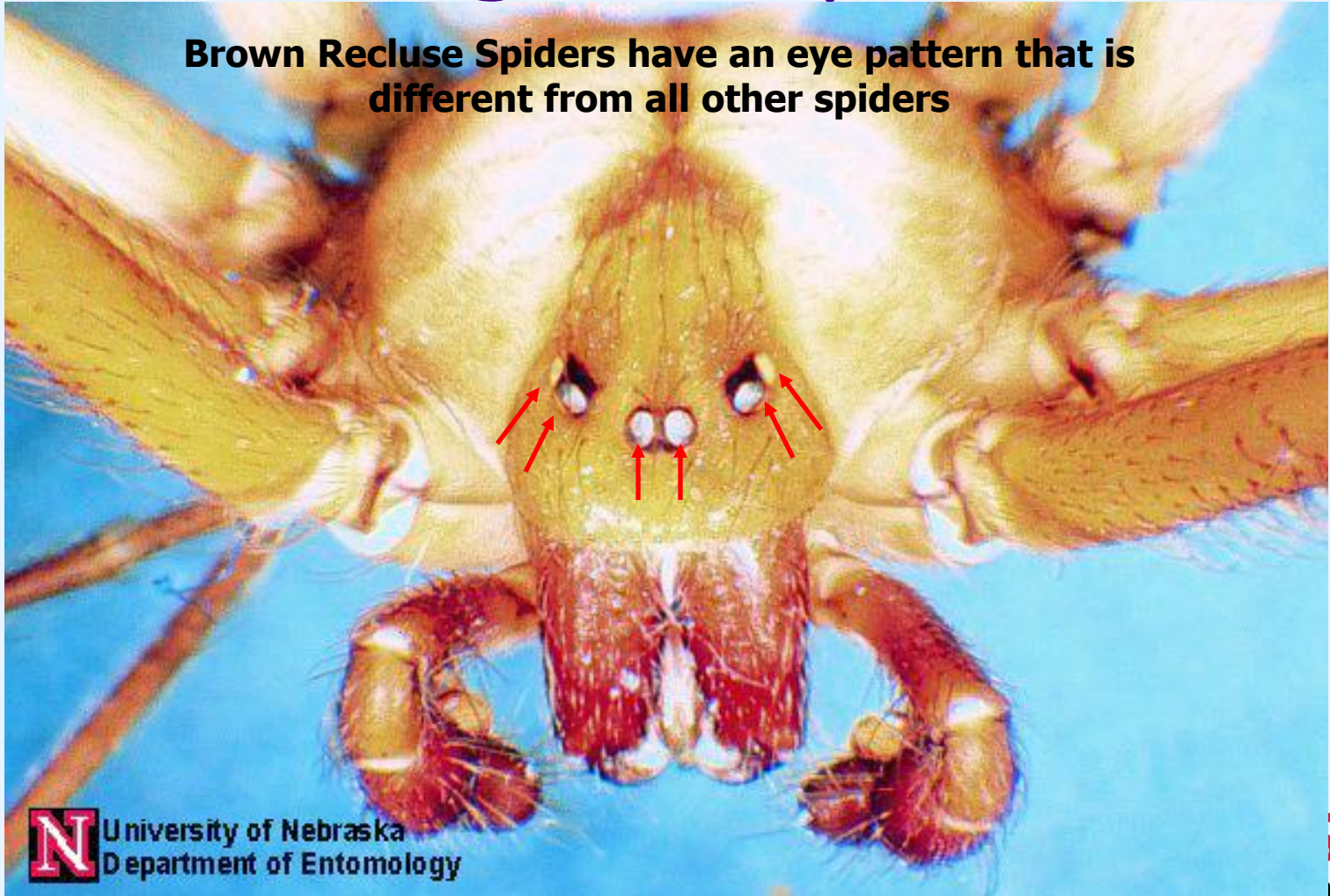


Photo: Nebraska Extension
in Lancaster County

Brown Recluse have 6 eyes, arranged in pairs

**Brown Recluse Spiders have an eye pattern that is
different from all other spiders**



Brown Recluse are medium-sized brown spiders

- ❖ Violin-shaped mark on cephalothorax.
Also called:
 - "Fiddleback" spiders
 - "Violin" spiders
 - "Brown" spiders
 - "Recluse" spiders



©2004 University of Nebraska Cooperative Extension in Lancaster Co.
Photo by: V. Jedlicka Visit <http://lancaster.unl.edu>



No distinctive markings on abdomen or patterns on legs

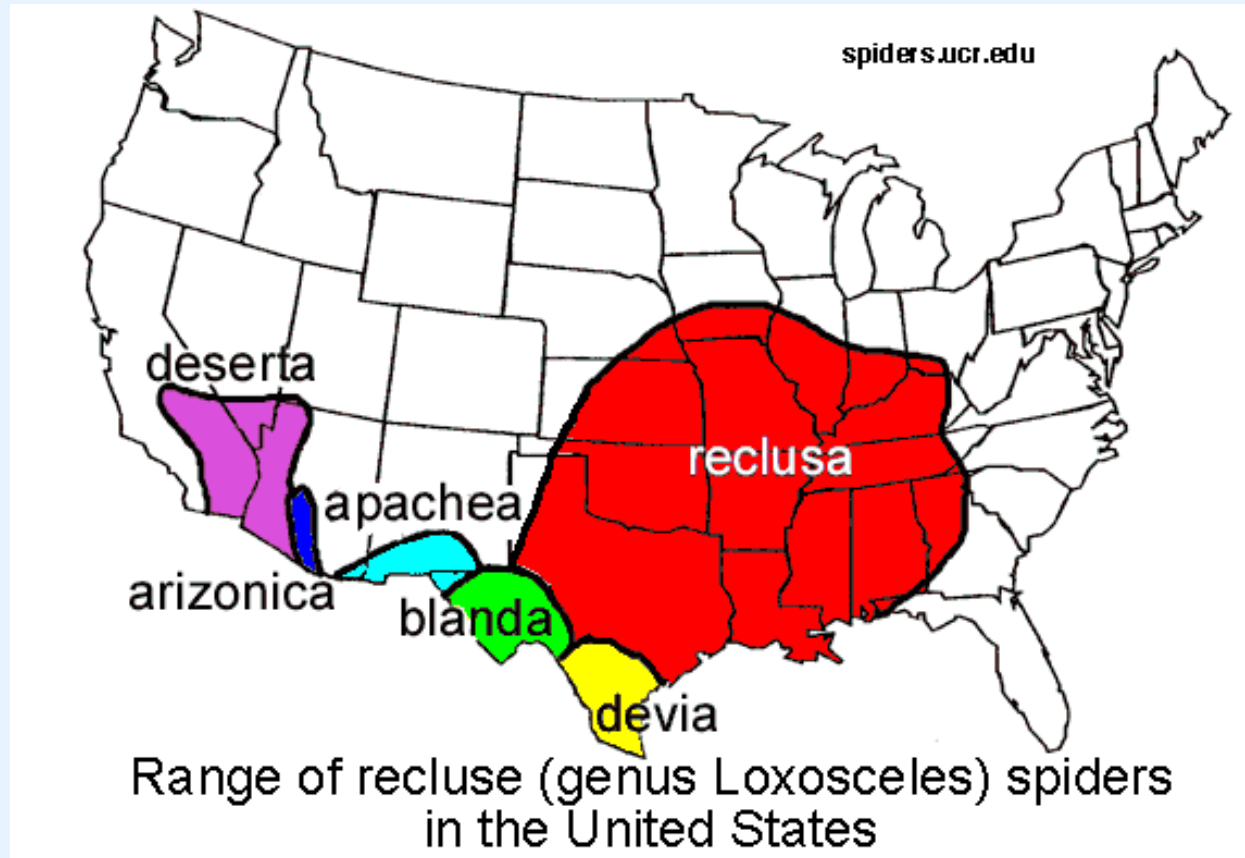


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Recluse Spiders: 11 Species in U.S.



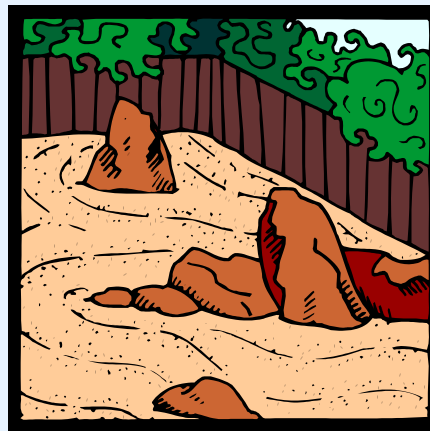
Nebraska is on north edge of Brown Recluse range



Location Depends on Latitude

❖ Southern states

- Found outdoors under bark, leaves, stones
- Also: utility boxes, wood piles, vehicles
- Invade and infest structures from outside



Location Depends on Latitude


❖ Northern states

- Infestations often start from infested boxes brought into buildings
- Commercial, industrial, and apartments more frequently infested
 - ✓ Reports of a few infested Nebraska facilities
- In Nebraska, it is less common to have single family homes with Brown Recluse infestations



Brown Recluse adapted to indoor living, especially storage areas

- ❖ Boxes of clothing, fabrics, papers
 - Movement with merchandise
- ❖ Undisturbed locations: closets, attics, crawlspaces and basements, utility areas, garages
- ❖ Cracks and crevices, dark areas
- ❖ Survive a wide range of temperatures

 ➤ 40-110 degrees F

Males and Females have Different Habits

❖ Males

- Active hunters
- Captured much more frequently on sticky traps

❖ Females

- Passive hunters
- Rarely move from "nesting" areas
- Rarely caught on traps



Activity Increases at Night

❖ Prey

- Firebrats, silverfish, cockroaches, and crickets
- Good evidence that Brown Recluse will feed on dead insects

❖ At daybreak, return to retreat

- Irregular webbing in secluded places



Bites occur in bed, while dressing, or when cleaning storage areas

- ❖ Spider is trapped between flesh and another surface
- ❖ To reduce risk...
 - Keep beds away from walls
 - Remove bed skirts so only pathway to mattress is up the legs. Bedding shouldn't touch floor
 - Keep clothing off floor, shake clothing before dressing
- Store items in spider-proof boxes or bags



Photo: University of Nebraska—Lincoln

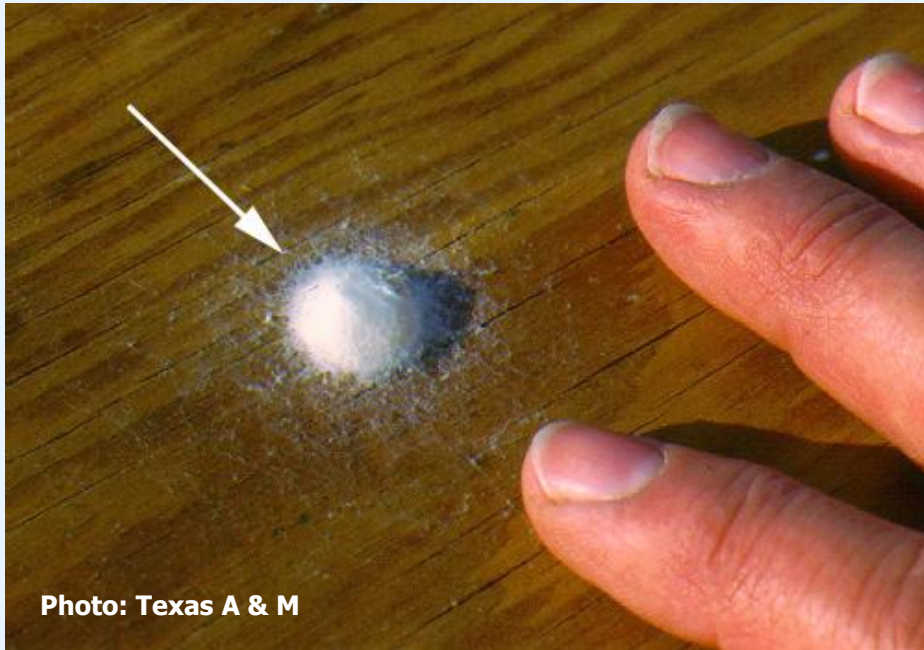
Brown Recluse Bite Symptoms



- ▶ Rarely any pain when bitten.
- ▶ Bite site becomes reddened.
- ▶ Painful ulceration develops.
- ▶ Skin and muscle tissue dies, leaving a deep, infected wound that enlarges, fails to heal or heals quite slowly.



Life History: Mating occurs in July



- ❖ Males seek females for mating and are often caught on sticky traps
- ❖ 1-5 egg sacs produced over female lifetime
 - Each egg sac contains 40-50 eggs
 - Average: 158 spiderlings/summer



Spiderlings Hatch

- ❖ Four weeks after egg sac is produced
 - Light brown with indistinct violin marking
 - Same general body shape
 - Eye pattern is distinctive characteristic
- ❖ Develop into adults in one year



All stages of spiders will be found in breeding populations

- ❖ Equal number of males and females
- ❖ Immatures

Photo: Nebraska Extension in Lancaster County



If only mature males are found, then there may not be a breeding population

Brown Recluse can survive long periods without food and water

- ❖ Most water comes from food
- ❖ Survival more than 297 days (10 months) in lab



Photo: Nebraska Extension in Lancaster County



Infestation may range from a few spiders to hundreds



- ❖ People may be completely unaware of their presence
- ❖ Behavior keeps them secluded and hidden

Inspect carefully for all infestation locations

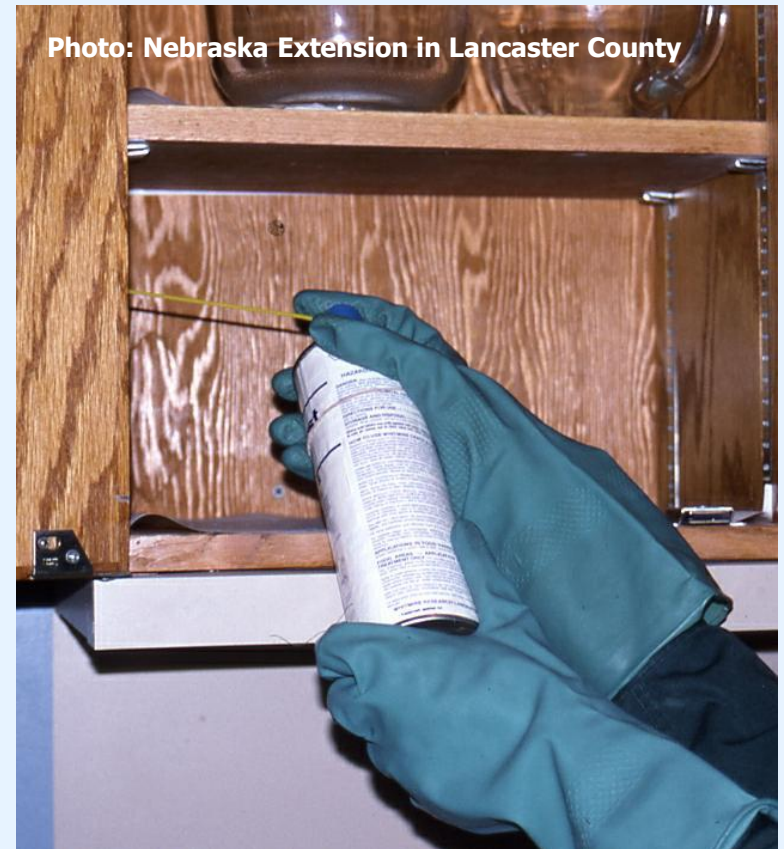
❖ Look for irregular webs

- Inside cardboard boxes
- In cracks, especially around ductwork and electrical boxes
- Under insulation
- Corners between rafters and ceiling joists
- Along sill plate and subfloor areas in crawlspaces and basements



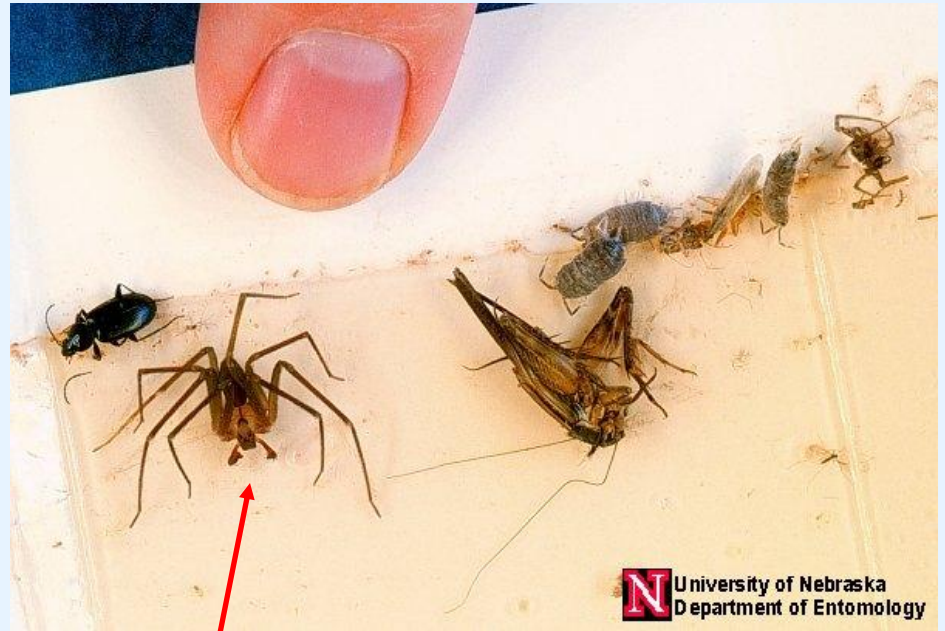
During Inspection:

- ❖ Vacuum spiders and webbing
- ❖ Flushing agent
 - Cracks and crevices
 - Focus on area where spiders have been seen
 - Take care with fabrics/clothing/paper



Sticky traps can confirm presence and extent of problem

- ❖ Identify Brown Recluse Spiders and determine males, females, and immatures



Trap with a single male Brown Recluse does not mean there is a breeding population



Sticky traps can confirm presence and extent of problem

- ❖ If Brown Recluse Spider is caught, continue using traps
- ❖ Problem: when too few traps are used



Trap with a single male Brown Recluse does not mean there is a breeding population

Place traps in all areas of structure

- ❖ Along walls-one trap under each piece of furniture
- ❖ Behind toilet
- ❖ Inside sink vanity
- ❖ Inside/under kitchen cabinets/below bathtub
- ❖ Closets

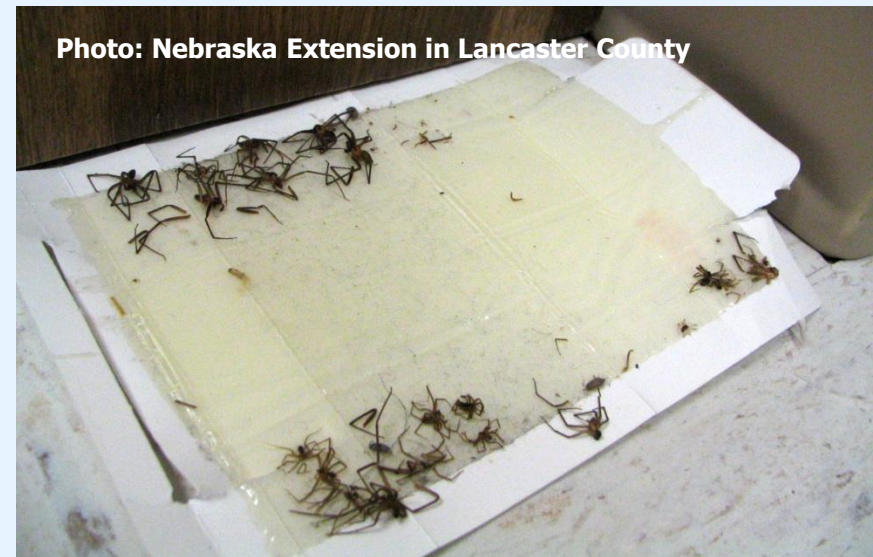


Photo: Nebraska Extension in Lancaster County

Traps with immature Brown Recluse Spiders indicates a breeding population



Pay special attention to storage areas

❖ Garages/basements:

- Place traps on floor behind stored items
- Sill plates in basements and crawl spaces

❖ Attics:

- Near vents/electrical openings
- ✓ May be association with bats/insects in attics



Check Traps Regularly

- ❖ Record trap catches
- ❖ Replace traps as needed
- ❖ Additional traps in "hot spots" and inspect for harborage areas



Photo: Nebraska Extension in Lancaster County



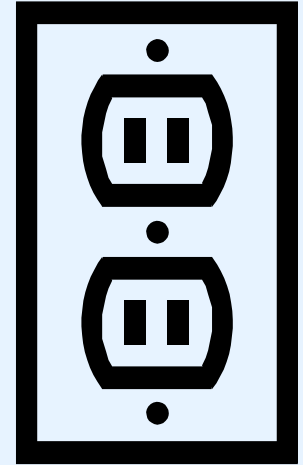
Insecticide Applications

❖ Crack and void treatments

- Residual dusts preferred
- Inorganic dust like silica gel works very well
 - ✓ Long residual life and desiccant activity
- Some organic dusts do not seem to be as effective as desiccant dusts
- Residual aerosols can be effective, but have shorter residual life



Treatment Tips



- ❖ Behind electrical outlet plates
- ❖ Cracks under sill plates and voids of foundation walls
- ❖ Remove and apply dusts under insulation in attics
- ❖ Attic floors create special problems
 - Remove flooring in attics or drill holes between joists



Spot Treatments

- ❖ Generally provide poor results, unless combined with crack and void treatments
- ❖ Liquids: Wettable powders or microencapsulated insecticide formulations work best
- ❖ Ultralow-volume space treatments are least likely to be effective because of cryptic behavior



Exterior Treatments

- ❖ All cracks in foundations should be treated and sealed
- ❖ Perimeter applications are not very effective



Yellow Sac Spider: *Cheiracanthium spp.*



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Sac Spider responsible for more bites than any other spider

- ❖ Many bites thought to be Brown Recluse bites probably from Sac Spiders
 - Localized redness and burning
 - Rash and blistering
 - Necrotic ulcer may form
 - Bite usually heals in 10-14 days
- ❖ Sac Spiders are hunting spiders and active at night



Sac Spiders are small and nocturnal so not often seen

- ❖ Size: $\frac{1}{4}$ - $\frac{1}{3}$ " long
- ❖ Hide during day in silken tubes
 - Corners of rooms, especially at wall-ceiling juncture
 - Behind pictures
 - Ceiling tiles
- ❖ People often get bitten while dressing or in bed



Photo: University of Nebraska–Lincoln



Managing Sac Spiders

- ❖ Sac spiders often come into building during summer months
- ❖ Sealing foundation cracks can prevent entry
- ❖ Inspect rooms for silken tubes and remove either physically or by vacuuming



Black Widow Spiders: 5 species in North America

- ❖ Red hourglass marking
- ❖ Hang upside down in cobwebby nest
- ❖ Widespread across U.S.
- ❖ Not aggressive
- ❖ Not often found indoors
- ❖ Pretty unusual in Nebraska

➤ Greater problem when we had outdoor privies.



Photo: Nebraska Extension in Lancaster County

"Widow" Spider hanging in cobwebby nest in rocky crevice in Utah

Black Widow venom is a neurotoxin and can be lethal

- ❖ Systemic symptoms with no local damage
- ❖ Venom travels through nervous system
- ❖ More potent than venom of pit viper
- ❖ Small amount injected
- ❖ Most dangerous to elderly and children



Muscles in entire body contract and cramp

- ❖ Intense pain
- ❖ Bite may go unnoticed or feel like a pin prick
- ❖ Numbing pain near bite followed by pain and cramps in large muscle masses, especially abdomen



Progressive Symptoms

- ❖ Nausea, vomiting
- ❖ Leg cramps, tremors, loss of muscle tone
- ❖ Breathing difficulties, heart irregularities, and death in severe cases



Inspection

- ❖ Black widow spiders will be found in and around irregular webbing



Photo: Jack Kelly Clark, courtesy University of California Statewide IPM Program



Managing Black Widow Spiders

- ❖ Removal through vacuuming or directed insecticide applications
- ❖ Sanitation will prevent occurrence of hiding places
- ❖ Sealing cracks and crevices in foundations



Other Nebraska Spiders Known to Bite Humans

- ❖ Not typically poisonous, but sensitive people may have an adverse reaction to bite:
 - Parson Spiders, *Herpyllus ecclesiasticus*
 - Woodlouse Hunter, *Dysdera crocata*



Photo: University of Nebraska–Lincoln



Other Nebraska Spiders Known to Bite Humans

- ❖ Not typically poisonous, but sensitive people may have an adverse reaction to bite:
 - Wolf Spiders, family *Lycosidae*, not to be confused with Funnel Web Spiders
 - Orb Weavers, Garden Spiders, family *Araneidae*
 - Crab Spiders, family *Thomisidae*
 - Jumping Spiders, family *Salticidae*



Parson Spider: *Herpyllus ecclesiasticus*



**Velvety black or brown with distinctive markings
on abdomen**



Parson Spider hunts at night for prey

- ❖ Outdoor spider that may wander inside during summer
- ❖ $\frac{1}{2}$ -inch body
- ❖ May crawl into bed or clothing



Woodlouse Hunter: scary looking spider with big fangs



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Bites are painful, but not dangerous

- ❖ These spiders have 6 eyes, arranged in a circular pattern
- ❖ Another accidental invader, especially during summer

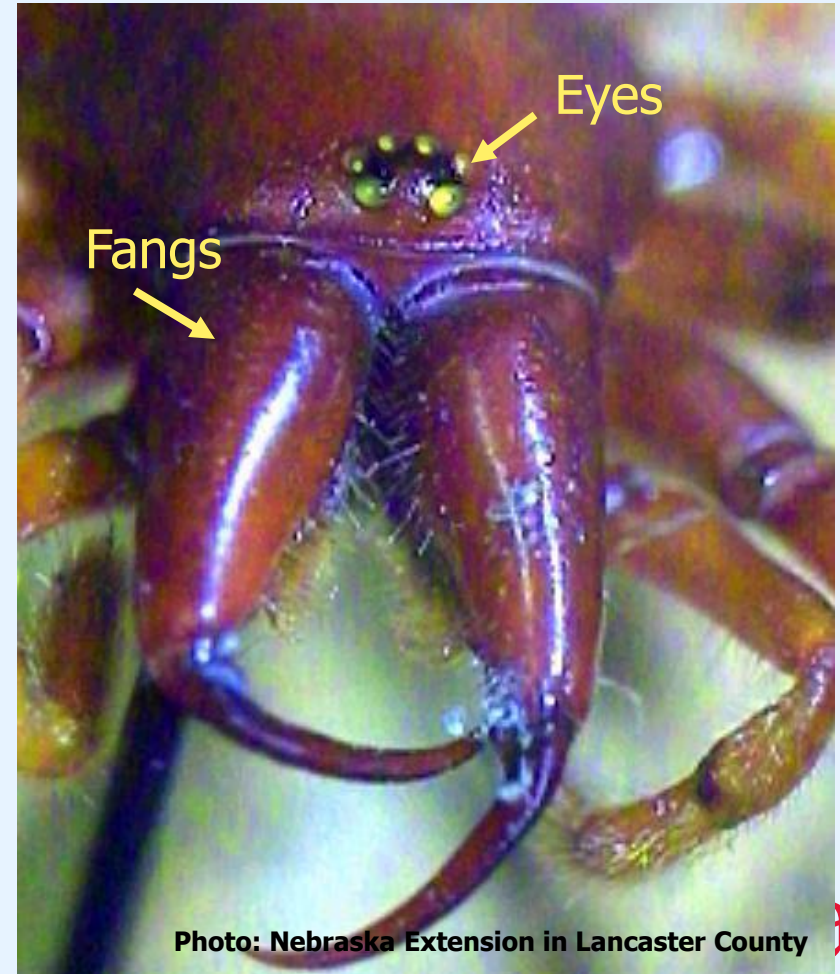


Photo: Nebraska Extension in Lancaster County



Woodlouse Hunters eat Woodlice, a.k.a. Pillbugs and Sowbugs

- ❖ Fangs used to pierce hard bodies of these small arthropods
- ❖ Live normally outdoors in moist areas



Photos: Nebraska Extension in Lancaster County



Wolf Spiders: "Big, hairy, and run real fast"

- ❖ Frequently invade structures in late summer
- ❖ Dozens of species, some are small
- ❖ Brown to black in color



Wolf Spiders have distinctive eye patterns

Photo: Nebraska Extension in Lancaster County



- ❖ One large pair of eyes facing forward
- ❖ Row of 4 eyes under larger pair
- ❖ One smaller pair behind large pair

Maternal Behavior

- ❖ Female carries egg sac under her body
 - After hatching, spiderlings hitch a ride with mother on her back
- ❖ Active hunters
 - Day and night
- ❖ Do not survive well in structures
- ❖ Activity in late summer



Wolf Spiders

- ❖ Breeding populations unlikely in structures
- ❖ Sticky traps better than insecticide
 - Near doors, crawlspaces, window wells, foundations, along walls
- ❖ Exclusion and sanitation best

Photo: Nebraska Extension in Lancaster County



Funnel Web Spiders often confused with Wolf Spiders

- ❖ Also called "Grass Spiders"
- ❖ May wander inside during summer
- ❖ Long spinnerets





Funnel Weavers build horizontal webs with a funnel at one end. They lie in wait for prey.



Others known to bite humans usually found outdoors:



Common Garden Spider is an Orb Weaver



Crab Spider



Highly magnified: Jumping Spiders are small, ranging from 1/8 to 1/2-inch long



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Jumping Spider may come inside buildings during warmer months

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Managing Accidental Invading Spiders

- ❖ Seal cracks and crevices
- ❖ Remove spider webs, egg sacs, and harborages:
 - Vacuuming is a good method
 - Establish a vegetation-free zone, 18-inches from building exterior
- ❖ Exterior lighting:
 - Replace mercury vapor lights with sodium vapor lights or use yellow "bug light" light bulbs



Managing Accidental Invading Spiders

- ❖ Use outdoor sprays after other methods have not worked
 - Spiders are not easy to control and sprays may not be effective for a long time
- ❖ Sticky traps in warmer months will catch spiders and are a good monitoring device



Credits

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- Texas A & M
- Center for Disease Control
- Jack Kelly Clark, University of California Statewide IPM Program (<http://www.ipm.ucdavis.edu>)



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(<http://spiders.ucr.edu>)

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