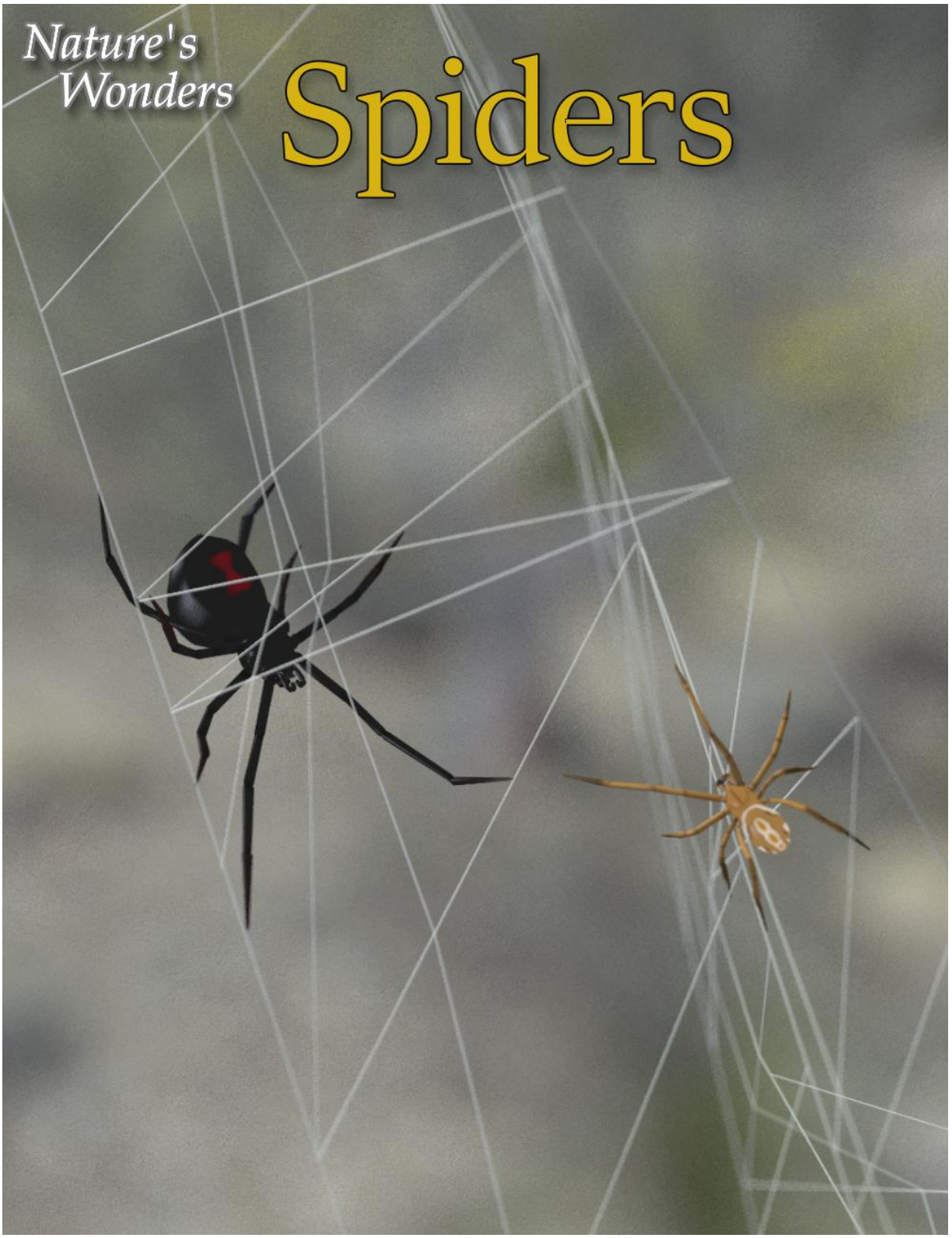

A 3D Model set by Ken Gilliland

Nature's Wonders Spiders

Base Model

Manual

Field Guide

Nature's Wonders Spiders

Introduction

Spiders (order *Araneae*) are arthropods that have eight legs, chelicerae with fangs that are generally able to inject venom, and spinnerets that extrude silk. They are the largest order of arachnids and rank seventh in total species among all orders of organisms. Spiders are found worldwide on every continent except for Antarctica, and have become established in nearly every land habitat.

Spiders occur in a large range of sizes. The smallest, Patu digua from Colombia, are less than 0.37 mm (0.015 inches) in body length. The largest and heaviest spiders occur among tarantulas, which can have body lengths up to 90 mm (3.5 inches) and leg spans up to 250 mm (9.8 inches).

Almost all known spider species are predators, preying mostly on insects, although a few large species have been known to take birds and lizards. It is estimated that the world's 25 million tons of spiders kill 400–800 million tons of prey per year.

Spiders have been the focus of stories and mythologies of various cultures for centuries. Uttu, the ancient Sumerian goddess of weaving, was envisioned as a spider spinning her web. Both Greek and Roman literature tells stories of people turning into spiders. Stories about the trickster-spider Anansi are prominent in the folktales of West Africa and the Caribbean. In some cultures, spiders have symbolized patience due to their hunting technique of setting webs and waiting for prey, as well as mischief and malice due to their venomous bites. Web-spinning also caused the association of the spider with creation myths, as they seem to have the ability to produce their own worlds. Dreamcatchers are depictions of spiderwebs.

Overview and Use

This set uses a common model to recreate digitally the *Araneae* species included in this volume. Each species uses specific morphs from the generic model to single-out its unique features.

- **Models included in this volume:**
  - **Nature's Wonders Spider Base** - This model is used with all spiders included in this set. The "blank" version of this model is in the Resources folder.

Creating a Spider using Poser

1. For this example, we'll create a Black Widow Spider.
2. Load Poser, select the FIGURES library and go to the Animals / Nature's Wonders / Fauna Libraries / Insects / **Spiders of the World** folder and the Firefly or Superfly sub-folder.
3. Select the Western Black Widow (or a spider of your choice).

Creating a Spider using DAZ Studio

1. For this example, we'll create a Black Widow Spider.
2. Load DAZ Studio and go to the Animals / Nature's Wonders / Fauna Libraries / Insects / **Spiders of the World f**older and select the sub-folder of which renderer you want to use, 3Delight or Iray.
3. Select the Western Black Widow (or a spider of your choice).

The InsectCam

All of the *Araneae* species in this set have been scaled to their appropriate sizes in relation to human figure models. In most cases, these can be very small. With that in mind, this set comes with an "InsectCam".

The InsectCam is a camera set-up to focus on the default position of the insect. With Poser, it will also change the "hither" setting from its default value of 0.800 to 0.0 to allow close focus.

Posing the Spider Model, Sizing & Poser Issues

With most figure-based models the center of the model is the "hip" area. The thorax is considered the "hip" in this model. Due to differences in leg sizes, not all poses will load perfectly. Some legs adjustments will probably be necessary; especially with species that have uniform leg sizes (The base model has long front and rear legs with the middle sets much shorter). In the future, there will probably be poses that offer both uniform and default leg adjustments to compensate for the longer/shorter legs.

An issue that can appear when rendering in Poser, with only a spider (no other items) in the scene, is that it will produce a default square shadow. It is a known bug within Poser. To correct this issue, include a second larger item off-screen and the shadows will render correctly.
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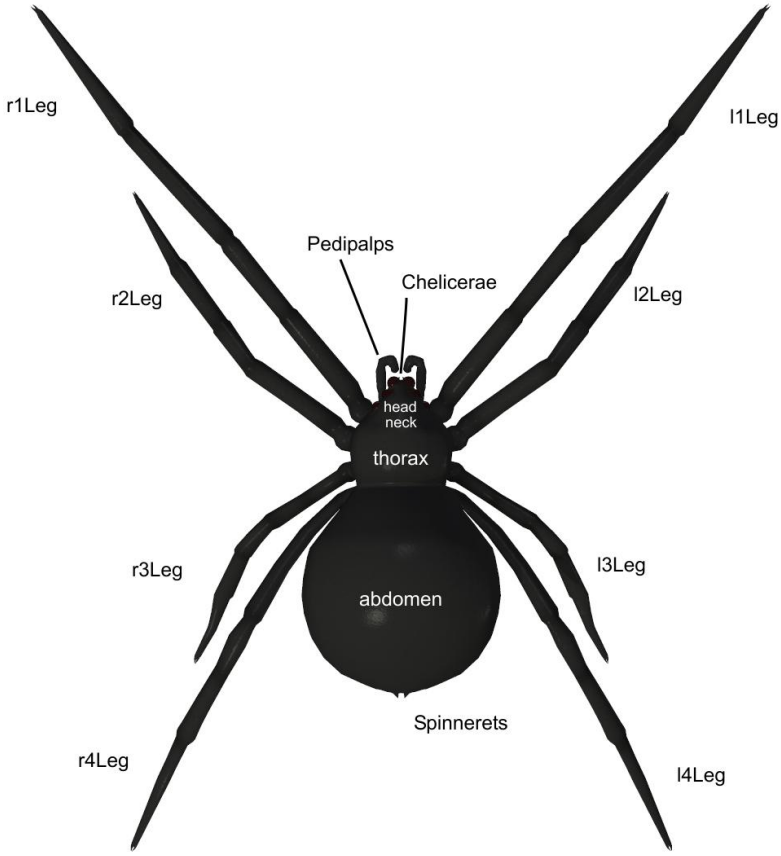
Using the Action Controls

There are a lot of body parts to keep track in the model with eight legs and numerous appendages, so I'll offer some advice on using them. Also, there are several parts within this model that have very specific uses in the daily life of a spider so I'll provide a diagram to explain the basics and the naming of the parts:

Legs: The legs are numbered 1, 2, 3, and 4 (front to back). Each leg has 5 sections with a "claw" morph located on the end (5th) section. The claw allows the spider to fasten itself to the web. The 5th section also has a twist control (not found on any other section of leg) that will aid in posing the claw on the web. There is an additional "Close Claws" control in the main BODY section that closes all 8 claws at once.



Legs 1 is connected to the **head** section.

Legs 2 and 3 are connected to the **thorax** section.

Legs 4 is connected to the **abdomen** section.

Capture and Eating Controls…

In capturing and eating prey, there is a sequence of events with 3 appendages on the spider. First, the Pedipalps are used by the spider to pin/hold down its prey. Next, the fangs inject venom to paralyze the prey. And lastly, the Chelicerae (Jaws) are used to feed.

The **Chelicerae** has a morph to hold the prey up to its mouth to feed. The **Fangs** are located below the Chelicerae and are used to inject venom into its prey. There are 2 morphs for the fangs, one that positions the fangs, and a second, that retracts/extends the tips to inject venom.

Another appendage using for capture and eating are the **Pedipalps**. Both the right and left pedipalps have 5 part sections.

Web Spinning Controls…

These controls activate the rear of the abdomen and focus on the **Spinnerets**. The spinnerets, as the name suggest, spin out silk to make webs or subdue threats. The controls allow up, down and side-to-side movements of the spinnerets. The additional controls active 2 hidden body parts that produce web silk.

Single Strand Silk… The "Silk Extend" morph allows the spider to drop from a single stand of web silk. The "Silk Extend Down" and "Silk Extend Side-to-Side" only work when the "Silk Extend" morph is active and allows movement of that single strand.

Dual Strand Silk… The "Swirl" morphs allow web silk to be shot in a swirly direction from the selected spinneret(s). These morphs should not be used in conjunction with the "Silk Extend" morph.

Latrodectus, the Widow family

Latrodectus is a broadly distributed genus of spiders with several species that are commonly known as the **true widows**. This group is composed of those often loosely called black widow spiders, brown widow spiders, and similar spiders. However, the diversity of species is much greater. A member of the family *Theridiidae*, this genus contains 34 species, which include several North American "black widows"; the southern black widow (*Latrodectus mactans)*, western black widow (*Latrodectus hesperus)*, and northern black widow (*Latrodectus variolus*). Besides these, North America also has the red widow (*Latrodectus bishopi)* and the brown widow (*Latrodectus geometricus)*, which, in addition to North America, has a much wider geographic distribution. Elsewhere, others include the European black widow (*Latrodectus tredecimguttatus*), the Australian redback spider (*Latrodectus hasseltii*) and the closely related New Zealand katipō (*Latrodectus katipo*), several different species in Southern Africa that can be called button spiders, and the South American black-widow spiders (*Latrodectus corallinus* and *Latrodectus curacaviensis*).

This species can vary widely in size. In most cases, the females are dark-colored and can be readily identified by reddish markings on the central underside (ventral) abdomen, which are often hourglass-shaped.

These small spiders have an unusually potent venom containing the neurotoxin latrotoxin, which causes the condition latrodectism, both named after the genus. Female widow spiders have unusually large venom glands, and their bite can be particularly harmful to large vertebrates, including humans. However, despite their notoriety, *Latrodectus* bites rarely cause death or produce serious complications. Only the bites of the females are dangerous to humans.

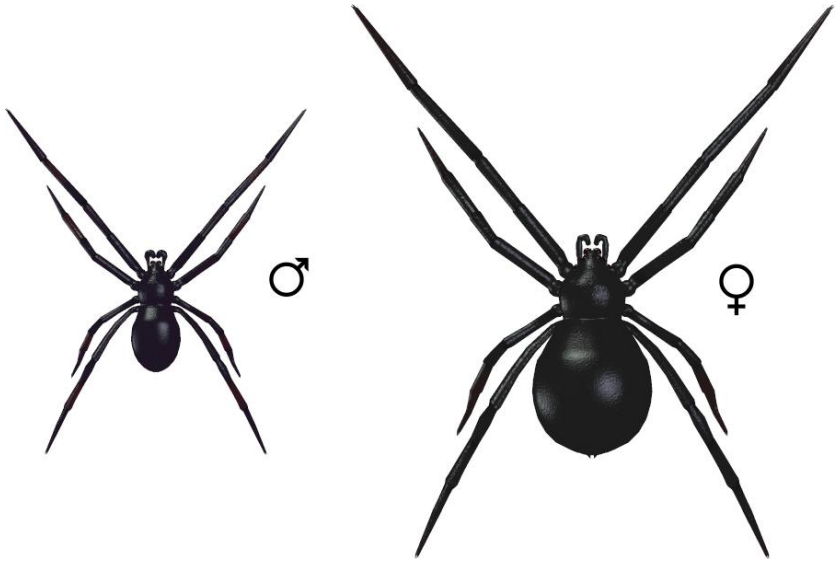
Like other members of the *Theridiidae* genus, widow spiders construct a web of irregular, tangled, sticky silken fibers. Black widow spiders prefer to nest near the ground in dark and undisturbed areas, usually in small holes produced by animals, or around construction openings or woodpiles. Indoor nests are in dark, undisturbed places such as under desks or furniture or in a basement. The spider frequently hangs upside down near the center of its web and waits for insects to blunder in and get stuck. Then, before the insect can extricate itself, the spider rushes over to envenomate its prey and wrap it in silk. To feed, the spider's mouth pulses digestive juices over the prey, which liquifies, which the spider internalizes by capillary action, sucking the slurry into its mouth. Their prey consists of small insects such as flies, mosquitoes, grasshoppers, beetles, and caterpillars. If the spider perceives a threat, it quickly lets itself down to the ground on a safety line of silk.

As with other web-weavers, these spiders have very poor eyesight and depend on vibrations reaching them through their webs to find trapped prey or warn them of larger threats. When a widow spider is trapped, it is unlikely to bite, preferring to play dead or flick silk at the potential threat; bites occur when they cannot escape. Many injuries to humans are due to defensive bites delivered when a spider gets unintentionally squeezed or pinched. The blue mud dauber species, *Chalybion californicum*, is a wasp that, in western North America, is the primary predator of black widow spiders.

Southern Black Widow Spider

Latrodectus mactans

Description: The body length (excluding legs) of the mature female is 8–13 mm (0.31–0.51 in), and 3–6 mm (0.12–0.24 in) for males. Legs are long in proportion to body. Females are shiny and black in color, with a red marking in the shape of an hourglass on the ventral underside of her very rounded abdomen. There is much variation in female size, particularly in egg-carrying females. The abdomen of a gravid female can be more than 1.25 cm (0.5 in) in diameter. Many female widows also have an orange or red patch just above the spinnerets on the top of the abdomen. Juveniles have a distinctly different appearance from the adults; the abdomen is grayish to black with white stripes running across it and is spotted with yellow and orange. Males are either purple, or closer to the appearance of the juveniles in color.



Web Description: It is a three-dimensional chaotic cobweb of exceptionally strong and very sticky silk.

Range: The southern widow is primarily found in, and endemic to, the southeastern United States, ranging as far north as Ohio and as far west as Texas.

Diet: A variety of insects, with a preference for fire ants if extant, but they also feed on woodlice, diplopods, and chilopods when they are young, and occasionally other arachnids**.**

Toxicology: Although the reputation of these spiders is notorious and their venom does affect humans, only mature females are capable of envenomation in humans. The venom injected by the female black widow is known as alpha-latrotoxin which binds to receptors at the neuromuscular motor end plate of both sympathetic and parasympathetic nerves, resulting in increased synaptic concentration of catecholamines. The symptoms are caused by lymphatic absorption and vascular dissemination of the neurotoxin. Deaths in healthy adults from *Latrodectus* bites are

exceedingly rare, with no deaths despite two thousand bites yearly, and studies within the past several decades have been unable to confirm any fatalities from the Southern Black widow.

Cool Facts: The females can live for up to three years, while a male's lifespan is about three to four months. The female may eat the male after mating.

The brown widow can compete for territory with, and ultimately displacing black widows in areas where they occur together, including predation on black widows.

Western Black Widow Spider

Latrodectus hesperus

Description: The female's body is 14–16 mm (0.5 in) in length and is black, often with an hourglass-shaped red mark on the lower abdomen. This "hourglass" mark can be yellow, and on rare occasions, white. The male of the species is around half this length and generally a tan color with lighter striping on the abdomen. The population was previously described as a subspecies of *L. mactans* and it is closely related to the northern species *L. variolus*.

Web Description: It is a three-dimensional chaotic cobweb of exceptionally strong and very sticky silk.

Range: The western widow can be found in western regions of North America. In Canada it can be found from British Columbia to Manitoba.

Diet: Darkling beetles, weevils, and ground beetles, as well as ants, wasps, and bumblebees.

Toxicology: Although the reputation of these spiders is notorious and their venom does affect humans, only mature females are capable of envenomation in humans. The venom injected by the female black widow is known as alpha-latrotoxin which binds to receptors at the neuromuscular motor end plate of both sympathetic and parasympathetic nerves, resulting in increased synaptic concentration of catecholamines. The symptoms are caused by lymphatic absorption and vascular dissemination of the neurotoxin. Deaths in humans have been recorded in the 1920's before antivemons were created.

Cool Facts: Juveniles and female adults can eject a chunk of viscid silk toward potential predators. While this silk is not toxic, its mechanical irritation can thwart most predators. adult males are unable to produce this defensive silk, presumably because they need to conserve energy for reproduction during their relatively short life span.

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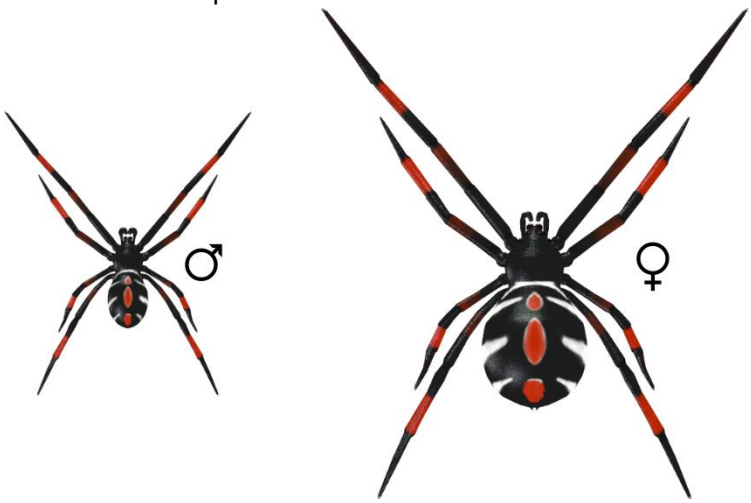
Northern Black Widow Spider

Latrodectus variolus

Description: The female's body is 9–11 mm (0.5 inches) in length. Males are approximately half the size of females, 4-5 mm (0.25 inches) The distinctive “hour glass” marking on the underside of the abdomen is incomplete or split in the middle. Northern widows also have a series of red spots along the dorsal mid-line of the abdomen, and many have a series of lateral white stripes on the abdomen.



Web Description: The web is an irregular mesh of strands in which the spider hangs in an inverted position.

Range: In North America, the species is commonly found in Middle Atlantic states (New Jersey, Delaware, Maryland). During the April–May mating season, it can travel north along the coast as far as Massachusetts. It is also found in Connecticut in the late summer, and rarely, in southern Ontario and southern Quebec, Michigan, and at least as far northwest as parts of Wisconsin. Outdoors, they are found in old stumps, hollow logs, under fallen fence posts, in abandoned animal burrows or piles of brush, and in the corners of sheds and crawlspaces.

Diet: Beetles, weevils, as well as flies, ants, wasps, and bumblebees.

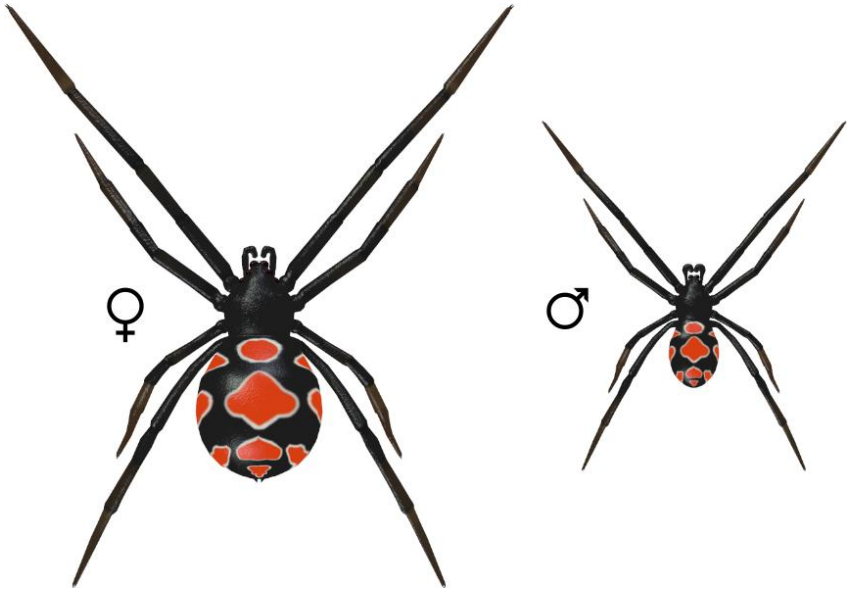
Toxicology: A bite may cause latrodectism, and requires medical attention in the case of increasingly severe discomfort or spreading local redness accompanied by severe pain. If a human is bitten by a black widow spider it typically won't be deadly unless the black widow bites an infant or the elderly. For everyone else, some of the symptoms may include body aches, severe pain, fever, inflammation, nausea, and vomiting, and this could last up to a week. Unlike for the related Western and Southern widows, as of 2015 no antivenom was available.

Cool Facts: Surprisingly, as common as this spider is, black widow bites are infrequent because the spider is actually very timid and prefers fleeing when disturbed. That’s a good thing because the venom of a widow spider is 15 times more toxic than that of rattlesnakes.

European Black Widow Spider

Latrodectus tredecimguttatus

Description: The female's body is 7–15 mm (0.28–0.59 in), while the male is smaller and reaches 4–7 mm (0.16–0.28 in) in length. It is black in color, similar to most other widow species, and is identified by the thirteen spots which are found on its dorsal abdomen (the species name is Latin for "with thirteen spots"). These spots are usually red in color, but may also be yellow or orange. The Mediterranean widow primarily lives in steppes and other grasslands, and can be a significant problem in areas where grain is harvested by hand. The female of the species has a body length of about 7–15 mm (0.28–0.59 in), while the male is smaller and reaches 4–7 mm (0.16–0.28 in) at best.



Web Description: It is a three-dimensional chaotic cobweb of exceptionally strong and very sticky silk.

Range: It is commonly found throughout the Mediterranean region, ranging from southern Iberia to southwest and central Asia. It primarily lives in steppes and other grasslands, and can be a significant problem in areas where grain is harvested by hand.

Diet: Beetles, weevils, as well as ants, flies, wasps, and bumblebees.

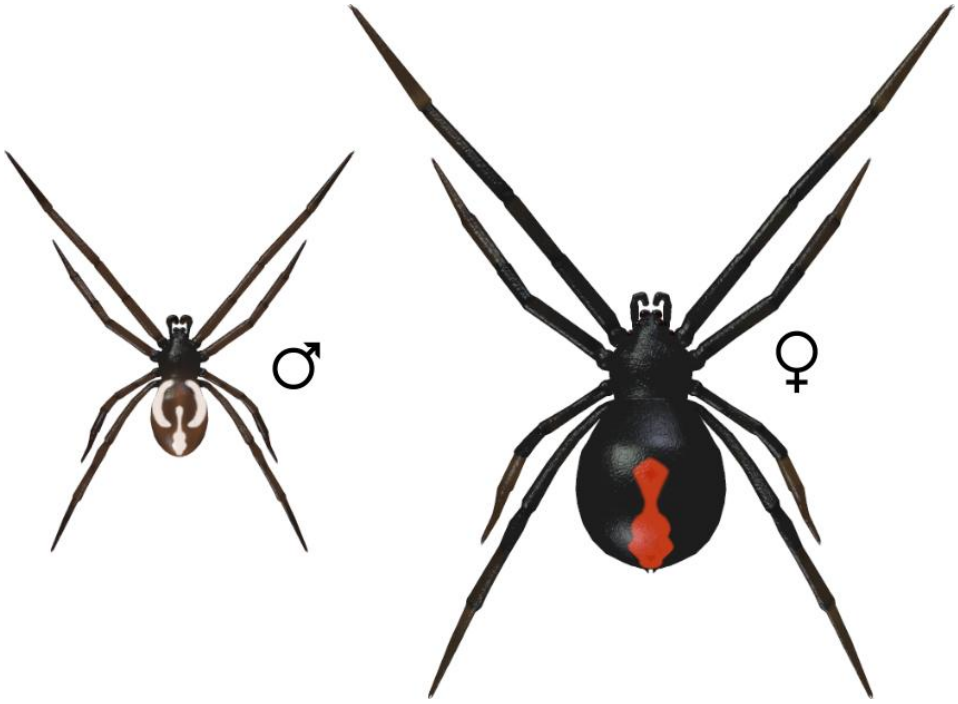
Toxicology: Only the female spider's bite is dangerous (either for humans or cattle) as the male cannot penetrate the relatively thick epidermis. It has a painful bite, but is rarely fatal.

Cool Facts: It is also known as the Mediterranean Black Widow.

Redback Spider or Australian Black Widow

Latrodectus hasselti

Description: The adult female is easily recognized by its spherical black body with a prominent red stripe on the upper side of her abdomen and an hourglass-shaped red/orange streak on the underside. Females usually have a body length of about 10 mm (0.4 in), while the male is much smaller, being only 3–4 mm (0.12–0.16 in) long.



Web Description: The web is an irregular-looking tangle of fine but strong silk. Although the threads seem random, they are strategically placed for support and entrapment of prey. The rear portion of the web forms a funnel-like retreat area where the spider and egg sacs are found. This area has vertical, sticky catching threads that run to ground attachments. The vertical strands act as trip wires to initially alert the spider to the presence of prey or threats.

Range: It was originally found in southern Australia and the adjacent western Australian deserts, but now found throughout Australia, Southeast Asia and New Zealand, with colonies elsewhere outside Australia. It is found in a warm sheltered locations, commonly near or inside human residences.

Diet: Insects, spiders and small vertebrates. Lizards and small snakes have also been caught.

Toxicology: The venom of the redback spider is thought to be similar to that of the other Latrodectus spiders. It contains a complex mixture of cellular constituents, enzymes and a number of high-molecular-weight toxins, including insect toxins and a vertebrate neurotoxin called alpha-latrotoxin, which causes intense pain in humans. Redback antivenom was developed by Commonwealth Serum Laboratories, then a government body involved with discovering antivenoms for many venomous Australian creatures.

Cool Facts: It is also known as the Australian black widow. It is mainly nocturna. It kills its prey by injecting a complex venom through its two fangs when it bites, before wrapping

them in silk and sucking out the liquefied insides. Often, it first squirts its victim with what resembles 'superglue' from its spinnerets, immobilizing the prey by sticking the victim's limbs and appendages to its own body. The redback spider then trusses the victim with silk. Once its prey is restrained, it is bitten repeatedly on the head, body and leg segments and is then hauled back to the redback spider's retreat. Sometimes a potentially dangerous victim can be left to struggle for hours until it is exhausted enough to approach safely. Male spiders and spiderlings often live on the periphery of the female spiders' web and steal leftovers. The redback is one of a number of arachnids that usually display sexual cannibalism while mating.

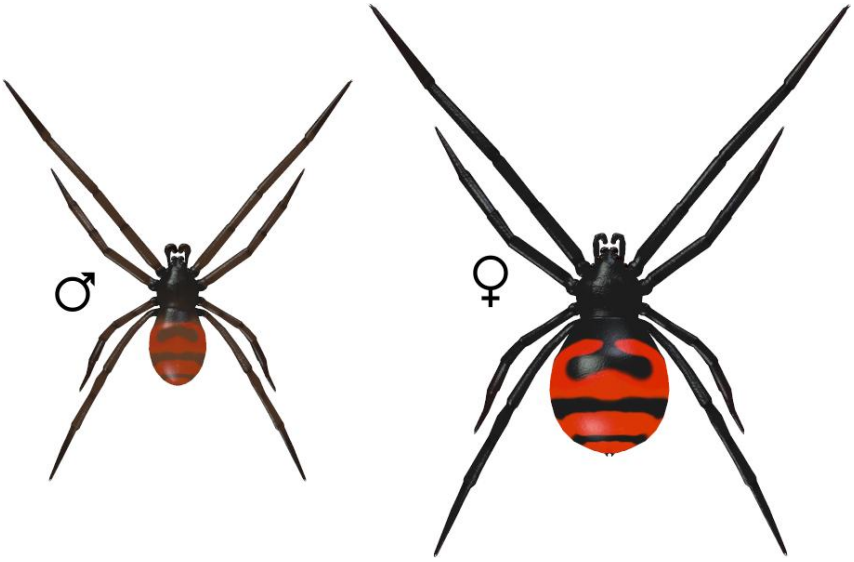
Other species of spider and parasitoid wasps prey on this species.

Cultural Impacts: Indigenous Australians in New South Wales mixed the spiders' bodies with the venom of snakes and pine tree gum to form a broth used to coat spear tips. Slim Newton drew popular attention to redbacks with his song "The Redback on the Toilet Seat", which won the Golden Guitar at the first Country Music Awards of Australia in 1973. In 2006, a redback spider postage stamp was designed as part of a "Dangerous Australians" stamp series, but was withheld from general circulation by Australia Post due to concerns that the realistic depiction would scare people opening their letter boxes.

Araña del trigo (South American Black Widow)

Latrodectus curacaviensis

Description: Adult female are larger than males, growing up to 11–17 mm, with their body and legs black and red. Males are much smaller, known by their long legs, and white or brown color. They have a distinct widow-type mark; a black diamond shape and red triangles in a square.



Web Description: The web is an irregular-looking tangle of fine but strong silk. Although the threads seem random, they are strategically placed for support and entrapment of prey. The rear portion of the web forms a funnel-like retreat area where the spider and egg sacs are found. This area has vertical, sticky catching threads that run to ground attachments. The vertical strands act as trip wires to initially alert the spider to the presence of prey or threats.

Range: It has been reported in the Lesser Antilles and South America. It is usually found under logs, in sheds, stone fireplaces, near trash and debris.

Diet: Insects, spiders and small vertebrates.

Toxicology: The venom contains excitatory neurotoxins (alpha-latrotoxins). Bites usually deliver only small amounts of venom, which may result in dangerous symptoms mostly in children, old people and people with cardiovascular and respiratory problems. Reported symptoms include intense local pain. Systemic symptoms include sweating, rapid breathing, increased heart rate, eyelids swelling, salivation, rigid and painful abdominal muscles, nausea, vomits and impaired sight.

Cool Facts: It is also known as the South American Black Widow.

Special Thanks to:

.. to my beta testers, Alisa and FlintHawk

Sources:

Wikipedia (https://www.wikipedia.org/)
Bug Guide (https://bugguide.net/)

Other Resources:

- **Nature's Wonders Spiders of the World, Volume 1**. This set includes six spider species including the Brown Recluse, the Cellar Spider, the Missing Sector Weaver, the European Garden Spider, the Green Lynx Spider and the Carolina Wolf Spider.
- **Nature's Wonders Spider Webs**. A prop set which includes numerous webs with morphs, along with captured prey and egg sacks.
- **Nature's Wonders Cicadas.** This set includes cicadas that could be used as prey items for the spiders.
- **Nature's Wonders Giant Moths.** This set includes moths that could be used as prey items for the spiders.
- **Nature's Wonders Bees.** This set includes bees that could be used as prey items or aggressors for the spiders.
- **Nature's Wonders Ants.** This set includes ants that could be used as prey items or aggressors for the spiders.

Useful Content by Other Vendors:

- **Cobwebs Toolbox for DS Iray** by Christophe3D. A good spider web set available through Renderosity. For Poser users, you can export the webs (.obj) in DAZ Studio for use in Poser.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