



# Silk Investigation

Spider silk is an incredible substance. Stronger than steel but pliable as soft cotton, it can stretch like a rubber band and snap back to its original size without breaking! Be an arachnologist (a spider scientist) and investigate this amazing material found all around us. What types of spider silk can you find?

## Materials

Pencil  
Photos of spider silk (pages 3-6)  
Photos of web types (pages 7-9)  
Paper to record observations  
Camera (optional)



## Directions

1. **Observe** the close-up photos of spider silk from 2 different spiders on pages 3-6. **Think about** the following questions and **write down** your observations.
  - a. Examine the photo of the jumping spider silk and molt.  
*What does the color and texture look like?*
  - b. Examine the photo of the fishing spider silk and egg case.  
*What does the color and texture look like?*  
*Can you find any baby spiders?*
  - c. *Which silk looks stickier?* Spiders make different types of silk.  
Sticky silk can capture prey.  
*Why would a spider want silk that isn't sticky?*
2. **Look** at the 5 examples of web types on pages 7-9. **Think about** the following questions and **write down** your observations. *Have you seen any webs that look like these before? Where have you found spiders or spiderwebs? What similarities and differences do you notice about the webs on pages 7-9?*

### Styles of webs pictured on pages 7-9

- Sheet: a flat web often pulled downward at a few anchor points.
  - Tangle: there is organization in the seeming chaos of this web.
  - Tube: a tunnel or socklike web structure for the spider to retreat with signal thread around the entrance. These webs are often found in cracks or crevices of buildings.
  - Orb: Using a central point the silk has a circular, radial pattern extending outward.
  - Trapdoor: a burrow in the ground lined with silk. A door to cover the burrow is often found nearby.
3. **Explore**, *with an adult's permission*, the area around your house, street, or local park for spiderwebs. *How many different styles of webs can you find?*
4. Challenge: **Draw** the webs or take pictures of them. *With an adult's permission*, **upload photos** of spiders to [iNaturalist](#) or [Seek](#) apps to find out more about them and share with the scientific community.

## The Science of Silk

Spiders evolved to spin silk as an elaborate hunting strategy. Inside the spider's abdomen different glands create different silks: sticky and non-sticky strands, silk to keep their eggs safe, and silk to escape predators. To make silk, spiders use their internal organ, the silk gland. Silk starts as a liquid inside the gland and solidifies as it exits the spider's spinneret.

### Some uses of silk

- Swathing silk can wrap up prey or egg sacs to keep them safe.
- Dry strands are used for web scaffolding so spiders can climb through their web without getting stuck.
- Sticky droplets of silk are added to webs to ensnare prey.
- Cribellate or fuzzy silk isn't sticky but latches on like hooks to the exoskeleton of prey.
- Ultraviolet (UV) reflective strands woven into webs in "x" shapes reflect UV light, deterring birds from flying into their webs.

Further reading:

[Field Guide to the Spiders of California and the Pacific Coast States](#)

## Jumping Spider Silk and Molt







## Fishing Spider Silk and Egg Case







## Sheet Web





## Tangle Web



## Tube Web (*Can you find the spider?*)





## Orb Web



## Trapdoor Burrow with Silk (*Can you find the door?*)

