Charlotte
without a web

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from Southeast Alaska's Natural World

Crab spiders wait motionless on flowers, then use their long front legs to capture insects that land in search of nectar or pollen. This spider has captured a fly after taking on the color of a large-leaved avens in a muskeg.

(Preceding page) Male crab spiders, like the one on top of this yellow female, are many times smaller than females. They hardly eat as adults, except for nectar and an occasional insect.

What's a spider without a web? In Southeast Alaska she might be a crab spider, a remarkable arachnid quite different from the web spider memorialized in the famous children's story by E. B. White.

Crab spiders don't spin webs. Instead the females hide out on flowers and capture unwary insects such as bees and flies that visit blossoms in search of nectar or pollen. Female crab spiders increase their chances of hunting success by changing color to match the yellows or whites of blossoms they are resting on. It's a matter of "All the better to eat you, my dear"—and all the better to keep from being eaten by birds or other predators higher up on the food chain.

We've seen some of these mistresses of disguise on a number of flowers in Southeast, including bunchberry, large-leaved avens, and bog laurel. We set out to learn more about them, and here is some of what we found.

While she's waiting for a meal, a crab spider sits almost motionless with her long front legs extended. When an insect lands on her flower and begins feeding, she reaches out and grasps it with her long legs, then bites it with two sharp fangs at the tip of her jaws. Her fangs not only deliver a venom that kills or paralyzes the insect. They also inject the insect with digestive juices that begin to dissolve its tissues. The spider extracts her meal as a liquid using her stomach's powerful pumping action. This rather unique method of feeding generally leaves the outer shell of the insect intact.

How many eggs a female crab spider will be able to produce in a summer depends on how many insects she can eat and how much weight she can gain. As much as possible, she will eat voraciously.

Meanwhile, male crab spiders—many times smaller than females—devote their three to four weeks of adulthood to looking for and mating with any females they can find. They typically sneak up on their vastly larger partners (for there's a real danger the nearsighted females will mistake them for prey). If the female is not ready to mate, the male will guard her from other males until she is receptive; then, once mating is done, he will move on in search of other receptive females.

Adult male crab spiders hardly eat at all. They live mostly on energy from food they captured before maturity. Finding and guarding females can take a lot of effort, though, and some recent studies have found that male crab spiders sometimes dip into flowers and drink nectar, which would provide considerable energy without the extended effort of capturing prey.

Simon Pollard and fellow researchers propose in the journal *Animal Behavior* that nectar may also provide male spiders with much-needed liquid. All spiders drink rainwater and dew to replace the body fluids they

A recent study in the Journal of Ecology *demonstrated that crab spiders benefit plants by reducing the numbers of plant-damaging insects without affecting pollination success. This spider is hunting on a bunchberry (dwarf dogwood) blossom.*

lose through evaporation. But males lose water faster than females because of their relative size, and they do not gain liquids from consuming insects as females do.

Although crab spiders do not spin webs, they nonetheless make silk, that incredibly strong fibrous protein that spiders extrude from spinnerets on their abdomens. Like

Crab spiders often kill and eat prey much larger than themselves. This spider has secured a bumblebee with silk and is feeding.

many other spiders, crab spiders lay down "draglines" when they move. These lines, which may be fastened at intervals, may serve as safeholds or be used to retrace a spider's path. Apparently male spiders follow lines laid down by other spiders, and this may lead them to females. Once a male reaches a receptive female, he may trap her for mating by wrapping her loosely in silk.

Crab spiders use silk in two other ways: A female's eggs are laid in a sac of silk attached to a plant; the sac will serve as a nursery for the two to three weeks it takes for the eggs to hatch. Later on, like the offspring of the arachnid heroine in E.B. White's story, spiderlings that are ready to strike out in the world spin delicate "parachute lines" of silk and practice what is called "ballooning." Climbing onto a post or branch, an adventuresome youngster faces into the wind, then releases a strand of silk from the end of its abdomen. The silken strand billows out behind the spiderling until it has enough lift to pick the spiderling up, carrying the youngster wherever the wind may blow.

With devices and adaptations like these, who needs a web?