ORB-WEAVING SPIDERS

CLASS : ARACHNIDA (*arachne*=spider)
ORDER : ARANEAE (*arachne*=spider)
Family : Araneidae (*arachne*=spider)

IMPORTANCE All species predaceous web-builders. Important in suppressing pest outbreaks. Able to survive during long periods when prey is scarce. Some people rear egg masses and release them in conifers for home and garden biological control.

DISTRIBUTION Worldwide: 2500 spp. North America: several hundred spp. Canada: 69 spp. (36,81,89)

BIOLOGY Poor vision. Spiral orbs spun on support lines radiating out from centre hub, some with zigzag designs (*Argiope* spp.), may be on vertical, horizontal or slanting plane. Males often spin a web on outer edge of female's web. Sacs full of hundreds of eggs produced by females in fall, attached to plant material nearby. Some species hatch quickly and overwinter as spiderlings. Others overwinter as eggs and hatch the following spring. Immatures make perfect orb webs, older spiders specialize their webs, characteristic of their species. Many eat their web and spin a new one each day at dawn or dusk. Often rest with head down in centre of web, waiting for prey. Some retreat in rolled up leaves near web. May drop to the ground when disturbed.

FOOD SOURCE Small, soft-bodied, jumping or flying insects including aphids, leafhoppers, flies, and springtails. Also grasshoppers and beetles (larger orb-weavers). Orb webs used to catch prey. Web vibrations transmitted to centre hub or to retreat from signal lines. Entangled prey is bitten and injected with digestive enzymes. Prey is spun in silk, carried to centre hub or retreat in corner and sucked dry (Fig. 98). Uneaten remains drop to the ground.

SEASONAL OCCURRENCE :

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
X	X	X	X	X	X	X	X	X	X	X	

MONITORING **Methods** - Berlese funnel, branch beatings, pan trap, pitfall trap, sweep net.
Habitats - Grasses, weedy areas, woods, caves, dark places.

CONSERVATION Avoid destroying webs if possible.
Attractants - Maintain plantings of goldenrod, ragweed. Permanent ground cover will provide spiders with hiding places, protect them from extreme climate and provides plenty of moisture.
Pesticide Toxicities -
If pesticide treatments are required, apply when spiders least active, i.e. past noon.
Toxic : azinphos-methyl, carbaryl, parathion, permethrin, silica aerogel (Drione™).
Safe to Moderate : fenthion (ultra-low volume, ULV) (EC), trichlorfon ULV.
Safe to Low : dimethoate, propoxur, trichlorfon ULV (EC).
Safe : disulfoton, fenthion ULV, sulphur, trichlorfon ULV (50%). (35,39,42,64,77,97)

RECOMMENDED READINGS : 81, 89

ORB-WEAVING SPIDERS

DESCRIPTION

Adults **2-28 mm**. Vary in shape, size, colour. Black, brown, grey or red with lighter coloured marks, legs often banded (Figs. 97 and 99), 8 eyes arranged in 2 horizontal rows, smaller males. Some males equipped with clasping spurs.

Figure 97 - Orb-weaving spider.

Figure 98 - Orb-weaving spider with prey.

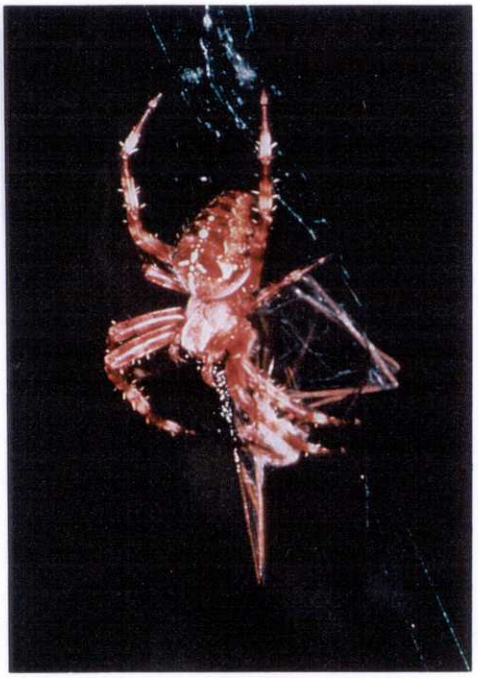

Figure 99 - Orb-weaving spider.

TETRAGNATHID SPIDERS

CLASS : ARACHNIDA (*arachne*=spider)
ORDER : ARANEAE (*arachne*=spider)
Family : Tetragnathidae (*tetra*=four, *gnathos*=jaw, refers to prominent jaws)

IMPORTANCE All species are web-building predators. Consume greater proportion of pests (80%) than beneficials. Important in natural regulation of many pest insects. Able to survive long periods of scarce prey.

DISTRIBUTION Worldwide: 250 spp. North America: 25 spp. Canada: 21 spp. (36,81,89)

BIOLOGY Orb webs made on an angle with 12-20 radii and widely spaced spirals. Sits in centre hub or clings to an upright structure such as a blade of grass. Some sit waiting at side of the web. Drop to ground if disturbed. Long-jawed orb weavers hold on with their short 3rd pair of legs while extending the other long pairs. Young thick-jawed spiders make small orb webs with a small inner spiral and a central hole, between branches of shrubs. Egg sac attached to close plant. Spiderlings spin their own webs.

FOOD SOURCE Leafhoppers, midges, plant bugs, ants, moth larvae, tachinid flies, braconid wasps, springtails and other insects. Digestive enzymes injected into prey to liquefy tissue. Body shell is sucked dry.

SEASONAL OCCURRENCE :

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
X	X	X	X	X	X	X	X				

MONITORING **Methods** - Berlese funnel, branch beatings, pan trap, pitfall trap.
Habitats - Marshy areas. Common in shrubby meadows and woodland edges near water. Thick-jawed spiders are often under debris, in dense vegetation, near water.

CONSERVATION Avoid damaging webs if possible.
Attractants - Maintain plantings of goldenrod, ragweed.
Pesticide Toxicities - If pesticides are required apply when spiders are inactive, i.e. past noon. Organophosphates (excluding azinphos-methyl) are the least harmful insecticides. Chlorinated insecticides are the most toxic.
Toxic : azinphos-methyl, fenvalarate, permethrin silica aerogel (Drione™).
Moderate : carbaryl, parathion.
Safe to Moderate : fenthion (ultra-low volume, ULV) (EC), trichlorfon ULV.
Safe to Low : dimethoate, propoxur, trichlorfon ULV (EC).
Safe : disulfoton, fenthion ULV, sulphur, trichlorfon ULV (50%). (35,39,77)

RECOMMENDED READINGS : 81, 89

TETRAGNATHID SPIDERS

DESCRIPTION

Adults **3-9 mm.** Long, slender, brown, legs (front pair especially) (Fig. 100). Males have large, protruding, powerful jaws. Differ from orb-weavers by lacking female external genitalia. Long-jawed orb-weavers have pale yellow cephalothorax and silver abdomen with dark grey dorsal stripes. Male jaws are 2/3 the length of the cephalothorax, female holds her jaws vertically. Other species have the same general size and colour, but differ in the proportions of jaws and legs.

Eggs Encased in silk cocoon.

Figure 100 - Tetragnathid spider.

CRAB SPIDERS

CLASS : ARACHNIDA (*arachne*=spider)
ORDER : ARANEAE (*arachne*=spider)
Family : Thomisidae and Philodromidae

IMPORTANCE All species predaceous hunters. Do not spin webs to catch prey. Able to feed on insects many times their size

DISTRIBUTION Worldwide: 1800 spp. (mainly Northern Hemisphere).
North America: >200 spp. Canada: 110 spp. (36,81)

BIOLOGY No retreats or overwintering nests. Males may tie down potential mate with silk during courtship. Female guards egg sac until she dies, spiderlings emerge after her death. *Philodromus* spp. attach egg sacs to leaves or bark.

FOOD SOURCE Moths (*Thanatus* spp.), any insects resting on flowers (goldenrod spider), small flies, thrips, springtails, stinging bees, beetles. Catch prey by chance encounters, hunting or waiting in ambush. Some hold their legs stretched out, ready to catch prey. Vision is very good for detecting movement. Prey is bitten, raised overhead and contents sucked dry. Some wait on flowers for bees and flies. Venom is toxic enough to kill much larger insects.

SEASONAL OCCURRENCE :

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
X	X	X	X	X	X	X	X	X	X	X	

MONITORING
Methods - Berlese funnel, branch beatings, malaise trap, pan trap, pitfall trap, sweep net.
Habitats -Resting on flowers (goldenrod spiders) or other vegetation (*Misumeriops celes*, *M. asperatus*, and *Thanatus* spp.), in and under bark (*Coriarachne* spp.), under rocks (*Philodromus* spp.), and on the ground (*Xystirus*, inconspicuous crab spider), in orchards, forests, grasslands, gardens or on daisies, goldenrod and other white or yellow flowers.

CONSERVATION
If pesticides are required apply when spiders are inactive, i.e. past noon.
Pesticide Toxicities -
High : permethrin. (35)

RECOMMENDED READINGS : 81, 89

CRAB SPIDERS

DESCRIPTION

Adults **1-11 mm.** Hold legs crab-like (as common name suggests), able to move forward, backward and sideways. Flattened body, either short and broad (Thomisidae) or elongate (Philodromidae). 8 small eyes on raised bumps in 2 backward curved rows of 4 eyes each. Legs may be long and slender with hairy tufts, 2nd pair heavier and longer (Figs. 101-103). Females much larger than males which have longer legs and smaller jaws. Well-camouflaged. Goldenrod spider (flower spider, red-spotted crab spider) yellowish-white with crimson marks between eyes. Females have pale legs, male cephalothorax is dark reddish-brown with white spot in center and in front of eyes. White abdomen with 2 red bands, male has 2 pairs of reddish-brown forelegs, 2 pairs of yellow hind legs. Colour can change to yellow for camouflage on daisies and goldenrod. *Xysticus* spp. dull brown, resemble their background, may be sexually dimorphic. *Coriarachne* spp. extremely flat for hiding under bark. *Tibellus* spp. resemble long-jawed orb weavers especially when they stretch out in wait for prey. Inconspicuous crab spiders small, with larger female and male with pale abdominal tip.

Eggs May be inside silken sac for protection (goldenrod spider), egg sac may be flattened and attached to leaf, twig or rock (*Philodromus* spp.).

Figure 101 - Crab spider.

Figure 102 - Thomisid spider.

Figure 103 - Crab spider.

WOLF SPIDERS

CLASS : ARACHNIDA (*arachne*=spider)
ORDER : ARANEAE (*arachne*=spider)
Family : Lycosidae (*lykos*=wolf)

IMPORTANCE All species active hunters. Do not spin webs to catch prey. Especially valuable to farmers and gardeners.

DISTRIBUTION World: 1500-2000 spp. North America: >200 spp. Canada: 90 spp. Amongst most common spiders on ground. Also at high altitudes and in the Arctic. (36,81,89)

BIOLOGY Daytime hunters, some also at night in warm climates. Only 1 genus spins web. Dig burrows in ground or under rocks, some have no retreat. Males court females by waving their pedipalps. Females produce large egg sacs which are stuck to the spinnerets. If removed, they will pick up something else to replace it. Egg sac is dragged behind until the spiderlings hatch. Spiderlings carried around until maturity. Good vision. The thin-legged wolf spider female spins a lens-shaped oval cocoon and drags it around. It is green at first, turning dirty gray with time. She carries spiderlings around on her back. Do not build a shelter. Hunt over a limited territory. Bask in the sun.

FOOD SOURCE Aphids, leafhoppers, springtails, flies, grasshoppers, beetles and other insects. Inject prey with digestive fluids and suck the insect dry.

SEASONAL OCCURRENCE (Adults) :

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
X	X	X	X	X	X	X	X	X	X	X	

MONITORING
Methods - Berlese funnel, pan trap, pitfall trap. Can also be lured from burrow by inserting straw or piece of grass.
Habitats - Common running on ground, over rocks, up plants or at rest under stones in sandy areas, open fields and grassy fields.

CONSERVATION If pesticides are required apply when inactive, i.e. past noon.
Pesticide Toxicities -
Safe or Low : *Bacillus thuringiensis* (BTB-202™). (45,77)

RECOMMENDED READINGS : 81, 89

WOLF SPIDERS

DESCRIPTION

Adults **3-35 mm.** Dark, mottled, well-camouflaged amongst dead leaves and rocks. Characteristic eye pattern: 4 small eyes in 1st row, 2 large in 2nd and 2 small in 3rd, long legs (Figs. 104-106). The thin-legged wolf spider is slender and hairy, may be striped lengthwise, with long spiny legs, prominent upper row of large eyes. The private wolf spider has a V-shaped mark on its back. Less common *Arctosa* spp. may change colour to match their background.

Figure 104 - Wolf spider.

Figure 105 - Wolf spider.

Figure 106 - Wolf spider.

JUMPING SPIDERS

CLASS : ARACHNIDA (*arachne*=spider)
ORDER : ARANEAE (*arachne*=spider)
Family : Salticidae (*saltare*=to leap, refers to jumping ability)

IMPORTANCE Excellent hunters known. Stalk and pounce on prey.

DISTRIBUTION Worldwide: >2800 spp. (mainly tropical). North America: 300 spp. Canada: 100 spp. (36,81)

BIOLOGY Diurnal, especially active in warm sun. Stay in small silk shelters under rocks or in crevices during cool temperatures and at night. Good jumpers (able to cover distance many times their body length), secure silk thread before taking off. Male reaches sexual maturity earlier. When he finds female wrapped in silk awaiting final molt, waits for her to emerge to mate with her. Courting behaviour includes waving brightly coloured legs, jaws and abdomen, wiggling the abdomen, and hopping. Excited males may perform mating displays for their own reflections. If accepted, he spins a rectangular web for sperm transfer. After mating she spins a silk cell in which eggs are laid and fertilized, guarding them until they hatch. More curious than timid, retreat when disturbed.

FOOD SOURCE Beetles, treehoppers, cockroaches and other insects. Zebra spiders: flies, moths, ants, beetles. Excellent vision (can see colour) used to stalk prey until few inches away. Jump, and grab prey with front legs, using fangs to stab prey and inject venom, and teeth to chew.

SEASONAL OCCURRENCE :

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	X	X	X	X	X	X	X	X	X	X	

MONITORING
Methods - Berlese funnel, pan trap, pitfall trap, sweep net.
Habitats - In buildings, on vegetation or under stones in meadows and woods. Some species at high altitudes (up to 23,000 ft in Himalayas).

CONSERVATION
If pesticides are required apply when spiders inactive, i.e. past noon.
Pesticide Toxicities -
High : permethrin. (35)

RECOMMENDED READINGS : 81, 89

JUMPING SPIDERS

DESCRIPTION

Adults **3-15 mm.** Small to medium, hairy, attractive, brightly coloured with iridescent scales, green, red or gray with red, white and black marks. Short legs, jumping power provided by slightly modified 4th pair. 8 eyes (including 2 which are large) arranged in 3 rows provide excellent binocular vision, able to change eye colour. *Phidippus* spp.: large, heavy bodies. Metaphid jumping spiders : 3-6 mm, brownish-yellow to gray, males have a white band on sides of abdomen, both sexes have spots, bands or chevrons (Fig. 107). Zebra jumping spider: black with white abdominal bands, strong front legs, larger females (Fig. 108).

Figure 107 - Metaphid jumping spider.

Figure 108 - Zebra jumping spider.