Backyard Beneficial Insects in New Mexico

COOPERATIVE EXTENSION SERVICE • GUIDE H-172

Ashley B. Bennett
Former Small Urban Farm IPM Specialist
Department of Extension Plant Sciences

Miranda L. Kersten
Senior Program Specialist
Agricultural Science Center at Los Lunas

NM STATE
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New Mexico State University
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INTRODUCTION

This guide will help you learn how to identify beneficial insects with identification tips and photos of beneficial insects found in New Mexico. Beneficial insects include pollinators and natural enemies of pest insects, which include insects that prey upon other insects and insects that parasitize other insects.

To find beneficial insects in your backyard, observe floral resources that are available. Pollinators and many natural enemies feed on pollen and nectar. Other natural enemies may lay in wait near flowers for their prey to approach. For more information on how to use floral resources to encourage populations of beneficial insects, see NMSU Extension Guide H-169, *Using Insectary Plants to Attract and Sustain Beneficial Insects for Biological Pest Control* (https://aces.nmsu.edu/pubs/_h/H169.pdf).

Being able to identify beneficial insects in your backyard or garden can help you to distinguish them from pests, provide you with the knowledge to monitor beneficial insect populations in your backyard, and assist with your integrated pest management (IPM) program. For more information on this last topic, see NMSU Extension Circular 655, *Integrated Pest Management (IPM) for Home Gardeners* (https://aces.nmsu.edu/pubs/_circulars/CR655.pdf).

Figure 1 shows the basic parts of an insect body. Certain terms are defined in the glossary near the end of this publication.

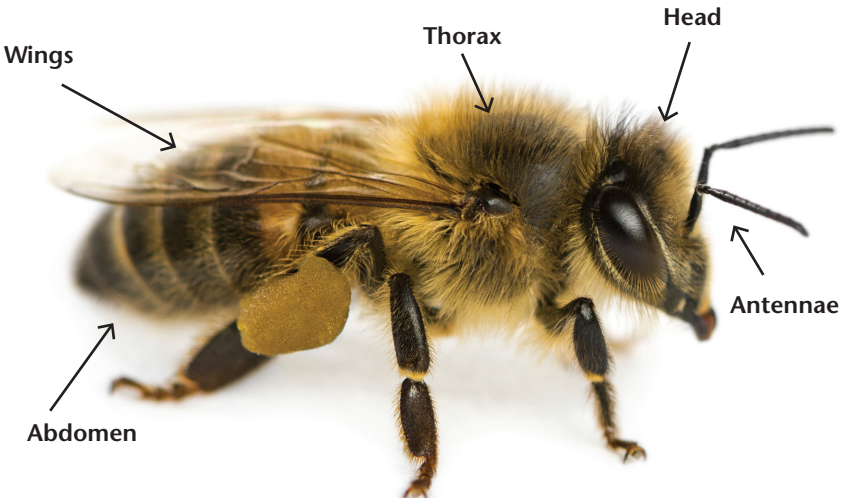

Figure 1. **Basic parts of an insect body. (Photo by © Isselee, Dreamstime.com.)**

POLLINATORS

Bumble Bees (Figures 2A–2D)

Order: Hymenoptera
Family: Apidae

Identification Tips	
Head	• Hairy and variable in color but usually black or black and yellow • Large eyes, long antennae
Body	• Robust large bee; body length for workers is 8–18 mm (0.3–0.7 inch) • Body is very hairy • Color pattern typically yellow and black, sometimes with orange bands on abdomen • Color pattern can often distinguish species
Wings	2 pairs, 4 wings total
Active	Early spring (larger individuals) to late fall
Other	Generalist; visits a wide variety of flowers
Key ID Tip	Large hairy bees with typically yellow and black hair

Figure 2A. **Bumble bee.**

Figure 2B. **Bumble bee.**

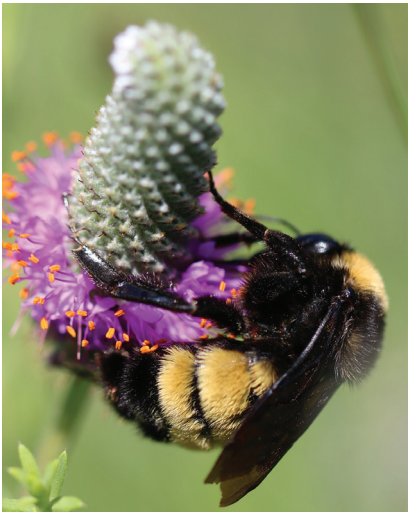

Figure 2C. **Bumble bee.**

Figure 2D. **Bumble bee.**

Honey Bees (Figures 3A–3D)
Order: Hymenoptera
Family: Apidae

Identification Tips	
Head	• Hairy and light tan in color • Large hairy eyes, long antennae
Body	• Medium to large bee around 10–15 mm (0.4–0.6 inch) in length • Thorax is hairy and amber in color; abdomen is not fuzzy but has short light-colored hair bands • Banding on abdomen is light tan to dark brown • Abdomen significantly less hairy than in bumble bees and lacks any yellow coloring
Wings	• 2 pairs, 4 wings total • Long curved cell at tip of forewing (Figure 3A)
Active	Generally early spring to very late fall
Other	Generalist; visits a wide variety of flowers
Key ID Tip	Hairy head and thorax; light tan to dark brown banding on abdomen

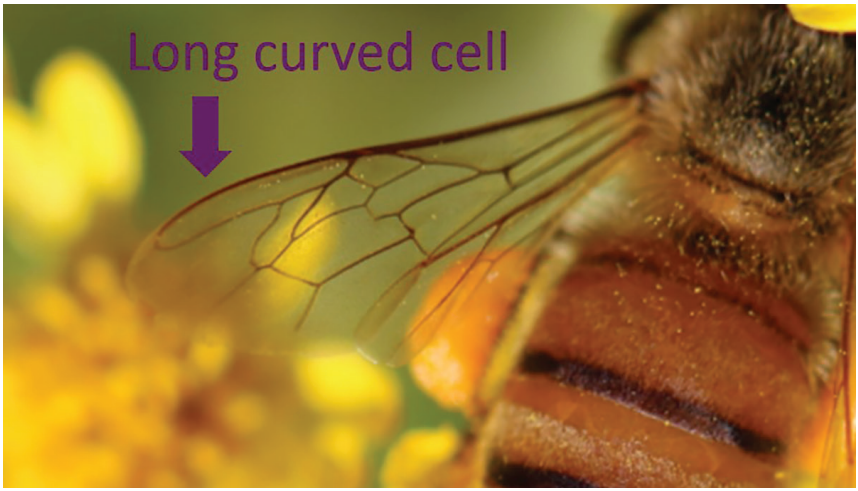

Figure 3A. **Honey bee wing showing distinct long curved cell at wing tip.**

Figure 3B. **Honey bee.**

Figure 3C. **Honey bee.**

Figure 3D. **The abdomen of a honey bee has short white hairs in bands and can vary from light tan to dark brown in color.**

Honey Bee vs. Bumble Bee (Figures 4A and 4B)

Identification Tips	
Honey Bee	**Bumble Bee**
Medium- to large-sized bee	Large robust bee
Banded abdomen that is tan to amber	Typically yellow and black hair patterns
Abdomen less hairy than bumble bees	Very hairy bodies, including abdomen
Hairy eyes	Banding pattern on abdomen will vary

Figure 4A. **Honey bee.**

Figure 4B. **Bumble bee.**

Metallic Green Sweat Bees (Figures 5A–5D)
Order: Hymenoptera
Family: Halictidae

Identification Tips	
Head	• Few hairs • Green to blue-green
Body	• Small bees 7–11 mm (0.25–0.4 inch) in length • Thorax is bright green to blue-green • Abdomen can be solid green or striped (e.g., black with the white stripes of hairs or yellow and tan with yellow stripes)
Wings	• 2 pairs, 4 wings total • Strong curved vein at the wing base (Figure 5D)
Active	Spring to fall, depending on species
Other	Generalist; visits a wide variety of flowers
Key ID Tip	Metallic green in color

Figure 5A.
Green bee with solid green abdomen.

Figure 5B.
Green bee with striped abdomen.

Figure 5C.
A green bee covered in pollen.

Figure 5D.
The curved basal wing vein of Halictidae bees.

Small Bees (Figures 6A–6F)
Order: Hymenoptera
Families: Andrenidae, Colletidae, Halictidae

Identification Tips	
Head	• No hairs to moderately hairy • Black to dark metallic • If black and no hairs, then face often has two yellowish markings beside each eye, or a solid yellow face
Body	• Small bees 2–10 mm (0.08–0.4 inch) in length • Thorax is black or dark metallic (e.g., green, blue, copper) • Abdomen can be solid black, brown, or banded • If banded, often black and white or tan and brown
Wings	2 pairs, 4 wings total
Active	Spring to fall, depending on species
Other	• Generalist; visits a variety of usually disk-shaped flowers • There are quite a few specialists in the genera *Andrena*, *Colletes*, and *Calliopsis*
Key ID Tip	Small and metallic, or small and black with yellow on face

Figure 6A.
Small bee (family Halictidae).

Figure 6B.
Hylaeus **(family Colletidae) bees can be distinguished by the two yellowish marking on their face.**

Figure 6C.
***Lasioglossum* sp.**
(family Halictidae).

Figure 6D.
***Halictus* sp.**
(family Halictidae).

Figure 6E.
A *Hylaeus* sp. nectars on a milkweed flower (*Asclepias* sp.).

Figure 6F.
A bee from the family Andrenidae nectars on a milkweed flower.

Medium to Large Bees (Figures 7A–7I)

Order: Hymenoptera
Families: Andrenidae, Apidae, Halictidae, Megachilidae

Identification Tips	
Head	• Moderately hairy to hairy; NOT metallic • Some bees in the group will have very long antennae
Body	• Medium to large bees 11–25 mm (0.4–1 inch) in length • Larger bees are robust in size with thick pollen-carrying hairs on back legs • Some bees carry pollen on the underside of their abdomen • Thorax is typically black with white, tan, or black hairs • Abdomen is typically banded but can be solid • If banded, often black with white bands of hair
Wings	2 pairs, 4 wings total
Active	Early spring to fall, depending on species
Other	Visits disk- and tubular-shaped flowers
Key ID Tip	Pollen-carrying hairs on back legs or underside of abdomen

Figure 7A. Megachile **(family Megachilidae) bees (left) store pollen on the underside of their abdomen.**

Figure 7B. **This *Triepeolus* sp. (family Apidae) is a cleptoparasite. Look for the smiley face on the thorax to help identify this bee.**

Figure 7C. **A long-horned bee (family Apidae, tribe Eucerini) on a coneflower (*Ratibida columnifera*).**

Figure 7D. **A *Megachile* sp. (family Megachilidae) bee visits a blanketflower (*Gaillardia* sp.).**

Figure 7E.
An *Anthophora* sp. (family Apidae) bee visits a coneflower (*Ratibida columnifera*).

Figure 7F.
The dorsal view of a *Megachile* sp. (family Megachilidae) bee.

Figure 7G.
A large bee from the family Apidae covered in pollen.

Figure 7H. **A *Dieunomia* sp. (family Halictidae) bee visits an *Aster* sp. flower.**

Figure 7I. **Carpenter bees (*Xylocopa* spp., family Apidae) are large bees that may be confused with bumble bees; however, carpenter bees carry pollen on scopa. (Photo by Brandt Magic.)**

Large Bee vs. Bumble Bee (Figures 8A and 8B)

Identification Tips	
Large Bee	**Bumble Bee**
Pollen carried between hairs on legs (scopa)	Pollen carried in a ball on the pollen basket

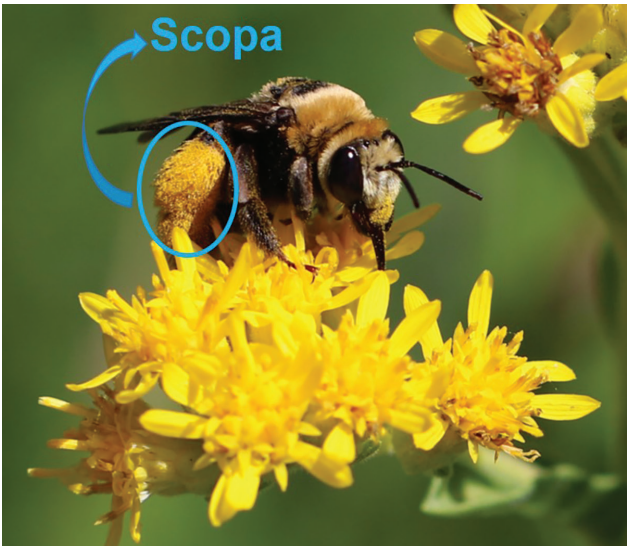

Figure 8A. **This large bee (family Apidae) carries pollen on scopa on its hind legs.**

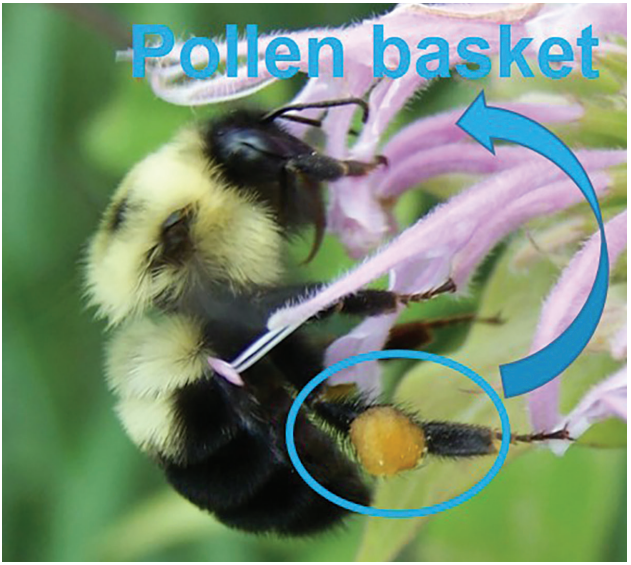

Figure 8B. **Bumble bees (*Bombus* spp., family Apidae) carry their pollen mixed with nectar on their hind legs in a pollen basket. They do not have scopa.**

Monarch Butterfly (Figures 9A–9C) and Monarch Mimics (Figures 9D–9G)
Order: Lepidoptera
Family: Nymphalidae

Identification Tips	
Wings	• Black and orange in color with a wingspan of around 88–127 mm (3.5–5 inches) • Black border on edge of hindwing with two rows of white spots • Large white spots on the end of forewing • Black wing veins
Mimics (Figures 9D–9G)	• Viceroy butterfly - Very similar color pattern with black wing veins - Black line on lower hindwing differentiates it from monarch butterfly - Often smaller than monarchs with wingspan of 63–76 mm (2.5–3 inches) • Queen butterfly - Often darker rusty orange in color - Black border on edge of hindwing without white spots - Often smaller than monarchs with wingspan of 76–89 mm (3–3.5 inches)
Active	Summer to fall
Other	Adult monarchs visit flowers for nectar. Monarch and queen caterpillars feed only on the leaves of milkweed plants.
Key ID Tips	• White spots on black body • Orange and black wings with white spots within black border of wing edge

Figure 9A. **A female monarch butterfly (*Danaus plexippus*).**

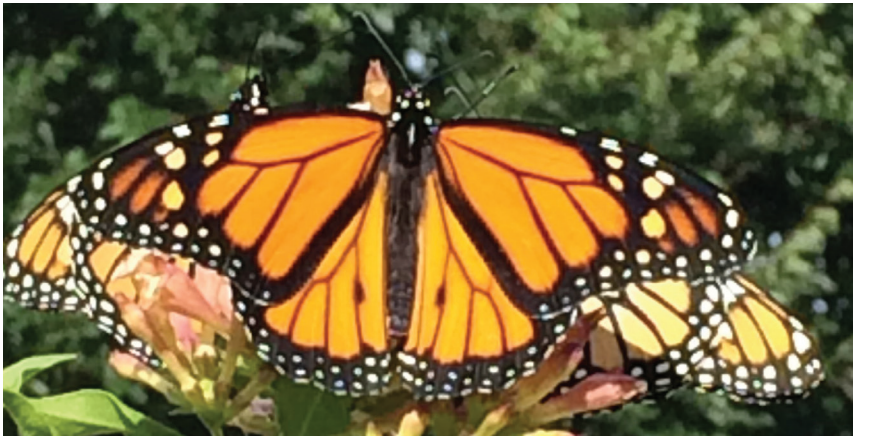

Figure 9B. **Male monarch butterflies can be distinguished from females by the presence of the dark gland on their hind wings.**

Figure 9C. **Monarch caterpillars are milkweed specialists and require milkweed plants to survive.**

Figure 9D. **A male queen butterfly (*Danaus gilippus*) nectars on a flower following its emergence from its chrysalis.**

Figure 9E. **Like monarchs, queen caterpillars feed only on milkweed plants. Queen caterpillars have three sets of filaments, while monarch caterpillars have only two.**

Figures 9F (top) and 9G (bottom). **Viceroy butterflies (*Limenitis archippus*) can be distinguished from monarch butterflies by the black line that runs across the lower hindwing.**

Checkered Beetle (Figures 10A and 10B)

Order: Coleoptera
Family: Cleridae

Identification Tips	
Head	• Rectangular head; clubbed antennae • Head wider than pronotum
Body	• Size ranges from 3–24 mm (0.1–1 inch) • Brightly colored contrasting pattern • Often quite hairy • Pronotum cylindrical and narrower than elytra
Wings	Second pair hidden under elytra
Active	Spring to fall
Prey	Grasshopper eggs, aphids, other small insects
Other	• Adults and larvae are predaceous, but adults will also feed on pollen • Some species are common on flowers • Overwinter in the soil as larvae, pupae, or adults
Key ID Tips	• Bright color pattern • Cylindrical pronotum that is more narrow than head and elytra

Figure 10A. **Adult checkered beetles are predators, but also feed on pollen.**

Figure 10B. **Checkered beetle (family Cleridae).**

Ground Beetle (Figure 11)
Order: Coleoptera
Family: Carabidae

Identification Tips	
Head	Chewing mouthparts
Body	• Oval body 1–60 mm (0.04–2.4 inches) in length • Often dark brown or black; may be iridescent
Wings	Second pair hidden under elytra
Active	Summer to fall
Prey	Caterpillars, grasshoppers, beetles, aphids, flies, snails
Other	• Adults and immatures are predaceous • Adults are often active at night on the soil surface • Larvae feed in the soil on soft-bodied insects • Overwinter in grassy clumps as adults or larvae
Key ID Tips	• Dark colors, often iridescent • Active on the ground at night

Figure 11. **Ground beetles (family Carabidae) may have iridescent bodies, like this fiery searcher (*Calosoma scrutator*), or may be dark brown or black.**

Lady Beetle (Figures 12A–12H)
Order: Coleoptera
Family: Coccinellidae

Identification Tips	
Head	Pronotum larger than head
Body	• Oval to round in shape; around 1–8 mm (0.04–0.3 inch) in length • Body color is red, orange, or gray with black markings • Usually spotted pattern but can be solid
Wings	Hidden under elytra
Active	Spring through fall
Prey	Aphids, scale insects, mites, thrips, insect eggs
Other	• Immature lady beetles have six legs and no wings • Body color of immature stage is black with orange or red markings • Overwinter as adults
Key ID Tips	• Head often concealed by pronotum (except for convergent lady beetle) • Often red/orange in color with black markings • Elytra covers abdomen

Figure 12A. **Convergent lady beetle (*Hippodamia convergens*).**

Figure 12B. **Seven-spotted lady beetle (*Coccinella septempunctata*).**

Figure 12C. **Two-spotted lady beetle (*Adalia bipunctata*).**

Figure 12D. **Twice-stabbed lady beetle (*Chilocorus* sp.).**

Figure 12E. **Multi-colored lady beetle (*Harmonia* sp.).**

Figure 12F.
Ashy gray lady beetle (*Olla v-nigrum*).

Figure 12G.
Parenthesis lady beetle (*Hippodamia parenthesis*).

Figure 12H.
Lady beetle larvae are predaceous.

Two-spotted Melyrid (Figure 13)
Order: Coleoptera
Family: Melyridae

Identification Tips	
Head	Dark green
Body	• Body color is metallic greenish-blue to black; around 7 mm (0.25 inch) in length • Pronotum is red with two black spots • Abdomen extends past the elytra
Wings	Second pair hidden under elytra
Active	Summer
Prey	Insect eggs, aphids, spider mites, caterpillars
Other	• Immature and adult stages are predatory • Overwinter as adults
Key ID Tips	• Two black spots on pronotum • Metallic body that is widest towards end of abdomen

Figure 13. **A two-spotted melyrid (*Collops bipunctatus*) on a golden crownbeard (*Verbesina encelioides*) flower. (Photo by Pamela Wolfe.)**

Robber Fly (Figures 14A–14C)
Order: Diptera
Family: Asilidae

Identification Tips	
Head	• Piercing–sucking mouthparts • Have "bearded" face with long fine hairs covering mouthparts • Large eyes with sunken area between eyes
Body	• Size ranges from 3–50 mm (0.1–2 inches), with average size of 9–15 mm (0.3–0.6 inch) • Long and tapered abdomen that may be brown, gray, or black, or colored to mimic a bumble bee • Legs are long, strong, and used to grab prey
Wings	1 pair, 2 wings total
Active	Summer
Prey	Butterflies, bees, beetles, grasshoppers, leafhoppers, wasps, flies, spiders
Other	• Larval stage lives in the soil and is predaceous on insect larvae • Overwinter in the soil as larvae
Key ID Tip	Large eyes, single pair of wings, long tapering abdomen, long legs

Figure 14A. **A bee-mimicking robber fly (*Mallophora fautrix*) with its bee prey.**

Figure 14B. **A robber fly perches on a plant.**

Figure 14C. **A robber fly showing the tapered abdomen.**

Syrphid Fly (Figures 15A–15D)
Order: Diptera
Family: Syrphidae

Identification Tips	
Head	Large eyes with short antennae
Body	• Body ranges from 8–20 mm (0.3–0.8 inch) in length • Thorax ranges from not hairy to moderately hairy; black to tan in color • Abdomen is yellow, tan, and black and looks similar to a bee
Wings	• 1 pair, 2 wings total • Spurious wing vein does not connect with other wing veins and may be visible in larger species
Active	Spring through fall
Prey	Aphids, scale insects, spider mites, thrips
Other	• Adults are not predaceous and instead visit flowers for nectar and pollen • Immature stage is predaceous • Overwinter in leaf litter or soil as eggs, larvae, or pupae
Key ID Tip	Only have two wings, large eyes, short antenna, are yellow and black in color and often have an iridescent sheen to wings, often seen hovering over plants

Figure 15A. **Syrphid flies often have an iridescent sheen on wings, black and yellow coloring on abdomen, and large eyes.**

Figure 15B.
Syrphid flies have large eyes and short antennae.

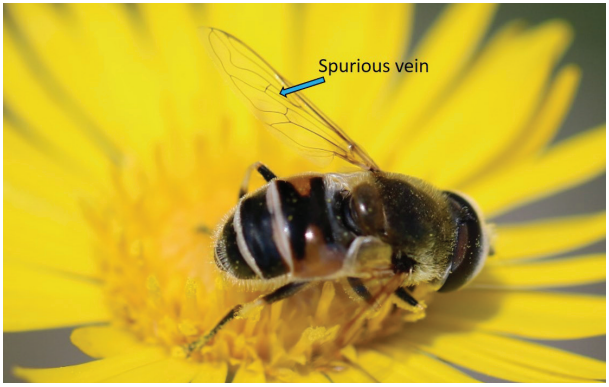

Figure 15C.
The spurious vein in the wing may be visible in larger syrphid flies.

Figure 15D.
A syrphid fly larva crawls between two alyssum (*Lobularia maritima*) flowers.

Tachinid Fly (Figure 16)
Order: Diptera
Family: Tachinidae

Identification Tips	
Head	• Often hairy • Very large eyes
Body	• Colors and size vary by species; 2–20 mm (0.1–0.75 inch) in length • Covered with bristled hairs
Wings	1 pair, 2 wings total
Active	Spring through fall
Prey/Host	Mostly caterpillars, but may also target beetles, grasshoppers, and other insects
Other	• Adults are not predaceous and instead visit flowers for nectar and pollen • Immature stage is predaceous and feeds inside their host (parasitoid) • Overwinters in leaf litter or within host as pupae
Key ID Tip	Resembles a housefly but has more hairs that are thick and bristled

Figure 16. **Tachinid fly (left) and pupal case.**

Assassin and Ambush Bugs (Figures 17A–17E)
Order: Hemiptera
Family: Reduviidae

Identification Tips	
Head	• Piercing–sucking mouthparts called a beak • Small elongated head with small eyes and distinct "neck"
Body	• Oval but narrow body often wider than wings; 5–36 mm (0.2–1.4 inches) in length • Body color is usually brown, gray, or black but can have red or green markings • Front legs often swollen and may have spines • Wheel bugs have a semicircular structure with spines on their thorax
Wings	2 pairs that are membranous with clear tips
Active	Summer
Prey	Aphids, caterpillars, grasshoppers, beetles
Other	• Adults and immatures are predaceous • Wheel bugs are excellent predators of caterpillars • Overwinter in any life stage in leaf litter or under bark
Key ID Tips	• Bottle-like head with distinct neck region behind eyes • Front legs often hairy or spiny

Figure 17A. **A wheel bug sits on a flower. Its beak (mouthpart on an assassin bug) can be seen folded under its head.**

Figure 17B. **A wheel bug sitting on goldenrod (*Solidago* sp.) shows the wings folded on the wider abdomen.**

Figure 17C. **A leafhopper assassin bug lays in wait for prey on a plains coreopsis (*Coreopsis tinctoria*) flower.**

Figure 17D. **The side view of this assassin bug shows the spines on the legs, long beak, and neck.**

Figure 17E. **An ambush bug feeds on a skipper butterfly (family Hesperiidae).**

Beetles vs. True Bugs

Identification Tips	
Beetles (family Coleoptera)	**True Bugs (family Hemiptera)**
Chewing mouthparts	Piercing–sucking mouthparts
Elytra covering second set of wings	Membranous wing tips
Complete metamorphosis	Incomplete metamorphosis

Damsel Bug (Figure 18)
Order: Hemiptera
Family: Nabidae

Identification Tips	
Head	Piercing–sucking mouthparts called a beak
Body	• Slender body; 3–12 mm (0.1–0.5 inch) in length • Light brown in color, long slender legs
Wings	2 pairs, longer than body, brown or tan in color
Active	Summer to fall
Prey	Aphids, small caterpillars, thrips, mites, leafhoppers, leaf beetles, insect eggs
Other	• Adults and immatures are predaceous • Overwinter as adults or eggs in leaf litter
Key ID Tips	• Slender brown body, beak, and long slender legs • Lacks neck region beyond the eyes

Figure 18. **A common damsel bug (*Nabis americoferus*). (Photo by Joseph Berger, Bugwood.org.)**

Minute Pirate Bug (Figure 19)
Order: Hemiptera
Family: Anthocoridae

Identification Tips	
Head	• Cone-shaped with bulging eyes • Segmented antennae • Mouthparts are a beak
Body	• Overall very small and flattened; 2–3 mm (0.1–0.2 inch) in length • Unique black and white triangular color pattern
Wings	• 2 pairs; wings create a black and white "X" • Tip of wing is clear or white and extends beyond abdomen
Active	Late spring to summer
Prey	Thrips, mites, scale insects, aphids, small caterpillars, insect eggs
Other	• Adults and immatures are predaceous • Supplements its diet with pollen and nectar • Overwinter as adults in leaf litter
Key ID Tips	• Small size • Black and white "X" formed by wings

Figure 19. **Minute pirate bugs (*Orius* spp.) can be difficult to see due to their small size.**

Wasp—Large (Figures 20A–20G)
Order: Hymenoptera
Families: Crabronidae, Pompilidae, Scoliidae, Sphecidae, Vespidae

Identification Tips	
Head	• Long segmented antenna • Notched eyes indicate a vespid wasp
Body	• Range in size from 10–50 mm (0.4–2 inches) • Overall NOT hairy; long and thin, narrow at waist • Thorax and abdomen are often all black or black and yellow • Abdomen colors range from yellow to red to black • Legs are long, thin, often with spines, and often not hairy (with exception to Scoliidae)
Wings	• 2 pairs, 4 wings total; often tinted tan or brown in color • Folded wings often indicate a sphecid wasp
Active	Spring to fall
Prey	Wide variety of insects and spiders
Other	Adults and immatures are predaceous; adult wasps will also feed on nectar
Key ID Tips	• Large size, narrow waist, long legs, and body not hairy • Pompilidae are all black with iridescent sheen • Sphecidae often have folded wings and have a collar for pronotum • Vespidae fold wings longitudinally and have notched eyes

Figure 20A. **Large wasp (family Pompilidae).**

Figure 20B. **Large wasp (family Sphecidae).**

Figure 20C. **Large wasp (family Sphecidae).**

Figure 20D. **Large wasp (family Vespidae).**

Figure 20E. **Large wasp (family Scoliidae).**

Figure 20F. **Large wasp (family Scoliidae).**

Figure 20G. **Large wasp (family Vespidae).**

Wasp—Small (Figures 21A–21E)
Order: Hymenoptera
Superfamilies: Chalcidoidea, Cynipoidea, Ichneumonoidea

Identification Tips	
Head	Segmented antennae with moderate-sized eyes
Body	• Overall NOT hairy; range in size from 1–10 mm (0.04–0.4 inch) • Abdomen and thorax dark in color, can be dark metallic • Abdomen rarely with colors such as red or yellow (with exception to Ichneumonidae family, which may have red, yellow, and striped abdomens)
Wings	2 pairs, 4 wings total
Active	Summer
Prey	• Many are host-specific, targeting eggs, larvae, or adults • Insects eggs, aphids, scale insects, caterpillars, flies, leafhoppers, stink bugs, many other insects
Other	Adults visit flowers, while immatures are predaceous on hosts (parasitoid)
Key ID Tip	Often very small, not hairy, long antennae

Figure 21A. **Small wasp (family Ichneumonidae, superfamily Ichneumonoidea).**

Figure 21B. **Small wasp (family Ichneumonidae, superfamily Ichneumonoidea).**

Figure 21C.
Small wasp (family Encyrtidae, superfamily Chalcidoidea).

Figure 21D.
Small wasp (family Eucoilidae, superfamily Cynipoidea).

Figure 21E.
Small wasp (family Ichneumonidae, superfamily Ichneumonoidea).

Praying Mantis (Figures 22A and 22B)
Order: Mantodea
Family: Mantidae

Identification Tips	
Head	Triangular head with very large eyes
Body	• Long body; 50–100 mm (0.5–4 inches) in length • Green to brown in color • Enlarged front legs with spines; raptorial in shape (adapted to grasping prey)
Wings	2 pairs, 4 wings total
Active	Summer
Prey	Aphids, grasshoppers, beetles, bees, wasps, true bugs, butterflies, moths, caterpillars, flies
Other	• Adults and immatures are predaceous • Opportunistic predators, so not great biological control agents • Overwinter as eggs in an egg case • Egg cases are laid on twigs in a mass that is covered by a hardened frothy foam
Key ID Tip	Large size, triangular head with large eyes, elongated pronotum (segment with first pair of legs), spiny raptorial front legs

Figure 22A.
Notice the wings are not fully developed on this mantis, indicating that it is not yet an adult but an immature.

Figure 22B.
A praying mantis egg case laid on a branch.

Green Lacewing (Figures 23A–23D)
Order: Neuroptera
Family: Chrysopidae

Identification Tips	
Head	• Bulging eyes are metallic in color • Long segmented antennae
Body	• Pale green in color • Range in size from 15–25 mm (0.6–1 inch)
Wings	• 2 pairs, 4 wings total • Longer than body; have many veins, causing them to appear lacy
Active	Spring to summer
Prey	Aphids, small caterpillars, thrips, mites, whiteflies, mealybugs, soft-bodied insects
Other	• Adults and immatures are predaceous, but adults will also feed on nectar, pollen, and honeydew • Stalked eggs are oval, white in color, and laid on the underside of leaves • Most overwinter as pupae, but some species will overwinter as adults in leaf litter or dry structures
Key ID Tip	Wings have many veins and fold roof-like over the abdomen

Figure 23A. **Green lacewing adult showing long lacy wings.**

Figure 23B. **Green lacewing adult.**

Figure 23C. **Immature lacewing.**

Figure 23D. **Lacewing eggs hang from the underside of a leaf.**

Spider (Figures 24A-24E)
Order: Araneae
Families: Araneidae, Lycosidae, Salticidae, Thomisidae

Identification Tips	
Head	Small head compared to body, usually with eight eyes
Body	Oval-shaped body with eight legs
Active	Summer
Prey	Beetles, caterpillars, aphids, bees, wasps, butterflies
Other	• Spiders are not insects • Many make webs • Overwinter as adults or eggs in soil or plant material
Key ID Tips	• Two body segments • Small head, usually with eight eyes • Eight legs

Figure 24A. **Orb weaver spider (family Araneidae).**

Figure 24B. **Crab spider (family Thomisidae).**

Figure 24C. **Jumping spiders (family Salticidae) have two large eyes in the bottom center of their heads.**

Figure 24D. **Jumping spider (family Salticidae).**

Figure 24E. **A wolf spider (family Lycosidae) carries its young on its abdomen.**

BEE MIMICS

Many species of flies and wasps may appear visually similar to bees. Here are some quick tips to tell them apart as well as some examples of bee mimics.

Bee vs. Fly (Figures 25A–25E)

Key ID	Bee	Fly
Large eyes, often touching on top	No	**Yes**
Short stubby antennae	No	**Yes**
Only 2 wings	No	**Yes**
Carries pollen	**Yes**	No

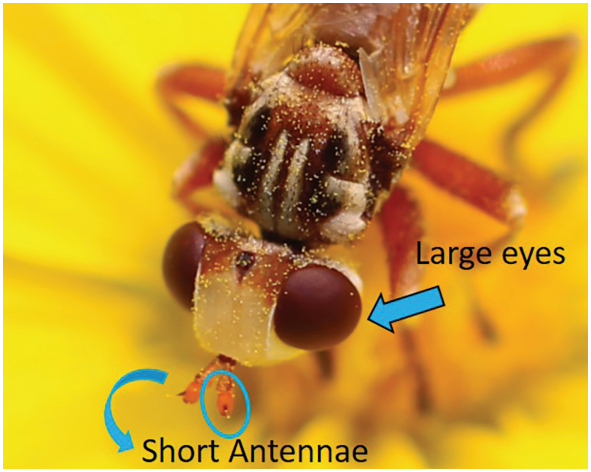

Figure 25A.
Flies have large eyes and short antennae.

Figure 25B.
Bees have longer antennae and carry pollen on their body.

Figure 25C.
A bee-mimicking robber fly rests on a plant stem. Notice the "beard" on its face.

Figure 25D.
Bee flies (family Bombyliidae) may be pollinators and look like bees, but their larval stage is actually a predator and parasitoid of bees.

Figure 25E.
Syrphid flies mimic bees to try to avoid predation.

Bee vs. Wasp (Figures 26A–26C)

Key ID	Bee	Wasp
Generally more coloration	No	**Yes**
Hairy body	**Yes**	No
Longer body shape	No	**Yes**
Long slender hairless legs	No	**Yes**
Carries pollen	**Yes**	No

Figure 26A. **Wasp (family Scoliidae).**

Figure 26B. **Wasp (family Chrysididae).**

Figure 26C. **Wasp (family Crabronidae).**

EVIDENCE OF BENEFICIAL INSECTS

In your landscape, you may not always see beneficial insects themselves, but you can look for evidence of their activity. Figures 27A through 27F show some examples of the evidence beneficial insects can leave behind.

Figure 27A. **Aphid "mummies," or aphids that have been parasitized by beneficial insects, appear gray and swollen.**

Figure 27B. **Parasitoid wasps leave exit holes in eggs following their emergence. This evidence may require a hand lens or microscope to view. (Photo by Pamela Wolfe.)**

Figure 27C. **The presence of leafcutter bees (family Megachilidae) may be confirmed by looking for the "C" shaped damage they cause to leaves. Female leafcutter bees remove pieces from leaves to use as nesting materials.**

Figures 27D and 27E. **Check areas of bare ground for the entry holes created by ground nesting bees.**

Figure 27F. **Check plant material for insect eggs. Eggs may be laid singly, in rows, or in clusters, depending on the species.**

GLOSSARY

Abdomen: The body section of an insect that is connected to the back of the thorax and contains reproductive and digestive organs.

Beak: The piercing–sucking mouthpart found on true bugs (order Hemiptera).

Beneficial insect: An insect that provides a service, such as pollination of flowers or predation of pests.

Elytra: Hard protective covering (modified front wings) over hind wings found on beetles (order Coleoptera).

Forewing: One of the front wings of an insect with four wings.

Hindwing: One of the back wings of an insect with four wings.

Integrated pest management (IPM): A pest management approach that combines cultural, mechanical, chemical, and biological control strategies.

Natural enemies: Organisms that reduce populations of another organism through predation and parasitism.

Overwinter: How an insect passes the winter season.

Parasitoid: An insect with a free-living adult stage and a parasitic larval stage.

Predator: An insect that preys on other insects.

Pronotum: The cover of the prothorax (the first segment of the thorax).

Scopa: Hairs on the legs of some bees that collect pollen.

Thorax: The middle body section of an insect that is found between the head and the abdomen. Legs and wings are attached to this section.

Miranda Kersten *is a Senior Program Specialist with the urban integrated pest management (IPM) program at NMSU's Agricultural Science Center in Los Lunas. Her work focuses on pollinator and beneficial insect conservation, monitoring beneficial insects across urban landscapes, and managing IPM research projects.*

FURTHER READING

For more information about beneficial insects and their conservation, visit these resources.

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