



# **INSECT IDENTIFICATION GUIDE**

# Dandelion Detectives Nectar-Feeding Insect Guide

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Many people are surprised how many different insects feed on nectar. Some of these insects, like butterflies, get all their food from flowers. Others eat a wider variety of foods. For example, lady beetles are predators that eat aphids and other plant pests, but they also rely on the sugar found in nectar to keep their energy up!

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## Using the Guide

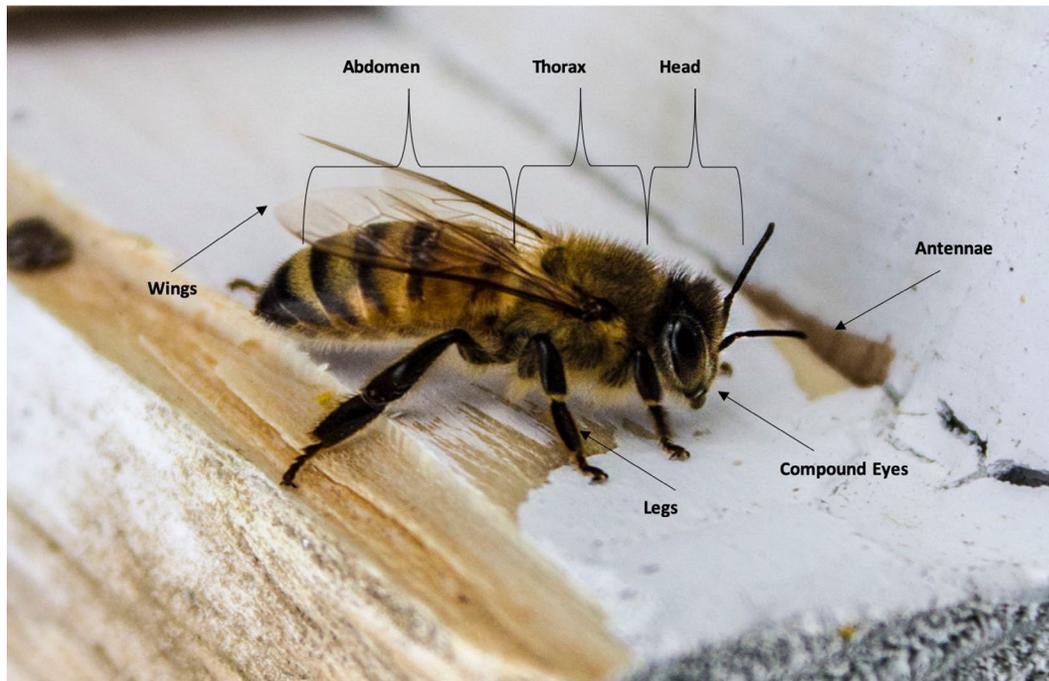
This guide highlights the adult stage of insects that might visit your Observation Dandelion. Each detective will find a small number of insects. Each individual flower in your lawn might provide food for just a few insects but think about how many creatures can feed from a lawn full of dandelions and other weeds!

This guide is organized by insect Order and Family. Each Order and Family have a Latin scientific name. For example, all flies are in the Order Diptera, which means two wings. Having only two total wings is a characteristic feature of all flies. Within an order, there are many related Families of insects. For instance, the hover flies, or Syrphidae, are one Family within the Order Diptera.

You can identify the insects found feeding on your Observation Dandelion to Order only, or Order and Family! You do not need to use the same level of identification for all the insects you see, some are very tricky to classify- even for experts. You might even see an insect not shown in this guide! Make sure to note any unique finds in your data sheet, and the scientists at headquarters will do our best to identify these mystery insects.

# Insect Anatomy

This guide is focused on the adult stage of nectar-feeding insects. These insects have three body segments (head, thorax and abdomen), six legs, two compound eyes, antennae, and wings.



## EARWIGS

(**ORDER:** Dermaptera, **FAMILY:** Forficulidae) (15-18 mm)

Earwigs are mostly active at night, but they could be tempted to feed from your dandelion. Earwigs are dark brown to tan, with a slender flattened body and long antenna. Earwigs can fly. They have membranous hind wings that are folded under their shorter, visible front wings. Their characteristic feature are their cerci, or “pincers”. These do not pose a threat to people, but it is thought that these may be used in defense by the earwig if attacked by other insects. Earwigs get their name from a myth that they crawl into our ears at night to sleep, but thankfully this is not true!

# Flies

(ORDER: Diptera)

Unlike the other winged insects, the flies only have two wings, one on each side. Flies also have large eyes. Most people think of flies as pests, but they play important roles in our environment as pollinators, predators, and as important food sources for other animals. Did you know that some mosquito species pollinate orchids? In fact, we would not have chocolate if it was not for flies - midges are pollinators of cacao, and the seeds of this plant are used to make this beloved treat! Other flies like long-legged flies and tachinids are valuable predators of garden pests. Flies can also be very colorful, some mimic bees and wasps like hover flies and bee flies.



Jean Hort

## BEE FLIES

(FAMILY: Bombyliidae):  
(4-15 mm)

Body covered with dense yellow to brown hair. Holds wings back at an angle when at rest. Long pointed mouthpart used for feeding on nectar within deep flowers.



Basile Morin

## BLOW FLIES

(FAMILY: Calliphoridae):  
(10-14 mm)

Similar size and shape to a house fly but metallic blue or green in color. Body has short black bristles. Clear wings with brown veins.



Björn S

## CRANE FLIES

(FAMILY: Tipulidae):  
(10-25 mm)

Very long legs, slender body and wings, and long antennae. Looks like a large mosquito! These flies are sometimes called "mosquito hawks" due to a myth that they eat mosquitoes. Unfortunately, this is not the case, the adults are short lived and do not eat other insects.



Gladson Machado

## HOUSE FLY

(FAMILY: Muscidae): (7-10 mm)

One of the most annoying insects to humans because they pester us in our homes and when eating outside. None the less you may find these common flies nectaring at your Observation Dandelion. House flies have a dark body with some dark stripes visible on their thorax, short antennae, and clear wings.



Charles J Sharp

## HOVER FLIES

(FAMILY: Syrphidae):  
(10-20 mm)

Bee and wasp mimics with black and yellow markings. Some species are covered with hairs and resemble bees, others are shiny, hairless, and wasp-like. Short antennae. Their common name comes from an ability to hover in midair!



Gail Hampshire

## LONG-LEGGED FLIES

(FAMILY: Dolichopodidae):  
(1-9 mm)

Small flies with a slender body that is often metallic green or gold and long thin legs. Wings may be completely clear or clear with black markings.



Ryan Hodnett

## ROOT MAGGOT FLIES

(FAMILY: Anthomyiidae):  
(2-12 mm)

Many species look like a small house fly, with a dark stout body, short antennae, and dark legs. Some species have a light yellow to orange body and legs.



James Gathany

## MOSQUITOS

(FAMILY: Culicidae):  
(3-15 mm)

Slender body and wings and long legs and antennae. Some species have white bands on their legs and body. Males have fluffy antennae. Visible long straw-like mouthpart. The adult females feed on blood from humans and other animals as well as nectar. The males feed on nectar only.



Judy Gallagher

## MIDGES

(FAMILIES: Ceratopogonidae and Cecidomyiidae): (1-5 mm)

Both families are very small. The Cecidomyiidae have long antennae and legs, a slender body and clear wings with few veins. These flies feed on many different plants and insects but do not bite humans. Ceratopogonidae are stouter with shorter legs and broader wings. Males have fluffy antennae. The adult females feed on blood from humans and other animals as well as nectar. The males feed on nectar only.



Charles J. Sharp

## TACHINID FLIES

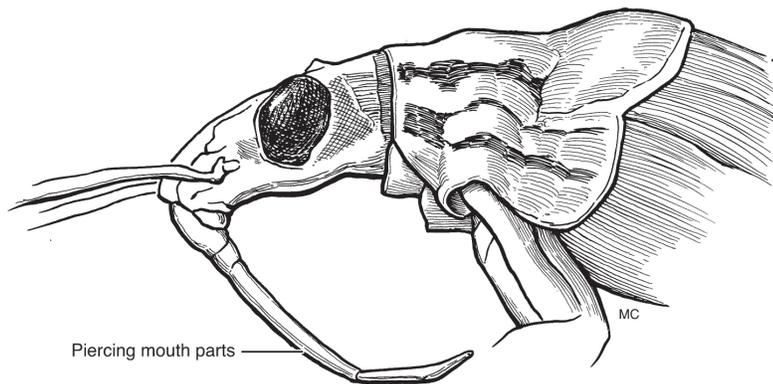
(FAMILY: Tachinidae):  
(2-18 mm)

Most are dark in color and resemble house flies, but some are brightly colored. Thick bristles present on their thorax and abdomen. Tachinids are parasitoids, meaning that the females locate insect prey for their offspring. The adult female fly deposits eggs on these insects, and the larvae that emerge will feed and eventually kill them! Many species attack garden pests.

# True Bugs

(ORDER: Hemiptera)

Did you know that Entomologists only call some insects bugs? The Hemiptera, or true bugs, have two unique identification features. First, they have a long thin straw-like mouthpart called a beak that they use to ingest a liquid meal. True bugs also have interesting wings, their front wing is typically hardened or leathery at its base, and more membranous and sometimes transparent at the tip. In addition to nectar, many true bugs use their straw-like mouthpart to pierce plants and ingest sap. However, the ambush bug, damsel bug, and minute pirate bug consume insect prey.



## AMBUSH BUGS

(FAMILY: Reduviidae):  
(5-20 mm)

Long narrow head with a curved beak. Diamond shaped body. Often black or grey but a few are brightly colored.



## DAMSEL BUGS

(FAMILY: Nabidae):  
(7-12 mm)

Tan insects with a narrow body, enlarged front legs and curved beak.



## LEAF-FOOTED BUGS

(FAMILY: Coreidae): (10-15 mm)

Large reddish brown or dark grey insect with a pointed head and long antennae. Some have banding on their abdomen, visible at the edges when wings are at rest. Their name comes from the enlarged leg segment on their hind-leg.



## LYGUS BUGS

(FAMILY: Lygaeidae): (8-10 mm)

Dark brown to tan body and wings that are bent toward their base, long antennae. Yellow triangle shaped marking on the thorax.



## MILKWEED BUGS

(FAMILY: Lygaeidae): (10-18 mm)

Black and orange with a triangular-shaped head, oval body, and long antennae.



## MINUTE PIRATE BUGS

(FAMILY: Anthocoridae): (2-5 mm)

Very tiny wedge-shaped insects with black and white markings.

# Bees, Wasps and Ants

(ORDER: Hymenoptera)

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## Bees

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Did you know there are 4,000 species of bees in North America? All bees are vegetarians - they feed only on pollen and nectar from flowers. Almost all bees have dense hairs somewhere on their body that allows females to collect pollen from flowers. Only a few species of bees are social, such as honey bees and bumble bees, meaning that they live together with many other bees in a colony where they share duties like collecting food and caring for young. However, most bees are solitary, which means that each female bee creates her own nest in the soil, in hollow twigs or stems, or in wood. Within her nest, the females make individual compartments called cells using mud or leaves. Inside each cell they place pollen and nectar and deposit an egg. The bee larva that hatches will develop by feeding on this food source. All bees have four wings, two on each side, which helps to distinguish them from flies that mimic bees!

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## GREEN SWEAT BEES

(FAMILY: Halictidae):  
(3-11 mm)

These metallic green bees are actually attracted to the salts present in our sweat! They are very docile and rarely sting humans. They are solitary bees, and each female builds her nest in the soil.



## BUMBLE BEES

(FAMILY: Apidae):  
(8-21 mm)

Social insects that live in small colonies that are often made below ground in abandoned rodent burrows! Large, furry bees covered with black and yellow hairs.



## EUROPEAN HONEY BEE

(FAMILY: Apidae):  
(12-15 mm)

Honey bees are responsible for the pollination of one third of our food! They are social insects that have large colonies where they produce honey. Workers from the colony might visit your Observation Dandelion. Look for bees covered with hairs that have dark brown and yellow bands on their abdomen.



## LARGE CARPENTER BEE

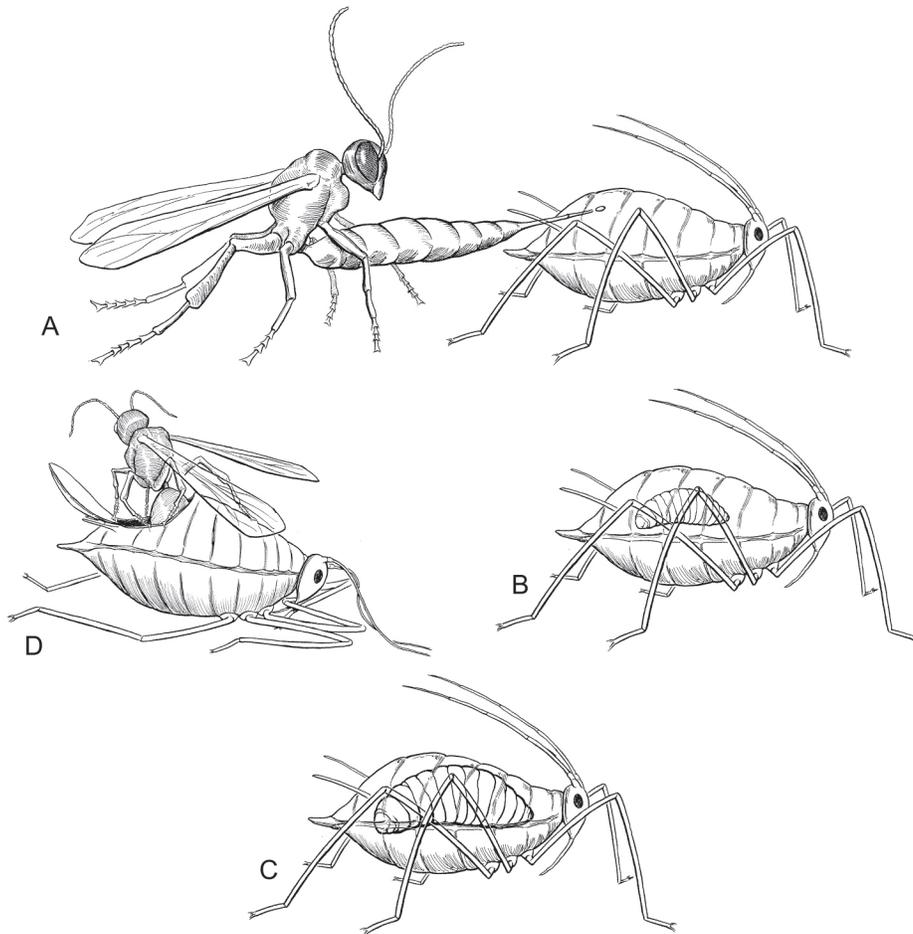
(FAMILY: Apidae):  
(15-23 mm)

Look similar to bumble bees but with a shiny black abdomen without hair. Males are territorial but cannot sting, females rarely sting humans. Carpenter bees are solitary, each female constructs her own nest in wood.

**MANY MORE!** You may find other types of bees that do not match up with these images. Many solitary bees are challenging to identify from photos, even for professional Entomologists! Don't forget to note any unique finds on your data sheet.

# Parasitoid Wasps

There are thousands of species of parasitoid wasps in North America. They are solitary and most are extremely tiny, as minute as a pencil point! Parasitoid wasps are very important because they attack garden pests. Female wasps will seek insect prey to feed her offspring and use their ovipositor (a long thin organ that looks like a stinger) to lay her eggs inside the pest! The wasp larvae develop by feeding on these insects. Some parasitoids have a very long ovipositor that looks like it could really hurt, but these insects cannot sting humans, and pose no threat at all. Parasitoid females gain the energy to seek out food for their offspring by feeding on nectar from flowers.





Peter Cristofono



Roy Cohutta Brown

## ICHNEUMONID WASPS

(FAMILY: Ichneumonidae):  
(3-40 mm)

This family includes the largest of parasitoid wasps. Vary widely in color and pattern, but many have a visible long ovipositor. The short-tailed ichneumons are the exception, these are reddish brown, with a slender abdomen, large clear wings, and long antennae.



Scott Justis



Scott Justis



Stephen Luk

## TINY PARASITOIDS (MANY FAMILIES): (< 6 mm)

There are many other species of parasitoids that might find your Observation Dandelion. These have the characteristic wasp body shape, with an abdomen that narrows at the base. Due to their size, it will be challenging to see many other features in your photos. Below are some images under strong magnification – they can be very colorful and even metallic!

# Stinging Wasps

Stinging wasps are common throughout North America and may be either solitary or social. They are known to use smaller insects as prey. Female wasps in this group have a modified ovipositor called a stinger that is used to paralyze prey before feeding on them or to protect intruders from invading their nest. Some families within this group will paralyze prey and lay their eggs onto them. As the larvae of the stinging wasp develop, they will feed of the paralyzed insect!



*John and Jane Balaban*

## **SPIDER WASPS**

**(FAMILY: Pompilidae): (5-40 mm)**

Solitary wasps, that can have black or metallic bodies, long legs, and dark wings. Females have curled antennae. Females construct a nest below ground and fill it with paralyzed spiders that her offspring feed on! The female is able to paralyze the spiders with a venom she produces by stinging them. Spiders wasps can sting humans but they are not aggressive.



*Dan Leeder*

## **FLOWER WASPS**

**(FAMILY: Scoliidae): (20-50 mm)**

Large black solitary wasps with bright colored markings. Wings have wrinkles towards the tip. Females construct a nest belowground. In addition to nectar, they feed on yard pests like grubs! Flower wasps can sting humans, but they are not aggressive.



Scott Peden

## THREAD-WAISTED WASPS

(FAMILY: Spicidae): (15-35 mm)

Get their name from a long slender first segment of their abdomen that creates a “waist”. Body is often brown or black with bright banding, some species are dark and metallic. Females of these solitary wasps build their nest below ground, or above ground using mud!



Matt Edmonds



Kevin Hall



Robin McLeod

## YELLOWJACKETS, HORNETS AND PAPER WASPS

(FAMILY: Vespidae): (10-30 mm)

Social wasps that live within a nest. These wasps make their own paper-like building material by mixing chewed wood with their saliva and water. Female workers forage for caterpillars and other insects to feed to developing larvae in the nest. They also commonly feed on floral nectar. These wasps are brown to black with yellow markings and do not have hairs. Their wings are dark yellow to brown. Social wasps are more aggressive than solitary species and can sting humans.

# Ants



Ryan Hodnett

## ANTS

(FAMILY: Formicidae):

There are hundreds of ant species throughout North America. Ants are typically reddish brown to black. They have bent antennae and distinct constriction between their three body segments. Ants are social insects that have large colonies built below ground. They are extremely strong and can lift up to 20 times their own body weight!

# Thrips

(ORDER: Thysanoptera):

Tiny wormlike insects with visible antennae. Thrips may or may not have wings. If wings are present they will be slender and flat against the abdomen, with feathery edges (this is challenging to see without a microscope!)



Salvador Vitanza, PhD

## PREDATORY THIRPS

(FAMILY: Aeolothripidae): (1-14 mm)

Tiny and slender, black body with black and white banded wings.



Joseph Morse

## PLANT-FEEDING THIRPS

(FAMILY: Thripidae): (1 mm)

Tiny and slender, light yellow to tan in color with light wings.

# Lacewings

(ORDER: Neuroptera)

The lacewings are important predators of garden pests that also nectar at flowers. The name of the order comes from their intricately veined wings, that look a bit like lace.



## GREEN LACEWINGS

(FAMILY: Chrysopidae) (8-25 mm)

Bright green body is long and thin, large eyes, and long antennae. Four large wings held like a tent over abdomen.



## BROWN LACEWINGS

(FAMILY: Hemerobiidae): (2-13 mm)

Long and thin brown body, large eyes, and long antennae. Four large wings with brown and white patterning are held like a tent over abdomen.

# Beetles

(ORDER: Coleoptera)

Beetles are a large insect order and many families include nectar feeding species. One distinguishing feature shared by beetles are their hardened wing covers, called elytra. The elytra cover the hind wings, which are used in flight. Look closely at your Observation Dandelion, some of these beetles are very tiny!



Gail Hampshire

## CARPET BEETLES

(FAMILY: Dermestidae): (2-12 mm)

Adults are round or oval shaped. They have short legs and antennae. Elytra and thorax are often multicolored including brown, black and white. If you saw a carpet beetle under a microscope you would see their bodies are covered by tiny colored scales!



Katja Schulz



Katja Schulz

## TUMBLING FLOWER BEETLES

(FAMILY: Mordellidae): (3-8 mm)

Wedge-shaped insects that narrow to a point at the end of their abdomen with visible antennae. They get their name from the jumping and tumbling motions they make using their enlarged back legs when disturbed. They may be uniformly dark or have spots, stripes, or other patterns on their elytra.



xpda

## SOFT-WING FLOWER BEETLES

(FAMILY: Melyridae): (2-7 mm)

Brightly colored with metallic markings. Long antennae, males have an enlarged segment of their antennae.



Judy Gallagher



Judy Gallagher

## SOLDIER BEETLES

(FAMILY: Cantharidae): (10-20 mm)

Long and slender with long antennae. Look a lot like fireflies but have a visible head when looking down at the top of beetle. Most have dark elytra, but some, like the goldenrod soldier beetle, are bright orange with black markings. Can also have a brightly colored thorax or head.



Udo Schmidt



Gilles San Martin

## SAP BEETLES

(FAMILY: Nitidulidae): (1-15 mm)

Shiny and oval, with clubbed antennae. Can be uniformly tan or black in color or black with yellow to orange markings. One common species is the picnic beetle, named as such because it is attracted to the food at picnics and is a nuisance at outdoor gatherings!



Bruce Marlin

## FIREFLIES

(FAMILY: Lampyridae): (4-18 mm)

Beetles are longer than they are wide. Dark body and wings with light yellow to orange markings. A plate called a pronotum covers both the head and thorax. These insects produce light from a bioluminescent organ in their abdomen and use it to find mates!



Line Sabroe

## LADY BEETLES

(FAMILY: Coccinellidae): (1-10 mm)

Also called ladybugs, these insects are predators of plant feeding insects. They also gain energy by feeding on nectar. Lady beetles are round to oval with very short antennae. Many lady beetles have red elytra with black spots, like the pink lady beetle. The multicolored Asian lady beetle has light orange to red elytra but may or may not have spots present! This beetle has a W shaped pattern on its pronotum, a plate that covers the thorax. Lady beetles do vary in color, the checkerspot lady beetle has yellow elytra with black square-shaped spots.



Judy Gallagher



Judy Gallagher

## LONGHORN BEETLES

(FAMILY: Cerambycidae): (3-60mm)

Their name comes from their very long antenna that are often as long or longer than the beetle's body! Most species have slender bodies that are longer than they are wide, and long legs. Longhorn beetles are often dark brown or black, but those that visit flowers often have bright markings. Some species of longhorn beetle like the banded longhorn beetle mimic wasps!



Gilles San Martin



Gilles San Martin

## WEEVILS

(FAMILY: Curculionidae): (5-15mm)

One distinguishing feature of weevils is a head that narrows into a snout! They also have bent antennae that are clubbed at the tip. Beyond these features this large beetle family can vary widely in color and size.

# Butterflies and Moths

(ORDER: Lepidoptera)

You will not find butterflies feeding on your Observation Dandelion due to funnel being too small for most species to enter. However, these beautiful pollinators commonly feed on lawn weeds and some common species to watch for are shown here! Scales coat the wings of these insects to produce a multitude of different color patterns. Butterflies have long antennae and a long, coiled mouthpart called a proboscis that they use to feed on nectar. Moths are less likely to be spotted as they are mostly active at night. One exception is the hummingbird moth, which has a thick hairy body and clear wings. They resemble a hummingbird when they fly!



*John Flannery*

**AMERICAN PAINTED LADY**

(FAMILY: Nymphalidae)



*Charles J Sharp*

**COMMA**

(FAMILY: Nymphalidae)



*Kenneth Dwain Harrelson*

**RED ADMIRAL**

(FAMILY: Nymphalidae)



*John Acorn*

**MOURNING CLOAK**

(FAMILY: Nymphalidae)



*Piccolo Namek*

**VICEROY**  
(FAMILY: Nymphalidae)



*Zeynel Cebeci*

**CABBAGE WHITE**  
(FAMILY: Pieridae)



*Judy Gallagher*

**CLOUDED SULPHUR**  
(FAMILY: Pieridae)



*D. Gordon E. Robertson*

**EASTERN TAILED BLUE**  
(FAMILY: Lycaenidae)



*Hemaris Thysbe*

**HUMMINGBIRD MOTH**  
(FAMILY: Sphingidae)



*M J Rodock*

**MONARCH**  
(FAMILY: Danaidae)



*Judy Gallagher*

**SILVER-SPOTTED**  
(FAMILY: Hesperidae)



*Andrew Cannizzaro*

**TIGER SWALLOWTAIL**  
(FAMILY: Papilionidae)

