



# Odonate Monitoring

The  
Dragonflies & Damselflies  
of Northern Illinois

# What are dragonflies and damselflies?

- Dragonflies and damselflies are flying insects in the order Odonata.
- Odonata or “toothed ones” is in reference to their toothy mandibles and lower lip or labium
- Both dragonflies and damselflies are voracious predatory insects

## Classification of Dragonflies & Damselflies

- Kingdom – Animal
- Phylum – Arthropoda
- Class – Insecta
- Order – Odonata
- Suborder – Anisoptere:  
Dragonflies
- Suborder – Zygoptere:  
Damselflies

# History of dragonflies and damselflies

- Fossils of protodonate have been found that date back 300 million years.
- Dragonflies predate the dinosaurs by 100 million years
- Were among the 1<sup>st</sup> winged organisms
- With a wingspan of upwards of 2.5 feet, they were the largest insects ever to fly on the planet

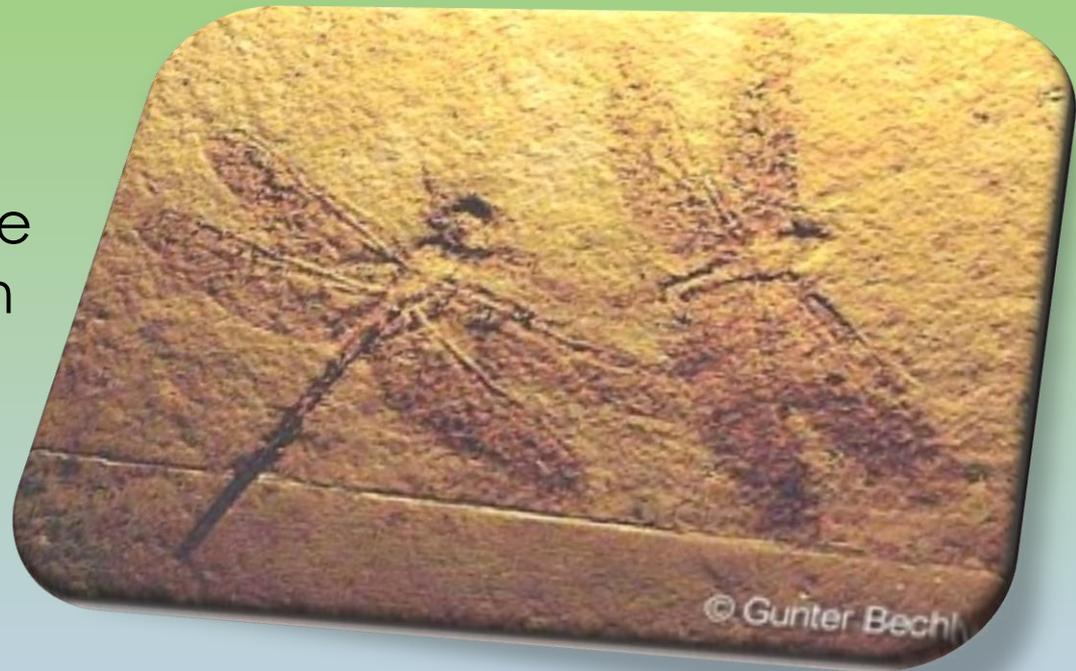


Photo Courtesy of: Gunter Bechly

# History of dragonflies and damselflies

- Some nymphs of protodonate were between 0.5 and 1.5 feet long
- Both adults and nymphs were some of the top predators during the carboniferous period
- The first “modern” odonate appeared around 250 million years ago.



Photo Courtesy of:  
Colorado University Museum

# Life History of Odonates



Belted Whiteface

# Mating

- Before initiating mating, males transfer sperm to his 2<sup>nd</sup> set of genitals or hamulus on the underside of segments 2 & 3
- Males clasp the females on the back of her head with their cerci & epiproct found on the tip of their abdomen
- The pair is now in tandem and will remain so until mating is over
- The female then brings her abdomen up to the male's hamulus
- The pair is now "in copula" or in the wheel position
- Still connected, the pair of some species may move to the tree tops to finish mating while other species may mate in flight
- Complete fertilization takes anywhere from 15 seconds to well over an hour



# Egg Laying

- Eggs are laid in or near water
- Some females lay eggs by simply dropping their eggs into the water or laying egg filled strings of jelly
- Other species use a needle-like ovipositor to insert eggs into aquatic plants or even into the damp ground near water
- Eggs range in size from 0.4 to 2 millimeters (0.02 – 0.08 inches)
- Eggs usually take 1 – 2 weeks to hatch. However, some hatch in as few as 4 days while others may over winter and hatch in the spring



Photo By: Paul Dacko

# Life of a Nymph

- Odonates go through incomplete metamorphosis consisting of an egg, a larval or nymph and an adult
- Nymphs are totally aquatic
- They take anywhere from four weeks to several years to become adults
- As they grow, nymphs shed their skin; each stage between shedding is called instars
- There can be anywhere from 8 to 17 instars
- Nymphs breathe through gills. Gills of damselflies are located at the end of the abdomen and in the rectum of dragonfly nymphs
- Nymphs capture prey by rapidly extending its labium
- When they are ready to become adults, nymphs climb out of the water



Darner nymph



Damselfly nymph

Photo By:  
Mike Feldmann



Lower lip or labium

# Taking Flight

- Emergence can occur day or night, depending on species, and take several hours
- After the skin on the back of the nymph splits open, the thorax emerges, followed after a short rest by the head, compressed wings, legs and part of the abdomen
- The adult rests as the legs harden and hemoglobin is pumped into the wings. It then pulls the rest of the abdomen out.
- The newly emerged adult is called a teneral; the remaining skin of the nymph is called an exuvia
- Tenerals are soft bodied and pale in color
- The adult can fly about an hour after emergence
- It may take up to two weeks before adults are fully mature



Photo By:  
Paul Dacko



Photo By:  
Paul Dacko

# Migration & Winter

- Unlike some butterflies and moths, adult dragonflies do not over winter
- Some nymphs will overwinter under the ice
- Some meadowhawk species will lay eggs in soil that will overwinter until spring floods
- Species like darners, meadowhawks and gliders are long distance migrants
- Green Darners, is our best known migrant, they make a one-way trip south each fall
- Their offspring make the return one-way trip north in the spring
- Wandering gliders migrate with the monsoons from India to Africa by crossing the Arabian Sea



Green Darner



Wandering Glider



Variegated Meadowhawk

# Built for Flight

- Odonates are built for flight
- They can fly forwards and backwards, straight up and down, and can even hover like a helicopter
- Odonates can reach speeds of about 100 body-lengths per second. This comes out to approximately 30 mph
- Each wing can move independently
- Wings can also be rotated forward and back on its axis
- Because of the ability to move and rotate their wings independently, odonates can turn on a dime



Ebony Jewelwing



Eastern Pondhawk



Wandering Glider

# Thermoregulation

- Like all insects, odonates are cold blooded. However, many can maintain a internal temperature as high as 110°F
- On cool mornings they will shiver their wings in order to warm their thorax enough for flight<sup>1</sup>
- On hot, sunny days dragonflies may overheat so will become less active or find shade<sup>2</sup>
- The obelisk position orients the abdomen directly at the sun reducing the exposed surface area<sup>3</sup>
- Some dragonflies will point their wings forward and down to reduce exposure and perhaps reflect sunlight<sup>4</sup>



1



2



3



4

# Predator

- Odonates are excellent hunters capturing 90 – 95% of their prey
- Some adult odonate hunt insects by flying back and forth or “hawking” over a hunting territory
- Other species hunt from a perch darting out after insect or “fly-catching”
- Prey is usually caught in flight where the spine covered legs of dragonflies are used like a net
- Most prey are flying insects but some tropical dragonflies have been known to take down small hummingbirds
- Nymphs actively hunt prey or hide and ambush aquatic insects, tadpoles and even small fish



Prince Baskettail



Damselfly feeding on Damselfly



Frosted Whiteface

## or Prey

- Many animals prey on odonates
- 90% of teneral dragonflies are eaten shortly after emergence
- Birds such as falcons, swallows and flycatchers catch odonates on the wing
- Orb-weaving spiders catch dragonflies in their webs while jumping spiders will hunt newly emerged adults
- Other insects such as praying mantises and robber-flies also prey on adult odonates
- Fish will prey on odonate nymphs
- Nymphs are also preyed upon by aquatic insects such as the Giant Water Bug and other nymphs
- Water mites and other insects are common parasites of odonates



# Telling them apart

## Dragonflies

- Stout robust bodies
- Four broad outstretched wings
- Strong flyers
- Large compound eyes that meet or nearly meet



Four-spotted Skimmer

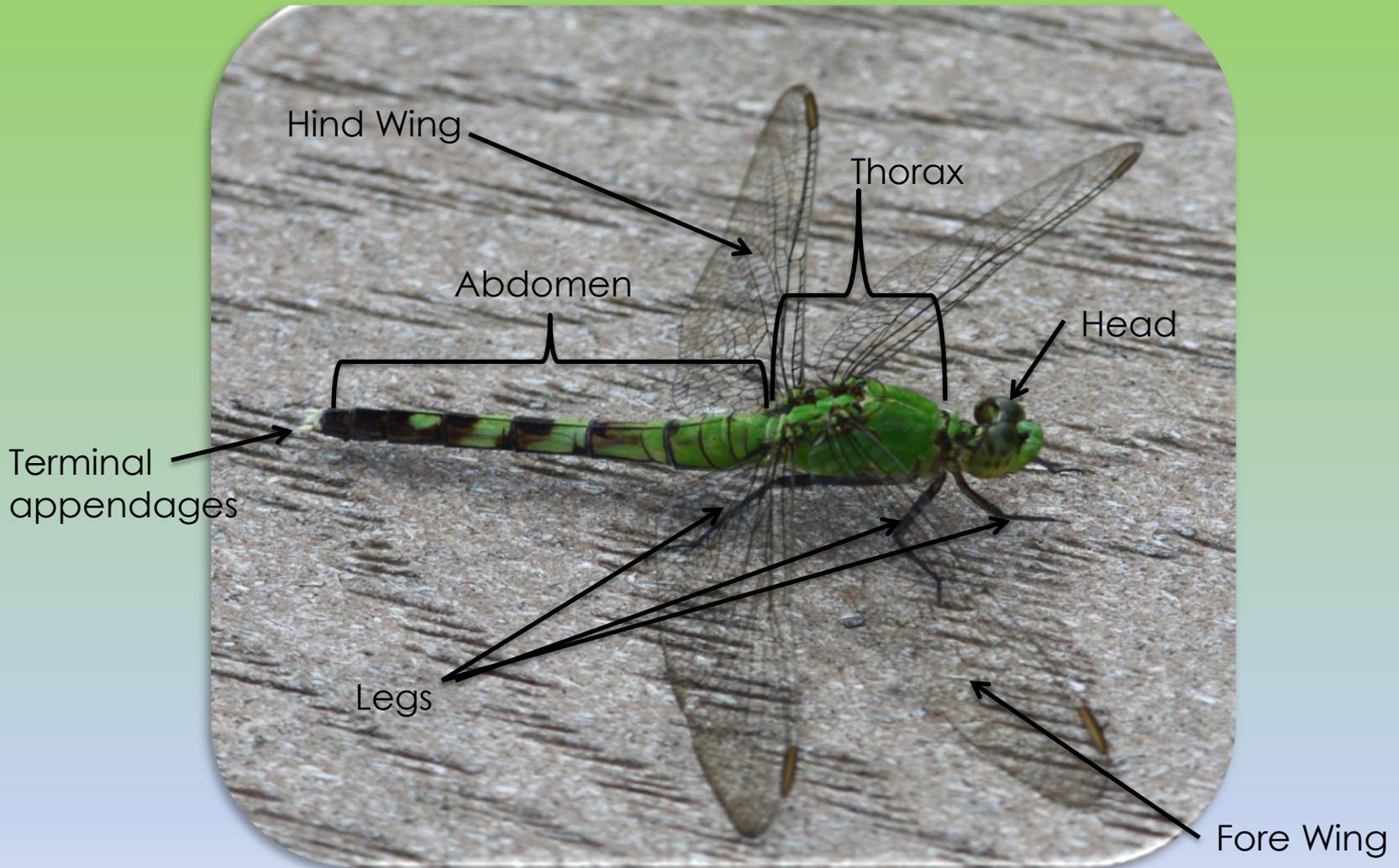
## Damselflies

- Slender delicate-like bodies
- Four narrow wings held over body
- Weak moth-like flight
- Compound eyes that are spaced far apart

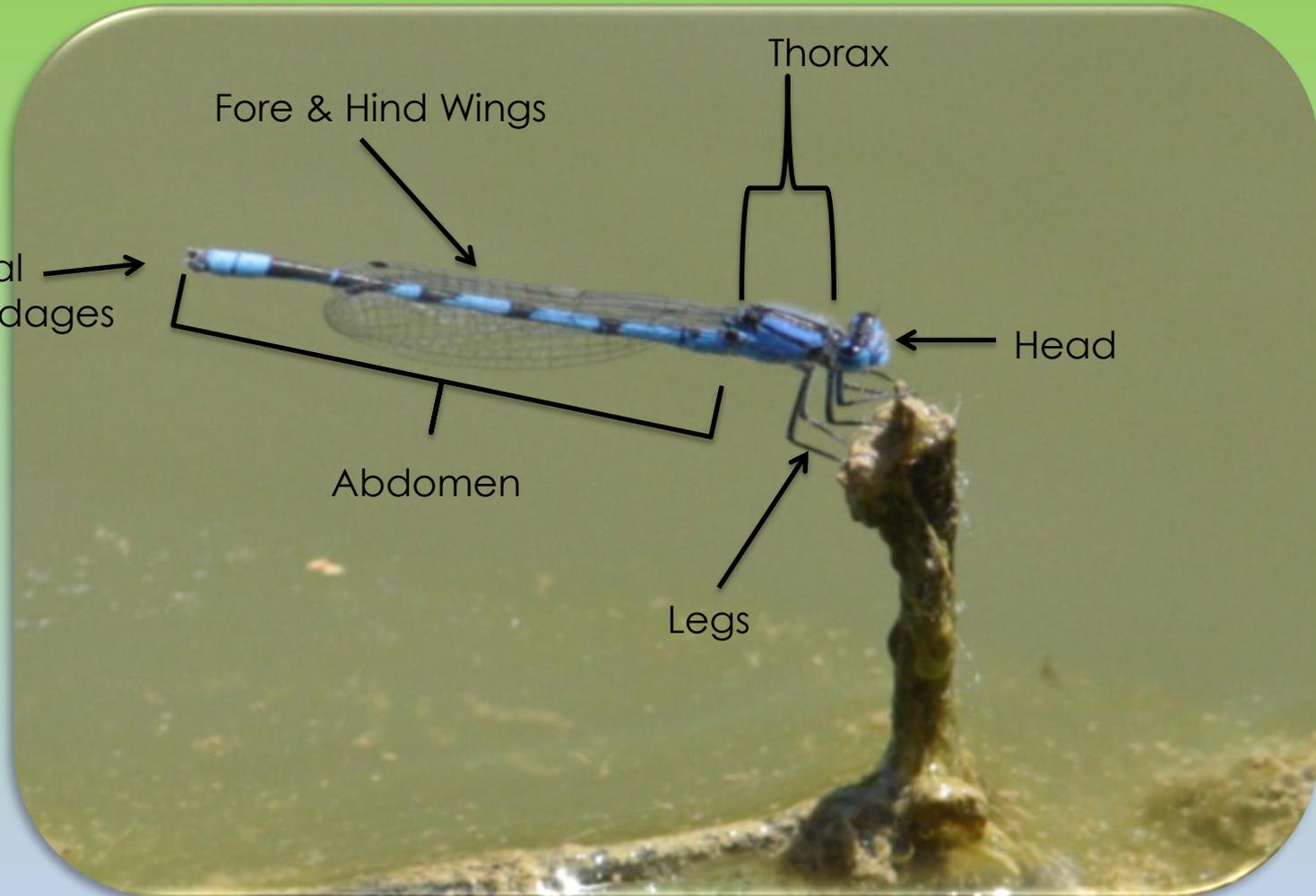


Eastern Forktail

# Body Parts



Eastern Pondhawk



Terminal  
appendages

Fore & Hind Wings

Thorax

Head

Abdomen

Legs

Familiar Bluet

# Abdominal Segments



Segments

S1

S2

S3

S4

S5

S6

S7

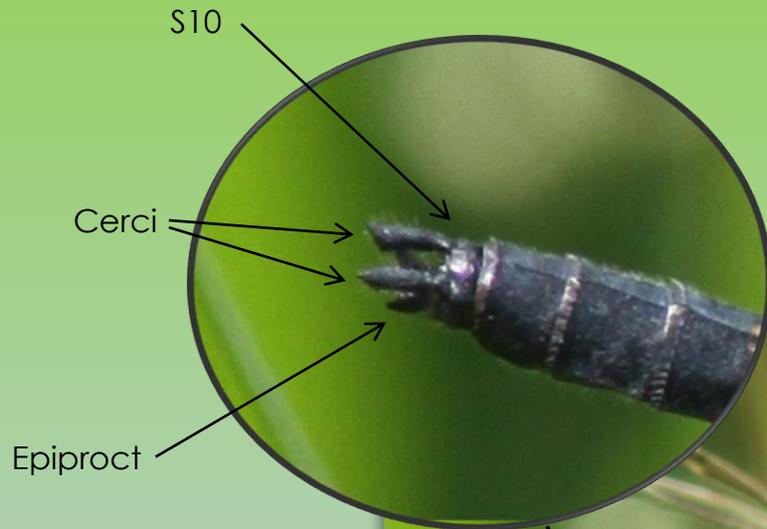
S8

S9

S10

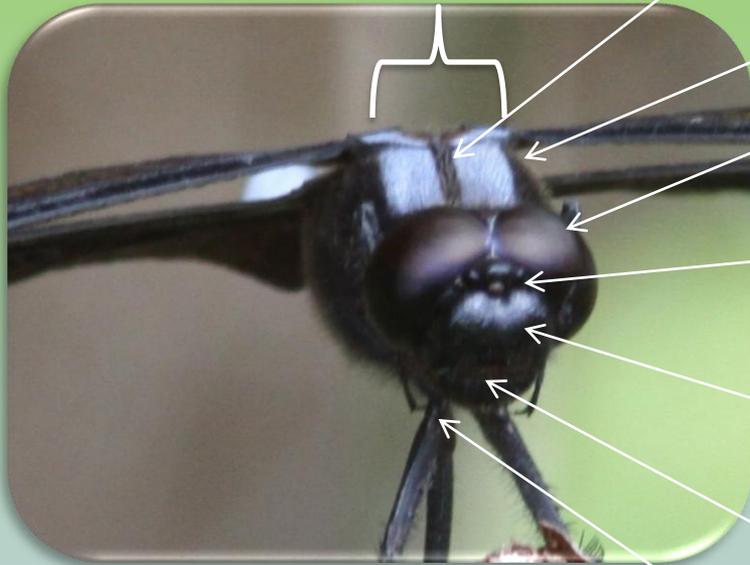
Arrowhead Spiketail

# Male Terminal Appendages



Dot-tailed Whiteface

# Frontal View



Widow Skimmer



American Rubyspot

Mid-dorsal Stripes

Mid-dorsal carina

Shoulder Stripes

Compound Eye

Ocellus or Simple Eyes

Frons

Labrum

Mandibles

# The Wings



Dot-tailed Whiteface



Spreadwing

Antenodal Crossvein

Nodus

Stigma

Nodus

Costa

Wing Spots

Basal Patch

Calico Pennant



The  
Damselflies  
of  
Northern Illinois



# Damselflies Families

➤ Broad-winged Damsels - Family *Calopterygidae*:

*Large showy damselflies of fast-flowing streams and rivers. Thorax and abdomen usually metallic. Broad colorful wings are held high over abdomen or to one side.*

- Jewelwings
- Rubyspots

➤ Spreadwings - Family *Lestidae*:

Medium to large damselflies with long thin abdomens. Thorax & abdomen are often metallic. Unlike other damsels, Spreadwings hold their wings opened at about a 45° angle from their bodies.



## ➤ Pond Damsels

Family *Coenagrionidae*:

Pond Damsels comprise a huge family of small, clearwinged damsels that display a wide range of colors.

- Dancers – Genus *Argia*:  
Moderate to large damsels of medium build. ♂'s predominantly blue or purple, ♀'s are olive or brown. Wings are highly stalked and clear. Flight is bouncy and they like to sit in bare, sunny places.
- American Bluets – Genus *Enallagma*:  
A large group of small to mid-sized damsels. ♂ are primarily blue with contrasting black stripes on thorax. Abdomen may appear either blue with black markings or black with blue markings. Wings are clear, have dark stigmas and are moderately stalked.
- Forktails – Genus *Ischnura*:  
Strikingly patterned small damsels similar to bluets. Small forked structure at end of abdomen gives this genus its name. Wings are clear and the stigmas of ♂'s differ in size or color between fore and hindwings. ♀'s come in a variety of colors and tend to change color as they age.

# Damselflies Families



# Ebony Jewelwing

*Calopteryx maculata*

**Average length:** 1.9 inches

**Description:** Head, thorax & abdomen of ♂ a metallic green sometimes blue. ♀ a brownish bronze

♂ with broad all black wings

♀ wings dark brown or smoky with white pseudostigma at tip

**Flight Season:** Late May through July, may fly into September

**Abundance:** Fairly common to abundant

**Habitat:** Small to medium, shaded forest streams



# American Rubyspot

*Hetaerina americana*

**Average length:** 1.7 inches

**Description:** Head & thorax of ♂ a metallic red to reddish brown  
Abdomen a metallic bronze.

♂ with clear wings with blood-red basal patches

♀ metallic green or yellow

Wings clear with yellowish to light brown wash

**Flight Season:** June and July, but may fly into early October

**Abundance:** Common

**Habitat:** Larger fast flowing streams and rivers with vegetative shorelines



# River Jewelwing

*Calopteryx aequabilis*

**Average length:** 2.0 inches

**Description:** Head, thorax and abdomen of ♂ a bright metallic green. Very thin black strips on thorax. ♂ with clear wings with black band on last third  
♀ metallic green or yellow. Narrow smokey wings with tips darker and slender white pseudostigmas

**Flight Season:** Late May through July, but may fly into early September

**Abundance:** Uncommon

**Habitat:** Clean medium to large streams and medium sized rivers with an open canopy



# Emerald Spreadwing

*Lestes dryas*

**Average length:** 1.5 inches

**Description:** A small, stocky spreadwing. ♂ bright metallic green above and pale yellow to whitish pruinose below. Last two segments of abdomen grayish-white pruinose

♀ similar to ♂ but with thin shoulder stripes and thicker abdomen

**Flight Season:** Late May to end of July

**Abundance:** Fairly common

**Habitat:** Shallow, temporary woodland (vernal) pools



# Slender Spreadwing

*Lestes rectangularis*

**Average length:** 1.8 inches

**Description:** A long, slender spreadwing. Thorax and abdomen of ♂ dark above with pale yellow sides. Wide bluish shoulder stripes on thorax. Wings clear with a pale vein at tip. ♀ similar to ♂ but with a shorter abdomen

**Flight Season:** Late May through October

**Abundance:** Common

**Habitat:** Partially shaded temporary and permanent ponds, marshes and quiet backwaters of streams



# Powdered Dancer

*Argia moesta*

**Average length:** 1.6 inches

**Description:** One of our largest dancers. ♂ dark brown in color becoming bluish-white from pruinose. Dark shoulder stripes obscured by pruinose.

♀ thorax brown or blue with fine dark shoulder stripes. Abdomen pale with dark wide top stripe and narrow side stripe.

**Flight Season:** June through August

**Abundance:** Very common to abundant

**Habitat:** Streams, rivers and lakes with rocky shorelines. Likes to sit on rocks



# Blue-fronted Dancer

*Argia apicalis*

**Average length:** 1.5 inches

**Description:** Brightly colored & slender species. ♂ top of thorax and last 3 segments of abdomen bright blue. Rest of abdomen dark. Hairline shoulder stripes

♀ either blue like male or brown and very similar to ♀ Powder Dancer

**Flight Season:** Mid June through mid September

**Abundance:** Fairly common

**Habitat:** Smaller rivers and streams with gentle current. Occasionally lakes and ponds. Likes to perch on the bare ground



Brown ♀

## Blue-tipped Dancer

*Argia tibialis*

**Average length:** 1.4 inches

**Description:** A small dark dancer. ♂ dark with pale purplish or dark blue shoulder stripes. Top of S9 & S10 are powder blue

♀ with blue or brown thorax. Wide dark shoulder stripe with fork at top that forms a small pale blue triangle.

**Flight Season:** Mid June through early July

**Abundance:** Common

**Habitat:** Small to midsize streams with some shaded banks. Occasionally sloughs and pond. Likes the shade more than other dancers



# Blue-ringed Dancer

*Argia sedula*

**Average length:** 1.3 inches

**Description:** A small mostly black dancer. ♂ dark with dark blue shoulder stripes and rings at segment joints. S8 - S10 are powder blue with black lower side stripes.

♀ body color light brown. Thorax markings pale with wide brown median strip. Brown humeral stripe is forked. Dorsal abdominal spotting, brown

**Flight Season:** June through September

**Abundance:** Common

**Habitat:** Small to large streams with herbaceous vegetation along shore. Often found in open, rocky areas. Wide habitat tolerance.



## Variable/Violet Dancer

*Argia fumipennis violacea*

**Average length:** 1.2 inches

**Description:** A small dancer easily recognizable. ♂'s thorax mostly violet with black forked stripe on each side. Violet abdomen with narrow black rings on most segments. Top of S8 – S10 powder blue.

♀ body color light brown. Thorax with thin forked stripe. Thin black stripe on sides of abdominal segments

**Flight Season:** June through September

**Abundance:** Common

**Habitat:** Small clear gentle streams and stream backwaters. Also some small clear lakes



# Orange Bluet

*Enallagma signatum*

**Average length:** 1.3 inches

**Description:** A slender bluet, ♂ eyes bright orange, thorax orange with wide black striping. Abdomen mostly black with orange tip

♀ may be dull orange, blue or greenish with eye that are brown over greenish or tan. Immature blue gradually turning orange.

**Flight Season:** June to early October

**Abundance:** Common

**Habitat:** Slow streams and marsh-bordered ponds and lakes. Likes to fly late in the day



# Skimming Bluet

*Enallagma geminatum*

**Average length:** 1 inch

**Description:** A tiny bluet with a mostly black abdomen. ♂'s thorax blue and black. Blue shoulder stripe maybe constricted near middle. S8 & S9 of black abdomen all blue. ♂ & ♀ have wavy black spot on S2  
♀ similar to ♂

**Flight Season:** Early June trough end of August or mid September

**Abundance:** Fairly common

**Habitat:** Larger well vegetated ponds, lakes and slow streams



# Familiar Bluet

*Enallagma civile*

**Average length:** 1.3 inches

**Description:** A fairly large bluet, ♂'s have a blue and black thorax with dark narrow shoulder stripes. Abdomen blue with black spots on upper side, largest on S6 & S7. S8 & S9 all blue

♀ marking similar to ♂. Pale areas pale blue to olive tan. Abdomen mostly dark.

**Flight Season:** Late May to late September. May fly into early October

**Abundance:** Fairly common

**Habitat:** Wide variety of habitats with still water



# Eastern Forktail

*Ischnura verticalis*

**Average length:** 1.2 inches

**Description:** A small dark species, strikingly marked. ♂'s lower thorax and shoulder stripe green. Tip of abdomen is blue. Dark head with bright green eyes and eye-spots

♀ back of head, most of thorax and base of abdomen is orange turning bluish with age. Black mid dorsal and thin shoulder stripe

**Flight Season:** Mid May through early October

**Abundance:** Abundant, one of the most widely distributed damselflies

**Habitat:** A wide range of permanent, still or slow water



# Fragile Forktail

*Ischnura posita*

**Average length:** 1 inch

**Description:** Tiny, one of our smallest damselflies. ♂'s thorax and abdomen is black. Green shoulder stripe broken and forms an exclamation point. Very thin rings around base of each segment.

♀ same as male but has either pale blue or green on thorax

**Flight Season:** Late May through mid September

**Abundance:** Fairly common

**Habitat:** Slow streams and ponds, shaded with herbaceous plants. Often found in dense grass or sedge beds



♂



Imm. ♀

# Forktail Quiz



The  
Dragonflies  
of  
Northern Illinois



# Dragonflies Families

- **Darners – Family Aeshnidae:**  
*Large dragonflies with large eyes that meet along a margin across the head giving it a helmeted look. Robust thorax of most have two stripes. Long, slender abdomen with spotted pattern of blue, green or yellow.*
- **Clubtails – Family Gomphidae:**  
Medium sized dragonflies with eyes that are completely separated, similar to damselflies. Thoraxes are usually bright yellow or green with black stripes. Eyes of most species are blue, green or turquoise. Narrow dark abdomen with yellow markings usually ends with last few segments wider, giving family its name.
- **Spiketails - Family Cordulegastridae:**  
Large black or dark brown dragonflies of small woodland stream. Bright yellow stripes on thorax and yellow markings on abdomen. ♀ with spike-like pseudo-ovipositor gives this family its name.



# Dragonflies Families

- Cruisers – Family *Macromiidae*  
Long slender dragonflies with long legs that have forked claws. Thorax has a single side stripe. Wings are very long, slender and stiff. The eyes are connected at a small point at the top of the head and are usually a brilliant green
- Emeralds – Family *Corduliidae*  
Emeralds are small to medium sized dragonflies with slender abdomens. Thorax & abdomen are generally dark with a hint of metallic green luster. As the name implies, most emeralds have green jewel-like eyes.
  - Baskettails - Genus *Epitheca*  
The dullest emeralds, drab brown bodies with no metallic luster. Eyes less intensely green or brown
  - Striped Emeralds - Genus *Somatochlora*  
Metallic green thoraxes and dark brown abdomens marked with yellow spots or stripes. Eyes emerald green



# Dragonflies Families

## ➤ Skimmers – Family *Libellulidae*

The largest dragonfly family in North America. They range from small to large dragonflies with stout bodies. Many species have patches of color on their wings. Many genera are represented in our area by only one or two species.

- King Skimmers – Genus *Libellula*  
Large, stout dragonflies of lakes and ponds. Most species have colored patches on their wings
- Meadowhawks – Genus *Sympetrum*  
Species of grassy meadows, marshes and lake shores. ♂ of most species are red. Identification of some species is very difficult.
- Amberwings – Genus *Nannothemis*  
Very small species with amber colored wings
- Blue Dashers – Genus *Pachydiplax*  
Medium sized species ♂ blue, may have dusky tint to wings. Very common



# Dragonflies Families

## ➤ Skimmers – Part 2

- Pondhawks – Genus *Erythemis*  
Medium to large species, Adult ♂ blue, ♀ bright green. Clear wings. Very Common
- Rainpool Gliders – Genus *Pantala*  
Broad-winged, medium sized skimmers. Often found over fields and pastures. Lays eggs in rainpools during the rainy season
- Saddlebag Gliders – Genus *Tamea*  
Large skimmers closely related to Rainpool Gliders. Large basal spots on both fore- and hind wings identify these species
- Whitefaces – Genus *Leucorrhinia*  
Small skimmers with white faces as name suggests. Body is dark, black legs and small basal wing spots. Marks on body range from red to yellow
- Small Pennants – Genus *Celithemis*  
Small colorful skimmers, thoraxes and top of abdomens patterned with red or yellow spots. Most species with distinctive wing markings



# Telling Dragonfly Families Apart



Darners



Clubtails



Spiketails

# Telling Dragonfly Families Apart



Saddlebags



Pennants



Wings Clear:  
Darners, Clubtails  
& Emeralds



Amberwing



King Skimmers

# Shadow Darner

*Aeshna umbrosa*

**Average length:** 2.9 inches

**Description:** Thoracic side stripes straight and narrow, yellow at bottom and blue to blue-green at top. Rearward facing hook at top of first stripe. Abdominal markings small. ♀ has a green-form and a blue-form

**Flight Season:** Late June through mid October

**Abundance:** Locally common

**Habitat:** Prefers shaded, forested habitat. Slow streams and forest ponds preferably with rotting wood



# Lance-tipped Darner

*Anax consticta*

**Average length:** 2.8 inches

**Description:** Front side stripe on thorax slightly constricted. Both front and back strips are wider at top. ♀ S9 is longer than S8. ♂ claspers are wedge shaped with distinctive down-pointed spur. Pale green face without black crossline. Abdomen covered with pale blue spots

**Flight Season:** July through October

**Abundance:** Fairly common, likes to perch on grasses about a foot off the ground.

**Habitat:** Shallow ponds, marshes and larger lakes with similar edges with emergent vegetation. Breeding occurs in ponds that dry up every year.



Photo By: Paul Dacko

# Common Green Darner

*Anax junius*

**Average length:** 3 inches

**Description:** ♂ with unmarked, green thorax and bright blue abdomen. ♀ same as ♂ but abdomen a light gray. A distinctive “bulls-eye” pattern on top of face.

**Flight Season:** Migratory, mid April through mid October

**Abundance:** Very common to abundant. One of our most common dragonflies

**Habitat:** Still waters, ponds marshes and slow streams with emergent vegetation



♂ & ♀ in tandem



# Unicorn Clubtail

*Arigomphus villosipes*

**Average length:** 2 inches

**Description:** Slender clubtail, green to greenish-yellow in color. ♂'s eyes turquoise to blue. Front of thorax with narrow black or dark brown stripes. S10 all pale. ♀ like male, both sexes with horn-like projection from occiput.

**Flight Season:** May through August

**Abundance:** Can be very common

**Habitat:** Mud bottomed lakes and ponds with or without much vegetation. May occur in degraded urban ponds



# Jade Clubtail

*Arigomphus submedianus*

**Average length:** 2 inches

**Description:** A prairie clubtail with pale green thorax. Abdomen dull greenish-gray with dark brown triangles. Abdominal S7-9 rich brown. Eyes greener than any other pond clubtail. Legs tan with inside of tibiae black.

**Flight Season:** May through August

**Abundance:** Can be fairly common to common

**Habitat:** Large mud bottomed lakes, sloughs and canals. Perches on or near the ground at waters edge.



Photo By: Paul Dacko



# Plains Clubtail

*Gomphus externus*

**Average length:** 2.2 inches

**Description:** Black and yellow clubtail with moderate club. ♂ with yellowish face and turquoise eyes. Legs black with outer edge of tibia yellow. S3-S7 black or brown with yellow spear points on top. Edges of S8 & S9 entirely yellow

**Flight Season:** Mid June through August

**Abundance:** Locally Common

**Habitat:** Streams and rivers with moderate current and open grassy or wooded banks



## Arrowhead Spiketail

*Cordulegaster obliqua*

**Average length:** 3.1 inches

**Description:** Stunning yellow arrowhead shaped spots on top of abdominal segments. Thorax black with yellow stripes. Eyes are green and touch only at one small point on top of head

**Flight Season:** May through July

**Abundance:** Uncommon, but may have been overlooked in many areas

**Habitat:** Forest seeps and tiny woodland streams with soft bottoms



## Swift (Illinois) River Cruiser

*Moromia illinoiensis*

**Average length:** 2.8 inches

**Description:** Nearly all black body with single yellow strip on thorax. Large yellow spot on S7. ♂ with S7 to S10 swollen to form club. ♀ same as ♂ but without club. Both sexes with bright green eyes.

**Flight Season:** Mid June through mid September

**Abundance:** Fairly common in the right habitat

**Habitat:** Larger streams to large rivers, also large lakes with areas with exposed shoreline



Photo By: Paul Dacko

## Common Baskettail

*Epitheca cynosura*

**Average length:** 1.6 inches

**Description:** A small brown dragonfly. Stout dark brown abdomen with series of yellow-orange spots along sides. Eyes range from blue & green to reddish-brown. Forewings clear; hindwings usually has a triangular basal spot

**Flight Season:** Mid May through mid July

**Abundance:** Common, can be abundant, forming large feeding swarms

**Habitat:** Marshy edges of lakes and slow streams. Prefers habitat with acidic water and mucky bottoms



# Prince Baskettail

*Epitheca princeps*

**Average length:** 2.2 inches

**Description:** A large brownish dragonfly up to twice the length of the Common Baskettail. Abdomen is long and slender. Wings marked with dark patches at base, middle and tips, similar to ♀ Twelve-spotted Skimmer and ♀ Common Whitetail

**Flight Season:** June through mid August

**Abundance:** Common

**Habitat:** Larger lakes and ponds with sandy to muddy bottoms



## Mocha Emerald

*Somatochlora linearis*

**Average length:** 2.5 inches

**Description:** Long slender emerald with unmarked thorax. ♂'s thorax dark brown with metallic green wash. Abdomen black with dull yellowish spots on sides of S1 & S2. ♀ like ♂ but with less metallic green and larger abdominal spots

**Flight Season:** June through mid September

**Abundance:** Uncommon to common in right type of habitat

**Habitat:** Small to intermittent forested streams with mud and leaf litter



Photo Courtesy of:  
Steve Collins

# Hine's Emerald

*Somatochlora hineana*

**Average length:** 2.4 inches

**Description:** A black to dark brown Emerald with two yellow stripes on thorax washed in metallic green. Third yellow stripe on S1. Face yellow. Dark abdomen with thin broken yellow ring around S2. ♂'s claspers show oval opening when viewed from side

**Flight Season:** July through August

**Abundance:** Very Rare and local.

**Only Federally endangered dragonfly.**

**Habitat:** Seepages and intermittent creeks over limestone bedrock with population of Devil Crayfish (*Cambarus diogenes*). Also seasonally dry fens and marshes.



Photo By: Paul Dacko

# Twelve-spotted Skimmer

*Libellula pulchella*

**Average length:** 2 inches

**Description:** Large dragonfly with distinctively marked wings. Each wing marked with 3 black patches. ♂ with bluish-white patches between black wing marks and bluish-white abdomen. ♀'s wings marked like ♂ but without white markings. ♀'s abdomen brown with yellow spots that form smooth, straight line down sides

**Flight Season:** Mid May through September

**Abundance:** Common to Very Common

**Habitat:** Ponds and lakes with marshy shorelines and soft bottoms



♂



♀

# Common Whitetail

*Plathemis lydia*

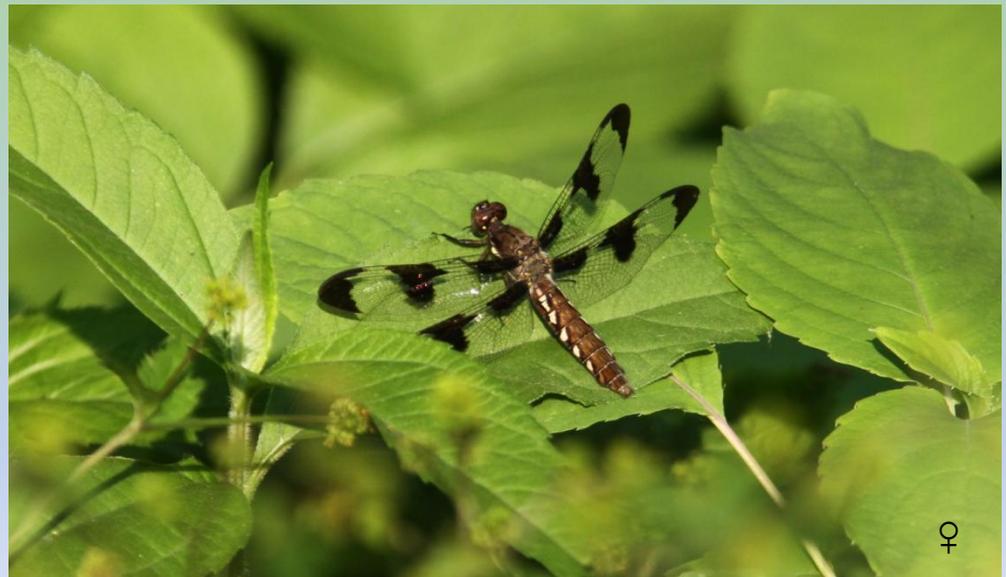
**Average length:** 1.7 inches

**Description:** Adult ♂'s unmistakable with stout white to bluish-white abdomen. Broad black bands on wings and a smaller spot near base of wings. ♀'s wings marked like ♀ Twelve-spotted Skimmer. Yellow spots on abdomen forms a jagged, zigzag stripe along side

**Flight Season:** Late May to mid September

**Abundance:** Common

**Habitat:** Prefers muddy bottoms of ponds, lakes and quiet pools of slow streams



# Widow Skimmer

*Libellule luctuosa*

**Average length:** 1.8 inches

**Description:** ♂ with striking wing pattern, black bands from wing base to nodus, bluish-white bands from nodus to stigma. Abdomen becoming bluish-grey with maturity. ♀'s wings marked like ♂'s but without bluish-white bands. Black abdomen with broad yellow stripes along sides.

**Flight Season:** Mid May through August

**Abundance:** Common to abundant

**Habitat:** Ponds, lakes and marshes



## Ruby/Cherry-faced Meadowhawks

*Sympetrum rubicundulum*/  
*Sympetrum internum*

**Average length:** 1.3 – 1.4 inches

**Description:** These two species essentially inseparable in the field. Brownish-red thorax & Bright red abdomen with black triangles down the side. Cherry-faced has red face and orange veins of leading edge of wing, black on Ruby. Ruby has yellowish-brown face. ♀'s and young ♂'s impossible to separate outside the lab.

**Flight Season:** Mid June through September

**Abundance:** Uncommon to Common

**Habitat:** Temporary or permanent ditches & streams. Also ponds, marshes and small lakes.



# Autumn Meadowhawk

*Sympetrum vicinum*

**Average length:** 1.3 inches

**Description:** Thorax reddish-brown, abdomen is red with very little or no black triangles. Legs are light not black as in other meadowhawks. Face is red. ♀'s orangish-brown with a trumpet-shaped ovipositor. Juveniles are a dusky orangish-yellow

**Flight Season:** Mid July through early November. Has one of the latest flight periods of any dragonfly

**Abundance:** Common

**Habitat:** Slow streams, permanent ponds and marshes



♂ & ♀ in tandem

# Eastern Amberwing

*Perithemis tenera*

**Average length:** 0.9 inches

**Description:** One of our smallest dragonflies. Thorax brown with faint yellowish stripes. Spindle shaped abdomen, narrower at front and back than the middle. Abdomen orangish-brown with black streaks on top. ♂ with golden amber wings. ♀ like ♂ but with variably patterned winged of orange and brownish-red patches

**Flight Season:** June through August

**Abundance:** Common to very common

**Habitat:** Ponds, quiet bays of larger lakes, backwaters and slower streams



# Blue Dasher

*Pachydiplax longipennis*

**Average length:** 1 to 1.7 inches

**Description:** Small to medium sized dragonfly, late season individuals being larger. Adult ♂ and ♀ with light blue to dark blue abdomen darkest at tip. Green eyes & white face. Thorax with green and black stripes. Pale amber wing patches. Juveniles are dark brown with yellow markings on thorax and abdomen.

**Flight Season:** June through mid September

**Abundance:** Common to very common

**Habitat:** Lakes, ponds and very slow streams



♂



Juvenile ♂ or ♀

## Eastern Pondhawk

*Erythemis simplicicollis*

**Average length:** 1.7 inches

**Description:** Medium sized dragonfly. Adult ♂'s thorax and abdomen powder-blue. Face bright green and eyes blue-green. Claspers bright white. ♀ quite unlike ♂. ♀'s thorax unstriped bright green. Abdomen with striking green & black stripes. Juvenile ♂ like ♀

**Flight Season:** Late May through mid September

**Abundance:** Common

**Habitat:** Lakes, ponds and slow streams often with floating vegetation



# Wandering Glider

*Pantala flavescens*

**Average length:** 1.9 inches

**Description:** Tapering yellow abdomen, orangish-red and black markings along top. Large, broad wings are clear, wingtips may become brown with age. Face yellow becoming reddish in older ♂'s. Eyes reddish-brown. Likes to hover while hunting.

**Flight Season:** Mid July through mid September, Highly migratory

**Abundance:** Common

**Habitat:** Primarily found in temporary pools & ponds. World wide distribution, may be found far from water or even mid ocean



# Spot-winged Glider

*Pantala hymenaea*

**Average length:** 1.9 inches

**Description:** Large, broad wings like other gliders. Small dark rounded spots at base of hindwings. Orangish-yellow abdomen patterned with tan, brown and rust. Face yellow to orange, eyes reddish-brown

**Flight Season:** Mid June through mid September

**Abundance:** Uncommon

**Habitat:** Temporary pools and ponds. Likes sunny open waters



Photo By: Paul Dacko



# Dot-tailed Whiteface

*Leucorrhinia intacta*

**Average length:** 1.3 inches

**Description:** A small to medium sized dragonfly with a bright white face. Thorax and abdomen black in ♂s, dark grey in ♀s. Squarish, bright yellow spot on top of S7. Smoky, basal patch on hindwings.

**Flight Season:** Mid May through September, one of the earliest dragonflies

**Abundance:** Fairly common to common

**Habitat:** Ponds, small lakes and quiet streams. Often found around water lilies



# Black Saddlebags

*Tramea lacerata*

**Average length:** 2.1 inches

**Description:** A large bluish-black dragonfly with long broad wings. Hindwings with irregular black patches that resemble saddlebags. Top of abdominal S7 has a pair of dull yellow spots. ♀'s duller than ♂'s

**Flight Season:** Mid June through September

**Abundance:** Common to very common

**Habitat:** Ponds, lakes and marshes with submerged vegetation



## Carolina/Red (-mantled) Saddlebags

*Tramea Carolina/T. onusta*

**Average length:** 2.0 inches

**Description:** Medium to large dragonfly with red saddlebag patches on hindwings. Thorax dull reddish-brown, abdomen bright red with S8-S9 black. Eyes reddish-brown, face dark purple. Similar Red Saddlebags has clear “windows” on inside of saddlebags and less black on abdominal segments.

**Flight Season:** Mid May through mid September

**Abundance:** Uncommon

**Habitat:** Ponds and lakes with submersed vegetation



Carolina Saddlebags



Red Saddlebags

Photo By: Paul Dacko

# Calico Pennant

*Celithemis elisa*

**Average length:** 1.2 inches

**Description:** A small stunning dragonfly. ♂ with black abdomen with bright red heart shaped spots on top of S4–S7. ♀'s abdominal markings bright yellow. Clear wings with reddish-brown patches and spots. Stigma and face of ♂ red, yellow in ♀.

**Flight Season:** Late May through mid August

**Abundance:** Fairly Common

**Habitat:** Marshy ponds, lakes and slow streams with shallow, soft bottoms and emergent vegetation like rushes



# Halloween Pennant

*Celithemis eponina*

**Average length:** 1.5 inches

**Description:** Medium sized pennant. Thorax orange-brown with black stripes. Abdomen black with orange top spots from base to S7. Wings golden-tan to orange with reddish-brown to black bands. Dull red eyes and red-orange face. Markings on ♀ yellow.

**Flight Season:** Early June through late September

**Abundance:** Common

**Habitat:** Ponds, lakes and slow streams. Will travel far from water to hunt



♂



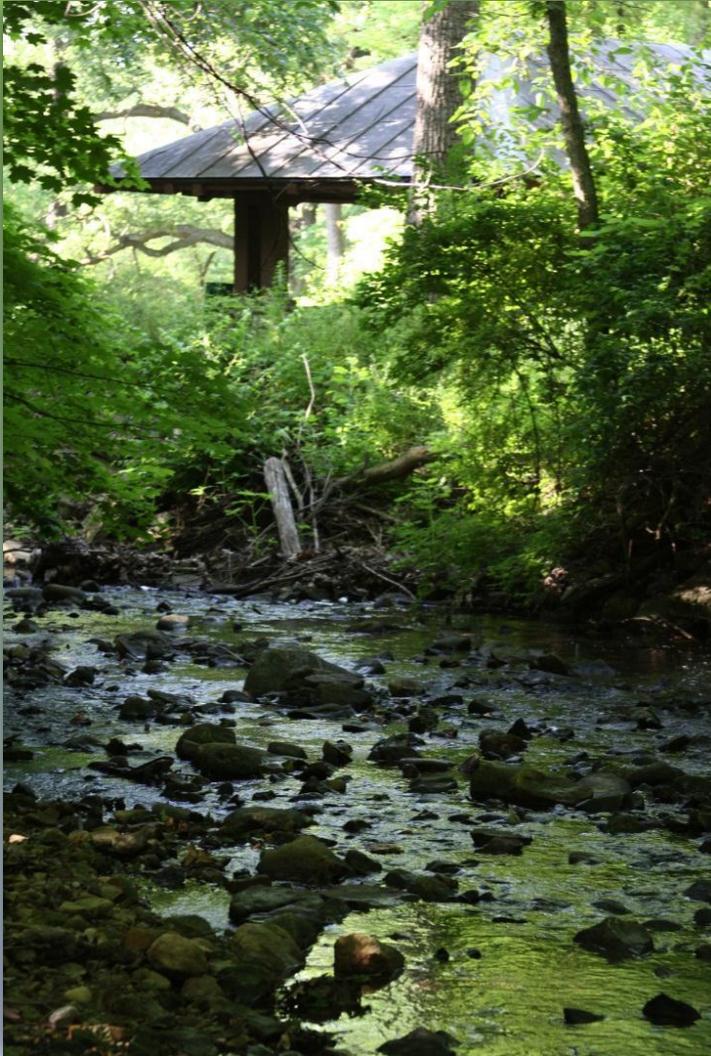
♀

# Looking for Dragonflies



Belted Whiteface

# Where To Find Odonates



Because odonates need water to reproduce the best place to start looking for them is near bodies of water.

These can include:

- Rivers and stream
- Temporary creeks
- Lakes and ponds
- Marshes
- Bogs
- Even drainage ditches



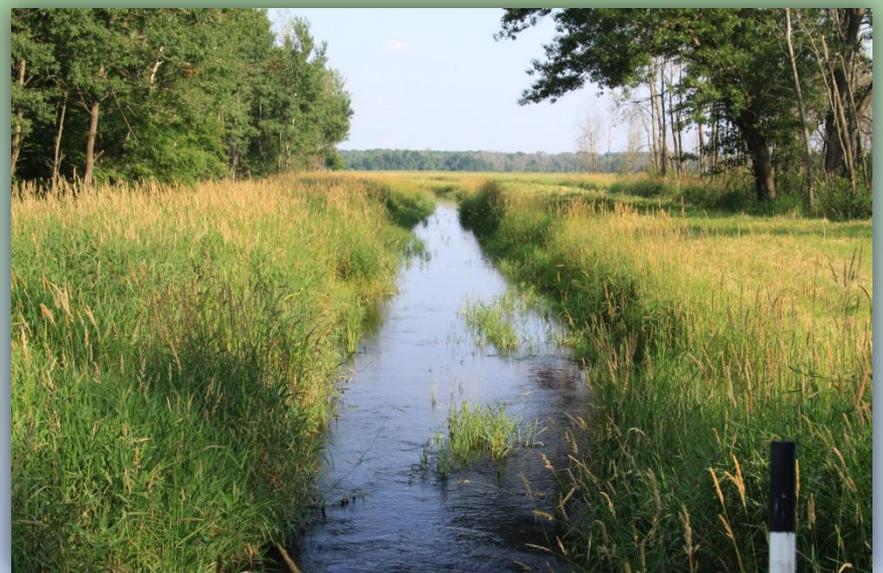
**Rivers**



**Streams**



**Temporary Creeks**



**Drainage Ditches**



**Ponds**



**Lakes**



**Marshes**



**Bogs**

Photo Courtesy of:  
Illinois Department of Natural Resources

# Odonates Found Far and Wide



Many odonates wander away from their breeding areas in search of food. In the spring and fall migratory species can also be found far from water.

Look in some of these areas:

- Prairies
- Savannas
- Open forests
- Meadows and farm fields
- Your back yard



**Meadows/Farm Fields**



**Prairies**



**Savanna/Open Woodlands**



**Back Yards**

# How Many Odonate Species Are There?

- ~ 6,000 species world wide
- ~ 462 species in U.S. & Canada
- ~ 145 to 150 species in Illinois
- ~ 78 species in Cook County
- However, there may be 100's if not 1,000's of as yet unknown species world wide



Blue Dasher

# 23 Common Dragonflies of the Chicago Region

(Based upon monitoring data)

- Common Green Darner
- Lance-tipped Darner
- Swamp Darner
- Jade Clubtail
- Unicorn Clubtail
- Common Baskettail
- Prince Baskettail
- Calico Pennant
- Halloween Pennant
- Black Saddlebags
- Red Saddlebags
- Eastern Pondhawk
- Twelve-spotted Skimmer
- Widow Skimmer
- Common Whitetail
- Dot-tailed Whiteface
- Eastern Amberwing
- Blue Dasher
- Wandering Glider
- Autumn (Yellow-legged) Meadowhawk
- Band-tailed Meadowhawk
- Ruby Meadowhawk
- Whiteface Meadowhawk

# 25 Common Damselflies of the Chicago Region

(Based upon monitoring data)

## Bluets

- Azure Bluet
- Double-striped Bluet
- Familiar Bluet
- Stream Bluet
- Marsh Bluet
- Orange Bluet
- Rainbow Bluet
- Skimming Bluet
- Slender Bluet

## Forktails

- Eastern Forktail
- Fragile Forktail

## Sprites

- Sedge Sprite

## Dancers

- Blue-fronted Dancer
- Blue-ringed Dancer
- Blue-tipped Dancer
- Powdered Dancer
- Variable Dancer

## Broad-winged Damsels

- Ebony Jewelwing
- American Rubyspot

## Spreadwings

- Common Spreadwing
- Elegant Spreadwing
- Emerald Spreadwing
- Lyre-tipped Spreadwing
- Slender Spreadwing
- Sweetflag Spreadwing

# What to take into the field

- Close-focusing binoculars
- Note book and pen
- Field Forms
- Field guides
- Camera (DSLR) with telephoto or macro lens
- Water proof boots
- Broad-brimmed hat
- Insect repellent
- Water bottle w/water



# What to Look For

- Become familiar with the common species of your site.
- Learn how to separate odonate families.
- Note any wing patterns.
- Are the eyes widely spaced or do they touch and by how much?
- What color are the eyes?
- Note color of striping on thorax
- Note pattern and color of spotting on abdominal segments
- Remember, newly emerged individuals are light in color, and darken as they age.
- Male terminal appendages can be useful in separating species.
- Some species, especially females can not be separated in the field.



Fragile Forktail

# When to look for dragonflies

- Start looking for dragonflies mid to late morning.
- Emerging dragonflies are best observed early in the morning.
- Some species will fly until dusk.
- Know the flight season of the species you may encounter.
- Few species will fly on very hot days or in the rain.
- Sunny days are best but dragonflies will fly on warm overcast days.



Chalk-fronted Corporal

# Resources – Field Guides

- Damselflies of the North Woods  
By Bob DuBois
- Dragonflies and Damselflies of Northeast Ohio  
By Larry Rosch, Judy Semroc & Linda Gilbert
- Dragonflies and Damselflies of the East  
By Dennis Paulson
- Dragonflies of Indiana  
James R. Curry
- Dragonflies of the North Woods  
By Kurt Mead
- Dragonflies Through Binoculars  
By Sidney W. Dunkle



# Resources – Web Sites

- Odonata Central – [www.odonatacentral.org](http://www.odonatacentral.org)
- The Dragonfly Website – [www.dragonflywebsite.com](http://www.dragonflywebsite.com)
- Bug Guide – [www.bugguide.net](http://www.bugguide.net)
- Illinois State Museum: Dragonfly & Damselfly Collection – [www.museum.state.il.us/ismdepts/zoology/odonata/](http://www.museum.state.il.us/ismdepts/zoology/odonata/)
- Illinois Odonata: Species Records for Counties – [www.museum.state.il.us/research/entomology/od\\_species4cnty.html](http://www.museum.state.il.us/research/entomology/od_species4cnty.html)
- Checklist & Status of Illinois Dragonflies – [www.museum.state.il.us/research/entomology/df1list.html](http://www.museum.state.il.us/research/entomology/df1list.html)
- Wisconsin Odonata Survey – [www.wiatri.net](http://www.wiatri.net)
- Dragonfly ID app from *Birdseye Apps*:  
*Nature at your Fingertips*  
now available for iPhones and Android



# Photo Credits

All photos used in this program were taken by James Phillips except for the following:

- Protodonata Fossil:  
By Gunter Bechly
- Protodonata nymph fossil:  
Courtesy of Colorado University  
Museum
- Arrowhead Spiketail egg laying:  
By Paul Dacko
- Volo Bog :  
Courtesy of IDNR
- Swift (Illinois) River Cruiser  
By Paul Dacko
- Mocha Emerald:  
By Steve Collins
- Hine's Emerald:  
By Paul Dacko
- Spot-winged Glider:  
By Paul Dacko
- Red Saddlebags  
By Paul Dacko





# Odonate Monitoring

## The Dragonflies & Damselflies of Northern Illinois

Presentation created by James J. Phillips

Rev. - 2019