Build-A-Dragonfly Activity

Head

Antenna (up to 2 participants)
Explanation = Their two short bristly antennae are thought to function as windsocks or anemometers, measuring wind direction and speed, thereby giving them a method with which to assess their flight.
Action = pretend to lick finger and hold up in air
Verbal = “Winds out of the SW 10-20”

Compound Eye (up to 2 participants, 1 for each “eye”)
Explanation = Each of the two compound eyes are made up of up to 30,000 individual “sub-eyes”, called ommatidia. As each “sub-eye” points in a slightly different direction, the dragonfly sees lots of slightly different views of its surroundings. They are particularly sensitive to movement as a moving object passes from the vision of one "sub-eye" to another.
Action = hold two hands somewhat together with fingers crossed over one another to simulate multiple lenses
Verbal = “The better to see you with my pretty” (or “I see you, I see you”)

Mouthparts (up to 2 participants)
Explanation = translation of the word Odonata is “toothed ones”, a reference to the toothy mouthparts which work together to hold the prey while it is chewed up.
Action = use hands to make side to side and up and down chewing motions
Verbal = “Chomp, chomp, yum, yum”

Thorax

Legs (up to 6 participants)
Explanation = Legs are used for capturing prey and for perching, but not for walking. The legs are held to form a basket in which prey is caught.
Action = use both arms in scooping motion toward mouth
Verbal = “Scoop ’em up, scoop ’em up”
**Muscles** inside thorax (4 participants preferred)
Explanation = Large muscles in the thorax power the wings, legs, and head.
Action = raise arms and show your muscles
Verbal = “Welcome to the Gun Show” or “We’re going to PUMP.... you up!”

**Wings** (4 participants preferred)
Explanation = Each of a dragonfly’s four wings operates independently, providing great maneuverability.
The flight muscles are anchored directly to the ends of the wings.
Action = One hand resting on a “muscle” participant, other arm flapping
Verbal = “Fly the friendly skies”

**Abdomen**

**Abdominal Segments** (up to 10 participants, 1 for each of the ten abdominal segments)
Explanation = The abdomen is very flexible and can bend up and down or side to side for balance as well as for mating and thermoregulating behaviors
Action = rock gently with slight forward and back motion while holding one arm out straight toward segment in front of you
Verbal = “long and straight, let’s balance and mate!”
DRAGON HUNTER CHALLENGE

Enjoy exploring the interesting dragonfly/damselfly activity around a pond. See how many points you can collect for catching them and/or observing their interesting behaviors.

1 point for each **different** species captured.

<table>
<thead>
<tr>
<th>Species Captured</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Observe a dragonfly or damselfly pair flying or perched in tandem.</td>
</tr>
<tr>
<td>40</td>
<td>Observe a dragon or damsel in the &quot;wheel&quot; position &quot;wheel&quot; position either flying or resting.</td>
</tr>
<tr>
<td>10</td>
<td>Find an exoskeleton (the aquatic skin of the nymph) Hint: usually found clinging to cattail stem or other emergent vegetation.</td>
</tr>
<tr>
<td>30</td>
<td>Observe a female dragon or damsel laying eggs either singly or in tandem. Some females tap their abdomens on the water, others lay eggs in or on aquatic vegetation.</td>
</tr>
<tr>
<td>50</td>
<td>Observe a dragon or damsel emerging from it's aquatic exoskeleton.</td>
</tr>
<tr>
<td>100</td>
<td>CATCH A DARNER!</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th><strong>Prop</strong></th>
<th><strong>Connection to Odonata</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For Larval Dragons &amp; Damselflies:</strong></td>
<td></td>
</tr>
<tr>
<td>Balloon or toy jet plane or jet ski</td>
<td>jet propulsion of larvae</td>
</tr>
<tr>
<td>Folding pick-up tool (reacher/grabber)</td>
<td>hinged mouthparts of nymph</td>
</tr>
<tr>
<td>Rubber fish or Picture of Fish Gill</td>
<td>dragonfly nymph breathes by gills; larvae eat some fish and vice versa</td>
</tr>
<tr>
<td>Picture of Mosquito larvae</td>
<td>typical prey of dragon/damself larvae</td>
</tr>
<tr>
<td>Picture of Greek mythology</td>
<td>naiaid, or nymph of dragon/damself</td>
</tr>
</tbody>
</table>

| **For Adult Dragons & Damselflies:** | |
| Plastic Dinosaur | dragonflies pre-date dinosaurs |
| Piece of yarn/rope 30 inches | wingspan of fossilized Carboniferous dragonflies |
| Mosquito or Fly, rubber bug or picture | typical flying prey items |
| Insect eye simulator (e.g. bug eyeglasses), wrap-around sunglasses, or goggles | large compound eyes |
| Helicopter or Picture of Dragonfly Micro Unmanned Aerial Vehicle | aircraft inspired by observing dragonfly flight |
| 35 mph speed limit sign | proven recorded speed (although estimated maybe to 50 mph) |
| Basket or shopping cart/basket | way dragons hold legs to scoop up prey out of the air |
| Long hair comb | bristles on legs help "comb" flying insects out of the air |
| Fake Teeth | Insect order name "Odonata" means "toothed ones", named for teeth on mouthparts (e.g. serrated mandibles) |
Cutting pliers

Tongs or clamps

Drinking Straws

Something heart-shaped (e.g. Heart shaped box or plastic heart)

Egg carton

Rubber frog, fish, praying mantis, or puppet bird (e.g. kestrel)

Picture of male & female cardinal

Miniature knight in armor

Picture of Washington Monument (or other obelisk)

Mouth guard or other protective guard

Horse

Darning needle

Hummingbird puppet, or a Twig

Airport wind sock

Suitcase

side-to-side cutting/chewing mouthparts (e.g. mandibles)

mouthparts (e.g. labrum and labium) to hold food while other mouthparts cut and crush

singly can represent tracheal “tubes” and spiracle openings; cluster of straws could be used to make compound eyes

mating wheel

adult female lays eggs/odonates start life as egg

predators of dragonflies

sexual dimorphism in most dragons & damselflies

exoskeleton, or could represent guarding behavior of male

obelisking behavior

hover guarding by males

“horse stingers”

“Devil’s darning needle”

dragons specialized for flight such that, like hummingbirds, do not walk around -- just perch

small antennae of dragons used for wind speed and direction

a few species of dragons migrate
## Dragonfly Families

| Petaltails | Named: for male cerci that are expanded and flattened like a flower petal  
Body Color: Only large gray and black dragonfly in Ohio (gray thorax and gray & black abdomen)  
Eyes: widely separated; dark, somewhat blackish  
Habitat: Woodland seeps  
Other: Primitive family dating back to Carboniferous Period (250 million years ago) |
|---|---|
| Darners | Named: for the long slender abdomen - like a darning needle  
Body Color: Most are brown or black, striped and spotted with blue, green, or yellow  
Thorax often patterned with frontal stripes and two lateral stripes usually blue, green, or yellow  
Eyes: very large eyes joined by a long seam  
Habitat: diverse group – some ponds/lakes, some streams/rivers  
Other: Abdomen with a noticeable pinch on S3 in most males  
Perch by hanging vertically |
| Spiketails | Named: for long pointed spiked ovipositor in females of most species  
Body Color: field i.d. by contrasting black/dark brown and yellow patterns  
dark thorax with two bold yellow stripes on top and two more on each side  
abdomen black or dark brown with bright yellow patterns  
males and females are similar in color  
Eyes: tear-shaped eyes which barely meet at top of head blue or green  
Habitat: streams  
Other: early and short flight period - late May through June |
| Cruisers | Named: for strong flight cruising up and down large rivers and streams looking for mates and prey  
Body Color: Dark thorax with single yellow or white lateral stripe on each side and very long legs  
Thoracic stripe extends up and across width of dorsal thorax; males and females similar colors  
Eyes: Have eyes that meet at a long seam (darners seam is longer)  
Habitat: streams and rivers  
Other: Abdomen with slightly widened segments at end, resembling a club, which is more pronounced in males |
| Emeralds | Named: for glowing emerald green jewel-like eyes in many, but not all species  
Body Color: Some have green or bronze metallic iridescence on the body; sexes similarly patterned  
Eyes: meet at a seam  
Habitat: most are uncommon as they inhabit rare wetlands like bogs; the common ones (Prince Baskettail and Common Baskettail) use ponds/lakes  
Other: Wings generally clear but may develop slight amber tint  
Males often have a spindle-shaped abdomen, narrowed toward both ends  
Are “flyer dragons”, seldom perching |
## Dragonfly Families

| Clubtails | Named: Most species with abdomen segments 7-9 enlarged and clublike (male usually larger club) (Note: there are other dragons in other families that have club-like abdominal tips)  
**Body Color:** Generally have a "camouflage" pattern, usually brown or black background marked with yellow or green  
**Eyes:** widely separated eyes, usually green or blue  
**Habitat:** ponds/lakes for the common species; many others inhabit flowing water  
**Other:** Often hard to i.d. to species in field  
Often perched horizontally on low, flat surfaces like the ground or a rock  
Do not soar, nor feed in swarms, nor lay eggs in tandem |
| Skimmers | Named: for the behavior of females skimming across the water surface periodically dipping the tip of their abdomen into the water to deposit eggs  
**Body Color:** Often have bright bodies and conspicuous wing patterns; many species exhibit sexual dimorphism, however in some species the immature male color pattern looks like female but changes as mature (e.g. Eastern Pondhawk, Dot-tailed Whiteface), and in some species as females age they change to male-like colors (e.g. Dot-tailed Whiteface, Blue Dasher, Slaty Skimmer)  
**Eyes:** meet at a seam in the center of the head, giving a helmet-like appearance  
**Habitat:** usually slow-moving waters like ponds & lakes  
**Other:** Largest group of odonates in NE OH, divided into ten subgroups.  
Most skimmers are "perchers"; they hunt from a perch, making quick aerial sorties, returning habitually to that same perch.  
Many have dark wing bands (not just spots).  
Some exhibit pruinosity – powdery gray covering that develops on the bodies with age.  
Most mate in midair rather than while perched.  
In some species the male will “hover guard” ovipositing female, while in others the pair will fly in tandem while laying eggs (only other dragon to do this is Common Green Darner). |