

## Search and Observation Tips

Success in tracking down any animal comes in large part from knowing what they want and how they see the world. *Think* and *see* like the creature you're trying to find, and you'll know where to look. No one really knows what's going through that tiny (and truly *ancient*) insect brain, and our eyes can't see the world like the 5,600 ommatidia that make up dragonfly's *huge* compound eyes. However, we can learn about their life cycles and habitat needs, and imagine what kind of environments they seek out as they fly through our landscapes at 40 mph.

To get inside their heads and understand what they need, check out [What is a dragonfly?](#) and [Habitat Tips](#), or just jump ahead and review the following notes.

Visit almost any body of fresh water May thru September, and you'll probably see at least a few dragonflies without much effort or preparation. If however, you're looking for a *particular* species or especially high *diversity*, here are a few tips to help you on your search:

- **Time of year** – I would suggest that the first and easiest method to both find and ID a dragonfly is to look at the [calendar](#). With a few exceptions (Common Green Darner, Common Whitetail, Eastern Pondhawk), most adult dragonflies have a relatively short flight season – usually about 2 or 3 months. For some species it's only 4 to 6 weeks. The most useful data on this site is without question the early, late and "peak" flight dates found on the [65 Species](#) ID pages. That's what I most wanted when I started, and probably the best tool I can give you for finding dragonflies in Northern VA. If you're looking for a particular species, start by checking out their "peak" flight time. Conversely, if you're trying to ID a particular species, check out the [Flight Time Calendar](#) to see what's out and about that time of year. In general, this can be tough mid-May thru June, since almost every species is out during that time period, but using the calendar any time before and after that is a great place to start. Of course, if you're looking for **maximum species diversity**, mid-May thru June/early July is the best time to be in the field. Over 50 of the 65 species on this site can be seen during this time period. Memorial Day weekend is one of the best times to be out there; wading through tall meadows, stream riffles and pond edges. For more about best times of year for dragonfly chasing see [Flight Time Calendar](#) and [Seasonal Viewing Tips](#).
- **Time of day** – Most dragonflies reach their peak of activity from about 10AM-5PM (11-4 in early spring and mid-fall). However, many stream species are most active during very specific times. Often, it's mid-morning and then again between 5PM-7PM. Although these species appear to shun the mid-day heat, most dragonflies like sun and heat, so aiming towards the brightest, warmest part of the day is a good rule. However, because there are several species that specifically shun the mid-afternoon heat and wait until early evening (Fawn Darner, Shadow Darner and Shadowdragons, and to a lesser extent Tiger Spiketail, striped emeralds and hanging clubtails) you cannot fully survey an area for dragonflies unless you explore your site on a few summer and fall evenings.



- **Weather** – Again, except for a very few species, dragonflies are true sun-worshippers and will literally drop out of the sky and into the closest vegetation when a large cloud crosses the sun. They need, or at least prefer, direct sunlight to fuel their 40 mph, 50 wing-beats-a-second flight. Cloudy days take most dragonflies out of the sky, and rain or wind send them deep into cover. However, some of my favorite and most productive dragonfly trips have been on cloudy days. Why? This is when many species search out meadows and perch among tall grass, waiting for the sun to emerge. Wade slowly and carefully through a tall meadow on a cloudy day any time between late April and October and you're likely to flush at least a few interesting dragonflies. If you're lucky, you may even find dragonflies usually out of reach – species that spend sunny days high in tree tops (clubtails) or in constant flight (gliders).

- **Habitat Type** – As we talked about in [Habitat Tips](#), dragonflies look for three basic elements: sun, perching structure, water. Figure out what particular combination of these three factors your species needs and you'll be halfway to finding them. One dragonfly may prefer shady woodland streams with lots of woody debris and another may be looking for sunny, shallow, marshy pools with lots of sedges/rushes. In general, the most productive habitat types in Northern VA appear to fall into the following five categories:

- 1) shallow ponds, marshy pools and flooded meadows (shallow = less fish predation)
- 2) wide, sunny, shallow creeks and shallow sections of sunny river with exposed rocks, gravel/sand bars, woody debris, some aquatic vegetation and stable/non-eroded banks
- 3) sunny forest seeps with a gentle but perennial flow and vegetated banks
- 4) large, sunny meadows and athletic fields adjacent to rivers, large creeks or ponds
- 5) sunny, unused roads, wide sunny pathways and sun-lit wood-edges adjacent to the above listed wetlands.

The above habitats exist in Northern VA, but the following habitat types are mostly missing from our area, and the species that prefer them are either absent or in very low numbers: bogs, coastal plain grassy pools, trout streams (cold, high-oxygen, rocky), natural lakes (all of Northern VA's lakes are man-made), and large, year-round swamps (outside of Mason Neck and a few spots along the Occoquan and Potomac Rivers, most of our swampy spots are either quite small or seasonal).

- **Search Method** – So now that you've got all the above factors in-mind, how do you actually track down and get close to dragonflies?
  - Stop and Look - as you get close to habitat, stop and look around (and up) for dragonflies that may also be approaching the site
  - Search the Edge – whether you're exploring a meadow, pond, stream or river it's often the *edge* where dragonflies spend their time
  - Sunniest Spots – dragonflies live to be in the sun, so search out the sunniest spots of whatever habitat you're in – that's where the dragonflies will be.



- Perches - Most dragonflies spend about half of their day on sunny perches, so pay special attention to sunny branch tips, tree trunks, rocks, fence posts, tall grasses and pathways.
- Shallowest Water – dragonflies prefer to lay their eggs in shallow water (less fish, more shelter, more food for larva), so whether you're exploring a pond, marsh or stream, focus on the shallower sections of water.
- Flush Tall Grasses and Low Branches - dragonflies often find shelter by perching deep within tall grass or tree and shrub branches. When walking thru meadows or along sunny forest edges near water, try flushing them into the open by brushing vegetation with a stick or insect net.
- 10:30AM-2:30PM & 4:30PM-dusk – Search during these times and you'll cover the periods of peak activity for a wide variety of species
- Mid-April thru early-July & mid-Sept thru mid-October. Searching during these weeks and months will allow you to witness peak flight periods for all 65 species listed on this site. It also allows you to take a break for a month or two, and give your feet a chance to dry out, your sunburn and poison ivy a chance to fade, and your chigger bites time to heal (in my experience, late July thru mid Sept is the worst time for chiggers in our area, so a good time to take a break ☺).

➤ **Photography** – When I started photographing dragonflies in 2003, digital cameras hadn't been fully accepted as capable of taking excellent wildlife photos. Today they have, and digital cameras are also a basic part of our lives, found in almost every cell phone and laptop. My camera is a Panasonic LUMIX FZ10 (35 mm equivalent, Leica lens, 4 megapixels, 12x optical zoom, image-stabilizer, manual/automatic focus options, built-in macro-lens, and a video feature). It's described as "SLR-like", which means it's a step-up from the typical point-and-shoot, but still basically a lay-person's, user-friendly, automatic camera. You don't have to purchase any extra lenses or other equipment – just grab the camera and go. This model doesn't exist anymore – the current equivalent is the **LUMIX DMC-FZ150**. It has all the great features of the FZ10, with an up-grade to 12 megapixels and 24x optical zoom. It's about \$500 on Amazon.com. Nikon and Cannon have similar excellent models, as do other companies – shop around and find what looks good to you. I like LUMIX simply because it's *several hundred dollars less* than Nikon and Cannon. It's worked great for me for ten years, 300+ field excursions and several thousand photos.



#### **Camera-shopping Tips:**

- At least 4 megapixels - to be honest, I don't think you need anything higher than 6, but most cameras today come with 10, 12 or higher. More marketing than necessity if you ask me.
- At least 12x optical zoom – 16 or higher is better. Getting close-up photos of a perched dragonfly without catching it usually means at least 8x optical zoom, and I often went all the way to 12 and found it lacking.
- Manual focus option – Essential! The automatic feature often refuses to focus on the dragonfly and picks the branch, rock, etc. Very frustrating.

- Macro lens – always helpful for close-up shots. Many digital cameras come with it as a built-in feature, so you don't have to carry extra lenses.
- Image-stabilizer – essential to prevent blurring when you've zoomed in and every breath and tremor would show up. LUMIX has this feature – other brands do as well.
- Extra lens cap – *always* bring at least one extra lens cap. If you lose one in the field (and you will) you'll get a scratched lens – not good.

#### **Photography tips:**

- Use a good carrying case – I like Lowepro, but there are other great cases.
- Always wear/use the camera strap – if your camera is out of its case, the strap should be around your neck, or wrapped around your wrist. As you wade across streams, jump rocks, climb fallen trees and crawl through underbrush you *will* drop your camera – the strap is there to stop a fumble from becoming a \$500 mistake.
- Take photos as you approach, in case it flies away – the perfect photo may be from 6 feet away, but the dragonfly in question may not be interested in sitting still that long ☺ Take photos as soon as you're close enough to capture any detail, then keep snapping those images as you carefully creep closer for that "perfect" shot.
- Take "extra" photos with different angles, lighting, and distances – if you think you need 4 photos, take 8 or 12. Take photos from different angles, different amounts of light and varying focus distances – lighting and focus are important, and you often don't realize how dark, light, shadowed or blurred your photos are until you get home and review them on your computer.
- Try to capture different field marks – the abdomen, wing patterns and huge eyes may be the most colorful, but it's often the **face, thorax sides, legs or abdomen tip** that hold the crucial field marks. You can avoid collecting dragonflies by photographing all their relevant marks in the field.
- Know what field marks you're looking for – the above tip is easier to achieve if you know the important field marks *before* you head-out, e.g. maybe the abdomen tip or the face is the only body feature you need to photograph.
- Make notes the same day, while their fresh! – Doesn't have to be anything complicated or involved. Just make a list for each survey with the **location, date, time** and species seen (I do mine after I get home). These records are more important than the photos. And of course you can add other observations if you want, e.g. weather, behavior (mating, emergence, feeding, etc.), habitat descriptions, plant life, bird species – whatever seems interesting to you. But don't make it a burden – the date, location, time and species seen are what you'll really need.
- Download, review, delete, label and store photos ASAP – to prevent memory issues (for both you and your computer) I suggest reviewing all your photos within a few days, if not the day of. Delete blurred and duplicate images (all



those digital images can build up and become impossible to store, sort and/or find), place your photos in folders with **date and location**, and clear your camera's memory card so it's empty for your next survey.



➤ **Catching and Collecting – tips and considerations**

● **Catch and Release:**

Netting – I try to save my net as a last resort, when it's the only way to ID the dragonfly, take a good photo or it's part of a public program. If you're patient, and have an optical zoom of 16x or more, you can almost always photograph the dragonfly in question without netting it. Using a net is fun and usually harmless if you're careful. However, a strong net swing can occasionally injure some of the larger faster species, like cruisers, spiketails, darners and striped emeralds. Very few of Northern VA's dragonflies are truly rare or vulnerable, but it's still unfortunate to injure one of these purely beneficial insects. So, please enjoy using your net (as long as you have permission/permits from both the property owner and the state of VA), but try to be careful and minimize injury to our gnat-catching, colorful, acrobatic dragonflies.

Chasing dragonflies can be loads of fun (definitely a rite of passage for dragonfly geeks like me), so as long as you have permission/permits and are careful, here are a few **netting tips** to help you catch your quarry:

- Best place to buy a net – Bioquip.com seems to have the best selection, for kids, beginners and professionals. You can spend \$20 or \$80, depending what you want. To get the right handle length, I buy several sections and attach them according to what I'm doing, or how I'm traveling.
- Net handle – 4'-6' seems to be the best length. Any shorter, dragonflies are hard to reach – longer, the net becomes cumbersome/hard to swing
- Net rim – about 36" is perfect. Smaller can make capture more challenging, and bigger makes it cumbersome to swing.
- Net bag – again, 36" is perfect. Dragonflies can turn and fly out of smaller bags. Large mesh is better than fine, as it allows you to move the net quicker through the air. Some sources say that colored netting is less visible to dragonflies than white, but that's never really made sense to me. More importantly, I haven't noticed a difference.
- Netting Technique – dragonflies can see almost 360 degrees, so undetected approach can be a challenge, if not almost impossible. I find that swinging the net up from beneath, or sideways from directly behind is most successful. Always **follow-thru, i.e. swing through and past** the dragonfly – odds are it notices your swing and starts to fly away before your net reaches it. Sweep back and forth to drive it the **bottom of the bag**, then **flip the net bag** over the rim to keep it from flying out.

- Removing dragonflies from your net – sweep your net back and forth to push him to the bottom. Then reach in and *gently*, but firmly, fold his wings behind his back, and carefully remove him by holding his folded wings. Those wings look fragile but are surprisingly tough. They don't have scale like butterflies or moths. You can hold him like this for several minutes without hurting him.
- Do they bite? – Dragonflies won't ever bite you, unless you hold them. If you're holding them dragonflies *can* bite, as can we, but unlike people their jaws aren't powerful enough to cause us injury. The minor exception are a few of the larger species (hanging clubtails, dragonhunters, the larger darners, and spiketails), which, although they certainly can't cause any real injury, do possess jaws just strong enough to barely break the skin and sometimes draw a drop or two of blood – again, only if you're holding them. They can bite hard enough to hurt a little, but mostly just startle. **The main risk is to them** – if you pull your finger back too fast you can yank off their heads. If they bite you, just carefully/slowly wiggle your finger back. Remember, you invaded his space and caught him in your net, so of course he's upset and defending himself. **It's your responsibility** as the bigger and (hopefully) more evolved species to release him with as little injury as possible.
- Do they sting? – No dragonfly can sting, ever. However, they hope *you* don't know that and may try to escape by *pretending* they can sting 😊 They may repeatedly tap you with the tip of their abdomen – all bluff and completely harmless, but maybe you'll think they're a wasp and let them go? Pretty resourceful little buggers.
- Holding and releasing dragonflies – the best way to hold dragonflies is by folding their wings behind their back. It won't hurt them, and it makes it easy for you to see and examine field marks. If you're going to be handling dragonflies you should **avoid wearing insect repellent or sunscreen on your fingers**. Also, don't touch their wings if your fingers are very sweaty – sweaty fingers can stick to and tear their wings. Try to hold them **no longer than 5 minutes, 10 at the most** – it can wear them out. Release them by putting them on the tip of your finger, or set them on a **sunny perch** to catch their breath. It may take them a few minutes to recover and fly off – the sun will give them energy. Try not to touch their eyes as they are delicate.
- Public programs, counts and field trips – When leading a public program, it's tons of fun and provides great education to catch a few dragonflies and give folks a close-up look at these bizarre and beautiful insects. Show them those amazing eyes, stunning colors and bristled legs. Talk to them about adaptations, food-webs and the importance of predators. Kids especially will be fascinated and hooked. Follow the tips above about **Holding and Releasing**, be sure to mention permits/property owner's permission, and stress how very special it is to see these creatures up close. I always encourage folks to feel those bristly/sticky legs by *gently* dragging the dragonfly's feet over people's upheld fingertips. Rather than passing the dragonfly around, I would suggest holding it yourself as described above. **Or**, a very dragonfly-friendly method often used by Loudoun



County Wildlife Conservancy field trip leader Andy Rabin, is to place the dragonfly in a transparent container and pass it around the group. Remember, 10 mins is a good handling time-limit to keep in mind, and try to release them in the sun.

- **Collecting/Preserving – what to consider:**

If you decide to pursue a collection permit from the Virginia Department of Game and Inland Fisheries (VDGIF), there is no difference between “catch and release” and “collecting”. The act of catching a dragonfly, even if released 2 minutes later, is still considered *collecting* by VDGIF, and requires a collection permit. I treat catch/release and collecting/preserving as two different methods on this website, and will now discuss collecting/preserving, i.e. creating a collection with preserved specimens.

I have grown to prefer catch/release (and photography) over collecting/preserving, although I’ve done both in the past. Deciding which to pursue is a personal choice. Conversations about the pros and cons of each often come down to personal philosophy, and folks can feel quite strongly about the issue. I suggest that whatever you decide it makes sense to ask yourself the **following 3 questions** – let your own answers and good judgment guide your decisions:

1. **Legal** – Do you have both the necessary state permits and the property owner’s permission to collect?
2. **Environmental** – Is the local population you’re collecting from, large and stable enough to withstand collection without adverse results? I would suggest considering the specific park, stream or local watershed you’re in as the “population” in question, rather than the larger county or state population.
3. **Ethical** – Will removing the dragonflies in question from their natural habitat result in providing specific knowledge that leads to significant conservation, education or appreciation of dragonflies and/or their habitats? Will your collection specifically help dragonflies in some way?

My personal opinion, is if you can answer “yes” to **all three** questions then collecting/preserving is worth considering. If not, I would suggest thinking twice about it. It then comes down to whether or not it’s something you want to do. Many naturalists and scientists that I respect choose to collect, and others that I also respect, choose not to.

I’ve done *both* in my career as a naturalist – for the duration of this project (since 1998) I’ve refrained from collecting/preserving. These days I very much enjoy catch and release, and unless I need a specific close-up photo or I’m leading a field trip, I usually just use my binoculars and camera. Advances in digital photography have made *virtual* collections within everyone’s reach, and species ID is usually possible (with a few exceptions) without capture. The pygmy darners, along with a few clubtails and emeralds, certainly are *easier* to ID if you’ve got one in your hands 😊 I enjoyed catching these tricky species for close-up examination and photos of



hard-to-see fieldmarks, and equally enjoyed releasing them back into the beautiful and imperiled habitats from which they came.

How to preserve dragonfly specimens:

- Always remember to record the date and location for each specimen you collect/preserve, and find a way to keep it with the preserved specimen. Without this info your collection will have minimal scientific or conservation value.
- Because dragonflies lose their colors a few days after death, preserving them can be a challenge and requires specific treatments if you wish to keep the color.
- As I haven't collected for a while, I'm not up to date on the best methods for preserving and therefore refer you to the following excellent fieldguides for more detailed collecting and preserving tips:
  - 1) Dragonflies of the North Woods, Kurt Mead
  - 2) Dragonflies and Damselflies of Georgia, Gif Beaton
  - 3) Dragonflies and Damselflies of New Jersey, Barlow, Golden and Bangma



*PJ Dunn makes an expert swing at a Great Blue Skimmer for a public program at Huntley Meadows Park.*

*Tony Robison stalking Dragonhunters, like the one above, who's doing some stalking of his own as he waits for dinner to fly by his perch.*

