

Dragonflies and Damselflies (Odonata): Field Technique and Identification

Instructors: Bryan Pfeiffer and Michael Blust
July 1-7, 2018

General Seminar Description

Although dragonflies and damselflies live and hunt and die at our (wet) feet, they can be difficult to study and learn in the field. This seminar will emphasize practical skills for locating, identifying and enjoying members of the order Odonata. We will encounter odonates through binoculars, with photography, and by naked eye. We will practice net technique in order to capture and identify dragonflies in the hand, which is the best way to learn them. We will also cover the essentials of nymph identification and the responsible collection and preservation of dragonfly specimens (adults, nymphs and exuviae).

Morning lectures will feature biology, taxonomy, and ecology. In the lab, we'll practice identification using prepared specimens, so that students will easily see and learn the essential characteristics for identifying various odonate groups in the field. During field excursions, students will visit rivers, wetlands, lakes and ponds for a broad odonate diversity. Evening sessions will for the most part cover specimen preparation, photography and students' particular aspirations.

The seminar will feature a "generic" approach to this insect order: we will discuss the particular habitat requirements, field techniques, and appropriate morphological characteristics for odonate genera, including some of the more elusive (and prized): *Somatochlora* (Striped Emeralds), *Ophiogomphus* (Snaketails), and additional members of the Gomphidae (clubtails). For example, although many *Somatochlora* and *Leucorrhinia* species inhabit peatlands, our approach to finding and identifying them are entirely different.

This seminar is suitable for beginning and advancing odonatologists, and for collectors and observers alike. We'll be in Maine near the peak of dragonfly and damselfly diversity, including high Gomphidae (clubtail) diversity, a family that can otherwise be somewhat difficult to learn. You will get wet and be happy in the company of these charismatic insects. Although it is fine to attend this seminar solely on dry land, as odonatologists like to say, "Good things come to those who wade."

Instructors

Although he is a field entomologist, **Bryan Pfeiffer** (bryan.pfeiffer@uvm.edu) is more of a teacher at heart. Over the course of three decades, he has lectured and guided people in the discovery of birds and insects. As a consulting field biologist, Bryan has worked for governments, timber companies, private landowners, and conservation groups. He has netted and photographed dragonflies and damselflies from tropical forests to above the Arctic Circle. As an educator, Bryan teaches professional writing to graduate students in the University of Vermont's Field Naturalist Program. Because he would rather spend time in the field, Bryan has a relatively small list of publications in odonatology to his credit, and is making glacial progress on a book about dragonflies called *Pantala: What an Insect Tells us about Sex, Evolution, and the Human Condition*.

As is true with many field naturalists, **Dr. Mike Blust** has been a birder for most of his life. An entomologist by training, he enjoyed 25 years of teaching a variety of biology courses at a small college in Vermont before taking an early retirement to join the Peace Corps and spend two years in Mexico working on sustainable harvesting of edible insects. Having done research on a dragonfly species for his MS, in 2000 he again turned to dragonflies as a research topic in Vermont. As the state with the lowest recorded Odonate diversity in the northeast, Mike and a handful of other enthusiasts have brought the average number of species per county from around 30 to above 90. Unlike birding, part of the fun and challenge is having to catch many of them to identify them with certainty. But as with birding, it is all mostly an excuse to enjoy the great outdoors.

Class limit: 16 participants

Seminar location: Steuben, Maine, and nearby field sites



An Odonata Pedagogy: Lectures and Field Work

We begin each morning — before dragonflies take flight for the day — with a reading of an Odonata haiku, then lectures and scope time. The lectures and specimen work are designed to get you familiar with particular features for identifying various genera. Although most dragonflies in our region can be identified by sight alone (based mostly on body markings), the best way to learn and confirm the identity of any particular dragonfly is in the hand. Basically, we'll look at key characteristics, including a lot of reproductive parts, through scopes and hand lens so that you can be ready for identification in the field.

On at least two days, we'll be in the field for the entire day (with boxed lunches). Otherwise, we'll stay close to the Eagle Hill campus for the morning, then take short field excursions after lunch. On most field days, we'll return to Steuben no later than 6PM so that you can have an hour or so to decompress before supper at 7 PM. After supper each night, we'll return to our lab for specimen work, photography practice or students' own "independent studies." In this seminar, we adapt to various levels of expertise and student interests. Also note that we need sunshine for odonates in the field; so our schedule could change with the weather.

General Schedule

Sunday, July 1

- 6:00 PM Informal greeting and acquaintance
- 7:00 PM Supper
- 8:00 PM A general discussion of the course, who we are, our objectives.
- 8:30 PM A short introduction to Odonata families

July 2-6

The seminar will generally follow one of the two daily schedules (long field day or short field day) listed below. The instructors and students will choose lecture topics from the "Odonata Buffet" (listed to the right). Before the course, Bryan and Mike will poll everyone on level of experience and seminar preferences.

During our first morning, July 2, we'll discuss field supplies and practice net technique. (You'll soon be swinging for odonates in the big leagues.)

Long Field Day

- 7:30AM Breakfast
- 8:30 AM Morning lecture
- 10:00AM Leave for the field
- 12:30PM Boxed lunch in the field
- 1:00 PM Field work
- 5:00 PM Return to Eagle Hill
- 7:00 PM Supper
- 8-9 PM Evening discussion and specimen work

Short Field Day

- 7:30AM Breakfast
- 8:30 AM Morning lectures and specimen work
- 12:30PM Lunch at Eagle Hill
- 1:30PM Leave for field (closer to Eagle Hill)
- 5:30PM Return to Eagle Hill
- 7:00PM Supper
- 8-9PM Evening discussion and specimen work

Saturday, July 7

- 6:30AM Morning "debriefing" and wrap up
- 7:30AM Breakfast
- 8:30AM Farewells



The Odonata Buffet

Lecture Topics and Scope Work

- The Harmony of Odonata Families
- Actualizing Aeshna (mosaic darners)
- Getting Gomphidae (clubtails) to Genus
- Sacred Somatochlora (striped emeralds)
- Loving Leucorrhinia (whitefaces)
- Enallagma Enlightenment (bluet terminals)
- Learning Lestes (spreadwings)
- Identifying Nymphs to Family (we'll go to genus and species level as time and interest permits)
- Insect macro photography (optional)
- Specimen preparation and curation

Field Priorities

- Net technique practice (formal sessions and lots of field time)
- Navigating rivers (including exuviae detection)
- Peatland species
- Catch-Identify-and-Release
- Dredging for nymphs
- Field photography
- Staying safe and happy

Informal Lectures/Discussions (usually after supper)

- Field supplies and attire
- Rearing nymphs
- Dragonfly sex and the most amazing experiment in the world (rated PG, for politely graphic)
- Odonate conservation
- Online data sources
- Dragonflies in the zeitgeist

Books, Field Guides and Other References

Bryan and Mike will haul to our seminar a sizable library of books on Odonata. Eagle Hill's library will also be a resource for you. For whatever reason (probably the passion of its followers), this insect order has an abundance of wonderful local field guides. You'll almost certainly want to own the guide closest to where you live. For our purposes here in Maine, you need only one book (listed below), which serves as our textbook and field guide. We will also provide seminar participants with a packet of handouts and other written resources.

The following field guide is *highly recommended* for lectures and field investigations:

- *The Dragonflies and Damselflies of Algonquin Provincial Park and the Surrounding Area* by Colin D. Jones, Andrea Kingsley, Peter Burke and Matt Holder: <http://store.algonquinpark.on.ca/cgi/algonquinpark/00517.html>. This guide not only features the vast majority of species we'll encounter in Maine, it is an excellent resource for learning odonate taxonomy and morphology. Note that shipping costs from Canada are extremely high for this guide, so we may pool an order of multiple copies.



These field guides are recommended but not required for this seminar:

- *Damselflies of the Northeast* by Ed Lam: <http://www.edlam.net/book.html>
- *Dragonflies and Damselflies of the East* by Dennis Paulson: <http://press.princeton.edu/titles/9538.html>
- *A Field Guide to Dragonflies and Damselflies of Massachusetts* by Blair Nikula, Jennifer L. Loose, and Matthew R. Burne: <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/publications-forms/publications/>

Other general references (not required for the seminar):

- *The Maine Damselfly and Dragonfly Survey Final Report (2005)*, which can be downloaded at: mdds.umf.maine.edu/
- *Dragonflies: Behavior and Ecology of Odonata* by Philip S. Corbet. Comstock Publishing Associates. 1999.
- *Dragonflies of North America 3rd Edition* by James G. Needham, Minter J. Westfall, Jr., & Michael L. May. 2014
- *Damselflies of North America 2nd edition* by Minter J. Westfall, Jr., and Michael L. May, (revised by Mike May). 2012. (plus a supplementary companion volume of color plates.)

Web Resources

- Odonata Central – <http://www.odonatacentral.org/>
- Maine Damselfly and Dragonfly Survey – mdds.umf.maine.edu/
- Vermont Dragonfly and Damselfly Atlas – <http://val.vtecostudies.org/projects/vermont-damselfly-and-dragonfly-atlas/>
- The Dragonfly Society of the Americas – <http://odonatacentral.org/index.php/PageAction.get/name/DSAHomePage>
- Northeast Odonata (Facebook group) – <https://www.facebook.com/groups/241657275954604/>
- NymphFest – <http://bryanpfeiffer.com/nymphfest/>
- International Odonata Research Institute – <http://www.iodonata.net/>



© Bryan Pfeiffer
www.bryanpfeiffer.com



© Bryan Pfeiffer
www.bryanpfeiffer.com

Field Attire

Wear standard field attire and plan to get wet. In the company of odonates, which have amazing visual acuity, brightly colored clothing is a “fashion violation.” So wear muted greens, tans, browns, grays or camouflage. Loose-fitting, quick-dry nylon is great, especially long pants (because we’ll be wading a lot). Other important points about field clothing for odonates:

- **Footwear** – You can elect to keep your feet dry throughout this seminar, but to really know dragonflies and damselflies you must get wet. We’ll wade into lakes, ponds, wetlands and rivers. Many odonologists wade with **old lightweight boots or beat-up tennis shoes** (which often get tossed out after a field season). Specialized water sandals or water shoes are fine (you might want to wear them with socks in lentic situations). High rubber boots will sometimes work for pursuing odonates, but you often run the risk of water higher than your boots (it’s likely); rubber boots also take on water from the top when you kneel in most bogs for macro photography or close looks at plants and insects. So bring your rubber boots, but plan to wear other footwear into the water.
- **Field Vest** – If you like to use a vest, bring it; but it’s not necessary for this seminar. At most, you’ll carry a field book, a field guide (or portions of a field guide we will supply for the seminar), and a box for your specimens (if you choose to collect or temporarily hold odonates for identification later “on the shore”). For many of us, a standard field bag on a belt or a lumbar (fanny) pack will hold most of the field supplies we need (see below).

Field Supplies

- **Field Bag** – If you’ll be collecting odonates or doing catch-identification-and-release, you’ll need something easily accessible for holding live specimens. Your best bet is a field bag worn around your waist that holds your specimen box, glassine envelopes, a field book and pencils, a few vials, and perhaps a field guide. One option is a Pajaro brand field bag or something similar:
<http://www.pajaro.com/fieldbag.shtml#original>.
Also check Army surplus shops for field bags.



- **Hand Lens** – Get yourself either a 10x or 14x hand lens. (No field naturalist should be without one.) Your best lens is a Bausch & Lomb Hastings Triplet. Second best would be a Bausch & Lomb Coddington. Otherwise, you can find budget hand lenses for \$10 to \$20. A hand lens is required for the seminar.



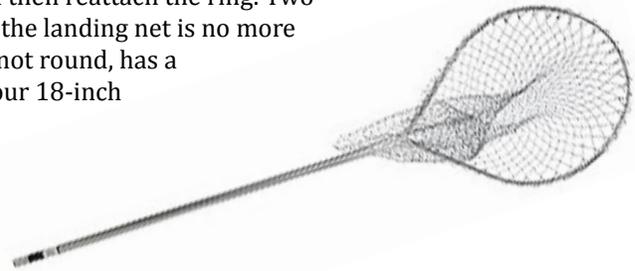
- **Specimen Box** – If you’ll be catching odonates for specimens or for identification-and-release, you’ll need a sturdy box to hold your live subjects in glassine envelopes measuring 3” x 5”. (Bryan and Mike will supply glassine envelopes.) Don’t get a box more than one or two inches deep (so that it can fit easily fit into your field bag). Plastic or aluminum is fine. One or two of these is essential for the course unless you do not plan to catch any odonates.



- **Vials or Small Tackle Boxes** – Plastic vials or small tackle boxes are ideal for holding nymph specimens or exuviae. Check your local hunting shop or mega-sporting-goods store for these. A box that fits into your field bag, the cargo pocket on your pants or your shirt pocket is great. Larger versions of these plastic tackle boxes are also great for holding miscellaneous field supplies – everything from pencils to hand lenses to spare batteries. Bryan and Mike will have extra vials and specimen storage boxes to lend. But this stuff is inexpensive and worthy of any entomologist’s collection of field supplies.



- **Insect Net** – Although it’s not required, a net will help you learn during this seminar. Because dragonflies are fast and agile, you’ll want a net that you can swing hard and fast. Standard insect nets, like those from BioQuip, which tend to have skinny handles and flexible net rings, are okay but not ideal. What you want for dragonflies is a net with a stout handle (about four or five feet long) and a stiff, tubular net ring, either 15 inches or 18 inches in diameter. A long-handled fishing landing net (fitted with an insect net bag) can be great for dragonflies (see below). Your instructors will have several extra nets for use in the course. If you’re in the market for a net contact Bryan (bryan.pfeiffer@uvm.edu) or check out the resources below:
 - **BioQuip** (<http://www.bioquip.com>) – Consider a 15” or 18” net ring on a telescoping handle, with a green (rather than white) aerial net bag. If you plan to order a net from BioQuip, DO IT NOW; don’t wait until the last minute or you may be without your own net during the seminar. Again, these BioQuip nets are okay but not ideal.
 - **Rose Entomology** (<http://www.roseentomology.com>) – If you suspect dragonflies will be a big part of your future (and you can afford a net at heart-stopping prices), do yourself a favor and buy a collapsable or standard net from Rose Entomology. Your instructors know of no better net (other than homemade) on the market. Rose’s collapsable handle (it’s a single tripod leg), an 18-inch net ring, and a green standard aerial net bag (not the fine mesh bag that Rose suggests). If Rose doesn’t have green bags, buy a green one from BioQuip to match the size of you net ring.
 - **Modified Landing Nets** – Make your own dragonfly net from a standard aluminum fishing landing net (either long-handled or telescoping) with a round or (more often the case) teardrop-shaped ring (pictured below). Mike and Bryan love these nets. To make yours, cut off the fish netting, remove the ring from the handle, and (sometimes with difficulty) fit the ring with an 18-inch BioQuip aerial net bag, and then reattach the ring. Two important points: 1) Make sure the ring on the landing net is no more than 18 inches in diameter or, if the ring is not round, has a circumference of about 56 inches so that your 18-inch insect net will fit. 2) Make sure the ring can be removed and reattached to the net handle. If you think you might want to make your own net, contact Bryan for advice (bryan.pfeiffer@uvm.edu).



Other Supplies and Lab Materials

Mandatory	Highly Recommended	Optional	To Be Supplied for You
<ul style="list-style-type: none"> • Daypack or Lumbar Pack 	<ul style="list-style-type: none"> • Field book and mechanical pencils or pens for notes in the field 	<ul style="list-style-type: none"> • Camera (even if you’re not attending for photography) 	<ul style="list-style-type: none"> • Glassine envelopes for field use
<ul style="list-style-type: none"> • Water bottle 	<ul style="list-style-type: none"> • Dissecting Scope (if you happen to have one and care to bring it) 	<ul style="list-style-type: none"> • Bug dope, sunscreen, personal first aid, GPS unit 	<ul style="list-style-type: none"> • Mylar envelopes for specimen storage
	<ul style="list-style-type: none"> • A small towel for drying off in the field 	<ul style="list-style-type: none"> • Laptop computer for preparing specimen labels, storing photographs, etc. 	<ul style="list-style-type: none"> • Acetone and other supplies for specimen preparation
			<ul style="list-style-type: none"> • Voucher cards for specimens

Credits and Grading

College Credit

Most participants will be taking this seminar for reasons other than for degree purposes. However, there are two options for earning university or college credits, with grading based on class participation and an extra project after the completion of the seminar.

1. You may arrange with your home institution to receive credits directly from the Eagle Hill Institute, in which case we provide your institution with a copy of the syllabus, the instructor's CV, and a grade roster for two credits. There is a fee.
2. Most seminars qualify for two credits from the University of Maine at Machias. The University of Maine at Machias application from needs to be filled out. Please inquire about details.

In both cases, the office staff and the instructor need to know of your interest in earning credits at least two weeks prior to your arrival at the Institute. You also need to confirm your plan to earn credits with your home institution. Options for the required after-seminar projects include a written paper based on additional fieldwork, comparison of field data with published reports, development of curriculum materials, and/or completion of a literature review on an agreed-upon subject. You are welcome to make a suggestion based upon your personal interests.

Continuing Education Units (CEUs)

You can earn CEUs through the University of Maine for a fee. If you are interested in earning credits, you need to let both the office staff and the instructor(s) know about this at least two weeks prior to your arrival at the Institute.



© Bryan Pfeiffer
www.bryanpfeiffer.com