Dragonflies and Damselflies (Odonata): Field Technique and Identification

Instructor: Bryan Pfeiffer

July 2-8, 2017

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 some of the more elusive (and prized) genera, including *Somatochlora* (Striped Emeralds), *Ophiogomphus* (Snaketails), additional members of the Gomphidae (clubtails), and other genera. 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."

Instructor

Although he is a field entomologist, Bryan Pfeiffer (bryan.pfeiffer@uvm.edu) is probably 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 birder and entomologist, 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 and Ecological Planning Programs. Because he would rather spend time in the field, Bryan has a relatively small list of publications in odonatology to his credit, and is only making grudging progress on a book about dragonflies called *Pantala: What an Insect Tells us about Sex, Evolution, and the Human Condition*.

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 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 be looking at key characteristics, including a lot of reproductive parts, through a hand lens.

On at least two days, we'll be in the field (with boxed lunches) for the entire day. 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 recognize that we need sunshine for odonates in the field; so our schedule could change with the weather.

General Schedule

Sunday, July 2

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 3-7

The seminar will generally follow one of the two daily schedules (long field day or short field day) listed below. Bryan and students will choose lecture topics from the "Odonata Buffet" (listed to the right). Before the course, Bryan will poll everyone on preferences, but we should be able to cover most of what's on our "buffet."

During our first morning, July 3, 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 2

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

The Odonata Buffet

Lecture Topics

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

Field Priorities

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

Informal Lecture/Discussions (usually after supper)

- Field supplies and attire
- Specimen preservation and curation
- Rearing nymphs
- Dragonfly sex and the most amazing experiment in the world (rated PG, for politely graphic)
- Data and record-keeping
- Odonate conservation
- Dragonflies in the "popular culture"

Books, Field Guides and Other References

Bryan 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. Bryan will also provide seminar participants with a packet of handouts and and other written resources.

The following field guide is required 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.

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

- *Damselflies of the Northeas*t 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 editio*n 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/
- 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/

Net technique training at Eagle Hill

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 cotton or quick-dry nylon is great. Because we'll be wading a lot, quick-dry nylon pants are highly recommended. 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 odontologists 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 run the risk of water higher than your boots (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 Bryan 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 <u>required</u> 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 will supply 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 <u>essential for the course</u> unless you do not plan to catch any odonates.

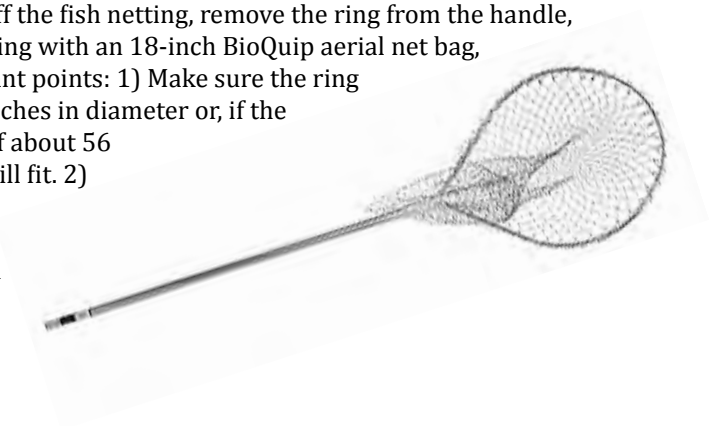
- **Vials or Small Tackle Boxes** – Plastic vials or small tackle boxes are idea for holding nymph specimens or exuviae. Check your local hunting shop or mega-sporting-goods store for these. A box that fits into your field bag, the cargo pocket on your pants or your shirt pocket is great. Larger versions of these plastic tackle boxes are also great for holding miscellaneous field supplies – everything from pencils to hand lenses to spare batteries. Bryan 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 instructor, Bryan Pfeiffer, 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 net from Rose Entomology. Your instructor knows of no better net (other than homemade) on the market. Get 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). You 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
• Daypack or Lumbar Pack	• Field book and mechanical pencils or pens for notes in the field	• Camera (even if you're not attending for photography)	• Glassine envelopes for field use
• Water bottle	• Dissecting Scope (if you happen to have one and care to bring it; we'll have other scopes on hand)	• Bug dope, sunscreen, personal first aid, GPS unit	• Mylar envelopes for specimen storage
	• A small towel for drying off in the field	• Laptop computer for preparing specimen labels, storing photographs, etc.	• Acetone and other supplies for specimen preparation
			• 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 credits for participating in this 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 2 credits. There is a fee.

2 - Most seminars qualify for 2 credits from the University of Maine at Machias, in which case we will also provide your institution with a copy of the syllabus, the instructor's CV, and a grade roster for 2 credits. The standard 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 the latest by noon of Monday, the first seminar day, and preferably much sooner. 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)

Continuing Education Units (CEUs)

You can earn CEUs through the University of Maine Orono 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 the latest by noon on Monday, the first seminar day.