

Butterfly Identification and Ecology

North Branch Nature Center Online

Summer 2020

Syllabus, Equipment and Reference Books

General Course Information

Designed for naturalists and scientists of varied abilities and interests, this seminar is two months of butterfly immersion online and in the field. Students will discover, study, and enjoy butterflies during their peak flight season here in Vermont or beyond. We'll cover butterfly taxonomy, behavior, field techniques (including netting and photography), and classic identification challenges.

In addition to assigned online readings and lectures, students will be advised how to locate and visit local sites for their own independent observations of butterflies on the wing. Each student will also have the option to take on an independent project during the course.



Crowberry Blue (*Plebejus idas empetri*) / Harrington, Maine / 28 June 2017

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The Instructor

A field entomologist, writer, and consulting field biologist, **Bryan Pfeiffer** is perhaps more than anything a teacher. Over the course of three decades, he has guided thousands of people to the discovery of birds, insects and other nature in various wild places. Bryan was a co-founder of the Vermont Butterfly Survey and its principle field lepidopterist. He has collected, watched, and photographed butterflies from the tropics of Central America to above the Arctic Circle in Scandinavia. He now consults with the University of Vermont's Field Naturalist Program and is at work on two books. Contact Bryan at bryan@bryanpfeiffer.com or find him online at www.bryanpfeiffer.com.

Course Organization

Four, two-week study units drive this course. Starting on Monday, June 1, Bryan will deliver the first of four bundles of online learning lectures, readings, and field assignments. Each bundle will include:

- **A Pre-recorded Lecture** — About an hour long, these will be online for viewing whenever it is convenient for each student. Every lecture will cover a particular aspect of butterfly taxonomy, identification or ecology, as well as relevant instruction and advice for students as they head out for field adventures with butterflies.
- **Online Classroom Meets** — One week after each lecture, we'll convene online to discuss the particular unit's topics and field challenges. If you're unable to join the meeting, each will be recorded and posted so that you can at least view it afterwards.
- **Readings** — Each bi-weekly bundle will include relevant readings, handouts, and online resources.
- **Independent Field Outings** — These will be your opportunity to put the online learning into practice. You'll be directed toward field sites where butterflies should be exhibiting what we're learning at the moment. Students will also have opportunities to pursue their own aspirations with these insects (photography or collecting, for example, or work with a particular taxon).

Online Unit Bundle Release Dates (Mondays at 5PM): June 1, 15, 30, July 13

Online Classroom Meets (Mondays at 5PM): June 8, 22, July 6, July 20

The course is designed for the aspirations of any student — from beginning butterflyers to intermediate lepidopterists looking to advance with a particular species or taxon. With varied online resources, students can choose to allocate more time to any aspects of this insect order, including photography, specimen collection and preparation, taxonomy, or all or part of the above. In short, students anywhere can complete this seminar without ever having to swing a net or touch a specimen, or by netting specimens and assembling their own reference collections.

Four, two-week units constitute this course:

Unit 1: Being There — Find, Observe, Learn, Enjoy

Bundle Delivered: June 1 at 5PM

Online Meet: June 8 at 5PM

When the course begins, members of five butterfly families will be on the wing in Vermont and across New England (as well as the sixth family for many students farther afield). Your objective will be to find them. Our lecture will include a general introduction to butterfly evolution, taxonomy, and family characteristics. But our major objective will be to get you outside and comfortable around these insects. We'll focus on where, when, and how to find butterfly generalists (easy) and specialists (tougher). We'll cover your tools as well, including binoculars, cameras, field guides, and net technique and extraction. And we'll learn "how to look" at a butterfly in order to determine its identity — and appreciate its rewards. This unit will deliver a relatively large share of the course's learning materials. So you might want to set aside extra time for reading the week of June 1.

Unit 2: Being a Butterfly

Bundle Delivered: June 15 at 5PM

Online Meet: June 22 at 5PM

You cannot know these insects until you know their life cycles and behaviors, which we will cover in two short lectures. Our emphasis will be butterfly energy budgeting — basically a day in the life of a male and a female, from emergence to mating to death. Your field explorations during this unit will expand to observe butterfly behaviors, particularly host plant association and mating behaviors. You may even find yourself watching a butterfly lay eggs. An extra video in this unit will feature butterfly capture, extraction from the net, and release.

Unit 3: Classic Identification Challenges and Finding Rarities

Bundle Delivered: June 30 at 5PM

Online Meet: July 6 at 5PM

As you gain experience and confidence in the field, you'll make progress on locating scarce or rare species and conquering some of the classic identification challenges. Skipper identification will constitute a significant portion of this unit, including the challenges in duskywings (*Erynnis*) and the gray-brown skippers sometimes known as "witches" (among them members of the genus *Euphyes*).

Unit 4: Wrapping Up

Bundle Delivered: July 13 at 5PM

Online Meet: July 20 at 5PM

Your primary objective will be to conclude the course ready to continue learning on your own. Photographers, for example, will gain additional skills during this unit. Interested students can learn to prepare a butterfly specimen. And we'll cover the resources (mostly online) you'll use to continue your discovery and enjoyment of these spectacular insects. Students who so desire will have the option to present to the class on their independent studies — either live after our online meeting or in a pre-recorded video.



Swamp Metalmark (*Calephelis muticum*)
Jackson County, MI / 10 July 2004

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Field Guides and Other References

Most any field guide to regional or North American butterflies will suffice for this course. If you intend to travel for butterflies, or if you are looking to buy only one guide, your best bet is the Swift Guide (below), but also note the next two on the list.

- ***A Swift Guide to Butterflies of North America*** (Second Edition) by Jeffrey Glassberg — A detailed guide designed for quick field identification; it lacks species accounts or much other text.
- ***Butterflies of Pennsylvania: A Field Guide*** by James L. Monroe and David M. Wright — If you live anywhere in the Northeast, and want a masterpiece when it comes to butterfly identification and life histories, you will do no better than this guide. Note, however, that unless you live in Pennsylvania, you won't have species distribution maps to help guide your way in identification; and this guide may lack certain species or include others that you won't find in your state. Even so, this field guide is so good that you might want to buy and annotate it with your local species. Also note that images in the book are from pinned specimens rather than living butterflies. As a result, you may want another field guide to help you learn how various families and genera appear, carry themselves, and go about their business in the field. Not only does this guide cover the essentials of butterfly identification and life histories for most species in the Northeast, it includes special accounts of some of the classic identification challenges, with field marks you simply won't find in other guides. It is a dream field guide.
- ***The ROM Field Guide to Butterflies of Ontario*** by Peter Hall, Colin Jones, et al. — A close second to the Pennsylvania guide comes from Ontario, which includes many species we find in Vermont and across much of the Northeast. Again, you won't have species maps to guide you outside of Ontario. Even so, this book covers most of the butterflies in New England and is among the best books for learning butterflies, including life histories. You can annotate it for your own local fauna. This guide features photos of living butterflies and pinned specimens.

Other field guides, somewhat dated but nonetheless adequate for learning in this course:

- ***Kaufman Focus Guide to Butterflies of North America*** by Jim Brock and Kenn Kaufman — A fine guide for all of North America.
- ***Butterflies through Binoculars – The East*** by Jeffrey Glassberg — Fine for beginners in eastern United States.
- ***Caterpillars of eastern North America: a guide to identification and natural history*** by David Wagner. Princeton University Press.

Reference Books

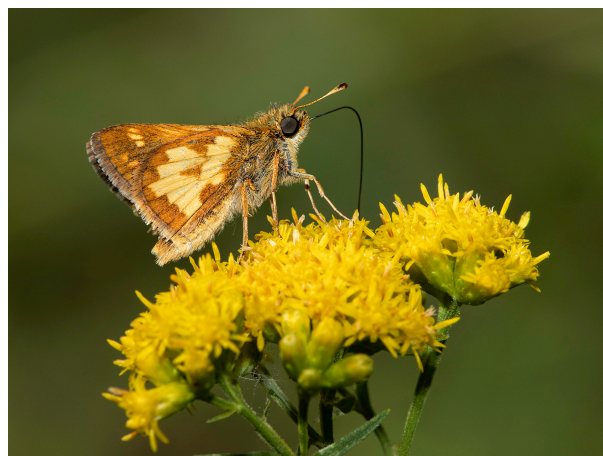
- ***Butterflies of the East Coast: An observer's guide*** by Rick Cech and Guy Tudor. Princeton University Press. 2005. ISBN 0-691-09055-6 — A masterpiece featuring the identification and natural history of eastern coast (and inland) butterflies. Now out of print, but if you can find it used, by all means buy it. (Or buy an extra for Bryan.)
- ***The Butterflies of North America: A Natural History and Field Guide*** by James A. Scott. Stanford Univ. Press. 1992.
- ***An introduction to the study of insects***, 6th ed. by Donald J. Borror, C. A. Triplehorn and N. F. Johnson. Harcourt Brace Jovanovich College Publishers. 1989. ISBN 0-03-025397-7
- ***The Lepidoptera: form, function and diversity*** by Malcolm J. Scoble. Oxford Univ. Press. 1995.

Moths

- ***Peterson Field Guide to Moths of Northeastern North America*** by David Beadle and Seabrook Leckie — If you intend to purchase one moth field guide, this is the one to get.
- ***Les Papillons du Quebec*** by Louis Handfield — In French; get the identification guide, not the scientific version unless you are a full-fledged fanatic. This guide features moths. ISBN 9782896542451

Techniques

- ***Basic techniques for observing and studying moths and butterflies*** by William D. Winter Jr. Memoir No. 5. 2000. ISBN 0-930282-07-8. Available through The Lepidopterists' Society.



Peck's Skipper (*Polites peckius*) / Buxton, Maine / 27 August 2019

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Field Clothing and Gear

In the field, you'll want to wear standard attire (muted greens, tans, browns, grays or camouflage are best) and plan for occasional wet feet for certain butterfly species. Quick-dry nylon pants are highly recommended — or permethrin treated clothing if ticks are a concern (they are indeed a concern). Other important points about field clothing for Lepidoptera:

- **Footwear** – You can elect to keep your feet dry in pursuit of butterflies, but you may find yourself visiting wetlands, particularly bogs and marshes, for some wonderful species. Old lightweight boots, beat-up tennis shoes or specialized water sandals or water shoes are fine. High rubber boots will often work for pursuing butterflies, but in most bogs or other wetlands you will run the risk of water higher than your boots, or water pouring in when you kneel for macro photography or close looks at plants and insects.
- **Field Vest** – If you like to use a vest, use it; but it's not necessary for this course. (Bryan doesn't wear one.) At most, you'll carry a field book, a field guide, and a box for your specimens (if you choose to collect or temporarily hold leps for identification later). 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 butterflies or doing catch-identification-and-release of butterflies, you'll need something 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, and a field guide. One option is a Pajaro brand field bag or something similar. Also check Army surplus shops for these kinds of field bags.
- **Specimen Box** – If you'll be catching butterflies for specimens or for identification-and-release, you'll need a sturdy box to temporarily hold your live subjects in glassine envelopes measuring 3" x 5" (available online). Don't get a box more than one or two inches deep (so that it can fit easily slide into your field bag). Plastic or aluminum is fine.
- **Flat-tipped (Stamp Forceps)** – If you prefer to catch, identify, and release butterflies, get a pair of pair of flat-tipped forceps. In this course, you'll learn a rapid field survey technique for safe extraction of your butterfly from a net in order to grab a quick photograph for identification later or for a photo voucher.
- **Insect Net** – Although one is not required, a net will help you learn during this seminar. Most lep nets are 15" in diameter with a four- or five-foot handle. Consider spending a bit more for a telescoping handle. If you plan to order a net, DO IT NOW; don't wait until the last minute or you may be without a net during the seminar. If you suspect that a net will become a big part of your life, don't scrimp on price or quality. Standard BioQuip nets, for example, with wooden handles, frankly, aren't that great. BioQuip's telescoping aluminum-handled net is okay. But the Rose Entomology nets are wonderful. Bryan can give you advice on making your own study, stout net (particularly good for dragonflies) from a \$30 fishing dip net and a standard BioQuip aerial net bag). A sources for nets and insect supplies:
 - **BioQuip** – <http://www.bioquip.com>
 - **Atelier Jean Paquet** – <http://www.atelierjeanpaquet.com/en/default.aspx>
 - **Rose Entomology** – <http://www.roseentomology.com> – Expensive and wonderful insect nets, now sold through BioQuip.

