

# **Groupings of Organisms & Key Experts**

## **Walden Biodiversity Days July 4, 1998 & 2009**

### **Compiled & Reported by Peter Alden**

The hundreds of experts and helpers of all sorts deserve our gratitude for the time you all spent getting here and back home, your time in the field and lab and computer, and your incredible expertise. We trust the friendships renewed and made and the characters you met were well worthwhile. The fine gatherings organized by the **Walden Woods Project** at the **Minute Man National Park** Friday evening, the lovely breakfast at the **Brace's**, the luncheon tent at the **Winter/Rasmussens**, and the fine cookout under the massive tent at the **Thoreau Institute** were memorable. Kudos to **Kathy Anderson** and her staff at WWP. **Tom Jones** did a great job on the video tribute to **Ed Wilson** on his 80<sup>th</sup> featuring **Jane Goodall**, **Ed Begley, Jr.** and **Don Henley**.



Peter Alden, Richard Premack, Dr. E.O. Wilson – Photo: Rich Cech

I would also like to highlight some of the key specialist experts that have donated their precious time on one or both of these Fourth of July holiday weekends to honor Henry David Thoreau and Edward O. Wilson. These specialists are listed A-Z in the participant lists, below, using a 2 letter code to reference those who noted that species (or genus). Within each grouping of organisms, we list our total July 4<sup>th</sup> species list, then the 1998 number and then the recent 2009 result.

We were able to attract experts in some groups one year and not the other. The cumulative results are likely the most complete list of summer biodiversity anywhere in the inland northeastern U.S.

<b>Numbers of Species by Groupings of Organisms</b>			
	<b>Total (both years)</b>	<b>1998</b>	<b>2009</b>
<b>Total Species</b>	<b>2692</b>	<b>1908</b>	<b>1941</b>
<b>Plants &amp; Fungi</b>			
Fungi (Mushrooms, Slime Molds)	335	234	215
Lichens	176	103	145
Freshwater Algae	49	13	38
Mosses and Liverworts	79	77	10
Ferns and Fern Allies	33	27	29
Conifers	17	16	17
Woody Plants (Trees and Shrubs)	177	152	165
Dicots (Herbs/most Wild Flowers)	436	335	341
Monocots (Grass, Sedge, Lily, Orchid)	193	174	121
<b>Subtotal Plants &amp; Fungi</b>	<b>1495</b>	<b>1131</b>	<b>1081</b>
<b>Animal Life</b>			
Invertebrates (Miscellaneous groups)	55	39	28
Arachnids (Spiders, Mites)	91	49	58
Insects (except Lepidoptera)	468	308	297
Butterflies	41	28	37
Moths	350	184	273
Fishes	24	17	20
Herps (Amphibians and Reptiles)	21	20	19
Birds	116	107	102
Mammals	31	25	26
<b>Subtotal All Animal Life</b>	<b>1197</b>	<b>777</b>	<b>860</b>

**Complete species lists and photos are available online:**

- Project Website <http://www.waldenbiodiversity.com>
- Photo Gallery <http://picasaweb.google.com/waldenbiodiversity>

## Combined Lists

We were honored both years to have a van load of **Connecticut**-based experts joining us with outstanding general naturalists in a number of fields. In 1998 **Cindi Kobak, Carol Lemmon, Frank Gallo and John Himmelman** came up and were hosted by Bill and Peggy Brace (along with the Batemans). In 2009 all four joined us again along with **Andy Brand** and **Bill Yule**. Their observations were merged and appear in the species list columns as: **CT 4** in 1998 and **CT 6** in 2009. **Noble Proctor** also of Connecticut worked on a separate team with **Wayne Petersen, Kathleen Anderson** and **David Clapp** that recorded over 850 species on July 4<sup>th</sup>, 1998. In 2009, **Ken Harte** of Carlisle gathered a dozen experts to scour **Carlisle** for fungi, flora and fauna. Their results were also merged and appear in the 2009 as **Carl**.

## FUNGI ~ 335 species (234 in 1998; 215 in 2009)

Lacking a formal checklist of the visible Fungi of Massachusetts or North America, the groupings are somewhat arbitrary. Common names are still in a state of flux or lacking for many species. Taxonomic revisions are continuing as in most other groups. Visible fungi are at their greatest variety from mid-summer to mid-autumn, but due to heavy rainfall in the preceding month in both 1998 and 2009 an extraordinary number of species were up. We thank the **Boston Mycological Club** for their



Photo: Rick Cech

participation both years. **Larry Millman** joined us both years. Experts in 1998 included **George Riner** (BMC President), **Milton Landowne** and the **Walworths**. **Noble Proctor** found many and was especially helpful in slime molds. Experts in 2009 included **George** and **Karen Davis, Kay Fairweather** and **Noah Siegal** of Royalston.

## LICHENS ~ 176 species (103 in 1998; 145 in 2009)

Lichens are a fascinating yet often neglected conspicuous feature of our rocks, soil and woody plant surfaces. We were fortunate to have experts here both years. In 1998 **Elizabeth Kneiper** (of Harvard's Grey Herbaria & the NE Bot. Club) and **Philip May** of Harvard's Farlow Herbarium helped out. In 2009 **Doug Greene** of Reading (a major compiler of New England biodiversity), **Scott LaGreca** (a top lichenologist now with the Berkshire Museum) and **Kay Fairweather** of Carlisle found an astounding 145 species!

## Freshwater ALGAE ~ 49 species (13 in '98; 38 in '09)

While we set an arbitrary minimum size of 1 mm for our inventories, we did accept reports of these due to several experts. Noble Proctor identified some in 1998, while **George Zoto and Rob Nuzzo** spent considerable time at Walden Pond and other sites in 2009 finding 38 species.

One wonders what diversity of life in the microscopic realm exists in the soils, waters, plants and animals that live in Thoreau country.

### **MOSSES & Liverworts ~ 79 species (77 in '98; 10 in '09)**

In 1998 moss expert **Ray Abair** and Connecticut's **Noble Proctor** found 77 species. Neither could join us in 2009, such that only 10 species were i.d'd. The closest expert we could find was living out in New York state and couldn't come at the last minute. This highlights how few experts there are that focus on these abundant organisms. Retaining the work of Ray Abair was instrumental in the decision to combine both lists.

### **FERNS & Allies ~ 33 species (27 in 1998; 29 in 2009)**



Photo: Don Lubin

Quite a number of general naturalists are good with ferns such as **Susan Clark** in Conantum and the Connecticut teams both years. We were very pleased in 2009 to be joined by **Don Lubin** of Harvard's Grey Herbarium. Highlight was the finding of the rare Hartford Climbing Fern in southwestern Carlisle and reports of its continued existence in West Concord (a colony Thoreau visited yearly). There are no alien invasive ferns here.

### **CONIFERS ~ 17 species (16 in 1998; 17 in 2009)**

While Eastern White Pine is a dominant species here, there are some rare native conifers such as the Atlantic White-cedar living in Carlisle, and the bog-loving American Larch and Black Spruce noted at Gowing's Swamp in Concord by **Cherrie Corey**. Quite a number of our conifers are introduced and are marked with an **Int** on the checklists. While none are state listed as invasive, they are a significant part of the horticultural landscape and used widely by native mammals, birds, insects and spiders.

### **TREES & SHRUBS ~ 177 species (152 in '98; 165 in '09)**

These woody dicots are well represented here. The largest families are the Rosaceae with 37 species and the Ericaceae with 18 species. As in the conifers there are a number of horticultural species reported that while not invasive, are present widely and used by a number of native animals. These are annotated in the checklists as **Int** (Introduced). Some trees and many shrubs have become highly invasive and are state listed. These are annotated as **INV** (Invasive).

Wineberry which had not been known here was noted by **Ron McAdow** in the Fairhaven area and by **Susan Clark** in Conantum. Ailanthus and Porcelainberry were found in new locales.

**Tom Rawinski** reported most of these in 1998. In 2009 we were pleased to have a number of top botanists working on these such as **Bryan Connolly** (Mass. State Botanist), **Cherrie Corey** of



Concord, **Ted Elliman** (New England Wild Flower Society), **Les Mehrhoff** (University of Connecticut and Invasive Plant Atlas of New England) and **Brian Washburn** (Newton Conservators).

## **Dicot HERBS (Wild Flowers) ~ 436 species (335 in 1998; 341 in 2009)**

These wildflowers (both native and introduced) were much in evidence due to the rains of June. Even a sample inventory such as this highlights the continuing decline in many native species and their numbers. **Ken Harte** and the Carlisle team did find the rare Britton's Violet both years. In 2009 two species of sundews were found by **Henning von Schmeling** of Atlanta, Georgia and **Cherrie Corey**. The many invasives are doing well. Disturbing were new reports of the invasive Leafy Spurge in Minute Man National Park and in Carlisle. A number of garden escapees were reported that are dubiously accepted as possibly wild and are included as they may become a



Photo: Sue Abrahamsen

happy addition or a problem. Those marked with an **Int** (Introduced from other continents or elsewhere in North America) includes those accepted as truly wild now but some that may not yet be accepted as part of our wild flora. The Asters have been split into many genera recently.

Our cooperative coverage of these plants from many fine botanists, many from our great local botanical organizations, has been excellent. Concord has the oldest botanical records in New England: from Thoreau's era (mid 1800's) through the update by **Richard Eaton** (Flora of Concord MCZ Harvard U. 1974) and the recent work of Boston University's **Richard Primack** and **Abe Miller-Rushing** and top local botanists. Local botanists with the **Conantum Garden Club**, **Rosita Corey**, **Cherrie Corey** and so many others are keeping up with the rapid changes in our local plant life.

Amongst many general naturalists who focused on finding over 400 species on these July 4<sup>th</sup> events, we'd like to thank the following specialists. In 1998 we were joined by **Brian Cassie**, **Noble Proctor**, **Tom Rawinski** (now at UNH), our Mass. State Botanist **Paul Somers**, and top New York City naturalist/artist **Guy Tudor**. Local botanists in 1998 included **Penny Logeman**, **Mary McClintock**, **Betty Porter**, and **Marian Thonrton**. In 2009 we welcomed **Brian Connolly** current Mass. State Botanist, **Cherrie Corey** (who led open parties to Great Meadows

and our rare Gowing's Swamp, and **Emily Norton** (Friends of Willard Brook SP). **Richard Primack** (using Thoreau's spring flowering times and bird arrival times as evidence of man-accelerated climate change) joined us both years, as did **Susan Clark**, **Rosita Corey** and **Elizabeth Bourquin**, and **Henry Woolsey** of the Mass. Natural Heritage & Endangered Species. The Connecticut and Carlisle teams noted hundreds of species.

## **MONOCOTS (Grass, Sedge, Lily et al) ~ 193 species (174 species in 1998; 121 species in 2009)**

Some of these require serious study and between the two years we have a fairly good snapshot of early summer grasses, sedges and unusual wild flowers families. Of note is that 3 species of native lilies were noted in 1998, but none in 2009. Red Lily Beetles are better at finding them than we are. The depth of our coverage was deeper in 1998 and several of our best "players" were off on far away adventures. 73 species of grass and 60 species of sedge have been noted on these two days. Orchids (other than Pink Ladies'-slipper) continue to decline, though in 2009 Rose Pogonia was found by **Henning von Schmeling** and Ladies' Tresses were seen in **Carlisle**.

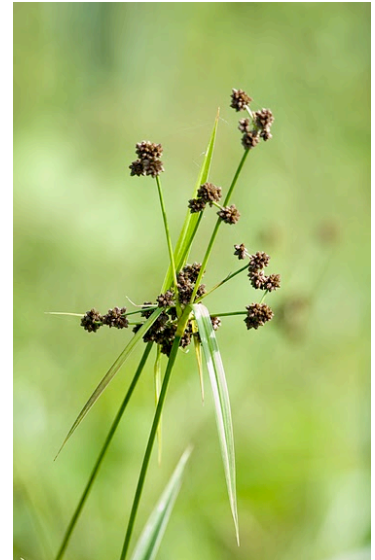


Photo: Sue Abrahamsen

**Frances Clark** of the New England Wild Flower Society, **Brian Cassie**, **Noble Proctor**, **Tom Rawinski**, **Paul Somers**, and **Guy Tudor** were major recorders in 1998. **Brian Connolly**, **Ted Elliman**, **Douglas Goldman** of the Harvard Grey Herbarium, and **Cherrie Corey** worked in 2009. **Bill Brace** and **Susan Clark** were in town experts both years.

## **INVERTEBRATES (misc.) ~ 55 sp. (39 in '98; 28 in '09)**

A number of invertebrates other than Arachnids and Insects were noted. These include a number of groups with few experts, scarce local checklists and easy identification aids and rare common names at the genus and species level. These include freshwater sponges, worms, leeches, mollusks, slugs, crustaceans, millipedes and centipedes. In 1998 our specialists were led by **Doug Smith** of U Mass Amherst, **Henry Barbour** of The Nature Conservancy, **Brian Reid** of The Wildlands Trust of SE Mass., **Frances Garretson** and **Bryan Windmiller**. In 2009 most records were by **Maria Aliberti-Lubertazzi**, **Robert Nuzzo** and **Joe Warfel**.

## **ARACHNIDS (Spiders et al) 91 species ~ (49 in '98; 58 in '09)**

The spiders, mites and ticks list is still a work in progress. We were fortunate to have local expert **Joe Warfel** help out both years. **Gwil Jones** of Northeastern U. focused on mites and ticks in '98. **Dick Walton** worked on Jumping Spiders in '09.

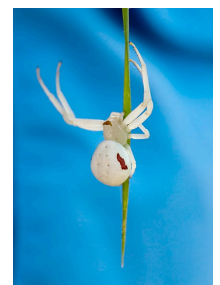


Photo: Sue Abrahamsen

## INSECTS (except Lepidoptera) ~ 468 species (308 in 1998, 297 in 2009)

One can never have enough insect specialists in a bio/inventory. We have been fortunate to have some top notch biologists in a number of orders. **Monty Montgomery**, a fisherman writer i.d'd many of our mayflies. The coverage of dragonflies and damselflies has been excellent with 50 species recorded! They are easy to study with close-focusing binoculars, good local color field guides and recently standardized common names. Many top birders have become Ode experts and those volunteering here both years include **Vernon Laux, Paul Miliotis, Peter and Jeremiah Trimble, Marj Rines and Jay Shetterly**. In 1998 we had **Blair Nikula** as well, while in 2009 **Maria Aliberti Lubertazzi** (President of the Cambridge Entomological Club) worked on nymphs.

The 119 beetles noted are a fraction of what is likely here. Dozens of insects from other orders such as bugs, orthopterans, nervewings and flies were captured. Specialists included **Philip Perkins** (Aquatic Beetles in 1998), **Sarah Lewis** (of Tufts U.) in '98 and **Jeff Cramer** in '09 (Fireflies), **Jay Shetterly** (Tiger and other beetles both years), **Bryan Windmiller, Karsten Hartel, Robert Nuzzo and Maria Aliberti Lubertazzi** (Aquatic Beetles) in 2009. No Asian Long-horned Beetles were found (Thank God).

The Hymenoptera or Social Insects were intensively worked on with 165 species noted. In 1998 **Edward O. Wilson** and his colleague **Stefan Cover** of the MCZ Harvard found the majority of our ants including two that had not been formally described to science at the time. **David Lubertazzi** worked on ants in 2009. An incredible amount of time and expertise went into trapping and identifying bees and wasps by **Bill Stubblefield and Steven Orzack** both years. One highlight was the first record for Mass. of a Mason Bee, *Chelostoma philadelphia*. **Michael Veit** of Lawrence Academy, Groton found many in 2009.

## BUTTERFLIES ~ 41 species (28 in 1998; 37 in 2009)

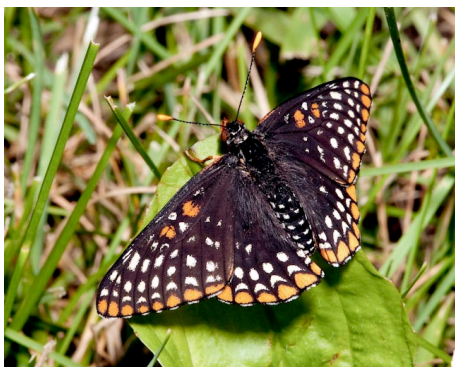


Photo: Rick Cech

A great many general naturalists have learned their local butterflies. A trend is the former pure birders who now are crack Ode and Lep observers. Some highlights in 2009 were E. Pine Elfin (**Carlisle**), Bog Copper (**Henning Von Schmeling**), Gray Hairstreak (**Connecticut team**), and Compton Tortoiseshell (**Jeff Glassberg**). Key butterflyers in 1998 included **Brian Cassie, Blair Nikula, Guy Tudor and Dick Walton**. In 2009 we were honored to have two major butterfly author/experts from the NYC area: **Rick Cech and Jeff Glassberg, Vern Laux, Paul Miliotis, Marj Rines**

**and Jeremiah and Peter Trimble** worked the fields both years.

## **MOTHS ~ 350 species (184 in '98; 273 in '09)**

We were fortunate to have attracted a number of top moth experts to join us both years. A wide variety of devices that attracted and captured these nocturnal animals were set up near the Old North Bridge, Walden Woods, and at both the Brace and Alden backyards. In 1998 we hosted **Paul Goldstein** (he deposited specimens at the American Museum of Natural History in NYC), **John Himmelman** and **Mark Mello** (Lloyd Center in South Dartmouth). In 2009 **Mark Mello** was joined by **David Wagner**, the expert at the University of Connecticut and author of *Caterpillars of Eastern North America*. Henning Von Schmeling and the Connecticut team added others. English names are a problem. I have added Moth to most English names. Perhaps we need separate names for the caterpillars and the adults. A Polyphemus Moth was nice as most Saturniids are suddenly rare. Of interest is that the recently abundant Gypsy Moth was **NOT** found in 2009!

## **FISHES ~ 24 species (17 in '98; 20 in '09)**

**Karsten Hartel** of the Harvard MCZ Fish Department did extensive netting of fish (and aquatic invertebrates) both years. He was aided by **David Lange**, **Vernon Laux**, **Lysa Leland**, **Don Lyman** and **Al Robichaud**. **John Bakewell** of Carlisle provided a useful boat. **Monty Montgomery** helped with the larger fish. In 1998 **Les Kaufman** of B.U. scuba-dived to the bottom of Walden Pond.

## **HERPS (Reptiles&Amphibians) 21species ~ (20in'98;19 in'09)**

These animals attract a lot of attention. The uncommon Northern Two-lined Salamander was found along with all local frogs. It was good to have Musk Turtle and Spotted Turtle both years, while we unfortunately missed the Blanding's Turtle in 2009. Ring-necked Snake was found in '98 and Milk Snake both years. Our top herp folk were **Matt Burne**, **Karsten Hartel**, **Don Lyman** (of Merrimack College in '09), **Emily Norton**, **Steve Orzack**, **Al Robichaud**, **Tom Tynning** (in '98) and **Bryan Windmiller**.

## **BIRDS ~ 116 species (107 in 1998; 102 in 2009)**

Unlike mosses, lichens, sedges, spiders, flies, beetles, and ants with a handful of experts there are hundreds or thousands of locals that know all our birds. It was difficult to not invite so many birders that would have loved to attend this novel event. Most of those invited were also doing dragonflies and butterflies. Some



Photo: Judy Schwenk



trends in these 11 years are clear. In 1998 we had a number of Ruffed Grouse and Ring-necked Pheasant, along with Chestnut-sided and Black-throated Green Warblers but none in 2009. The Brown Thrasher and Veery are almost gone locally. On the plus side in 2009 we had the first nesting Pied-billed Grebe and Osprey in decades and increases in Turkey Vulture, Cooper's and Red-shouldered Hawk, Red-bellied Woodpecker and Pine Warbler. Edges of Hanscom Field (Airport) are the last home of Upland Sandpiper and Grasshopper Sparrow. Meadowlarks are gone and Bobolinks may follow. Rarities noted in 2009 would be Least Bittern, Yellow-throated Vireo and Orchard Oriole. We did poorly on owls.

Key bird people were **Peter Alden**, **James Baird** (Mass. Audubon Soc.), **Walter Brain** ('98), **Brian Cassie**, **Rosita Corey**, **Scott Edwards** (Harvard U. MCZ Bird Dept.), **Frank Gallo** (of Connecticut), **Ken Harte**, **Richard Hildreth** ('98), **Philip Kyle** (Thorton Burgess Soc. '09), **Vern Laux**, **Norm Levey**, **Gwyn Loud**, **Paul Miliotis**, **Sharon MacGregor**, **Marj Rines** (Menotomy Bird Club), Concord author/artist **David Sibley** ('09), **Bob Stymiest**, **Jeremiah** and **Peter Trimble**, **Guy Tudor** ('98), **Bryan Windmiller** and **Julia Yoshida** ('98). Ten of the above are members of the Nuttall Ornithological Club.

## **MAMMALS ~ 31 species (25 in 1998; 26 in 2009)**



Photo: Susan C. Morse

Detecting most mammals is a challenge requiring knowledge of tracks, scat, sign and sometimes dumb luck. In 1998 **Marj Rines** saw a Black Bear, while scat was found in 2009 up in the Estabrook Woods. **Sue Morse** of Vermont's Keeping Track joined us in 2009 with some great finds. Concord's **Lydia Rogers** smoothed the sand on two mammal and herp underpasses under Route 2 before the event and then i.d'd fresh tracks on July 4. **Gwil Jones** ('98) checked for parasites on roadkills while **Thomas Kunz** of BU worked on bats in 1998. Fishers (weasels not cats) are increasing and were seen in Lincoln as were tracks in Concord. A significant find in 1998 was a Moose that walked through Concord the day after the July 4, 1998 event and was noted in **E.O. Wilson's "Future of Life"**.