

They're baaaack!

Anax junius by Phil Myers.

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Outstanding Odonata problems needing our assistance

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As we tool up for the forthcoming field season, we should take note of some Michigan problems that would benefit from your help.

Red-waisted Whiteface, *Leucorrhinia proxima*: There is a red (western) and a gray and yellow (eastern) form. The boundary may not be north-south at all (as it appeared on the dot maps), it could be more east-west! I have only two specimens in my collection. One from Alger Co. is clearly the red form.

Another (a female, unfortunately) from Lake Co. appears to be the gray-yellow form. I have several males of the gray-yellow form from Sawyer Co., in northwest Wisconsin. The gray-yellow form is more pruinose than the red form.

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Epiaeschna heros — *migrant or resident?*

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**So, your
assignment this
year --- pay
attention to
Swamp Darners.
Exuviae would be
positive proof that
E. heros is
reproducing
successfully here.**

The Swamp Darner, *Epiaeschna heros*, is an unforgettable dragonfly. One of our largest species, this robust aeshnid seems to be widespread across the southern part of the state of Michigan, yet never commonly found. It appears in the spring months, as migrants fly into Michigan from the south, and those spring records seem to be when sightings and collections are most concentrated. There are a few mid-season records, but no late summer sightings. This obviously leads me to question whether or not we have breeding populations in Michigan, or are all of our records merely of vagrants? Do larvae overwinter here, or is *E. heros* similar to the migratory phenotypes of *Anax junius*? That is, do early migrants lay eggs and the larvae grow phenomenally fast and emerge as adults in July or August? Or, do some overwinter here as larvae and emerge the following year?

Julie Craves and others have caught this darner in mist nets in May when the darners appear to be migrating northward. We also have mid-summer sightings – I caught a male flying over small ponds at the E.S. George Reserve in early August of 1996, and I have seen others hawking along farm lanes in Washtenaw Co. in mid-summer. There are no exuviae or larvae of this species from Michigan in the UMMZ collection. Yet, I caught a female that was apparently ovipositing in a slough in Warren Woods (Berrien Co.) on June 21, 1999. So, it would appear that they are certainly attempting to reproduce here, but whether or not larvae are surviving to become adults is the question.

Summary of *E. heros* records in MOS Database

Huron Co.		Jun 25, 1908	Gaige?	M
Berrien Co.	E.K. Warren Preserve, Warren Woods	Jun 23, 1919	T.H. Hubbell	M
Wayne Co.	Detroit, 6th floor Federal Building	Jul 29, 1938	S. Moore	F
Livingston Co.	E.S. George Reserve	Aug 06, 1996	M.F. O'Brien	M
Berrien Co.	Warren Woods Natural Area	Jun 21, 1998	M. O'Brien,	F
Wayne Co.	Andover Dr., Dearborn	May 10, 2003	D.O'Brien & J. Craves	F
Jackson Co.	Hanover	May 10, 2003	D.R. Badgero	F
Wayne Co.	Brownstown Twp., Beech-Daly N of Sibley	Jun 19, 2004	Julie Craves & Darrin O'Brien	F
Wayne Co.	Brownstown Twp., King Rd. E of Inkster	Jun 19, 2004	Julie Craves & Darrin	M
Monroe Co.	Frenchtown Twp, Munson Park	Jul 05, 2004	Julie Craves & Darrin	F
Wayne Co.	Andover Dr., Dearborn	Jun 11, 2005	Julie Craves	M

Ed Note: I have found Swamp Darners ovipositing at Holliday Nature Preserve, Westland, Wayne County, as well. — JAC

Additional localities for Williamsonia lintneri in Michigan

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Last fall, I received a box of specimens from the U.S. Forest Service, from their Hiawatha National Forest Odonata survey work. Doug Munson was their primary surveyor, and as usual, there were plenty of nice records. Incurvate Emerald, *Somatochlora incurvata*, was one of their targeted sensitive species, and Doug has vastly multiplied the number of records that we have for it.

One of the non-target species, Ringed Boghaunter, *Williamsonia lintneri*, was picked up in several locations in the UP, greatly expanding its range from the first LP localities in Mecosta Co. (Ross and O'Brien, 1999) and Kent Co. (Swanson 2002). In 2003, Allen Chartier photographed this species near Trout Lake in Chippewa Co., and subsequent forays by U.S. Forest Service personnel confirmed his sightings with voucher specimens. In addition, I received a collection of Odonata from Duane Badgero of Plymouth, MI, and among the 425 specimens were two *W. lintneri*! One of those is a new county record for the Lower Peninsula. On the map, note the cluster of LP counties where *W. lintneri* has been found. Also note the large area in the UP yet to be searched for the Ringed Boghaunter! We can expect that the number of known localities will greatly increase as more people search in early May to early June.

NEW LOCALITIES SUMMARY for *W. lintneri*

Chippewa Co., Hiawatha National Forest, FS Rd. 3136, West Black Creek, T45N, R4W, S31, June 3, 2005, 1 female
Chippewa Co., Hiawatha National Forest, Lone Pine Road, FS Rd 3141, 3.5 mi S Trout Lake, May 25, 2003
Chippewa Co., Hiawatha National Forest, T44N, R6W, S10, Bog N of USFS 3344, May 21, 2005, D.R. Badgero, male
Delta Co., Hiawatha National Forest, Nahma Marsh, near end of Marsh walk trail, T40N, R19W, S17, June 5, 2003
Montcalm Co. Langston State Game Area, Willard Rd. off 91, C10, Sec. 28, May 7, 2005, D.R. Badgero, female

LITERATURE CITED:

Ross, S. and M.F. O'Brien 1999. *Williamsonia lintneri* (Odonata: Corduliidae) -- A first Michigan record with additional notes on *W. fletcheri*. *Great Lakes Entomol.* 32:201-205.
Swanson, G. 2000. Update on *Williamsonia* in Kent Co. *Williamsonia* 6(2):6.

Venezuelan Odonata

Steven Ross
Mecosta Co.

In late May 2005, I had the opportunity to accompany my Venezuela friend, David Ascanio, to the top of Roraima tepui in southeastern Venezuela. Roraima tepui (a large mesa) is the largest of the eastern Venezuelan tepuis, rises about 4000 feet above the Gran Sabana and about 9000 feet above sea level. The borders of Venezuela, Guyana and Brazil meet on top. Our in-out trip was a seven day hike through open savannah grassland, pre-montane forest, dwarf-montane forest and the otherworldly top of the tepui itself. While a birding trip for David to do research on the Band-winged Nightjar, I mixed in a little oding along the way.

I had checked into doing some collecting before going and got a good laugh from everyone at the permitting authorities. I did, however, lug along a cheapie net that came in handy to catch and pose a few odes.

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Venezuelan Odonata (cont.)

(Continued from page 3)

A contact at the university in Merida had suggested looking for *Sympetrum roraimai*, an endemic, and *Rhioaeschna draco*, a large black *Aeshna*. I probably found larvae of both on top of the tepui. The top of Roraima is a world of stunted trees, endemic orchids, pitcher plants, agaves, and *Stegolepis* (strange endemic plants similar to agaves in appearance), and tens of thousands of permanent and intermittent pools and dozens of streams. *Aeshna* larva were common in the permanent pools and stream pools. In only one set of well-hidden pools among the rock outcrops did I find what was probably the *Sympetrum* larva.

On the hike back, adult odes were more prevalent along the Tek River which we had to wade across. We stayed in an adobe hut (with some impressive roaches) for one night. This gave us some time to take a much needed bath in the stream and I explored the stream banks. Most of what I found along the Tek were Argids (?) of two or three species and one *Hetaerina* sp. that was not at all cooperative. The Tek is a clean fast-moving stream over rocks and about 30 feet wide.

At the end of the hike, in the village of Paraitepui, I took the opportunity to back track about a kilometer to a small stream about five feet wide. This was a nice secluded area of shrubbery and flat rocks with a bit more than a trickle of water where I found seven species of Odonata. I worked my way up and down the stream from the crossing point of the trail to Roraima, photographing natural and posed odes. Another uncooperative *Hetaerina* was here also. On returning to the small town where we were to camp, I found David in a hurry to leave as our driver had arrived a day early with another couple, so we were able to cut a day off the trip and look for a Harpy Eagle instead.

As we had lots of time, we spent two hours near the site, hoping the parent might come in to feed the young. However, a number of dragonflies and butterflies were busy in the tangles of vines and shrubbery along the road edge, and occupied much of my time as the birding was not good here.

I have made some attempts to identify the ode pictures I took, but there is no popular Venezuelan ode guide and all of the specimens I've found via the web and museum web sites are either not conclusive enough to be sure or of preserved specimens lacking in color. If anyone can identify the ones pictured here, I'd be grateful.



Stream near Paraitepui.



Stream near Paraitepui.



Stream near Paraitepui. (Editor thinks this is *Macrothemis pseudimitans*.)



Near Harpy Eagle nest east of La Palmar.

Outstanding Odonata problems needing our assistance (cont.)

(Continued from page 1)

There may be a behavioral difference. In New York the gray-yellow form is more retiring and is found in the bushes back of the bog, pond, or stream, far from the water in any case. In Minnesota and Manitoba the red form seems to find territorial perches right on the edge of the lake or bog. It would be especially interesting to find the red form in the Lower Peninsula. Or confirm that the gray-yellow form occurs here.

Common Baskettail, *Epitheca cynosura*: Almost all northern specimens, and most from Michigan (and WI and MN) have a large brown spot at the base of the hind wing. They have their terminal appendages parallel (viewed from above) or divergent. But the long-lost species *morio*, originally from Wisconsin and Maine (with a putative female from southern Michigan), just might be valid after all. It has the male appendages parallel in dorsal view and has only a tiny dark spot in the wing. There is an uncomfortably large range of variation in *cynosura*, but collecting a large series might show that there are really two species, confounded at present as *cynosura*. Or only one - who knows? And don't forget to look for the slender *costalis* (Stripe-winged Baskettail) in southeastern Michigan, where it appears to be more common than *cynosura*.

Northern/Vernal Bluet, *Enallagma cyathigerum* and *vernale*: Michigan seems to be on the border between typical western forms (which inhabit all types of water bodies) and the northeastern form (which is confined to fishless bogs). The northeastern forms are recognizable as specimens by their cerci, which show morphological evidence of intergrading with *vernale*. Unfortunately, this determination really requires a microscope, unless your eyes are a lot better than mine (which they probably are anyway). These are two really interesting species, and we need more observations, especially in the place where they seem to be the most confusing.

Delta-spotted Spiketail and Brown Spiketail, *Cordulegaster diastatops* and *bilineata*: These two species are very similar, and the characters used in the manuals for their separation seem to be poor. The best (and seemingly only) separation criterion is the appearance of the epiproct, viewed from below. *Diastatops* is the most prevalent Michigan form, but *bilineata* has been reported (also in Wisconsin, and Ohio). The one "*bilineata*" from MI that I have seen seems to be *diastatops*. We need both specimens and habitat information for their certain diagnosis.

Last call — Great Lakes Odonata Meeting 2006

Just to summarize the event... the 2006 GLOM will be in Grantsburg, WI, on June 22-25, 2006. There will be field trips on (canoes) and near the St. Croix River, home of the St. Croix (aka Wisconsin) Snaketail (*Ophiogomphus susbehcha*) and the Sand (aka Sioux) Snaketail (*Ophiogomphus smithi*). We also plan to spend some time at Crex Meadows. This is a non-academic meeting (but academics are welcome!) and is an open and welcoming event. Beginners are encouraged to attend.

The event website and printable registration form is here:

<http://web.gkl2.net/homes/mberg/GLOM2006.htm>



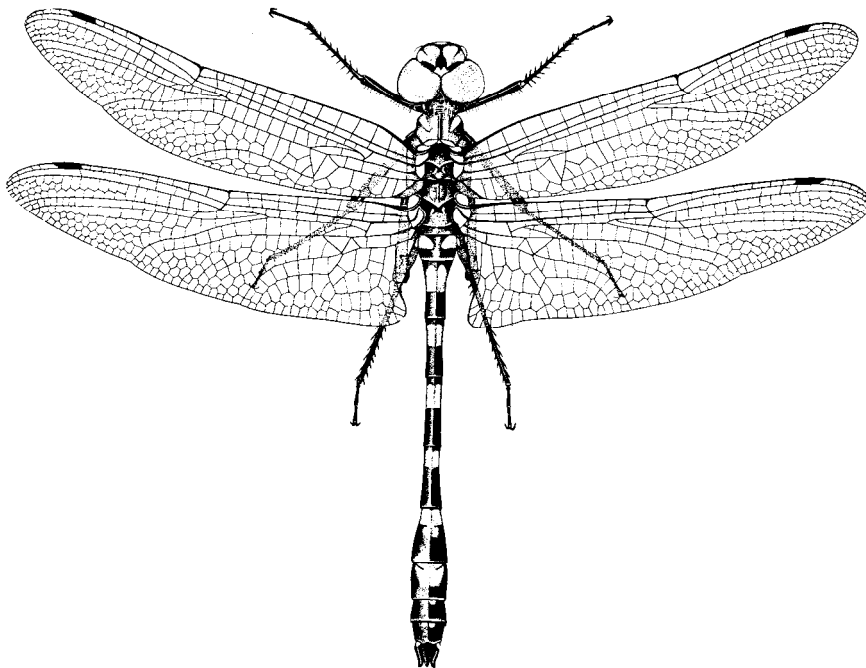
In response to Mark's query about how our perception and appreciation of Odonata has changed in the 10 years of MOS . . .

At times it seems as though I have morphed into a dragonfly myself. It's a sunny warm day and I am compelled to be out hunting new records for good old Benzie County. Though the smallest Michigan county in size, the list is now around 100 species. Cool rainy days find me sitting tight inside, trying to be responsible so I can justify being out on the next good day for dragonflies.

My knowledge of dragonflies has gone from knowing the names of maybe three species to building my list for Benzie County and seeing 80 species (Anisoptera only) in one year statewide. My appreciation has grown by leaps and bounds, centered around dragonflies' use of different aquatic breeding habitats. Hunting for dragonflies has made me learn about and look for different types of breeding habitats all over the county, from specific stretches of rivers and lakes, to bogs, fens, temporary pools, seeps, and acidic lakes, etc. When hunting for dragonflies, timing is everything. The fact that dragonflies are specific about the time of year and the time of day they fly means that it is necessary to visit a site at different times of the year and day. Repeated trips to the same spot may not survey all the species if your timing is off. So it's off to the Wallin Road bog for the umpteenth time!

I very much like participating in projects that increase our knowledge of the natural world. Until the MOS came along, my efforts had been solely with birds. Contributing to our knowledge about the distribution of dragonflies in the state has been the most rewarding part of the experience for me. Capturing a dragon, identifying it, and looking at the first range maps in the handbook, and seeing no dots anywhere close was thrilling (try finding even a county record for a bird). Then receiving two of Mark's LBOTY awards my first serious year really hooked me.

One of my perceptions about dragonflies is there is much more to be learned about them. Like many subject, the more you know, the more questions that are raised. I hope the MOS has inspired others like me to continue the search for that next county or state record. – *Carl Freeman, Benzie County.*



FOR THOSE DOING MOS SURVEYS

We have a small supply of "Rite In The Rain" spiral-bound field notebooks for MOS members that are going to be doing field work this summer. They are excellent for writing on in any weather and if they get wet, you don't get a pocketful of mush... Just ask Mark O'Brien for a notebook if you'll be collecting for the survey this summer. In addition, the MOS will also supply you with glassine envelopes.

Send your request to:
mfobrien@umich.edu

Recent literature

Brodin, T., D. J. Mikolajewski, and F. Johansson. 2006. Behavioural and life history effects of predator diet cues during ontogeny in damselfly larvae. *Oecologia* 148: 162-169. – Looked at the growth and behavior of *Coenagrion hastulatum* larvae was affected by the diet of *Aeshna juncea* under different conditions.

Dnitriew, C. and L. Rowe. 2005. Resource limitation, predation risk, and compensatory growth in a damselfly. *Oecologia* 142:150-154. – Food-deprived larval Eastern Forktails (*Ischnura verticalis*) had a reduced growth rate, but made up the difference later. They had adult body measurements equal to that of control individuals, but had less dry mass.

Foote, A. L. and C. L. R. Hornung. 2005. Odonates as biological indicators of grazing effects on Canadian prairie wetlands. *Ecol. Entom.* 30:271-283. – Intensive cattle grazing reduced odonate abundance and reproductive effort due to removal of emergent vegetation.

Gade, G. and H. G. Marco. 2005. The adipokinetic hormones of Odonata: a phylogenetic approach. *Jrl. Insect Physio.* 51:333-341. – Representatives of each of the three major suborders of Odonata were examined, and it was found that each one always contained only one adipokinetic peptide, which I take it is some sort of hormone.

Hawking, J. H. and T. R. New. 2002. Interpreting dragonfly diversity to aid in conservation assessment: lessons from the Odonata assemblage at Middle Creek, north-eastern Victoria, Australia. *Journal of Insect Conservation* 6:171-178. – Single sampling occasions do not reliably interpret overall odonate diversity.

Hickling, R. D. B. Roy, J. K. Hill, and C. D. Thomas. 2005. A northward shift of range margins in British Odonata. *Global Change Biology* 11:502-506. – Examined 37 species of British odes, and found that all but three shifted their ranges northward between two periods (1960-1970 and 1985-1995). A very interesting and well-done paper; if you have access to Blackwell Publishing's web site, take a look.

Hoffman, T. A. and C. F. Mason. 2005. Habitat characteristics and the distribution of Odonata in a lowland river catchment in eastern England. *Hydrobiologia* 539:137-147. – Larval Odonata responded directly to river flow, oxygen, and phosphates; and adults to shade, reed cover, bank height and land use. Discusses river management as it impacts Odonata.

Hornung, C. L. R. and C. Pacas. 2006. Investigating damselfly populations at springs in Banff National Park, Canada, with special focus on *Argia vivida*, *Amphiagrion abbreviatum*, and *Ischnura cervula* (Odonata: Coenagrionidae). *Aquatic Ecology* 40: 49-58. – Detailed life history requirements for Vivid Dancer, confirmation of Western Red Damsel, and no breeding activity of Pacific Forktail.

Marden, J. H. and J. R. Cobb. 2003. Territorial and mating success of dragonflies that vary in muscle power output and presence of gregarine gut parasites. *Animal Behaviour* 58:857-865. – Using Twelve-spotted Skimmers (*Libellula pulchella*), authors examined relationship between gut parasites and muscle power. Parasitized dragonflies were compromised in muscle power output, and females consistently mated with physiologically or immunologically superior males.

McGuffin, M. A., R. L. Baker, and M. R. Forbes. 2006. Detection and avoidance of fish predators by adult *Enallagma* damselflies. *Jrl. Insect Behavior* 19:77-91. – Field studies showed *E. boreale* (Boreal Bluet) does not co-exist with fish, but

Recent literature (cont.)

E. signatum (Orange Bluet) is restricted to sites with fish. *E. ebrium* (Marsh Bluet) is found in both types of sites. In the lab, there was no effect of chemical cues on fish presence on propensity to oviposit or number of eggs released.

Olberg, R. M., A. H. Worthington, J. L. Fox, C. E. Bessette, and M. P. Loosemore. 2005. Prey size selection and distance estimation in foraging adult dragonflies. *Jrl. Comp. Physio. A* 191:791-797. – Determined that dragonflies are able to detect distance from using experiments with different sized glass beads. Also, they reject beads that are larger than their own heads. Good idea.

Prum, R. O., J. A. Cole, and R. H. Torres. 2004. Blue integumentary structural colors in dragonflies (Odonata) are not produced by incoherent Tyndall scattering. *Jrl. Experimental Biology* 207:3999-4009. – Discusses in stunningly technical terms how the non-iridescent blue color of odonates such as the bluets (*Enallagma* sp.) is produced.

Purse, B. V. and D. J. Thompson. 2005. Lifetime mating success in a marginal population of a damselfly, *Coenagrion mercuriale*. *Animal Behav.* 69:1301-1315. – At marginal sites (those with poor environmental conditions), selection may favor traits that confer endurance rather than phenotypic traits.

Robb, T. and M. R. Forbes. 2005. On understanding seasonal increases in damselfly defence and resistance against ectoparasitic mites. *Ecol. Entom.* 30:224-341. – *Lestes forcipatus* (Sweetflag Spreadwings) that emerge later in the season are more resistant to parasitic water mites than those that emerge earlier. This is apparently due to higher air temperatures at the time of dragonfly emergence (which is when mites attach themselves), because the dragonflies are better able to encapsulate the mite mouthparts due to a temperature-mediated deposition of melanin.

Rouquette, J. R. and D. J. Thompson. 2005. Habitat associations of the endangered damselfly, *Coenagrion mercuriale*, in a water meadow ditch system in southern England. *Biological Conservation* 123:225-235. – Self-explanatory.

Schenk, K. and D. Sondgerath. 2005. Influence of egg size differences within egg clutches on larval parameters in nine libellulid species (Odonata). *Ecol. Entom.* 30:456-463. – In the species studied, the correlation between egg size and development time varied considerably. Larger eggs did result in larger larvae, but the effects often diminished with progressing larval development under good conditions.

Schenk, K., F. Suhling, and A. Martens. 2005. Egg distribution, mate-guarding intensity and offspring characteristics in dragonflies (Odonata). *Animal Behav.* 68:599-606. – Egg size varies and is randomly distributed throughout the clutch of two species of odonata that oviposited in tandem (*Pantala flavescens* and *Sympetrum fonscolombii*) and spread their eggs over several ponds, versus species that engaged in noncontact mate guarding and deposited their eggs in one pond.

Scher, O. and Alain Thiery. 2005. Odonata, Amphibia, and environmental characteristics in motorway stormwater retention ponds (southern France). *Hydrobiologia* 551: 237-251. – Retention ponds were high in copper and zinc in the top sediment layer and herbicides in the water. Odonata preferred ponds with natural bottoms.

Uhia, E. and A. C. Rivera. 2005. Male damselflies detect female mating status: importance for postcopulatory sexual selection. *Animal Behaviour* 69:797-804. – Found that copulation between males and mated females lasted much longer than with virgin females, and concluded that this was to induce females to use the current male's sperm and/or eject a previous rival's sperm (not because experienced females are more fun).

2006 Annual DSA Meeting!

2006 Dragonfly Society of the Americas Annual Meeting, June 10-12, Cave City, Kentucky

Hosts: Carl Cook: bugman@scrta.com and Ellis Lauder milk: ellis.laudermilk@ky.gov

The Cave City/Mammoth Cave National Park area of Kentucky has been selected as the site for DSA's 2006 Annual Meeting, June 10-12, 2006. For those who attended DSA's Southeast Regional Meeting in 2004, the location and facilities are already well known. The following is a summary of the area, and overview of meeting activities.

For a full description, go to: http://odonatacentral.bfl.utexas.edu/dsa1/annual_meeting.htm

Cave City, KY

Plans for the 2006 annual meeting are essentially in place, so we highly recommend everyone make reservations for lodging at your earliest convenience to ensure your needs will be met. Cave City, a small, leisurely, rural town located in Barren County will be our headquarters for the meeting. Information on Cave City's nearby attractions, lodging (including motels, bed & breakfasts, campgrounds, cabin rentals and pet boarding) and dining can be found on the Cave City web page at <http://cavecity.com>. A special rate of \$52.00 + ~10% taxes/room has been negotiated with the Cave City Quality Inn (270-773-3101), so be sure to tell them you are part of the Dragonfly Society of the Americas meeting group to receive the special rate. They are holding 40 rooms until 14 days prior to the meeting. Again, we recommend making reservations as soon as possible. By auto, Cave City is approximately 90 miles from Louisville, KY and/or Nashville, TN, via Interstate 65, and these two cities are the best air terminals for anyone planning to fly. If you are planning to attend the meeting, please add your name and other information to the List of Attendees.

Preliminary meeting schedule:

June 9 (Friday): arrival in the afternoon/evening.

June 10 (Saturday): business meeting in the morning with presentation of papers in the afternoon.

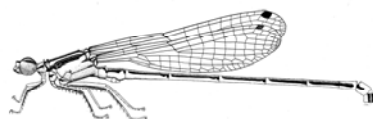
June 11-12 (Sunday & Monday): devoted to field activities – guided visits to Little Barren River, Green River, Big Brush & Lynn Camp Creeks, Hundred Acre & Sloans Crossing ponds, among others. Also "The Bug Works" (Carl's residence in Center, KY) will be open to visitors. A cookout catered by the The Pit's Bar-B-Que is also planned for Sunday evening (11th) along the banks of the South Fork Little Barren River at Sulphur Well, and our traditional dinner will be held Monday evening (12th).

June 13-15: Post Meeting Trip. If you are planning to attend the post meeting trip, reservations in Cave City, Kentucky, should be made through June 12th. We will leave for Crossville, Tennessee the morning of June 13th. Carl and I made our room reservations for the 13th and 14th in Crossville, and we plan to travel back home at the end of the day on the 15th.

The Fauna

Approximately 159 odonate species have been reported from Kentucky. Two counties within a short drive of Cave City, Green (103 species) and Edmonson (101), have the highest recorded number of species, respectively, in the state. Approximately 113 cumulative species have been recorded from Edmonson, Green and Hart counties. The immediate area has several nice streams and rivers that should provide excellent collecting opportunities for lotic species, including *Gomphus crassus*, *G. fraternus*, *G. lineatifrons*, *G. quadricolor*, *Ophigomphus rupinsulensis*, *Neurocordulia yamaskanensis*, etc. The Green River flows through Mammoth Cave National Park, and The Nature Conservancy ranks the Green as one of the top 5 most important streams in the United States for freshwater biodiversity. Also, within a few minutes drive are the Little Barren and South Fork Little Barren rivers where Carl cut his odonate teeth.

(Note from Mark O'Brien — The DSA Meetings are WONDERFUL opportunities to meet some top-notch people, get your feet wet, and ingest a lot of new information. The Kentucky meeting is fairly close by, so if anyone can get there this year, try to do so. This year, I will be busy with high school graduation activities, so I can't attend.)



**A publication of the Michigan
Odonata Survey
Michigan Odonata Survey**

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