

Dragonfly Records—Collecting and Photography

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In North America and parts of Europe, there has been a dramatic change in the way dragonfly records are established. Not many years ago, all records of dragonflies that contributed to our knowledge of their distribution, abundance, and flight seasons were specimen-based. All we knew of the spatial and temporal distribution of Odonata was based on the specimens contained in museums and private collections.

Odonatology has long been a field shared by professionals and amateurs, as many of the people who contributed to it were not academicians or, necessarily, even biologists. They were people who became interested in dragonflies and, understanding how easy it was for them to contribute to the sum of knowledge, did so. And now, in the Twenty-first Century, amateurs are playing an even larger part.

Interest in Odonates has increased tremendously with the recent plethora of identification guides, the availability of common names for all the species, and the routine incorporation of dragonflies into the educational programs of nature centers and Audubon societies. The consequence of this is that more and more of the people who are interested in learning about dragonflies, including those who actively seek to expand our knowledge of them, have little interest in carrying a net into the field or taking the time necessary to process and maintain a collection.

How dragonfly records are incorporated into the common bank of knowledge has changed as well. Formerly, distributional records were published in journal articles and books. Now, many of them come to light in local newsletters and in online e-mail forums and anyone who wishes to construct a range map or understand the seasonal distribution of a species must consult these additional sources.

When general naturalists become interested in a taxonomic group, I have found that two of the things that are of the most interest are the current taxonomy of the group, furnishing the correct species names by which to communicate, and the distribution and abundance of species. The best way to provide for the former need is through an up-to-date checklist of species, just as has been done in many other taxonomic groups. For this reason, the DSA in 2007 formed a Checklist Committee.

DSA Checklist Committee

The Checklist Committee has set itself three goals, although these have not been formalized other than by the original note in ARGIA. First, we judge records of species newly recorded in North America (US/Canada). We have come into this in a way through the back door, as our first mandate was simply to coin names for these newly recorded species that—presumably—did not have English common names. But first we needed to deal with the record itself to be able to give the species the “official” status it gets by having a name conferred on it. Second, we assign each of those species a common name. And third, we try to come to a consensus about the taxonomic status of all North American Odonates. The Checklist Committee was formed from a prior Common Names Committee (convened in 1996) that concerned itself with only the first two of the three duties.

Each of these three functions has its own set of criteria, but basically a committee member proposes a course of action, the committee discusses it, and we then vote on it. We post the results in ARGIA and change our checklist accordingly. We table some of the taxonomic questions, acknowledging that we don’t know enough to recommend a change in the status quo. But we feel we need an “official” checklist to express that status quo, if for no other reason than the apparent need for a stable set of names.

We are the closest thing in the Odonate world to the North American Classification Committee that determines the content of the Check-list of North American Birds. For a variety of reasons, fewer and fewer records of North American birds are supported by specimens, so photos are well established as part of the currency for

bird records, both national and regional. But one thing our committee has never tried to do is arbitrate over regional records. There are so many of them every year in Odonates that we can't reasonably be expected to handle them, and there seem to be only a few states and provinces that are trying to handle this in a way that state bird-record committees do.

OdonataCentral

OdonataCentral, <<http://www.odonatacentral.org/>>, is the closest thing we have to fulfill the function of judging Odonate records from all over North America, as records are submitted and then "vetted" by local experts. However, not all records, including some very significant ones, are sent to OC, as it is a voluntary effort, and there are other ways of publicizing records (primarily by publications, including the long series of state Odonate lists published in the *Bulletin of American Odonatology*). Some states and provinces have individuals who collect their records and even remind their colleagues to submit their records to OC. At this time, OdonataCentral is our most complete repository of North American Odonate records.

The Value of Photographs

The reality is that large number of amateurs—who we have diligently tried to enlist in Odonate studies—aren't interested in collecting, and some are turned off by it. We would have far fewer Odonate enthusiasts, and nowadays far fewer records of Odonates, if we insisted that every county record must be based on a specimen. With the proliferation of digital photography, the high quality of the cameras (and of course the photographers), and the ease of sending photos back and forth, photos have taken the place of specimens as vouchers to a large degree.

The downside of having photo-based records is that many species cannot be identified from photos. This is particular true of females, but it is also true of brightly colored males, some of which look very similar to the brightly colored males of other species in the same genus. The old-time odonatologists would catch one of these, look at some small structure(s), and immediately be able to name it. But these structures are very often not visible in photos. Not only do photos not always permit identification, but their emphasis may lead to a generation of Odonate enthusiasts who know nothing about those diagnostic structures or how to look at them. They remain the most salient distinguishing features of species in many genera, even more important in tropical regions outside the range of field guides. Authors of field guides try diligently to find characteristics that will allow field identification, and thus identification from photos, but in some cases, they have no luck.

The Value of Specimens and Continued Collecting

Those of us who have been studying Odonates for years know that taxonomy depends on specimens. What many don't know is that taxonomy is endangered: Positions of taxonomists in universities and museums have been eliminated left and right, replaced by biologists with other interests if at all. The decline of taxonomists is ongoing, because there are few institutions to train them, and their work is not considered sufficiently glamorous even by their fellow biologists.

There is little doubt that the decline of taxonomists accompanies the decline in specimen collecting. The latter decline has been quantified from museum collections for numerous taxonomic groups. We owe it to future scientists to continue to add specimens to collections for all the varied uses they will have, some of them unknown at present. Many people think of specimens as primarily vouchers for occurrence, but they are so much more than that, often contributing significantly to ecological and behavioral questions. Who would have thought a few decades ago that DNA could be extracted from museum specimens to give us clues about the evolution of dragonflies?

The surprising fact is that there are not enough specimens in collections. Many taxonomic studies are incomplete because specimens from a particular area of interest were not available. Sometimes there is a series of males but no females. There are not only two sexes to be examined, but there are changes in coloration with maturation. There are also seasonal changes in size, and perhaps in coloration. Individual variation is the basis

for evolution by natural selection, so it behooves us to understand it, and we can only do so with series of specimens.

We should try to base significant records on specimens whenever possible. This is especially true in poorly known regions, nowhere more than in the tropics. Even in North America, more and more of the places where people seek out Odonates in the field are parks and reserves and wildlife refuges, and most people will be unable to get collecting permits for such places. There has been a spate of new US records in south Texas recently, and some of them are based now only on photos, as the spots where interesting species are likely to turn up are so often the places where collecting is prohibited.

I have no hesitation in stating the viewpoint that, contrary to present-day attitudes, ad hoc insect collecting should be encouraged rather than prohibited in our nature preserves. We have much to learn about just the distribution and occurrence of many species, and such an action would immediately increase that knowledge bank. This is especially true for those along the southern border of the US, where species not in our field guides and unknown to our present-day naturalists armed with cameras rather than nets are likely to turn up.

The constant incursion of tropical species may be because of global warming, if not habitat destruction farther south. Detecting their presence should be facilitated by freely granting collecting permits to anyone interested in adding to the knowledge base, with two important conditions. The collector must deposit all specimens collected in accredited institutions and must immediately submit records of specimens collected to the preserve in question. Finally, the collector would be strongly urged to submit interesting records for publication.

One more thought about dragonfly collecting comes from many remarks I have heard. In the bird community, it would be considered a cardinal sin to collect a rare bird when many others would have greatly enjoyed seeing it. Note this is a people-rights matter, not an animal-rights matter, although of course many of the same people wouldn't want to see the bird killed in any case.

Dragonflies are different. A rare dragonfly that turns up somewhere is unlikely to remain in the same spot, as often happens with rare birds. I don't think you can "stake out" dragonflies. They don't live that long and they wander around if not territorial. They are much smaller than birds (thus harder to see) and don't sing or call. Actually, even territorial males are often not present in the same spot the next day. The number of single records of rare dragonflies supported by photos, and the lack of further sightings of these same individuals, supports this statement thoroughly. Thus, the collection of a rare dragonfly is not likely to be a matter of taking it away from other Odonate enthusiasts who would have wanted to see it.

Suggested Photographic Protocol

Assuming photographs are part of the currency of Odonata records, we should think about them seriously in that context.

- 1) Records established on photographic evidence should be limited to those species that can be identified by photos.
- 2) Anyone attempting to establish records by photos should be fully informed about the difficult species groups. It must be emphasized that in surprisingly many genera, females (and in some cases males) cannot be so identified. A replacement of specimens by photos would result in a real loss with regards to these species.
- 3) If a species is identifiable in a photo, the parts that identify it should be photographed. This will obviously not be easy, as these parts are often small structures, but in some cases it is the view that is important, a dorsal view of a dragonfly to show wing venation or a ventrolateral view to show the color pattern of the lower sides of the thorax. The more views of a single individual that are available, the greater the likelihood of them including a critical view.
- 4) Records of major significance (new national and state/ provincial records) would be best supported by voucher specimens, but photos are nevertheless acceptable, as disallowing them would throw out an unacceptably large amount of valuable information.

5) Local people should become organized to deal with regional records, whether specimens or photos. A photo file for each state and province would be the simple way to accomplish this, stored in a place (public server?) accessible to all interested parties. The maintenance of online range maps on a regional basis has worked well for a number of regions. Nevertheless, the existence of a continent-wide repository such as OdonataCentral makes it the logical place for all North American records, in my opinion. Local organizations would do well to facilitate the submission of records to OdonataCentral, with the great benefit of having updated range maps on a continent-wide scale.

The Value of Sight Reports

The documentation of bird records has proceeded from a specimen-based documentation to a photo-based documentation over time. In addition, sight reports with no documentation beyond a written description are routinely submitted to record committees and the great majority accepted. With what might be called the “new nature photography,” more reports are substantiated by photos nowadays than just a decade ago, but there are still many that stand on the known expertise of observers and the information presented in their descriptions. We have not progressed to that state yet in North American odonatology, and sightings of Odonates that represent significant records should still be documented at least by photographs.

Further Comments

Nick Donnelly made the point that we should be paying a lot more attention to the temporal distribution of Odonates (flight seasons, not only overall but each year, persistence over the years, and changes in ranges), now that we have a good system in place for documenting their spatial distribution.

The Checklist Committee is happy to discuss protocols for accepting records, but judging records of local significance will remain outside our purview. It would behoove states and provinces where there is a large and active group of Odonate enthusiasts to put in place such protocols, and I know some of them have. Perhaps it is time to pull together a summary of what is going on across the continent and publish that in ARGIA.

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