The use of binoculars to identify adult Odonata[1]

GILLES JACQUEMIN

Université Henri Poincaré, Nancy 1, Biologie des Insectes,
BP 239, F-54506 Vandoeuvre-les-Nancy, Cedex, France

Summary

Many current odonatological surveys are carried out by naturalists with a background in ornithology who employ the same visual identification methods as used by many birdwatchers. Identifications based solely on observation through binoculars must be treated cautiously and, whenever possible, should be supported by checking diagnostic features on captured specimens, which subsequently can be released. Identification keys designed for use with binoculars are of limited value and, considering the risk of misidentification, records based solely on binocular observation by inexperienced observers cannot be relied upon.

Introduction

Some entomologists, often those who come to entomology via ornithology, try to transfer methods applicable to their studies of birds to their work on insects. The use of binoculars to identify insects that fly actively and are difficult to capture appears on the surface to he a good method of recording, being all the more attractive because it avoids the necessity for capture (resulting in possible death or physical injury of the insect). However, that technique is appropriate for only a small minority of insects, namely those that are diurnal and readily identifiable by distinct colouration or markings. Accordingly it is inapplicable for the vast majority of insects and will not prevent the entomologist from facing the moral question: `Do I have the right to kill insects in order to further knowledge?' Each person will answer this according to his or her personal feelings and conscience. Fortunately many odonate taxa fall within that minority category of insects potentially identifiable with binoculars. So what is the problem?

In ornithology the ability to identify a bird at a distance is absolutely essential. That is why guides have been designed exclusively with this objective in mind (e.g. the celebrated `Peterson' guide (Peterson *et al*., 1954) and its numerous successors). Nevertheless to use such guides effectively requires long practice, great discretion and constant communication between experienced ornithologists and novices so that the latter, from the outset, are made to realise the danger of excessive self-confidence (even, and above all, in good faith!) and acquire the prudence and humility that are indispensable. One must also bear in mind that additional `safety measures' have been put in place with the institution of data validation committees (e.g. the British Birds Rarities Committee).

[1] This article is a slightly modified version of the one published in Martinia **21:** 47-50 and is reproduced here by kind permission of the Editor of that Journal.

In odonatology the situation is quite different: an animal can normally be captured to provide assurance of its identity and then released. So why not do this? Certainly, from time to time there is a small possibility of injury; however, given a modicum of care and a little skill, the likelihood of damage is small. Moreover, the death of an insect is, objectively (speaking ecologically and devoid of all sentiment) something much less serious than that of a bird, the size of their populations being unaffected in the vast majority of cases, primarily because the reproductive capacity of invertebrates far exceeds that of warm-blooded vertebrates. It needs to be emphasized, with regard to collections made by entomologists, and despite what may sometimes be reported, no species of insect has been eliminated in Europe owing to excessive collecting. Admittedly, the situation is less clear when rare insects are collected for sale purposes. All experienced entomologists know that, as a general rule, species inventories can only be obtained by killing a certain number of individuals as this is usually the only way of securing reliable determinations. To decide to make an insect inventory presupposes implicit acceptance of this principle! It is well understood that each person will select methods that allow the anticipated result to be obtained with the least destruction. The great majority of entomologists today respect a code of practice and collect no more than is strictly necessary In odonatology, we are particularly fortunate in that we are dealing with large insects that are normally (at least in western Europe) identifiable on site using the techniques of `catching-releasing' (adults and larvae) and collecting exuviae. Also we are dealing with a very low number of species (fewer than 100, among a total of 37,000 already known among the insects of France; fewer than 50 in the UK).

Certainly, an experienced odonatologist (like an ornithologist) learns, with the passage of time, to recognise by sight — by eye or with binoculars— more and more species with which he or she is familiar; and this is most valuable. But, just as in ornithology, it is necessary that great care and humility are exercised in identifications. This may `touch a nerve' as extensive experience is needed to acquire this capacity for self-evaluation and to be able to assess the reliability of such identification by sight. It follows that the novice, even if he or she thinks that he or she is already familiar with the group, risks a lot through an excess of confidence, and by failing to allow sufficiently for possible errors in his or her diagnosis, but what are the problems? Firstly, dragonflies are much smaller than birds, their movements rapid and unpredictable, and their appearance very variable, depending on sex, age and light conditions. Secondly, their behaviour (flight, posture, etc.) and habitat can sometimes vary depending on site, region and weather. Thirdly, dragonflies neither sing nor call and each ornithologist knows very well how vocal expressions allow many birds to be identified with certainty. In summary, identification by sight is much more difficult for Odonata than it is for birds. It thus follows that capture (and subsequent release) remains the only sure and reliable means of determining a species of dragonfly, even after spending many years studying them in the field. This applies particularly to the great majority of the Zygoptera, which fortunately, in most cases, present little difficulty for capture. Many anisopterans are difficult to capture but the odonatologist will come, in due course, to make reliable sight identifications for a certain number of

well-known and easily recognizable species (notably Libellulidae). For others, that have less clear markings, he or she will only be in a position to express a strong likelihood. Knowledge of the behaviour arid ecology of species helps the experienced odonatologist, but will rarely provide absolute certainty. Such certainty is absolutely necessary to validate a record and, if any doubts remain, the record is invalid.

Visual identification at a distance is a complex and very personal phenomenon which I liken to the capacity we have to recognize instantly a person we know by integrating a multitude of characteristics that we cannot analyse individually. As a result, it is extremely difficult to try to convey this to others by a simple method (e.g. a dichotomous key), and clearly the novice cannot, by definition, call on long experience. Indeed, a method that relies solely on binoculars should only be published with clear indications of the inherent risks involved since, once published, it carries the risk of being used over-enthusiastically and without due caution by the idealistic novice.

I may add that after 25 years in odonatology (and 35 in ornithology), I remain extremely cautious about my identifications at a distance of many Anisoptera (such as Corduliidae, *Sympetrum* and *Orthetrum* and many Aeshnidae), For example, in regions where more than one species of *Cordulegaster* co-exist, I never allow myself to make a formal identification to species solely on the basis of binocular observation. For Zygoptera a visual identification is only reliable at close range and can only be used most of the time to detect a less common species among a crowd of individuals; a swing of the (indispensable]) net will bring certainty to a determination. For some species, the identification of an isolated female will often necessitate microscopic examination and therefore retention of the specimen as a voucher.

This consideration raises the question of who should decide when and whether such a 'voucher specimen' should be collected. Nowadays many ornithologists subscribe to telephone information services to discover where and when a rare bird can be viewed. Having obtained such information, they may then travel far to view the rarity and thus add its name to their 'Life List.' A similar service is becoming available to observers wishing to view rare insects, especially butterflies and dragonflies. Having invested time and money to reach a viewing site, such observers will not take kindly to a specimen of the rarity being captured and retained as a voucher specimen. However, where there is a conflict of interest, the overall interests of science and odonatology should be considered. Indeed it should be borne in mind that without collecting Odonata in the past we would not now know the species. A decision regarding the need to obtain a voucher specimen should ideally be macle by a *bona fide* odonatologist whose sole interest must be in advancing the science of odonatology for the benefit of all odonatologists.

In conclusion: an inventory of the Odonata, notably the Anisoptera, of a locality must, ideally, always be made on the basis of larvae and exuviae, which indicate with precision the species actually breeding at the study site at the time and their

abundance; there now exist at least two excellent books (Gerken & Sternberg, 1999; Heideman & Seidenbusch, 2002) for identifying these stages. An inventory based on the very mobile adults, particularly of some anisopteran species, presents a much less reliable indication of the resident population, unless it is obtained over a long period and on the basis of regular observations at the site and/or observations of adult breeding behaviour there. Consequently, it is not so crucial to obtain a definitive identification for each anisopteran seen. An observation can remain provisional, as a simple indication of potential presence, pending confirmation. It is evident that a serious record must never be based solely on identification by sight at a distance.

Acknowledgement

Caroline Daguet kindly helped with the translation of the original article from French to English.

References

Gerken, B. & Sternberg, K. 1999. Die Exuvien europäischer Libellen (Insects, Odonata). Arnika & Eisvogel, Höxter & Jena, Germany. 354pp.

Heideman, H. & Seidenbusch, R. 2002. Larves et exuvies des libellules de France et d'Allemagne (sauf de Corse). Société Française d'Odonatologie, Bois-d'Arcy, France, 416pp.

Peterson, R. T., Mountfort, G. R. & Hallam, P. A. D. 1954. A field guide to the birds of Britain and Europe. Collins, London. 318pp.