

RECENT DEVELOPMENTS IN THE CONSERVATION OF ODONATA IN GREAT BRITAIN

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The principal advances in dragonfly conservation in Great Britain since 1976 are the formation of the British Dragonfly Society, the production of an atlas showing the distribution of all species in the British Isles, an increase in the number of nature reserves which contain important odonate habitats, new measures designed to protect odonate habitats under the Site of Special Scientific Interest procedure, and the development of cooperation between farmers and conservationists, which has resulted in the construction of many new odonate habitats.

INTRODUCTION

Effective conservation depends on accurate knowledge of the current distribution of each species. This information will indicate whether special measures should be taken to conserve a particular species, and, if they are necessary, which breeding sites should be given protection. Conservation also depends on knowledge about the habitat requirements of each species so that protected sites can be managed effectively to maintain viable populations.

This paper outlines the main changes in the British conservation situation since a review was made in 1976 (MOORE, 1976).

THE BRITISH DRAGONFLY SOCIETY

One of the main events that has occurred since 1976 has been the formation and growth of the British Dragonfly Society (MERRITT, 1987). It was founded in 1983 and now has over 500 members. It has an annual symposium which is well attended and organises numerous field trips. It produces its own journal and a newsletter. A Dragonfly Conservation Group was convened in 1986 in order to promote and coordinate the Society's conservation work on

dragonflies. It liaises with the Nature Conservancy Council (NCC), the official conservation body in Great Britain. The Dragonfly Conservation Group has produced a code of practice on collecting and a leaflet on the construction of ponds. It advises on site conservation.

The formation of the British Dragonfly Society has greatly facilitated the gathering of data on dragonfly distribution throughout the British Isles. Coverage of the 3,862 10 km squares is comprehensive enough — c. 3,000 squares have been covered — to produce an Atlas. It is in preparation and will be published in 1991. It will give a reliable indication of the present distribution of the 39 breeding species of the British Isles and will indicate which species have declined in recent years. The data will suggest new areas for research, for example, on the recent expansion of southern species northwards, and on differences in the flying season between the sibling species *Sympetrum striolatum* (Charpentier) and *Sympetrum nigrescens* Lucas.

SITE PROTECTION

The Atlas will provide a firmer base for selecting both nature reserves and Sites of Special Scientific Interest (SSSI). Both National Nature Reserves (NNR) and SSSI are selected primarily as examples of the different habitats or biotopes found in Great Britain. The aim of the series of NNRs is to conserve the best examples of each biotope type. They are selected primarily on botanical grounds but, as was shown in the 1976 review (MOORE, 1976), this method succeeded in protecting populations of 32 out of the 38 British breeding species of dragonfly at that time. Since then 89 more NNRs have been established (NATURE CONSERVANCY COUNCIL, 1976, 1988) and three more species have been protected in these reserves. They are the very rare boreo-alpine *Coenagrion hastulatum* (Charpentier), the very local Mediterranean and central European species *Ischnura pumilio* (Charpentier) and the local *Somatochlora metallica* (Vander Linden). *Coenagrion mercuriale* (Charpentier) has received further protection through acquisitions of new heathland reserves in Dorset. This species has a restricted range in West Europe and North Africa and is threatened with extinction in many parts of its range, and so it is particularly desirable to conserve populations in nature reserves.

The SSSI procedure ensures that County Planning Officers have to consult the NCC before allowing any development on an area designated as a SSSI by the NCC. Since the passing of the Wildlife and Countryside Act in 1981 the NCC also has to tell owners of Sites what farming or forestry operations would damage the scientific interest of the Sites, and the owner then has to consult with the NCC before he may undertake such an operation. Usually it is not allowed, and Government money is now available to compensate owners for loss of opportunity.

As noted above, SSSI are primarily selected on botanical grounds, but in well studied taxonomic groups SSSI can be notified on the grounds of supporting a rare or local species or of supporting an unusually rich assemblage of species of the group. It says much for recent work on Odonata that the Odonata is the only invertebrate group which can be selected on the basis of an assemblage of its species. The selection system for odonate species is quite complex (NATURE CONSERVANCY COUNCIL, 1989). An area can be notified as a SSSI if : — 1 — it contains a rediscovered population of a species which is thought to be extinct in Britain (e.g. *Coenagrion armatum* (Charpentier)) — 2 — it contains a population listed in the Wildlife and Countryside Act 1981 as being endangered in Britain (e.g. *Aeshna isosceles* (Müller)) — 3 — it contains the only, or a strong population of a vulnerable species (e.g. *Lestes dryas* Kirby), a rare species (e.g. *Libellula fulva* Müller), or a nationally scarce species (e.g. *Brachytron pratense* (Müller)) within the 'area of search'. The 'area of search' is either a medium sized county or a division of a large county. In practice it generally covers an area of about 2,500 sq.km. A strong population of any species at the edge of its range may also be considered for notification — for example *Aeshna cyanea* (Müller) in Scotland. — 4 — it contains an outstanding assemblage of dragonfly species for its area. The value chosen as an outstanding assemblage varies throughout Britain because there are more species in the south than in the north. It ranges from seven species in the Orkney Islands to seventeen in central south England (see Fig. 1).

By 1988 3,188 SSSI, covering 1,576,786 ha, that is nearly 7% of the land surface of Great Britain, have been notified. The SSSI procedure has saved many sites, but it is not wholly successful in conserving habitat. In the year 1987-8 161 cases of damage were reported on SSSI or proposed SSSI, and in 63 there was partial loss of the site or damage which was likely to have long term effects (NATURE CONSERVANCY COUNCIL, 1989). Nevertheless, the SSSI procedure revitalised by the Wildlife and Countryside Act 1981 should, if maintained, go a long way in conserving the best sites for Odonata in Britain. Many SSSI are managed as nature reserves by non-governmental conservation bodies. At Arne in Dorset the Royal Society for the Protection of Birds (RSPB) has constructed bog pools for dragonflies and has erected illustrated signboards so that visitors can identify the species present by the pools. Systems similar to the British SSSI one operate both in Northern Ireland and in the Republic of Ireland.

THE FARMING AND WILDLIFE TRUST

Another major event affecting conservation of Odonata which has occurred since 1976 is a new cooperative movement between farmers and conservationists. It is effected by the Farming and Wildlife Trust (FWT) with its



Fig. 1. Total numbers of dragonfly species regarded as outstanding assemblages in different parts of Britain. (Note that the total number of species in Shetland is too small for this concept to be valid.)

constituent county Farming and Wildlife Advisory Groups (FWAG). The whole organisation is an 'umbrella' one under which both farming and conservation organisations can act. It is supported by farming and forestry organisations, such as the Ministry of Agriculture, Fisheries and Food, the Forestry Commission and the National Farmers Union, and conservation organisations such as the Nature Conservancy Council, the Royal Society for the Protection of Birds and the Royal Society for Nature Conservation (RSNC). Most importantly it is supported by, and largely run by farmers, and so is a conservation organisation with which most farmers can identify (CARTER, 1983).

Some FWAGs existed in 1976, but no county employed an adviser. Today 41 counties employ a full-time Farm and Conservation Adviser (FCA). Since 1983 17,000 farms have been visited at the request of the farmer. The FCA surveys the farm, draws attention to its salient wildlife features and advises on their conservation management and on sources of financial help. As the result of all this work hundreds of farm ponds have been restored or created. This must have led to a very significant increase in the commoner species of Odonata. The work of the FWAGs is encouraged by county and national competitions which are held annually throughout the United Kingdom. The winners are those farmers who have undertaken outstanding conservation work on their farms within the constraints of profitable farming. Well designed and managed ponds are a feature of most of them.

RESEARCH

Since 1976 knowledge about the habitat requirements of British species of Odonata has increased as the result of numerous studies made in several European countries. One of the more important conclusions which is emerging is that species can vary in life history and behaviour very considerably in different parts of their range. Therefore care must be taken not to extrapolate too readily from one locality to another. Recent studies also show that dragonflies frequently breed under suboptimal conditions. This fact has many consequences not least on the interpretation of distribution maps and the design of future surveys. Despite the great increase in knowledge we still cannot describe accurately the limiting factors of a single dragonfly species.

CONCLUSION

There are many factors which still militate against the total conservation of dragonflies in Great Britain, notably an increase in river pollution due to an increase in intensive animal farming, and a weakening of planning procedures by the present Government. However, the overall situation, as

regards both site protection and research, has improved rather than deteriorated since 1976 and this has been reflected by recent increases in some of the rarer species.

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