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Kurzmitteilung

Perspectives in Odonatology Notes from a workshop during the GdO meeting, Höxter, 13. March 1994

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Preamble

During the lectures and discussions at this meeting, stimulating facts and ideas arose. In the context of present-day Odonatology, these indicate directions and priorities for future work - on theoretical and applied fronts.

In the following brief account, I identify some points that arose during the plenary discussion session that concluded the main GdO meeting. My ability to chair that session, and to provide this resumé, depended on the participation of Bernd GERKEN, whose valued help I acknowledge here. After due consideration, we agreed that a brief, personal resumé of the discussion (instead of verbatim accounts of the contributions from each speaker) would be appropriate for the aims of the session and of LIBELLULA. To adopt such an approach necessarily means that facts and ideas are not precisely attributed to the person or persons who introduced them. The following account draws on contributions made by

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several members of GdO, including the following: R. BUCHWALD, P. CORBET, B. GERKEN, A. MARTENS, J. OTT, G. RÜPPELL, E. SCHMIDT, M. SCHORR, K. STERNBERG and W. ZESSIN. When names of contributors have been inserted, this has been done to indicate areas of interest rather than to imply sole contribution, and to lead the reader to relevant published work.

Habitat selection

In *Aeshna subarctica* breeding habitats are of three kinds (STERNBERG): (a), stem habitats (Stammhabitate) exhibit a full age-pyramid of larvae, produce large numbers of adults which can colonize other habitats, and permit full reproductive activity by males, and oviposition by females; (b) subsidiary habitats (Nebenhabitate) support larval populations and permit oviposition and also some male reproductive activity but on a smaller scale and less regularly than in (a); and (c) larval habitats (Larvenhabitate) support only small larval populations and permit oviposition but, because trees line the shore close to the water, do not provide room for male reproductive activity. Use of habitats like this, a phenomenon encountered also in *Aeshna cyanea* (SCHMIDT), has a bearing on proximate cues employed by dragonflies for habitat selection, perhaps in an hierarchical manner, by males and females. Presumably each sex responds to slightly different cues at different times of life or (in the case of the female) at different stages of the ovarian cycle. Habitat (a) gives females access to genetic material from males best able to defend a high-quality patrol site, whereas habitat (c) offers an ovipositing female relative immunity from interference from males. Also, the three kinds of habitat may have differing value as breeding sites from year to year in a region where interyear climatic variation is large.

Existence of what appears to the human observer as a spectrum of habitats, used by a species in different ways at different times, has a bearing on several important aspects of ecology and conservation, including the criteria used for habitat inventorisation, habitat occupancy in the context of ecological succession, and rotational management (as proposed by WILDERMUTH) as a strategy for

species and habitat protection. Such examples of habitat heterogeneity broaden the traditional concept of the ecological niche (RÜPPELL, SCHMIDT) and may sometimes dilute the apparent dichotomy between stenotopy and eurytopy. Moreover, by focusing on criteria for habitat occupancy, such a spectrum reminds us that the niche for each developmental stage in the dragonfly life cycle is different (BUCHWALD, OTT).

Locating the habitat

Despite elegant work identifying proximal cues for habitat selection (BUCHWALD, WILDERMUTH), little is known about how the mature dragonfly first locates a breeding site. Sometimes such adults 'home' precisely to their own emergence site (UTZERI), but the way in which navigation is accomplished remains unknown. Apparently the process entails a kind of imprinting, perhaps mediated visually.

Past habitats

Review of fossil material (ZESSIN) reveals that fossilised larvae are relatively rare and that the great majority of adults are fossilised in sites that were usually not breeding sites, a probable exception being Tertiary sediments at Messel (Darmstad/FRG). Therefore inferences about habitats occupied by Odonata in past times have to be drawn from other possible correlates, such as gross morphology and inferred capability for thermoregulation (MAY).

Habitat management for conservation

A basic need is biotope documentation using systems that allow data to be standardised and therefore to be reproducible from one region to another (SCHMIDT). The use of 'indicator species' to provide evidence of the quality of different kinds of biotope (BUCHWALD, GERKEN, OTT, SCHMIDT, SCHORR) is affected by two important considerations: (a) especially in Central Europe (SCHMIDT), many species are close to the limits of their geographical range; and (b) now almost everywhere human impacts

have severely modified biotopes and biotope complexes (OTT). Such considerations make it necessary to document the influence of human impacts (RÜPPELL) and to make allowance for human influence (even in nature reserves) when management plans are being drawn up to achieve reclamation or protection of biotopes. To progress efficiently in this field of endeavour requires that species initiatives be co-ordinated across Europe, enabling different regions to be compared and workshops to be convened to focus on problems of high priority (RÜPPELL). GdO can offer help with such co-ordination, and HAGENIA could provide a forum for exchange of information and views (GERKEN). In Britain, where such co-ordination is easier because of the smaller area involved, the British Dragonfly Society (BDS) contributes to habitat conservation through the Dragonfly Conservation Group (DCG), a standing body of the Society, established in 1986 and chaired by a member with a long professional experience in nature conservation. Through the DCG, BDS is recognised nationally as the authoritative source of information and advice on dragonflies and their conservation; and, by collaborating with larger conservation bodies (e.g. the Royal Society for Protection of Birds), BDS can influence the management of many habitats in ways that favour their dragonfly fauna. BDS, as well as conservation bodies at the national, regional and local level, have found it useful to have a single source and contact point for information and advice.