

**LARVAL MORPHOLOGY OF THREE SPECIES
OF THE GENUS *HADROTHEMIS* KARSCH
(ANISOPTERA: LIBELLULIDAE)**

M. Di DOMENICO¹, V. CLAUSNITZER² and G. CARCHINI¹

¹ Dipartimento di Biologia, Università "Tor Vergata", Via della Ricerca Scientifica snc,
I-00133, Roma, Italy

² Biogeography, Philipps-University of Marburg, Graefestrasse 17, D-06110 Halle/Saale, Germany

Received June 27, 2005 / Reviewed and Accepted November 2, 2005

The larval morphology of *H. scabrifrons*, *H. coacta* and *H. camarensis* is described for the first time from specimens collected in East Africa, and a comparison among the species is given.

**THE LARVA OF *POLYTHORE SPAETERI*
BURMEISTER & BÖRZSÖNY, WITH COMPARISON
TO OTHER POLYTHORID LARVAE AND MOLECULAR
SPECIES ASSIGNMENT
(ZYGOPTERA: POLYTHORIDAE)**

V. ETSCHER, M.A. MILLER and E.-G. BURMEISTER

Zoologische Staatssammlung München, Münchhausenstrasse 21, D-81247 München, Germany
zsm@zsm.mwn.de

Received January 20, 2005 / Revised and Accepted October 27, 2005

The larva from the area of Panguana (Huanuco prov., Peru) is described. This constitutes the first description of a Polythore. P-distance measuring of a 790 bp long fragment of the mitochondrial COI gene was used as a tool for the assignment of the larva. The low degree of sequence divergences between larval and imaginal COI sequences leaves no doubt about conspecificity. The use of scanning electron microscopy gives an impression of some morphological characters not mentioned so far concerning polythorid larvae. Comparison of the *P. spaeteri* larva with the few currently available descriptions of polythorid larvae shows that characterisation of the larvae at generic level is not possible until more larval specimens of the family are examined.

**SEXUAL DIMORPHISM IN WING CELL PATTERNS
IN *XANTHOCNEMIS ZEALANDICA* McLACHLAN
(ZYGOPTERA: COENAGRIONIDAE)**

S. HARDERSEN

Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale,
Verona-Bosco della Fontana, Strada Mantova 29, I-46045 Marmirolo (MN), Italy
s.hardersen@libero.it

Received January 10, 2005 / Revised and Accepted October 21, 2005

In many odon. spp. ♂♂ and ♀♀ differ phenotypically; the most commonly noticed characters which exhibit sexual dimorphism are size, and body- and wing colouration. Although the odon. wing venation has been studied intensively, very limited data on sexual dimorphism exist. In this study distinct cell groups in the wings of *X. zealandica* were compared between ♂♂ and ♀♀. Of the 6 cell groups studied two were sexually dimorphic. Reasons for the observed differences are discussed.

**IMMUNOCYTOCHEMICAL DEMONSTRATION
OF SOME VERTEBRATE PEPTIDE HORMONE-LIKE
SUBSTANCES IN THE MIDGUT ENDOCRINE CELLS
IN *TRAMEA VIRGINIA* (RAMBUR)
(ANISOPTERA: LIBELLULIDAE)**

N.V. PATANKAR* and D.B. TEMBHARE

Department of Zoology, Nagpur University Campus, Amravati Road, Nagpur-440 033, India

Received September 2, 2005 / Revised and Accepted November 16, 2005

The present immunocytochemical study reveals the presence of well-defined endocrine cells, intermingled with the columnar cells of the epithelium in the midgut region of the alimentary canal of *T. virginia*. The midgut endocrine cells are of 2 types, the open-type midgut endocrine cells (OMEC) with a long tubule opening into the lumen of the midgut and close-type midgut endocrine cells (CMEC) which are spherical in shape and devoid of extending tubules. Various gastrointestinal hormone-like substances are localized in respective types of midgut endocrine cells in different regions of the midgut i.e. anterior, middle and posterior. The NPY, FMRFamide and β -endorphin were localized in the open-type while substance P, gastrin, CCK and VIP in the close-type midgut endocrine cells. The midgut endocrine cells in *T. virginia* differ from each other in their location, cytomorphological and immunocytochemical characteristics representing different types of endocrine cells. Functional significance of these myotropic and vertebrate gastrointestinal hormone-like substances in the midgut endocrine cells of *T. virginia* is discussed.

* **Address for correspondence:** D.B. Tembhare, 44 Vijaya Nagar, South Ambazari Road, Nagpur-440 022, India; – e-mail: entonitishapatankar@rediffmail.com; – drnitisha@rediffmail.com

**FECUNDITY AND OVIPOSITION
IN *MORTONAGRION HIROSEI* ASAHINA, *M. SELENION* (RIS),
ISCHNURA ASIATICA (BRAUER) AND *I. SENEGALENSIS*
(RAMBUR), COEXISTING IN ESTUARINE LANDSCAPES OF
THE WARM TEMPERATE ZONE OF JAPAN
(ZYGOPTERA: COENAGRIONIDAE)**

M. WATANABE¹ and S. MATSU'URA²

¹ Graduate School of Life and Environmental Sciences, University of Tsukuba, Tsukuba,
Ibaraki 305-8572, Japan; – watanabe@kankyo.envr.tsukuba.ac.jp

² Graduate School of Environmental Sciences, University of Tsukuba, Tsukuba,
Ibaraki 305-8572, Japan

Received May 11, 2005 / Revised and Accepted November 5, 2005

Adults of the 4 spp., inhabiting an estuarine landscape that includes reed communities and rice paddy fields established on water of varying saline concentration in Mie prefecture, Japan, were studied. The fecundity of *Ischnura* spp. was higher than that of *Mortonagrion* spp. *I. senegalensis* contained the largest number of mature, submature, and immature eggs with the smallest mature egg size, whereas *M. selenion* contained the smallest number of immature eggs with the largest mature egg size. During a 3-day laboratory oviposition experiment without food, all ♀♀ developed eggs, resulting in a greater number of mature eggs than was originally contained. Most of the eggs that developed to maturity were laid by *M. selenion* and *I. asiatica*, while *M. hirosei* laid only half of the number laid by either of these. The oviposition process of the 4 spp. is discussed from the viewpoint of their larval habitat selection.

¹ Corresponding author

**THE ODONATA OF SOUTH URAL, RUSSIA,
WITH SPECIAL REFERENCE TO
ISCHNURA ARALENSIS HARITONOV, 1979**

V.A. YANYBAEVA¹, H.J. DUMONT², A.Yu. HARITONOV³ and O.N. POPOVA³

¹ Bashkirian State Nature Reserve, RUS-453592 Sargaya, Bashkortostan Republic, Russia;
– bashart@bashnet.ru

² Animal Ecology, University of Ghent, Ledeganckstraat 35, B-9000 Gent, Belgium

³ Institute of Animal Systematics and Ecology, Siberian Branch, Russian Academy of Sciences,
ul. Frunze 11, RUS-630091 Novosibirsk, Russia; – pc@eco.nsc.ru

Received July 8, 2005 / Reviewed and Accepted September 10, 2005

The odon. fauna of S. Ural (Russia), as known from literature data and new collections, is composed of 59 spp. *Coenagrion ecornutum*, *Ischnura pumilio*, *Somatochlora graeseri* and *Selysiothemis nigra* are first records for S. Ural; the presence of *Ischnura aralensis* Haritonov, 1979 (syn. *I. haritonovi* Dumont, 1997), *Aeshna cyanea*, *Anax imperator* and *Libellula depressa* is confirmed, but that of *Pyrrhosoma nymphula*, *Sympecma fusca*, *Cordulegaster boltonii* and *Libellula fulva* is not. *Aeshna undulata* Bartenev, 1909 is a probable synonym of *A. juncea* Linnaeus, 1758. *I. aralensis*, *C. ecornutum*, *Enallagma cyathigerum* risi and *S. graeseri* were found W as well as E of the Ural River, and thus are part of the fauna of Europe. Several western spp. reach their limit of eastward extent in S. Ural and, conversely, several eastern (Siberian) spp. reach their limit of westward extent there too. The range of *I. aralensis* is discussed in the light of the contractions and expansions of the Caspian-Aral lakes during the Late Pleistocene. The current disjunct positions of its colonies is understood as the result of the present phase of aridity in middle Asia.

SHORT COMMUNICATIONS

**FINE-STRUCTURAL CHANGES IN THE EGG CHORION
OF *BRADINOPYGA GEMINATA* (RAMBUR)
INDUCED BY PAPER MILL EFFLUENT
(ANISOPTERA: LIBELLULIDAE)**

R.J. ANDREW^{1*}, L. KODHE² and S.S. KURUP²

¹ Department of Zoology, Hislop College, Civil lines, Nagpur-440 001 (MS), India
* rajuandrew@yahoo.com

² Department of Zoology, SSESAs Science College, Congress Nagar, Nagpur-440 012 (MS), India

Received May 2, 2004 / Revised and Accepted November 1, 2005

The egg chorion of the dragonfly *B. geminata* undergoes major structural changes when incubated in paper mill effluent. The exochorion becomes blemished, marred and perforated. It bunches into a granular condition and loses its jelly-like original identity. The endochorion develops cracks and is pitted with holes. The hexagonal demarcations of the endochorion plates are obliterated and replaced by a network of angular surface reticulations. The micropylar stalk and the circular basal ridge dissolve and distort the micropylar apparatus.

**IMMUNE MELANIZATION ABILITY
AND MALE TERRITORIAL STATUS
IN *ERYTHEMIS VESICULOSA* (FABRICIUS)
(ANISOPTERA: LIBELLULIDAE)**

A. CÓRDOBA-AGUILAR* and V. MÉNDEZ

Instituto de Ecología, Universidad Nacional Autónoma de México, Apartado Postal 70-275,
Circuito Exterior s/n, MX-04510 Ciudad Universitaria, México, D. F., Mexico

* acordoba@ecologia.unam.mx

Received June 15, 2005 / Reviewed and Accepted November 4, 2005

Using a nylon filament implant inserted in the thorax, it was tested whether there were immune ability and size differences between territorial and nonterritorial ♂♂ that gather in lentic aquatic sites. It was found that territorial ♂♂ mounted a larger melanin-based immune response than nonterritorial ♂♂. This is coherent with current results in other odon. and is interpreted as territorial ♂♂ being in better condition than nonterritorial ♂♂. However, there was no size difference between the territorial and nonterritorial individuals. This suggests that size may be a poor predictor of immune ability.

TWO NEW ZYGOPTERA SPECIES FROM PAPUA NEW GUINEA (PROTONEURIDAE, COENAGRIONIDAE)

G. THEISCHINGER¹ and S.J. RICHARDS²

¹ NSW Department of Environment and Conservation, PO Box 29, Lidcombe,
NSW 1825, Australia; – gunther.theischinger@environment.nsw.gov.au

² Vertebrates Department, South Australian Museum, North Terrace, Adelaide,
S.A. 5000, Australia; – richards.steve@saugov.sa.gov.au

Received September 7, 2005 / Reviewed and Accepted November 2, 2005

Nososticta acudens sp. n. and *Papuagrion nigripedum* sp. n. from Papua New Guinea are described, both from lowland rainforest in Gulf prov. (Dark-End Lumber, 3-X-1999). Holotype ♂♂ are deposited at SAMA, Adelaide, Australia. Diagnostic characters of the adult ♂ are illustrated and the affinities of both spp. are discussed.