

BIOGEOGRAPHICAL AND ECOLOGICAL DESCRIPTION OF THE ODONATA OF EASTERN VASYUGAN PLAIN, WEST SIBERIA, RUSSIA

R. BERNARD¹ and O. E. KOSTERIN²

¹ Department of General Zoology, Adam Mickiewicz University, Umultowska 89,
PO-61-614 Poznań, Poland; – rbernard@amu.edu.pl

² Institute of Cytology and Genetics, Siberian Division, Russian Academy of Sciences,
Academician Lavrentev Avenue 10, RUS-630090 Novosibirsk, Russia; – kosterin@bionet.nsc.ru

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Results of the studies of odonate fauna, carried out in July 2006 in the odonologically almost unexplored Vasyugan Plain, are presented. The studies concentrated in the northern and northeastern parts of the largest bog in the world, the Vasyugan Bog, and its surroundings. Large primeval complexes of *Sphagnum* bogs and fens and other accompanying habitats, man-made as well, were studied. 25 localities are briefly described and the occurrence of 35 recorded spp. is commented. Due to almost total absence of typically East Palaearctic spp. (only *Shaogomphus postocularis* found), the aspect of the odon. fauna in the studied area is similar to a certain degree to that known from central and eastern Europe, but with some differences in the species composition, abundance of many spp. and their habitat preferences. In *Coenagrion puella*, *C. pulchellum*, *Enallagma risi*, *Nehalennia speciosa*, *Gomphus vulgatissimus*, *Shaogomphus postocularis*, *Somatochlora flavomaculata*, *Leucorrhinia albifrons*, and *L. pectoralis*, the northern limit of their distribution appears further N than it was previously known. This suggests that the actual northern range limit of some of these species in W Siberia does not descend as sharply to the S as it was expected. The first known site of *S. postocularis* W of the Ob' river and on a perfect plain is also worth noticing. Among the most remarkable discoveries was the regular, area-wide occurrence of several previously poorly known in Siberia spp., such as *N. speciosa*, *Aeshna subarctica*, *G. vulgatissimus* and *S. flavomaculata*. Taxonomically interesting is the coexistence, in the studied area but not at the same localities, of two taxa considered as subspecies or separate species, *E. c. cyathigerum* and *E. (c.?) risi*. The fact of clear spatial separation and at most a minimum degree of intergrading (if any) of these 2 taxa suggests their full species status which would agree with morphological and recent molecular data. The regular and not rare presence of 2 androchrome *Calopteryx splendens* ♀ forms and ♂♂ with the wings coloured to the tips, as well as the occurrence of brownish wing 'smoking' of many ♀ *S. flavomaculata* and *S. arctica* are peculiar features of the Vasyugan odon. aspect. The ♂ segregation

in the 'triangle' of peat bog aesnids, *Aeshna crenata*, *A. juncea* and *A. subarctica*, is described and discussed. Between *A. juncea* and *A. subarctica* it was very advanced, partially spatial and partially weather/temporal, between *A. crenata* and *A. subarctica* almost complete, spatial, and between *A. crenata* and *A. juncea* advanced, weather/temporal. These observations confirm the dominant position of *A. crenata* over the water table, and also suggest the lack of *crenata*-dominance off the water table. The reliability of adult diagnostic features, more and less commonly used to distinguish between *A. subarctica* and *A. juncea*, is discussed.

**FACTORS AFFECTING INTERACTION RATES
IN *PLATHEMIS LYDIA* (DRURY)
(ANISOPTERA: LIBELLULIDAE)**

C.M. CURRY* and J.H. KENNEDY

Department of Biological Sciences, University of North Texas, P.O. Box 310559, Denton,
Texas 76203-0559

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Interspecific interaction rates and space use were observed for *P. lydia* at 3 ponds in north-central Texas from June to August 2007. Aggressive interactions of marked individuals were tallied for each interacting sp. by which individual was the aggressor or target and which sp. won or lost. The space used was also mapped. These data were also collected for one individual each of the libellulids *Pachydiplax longipennis* and *Tramea lacerata* and compared to *P. lydia*. Interaction rates were different depending on the category of interacting odon. (perching or flying), supporting the hypothesis that the thermoregulatory categories of perching and flying aid in habitat partitioning among spp.

* **Corresponding author**, current address: Department of Zoology, University of Oklahoma, 730 Van Vleet Oval, Room 314, Norman, Oklahoma 73019, United States; – Claire.M.Curry-1@ou.edu

**LIFE HISTORY OF AN ENDANGERED DRAGONFLY,
NANNOPHYA PYGMAEA RAMBUR, IN KOREA
(ANISOPTERA: LIBELLULIDAE)**

D.G. KIM¹, J.W. YUM², T.J. YOON³ and Y.J. BAE^{1,3,*}

¹ College of Life Sciences and Biotechnology, Korea University, Seoul 136-701, Korea

² National Institute of Biological Resources, Incheon 404-170, Korea

³ Korean Entomological Institute, Korea University, Seoul 136-701, Korea

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Aspects of the *N. pygmaea* life history, an endangered sp. in Korea, were studied at an abandoned paddy field in Mungyeong, Gyeongsangbuk-do, Korea. The larvae were sampled quantitatively at monthly intervals (every 2 weeks during the emergence period) from June 2006 to July 2007 and the adults were counted via a line-transect method. Based on the analyses of larval body length distribution, degree days (DD), and emergence time, the sp. is considered univoltine with an emergence period from mid-May to early August. The estimated sum of the thermal amount, effective to larval development during the study period, was 2468 DD. The relationship between the larval head width and wingsheath width, which is coincident with the temperature fluctuation pattern, shows that the population harbors at least 4 size groups (cohorts) in a generation.

* Corresponding author: yjbae@korea.ac.kr

**MATING EXPERIENCE AFFECTING MALE DISCRIMINATION
BETWEEN SEXES AND FEMALE MORPHS IN
ISCHNURA SENEGALENSIS (RAMBUR)
(ZYGOPTERA: COENAGRIONIDAE)**

Y. TAKAHASHI and M. WATANABE*

Graduate School of Life and Environmental Sciences, University of Tsukuba, Tsukuba,
Ibaraki, 305-8572, Japan
yuyuyuyu@ies.life.tsukuba.ac.jp

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Ischnura senegalensis ♀♀ exhibit colour dimorphism, appearing as andromorphs and gynomorphs. Binary choice experiments between sexes and morphs were conducted in the laboratory. Virgin ♂♂ reared separately from ♀♀ showed no preference between sexes or between morphs, suggesting that virgin ♂♂ were unable to recognize potential mates and had no innate mating preference for a particular ♀ morph. After enclosure with a single ♀ in a small cage, ♂♂ that had experienced copulation significantly preferred the same ♀ morph with which they had copulated, while ♂♂ that failed to copulate with the ♀ showed no preference. The ♂♂ that had experienced copulation significantly preferred ♀♀ over ♂♂. Therefore, ability of ♂♂ to discriminate between sexes and morphs was confirmed by their copulation experience.

*Corresponding author: watanabe@kankyo.envr.tsukuba.ac.jp

SHORT COMMUNICATIONS

**MORTALITY DURING EMERGENCE
OF *PANTALA FLAVESCENS* FABRICIUS IN CENTRAL INDIA
(ANISOPTERA: LIBELLULIDAE)**

R.J. ANDREW

Department of Zoology, Hislop College, Civil lines, Nagpur-440 001, India
rajuandrew@yahoo.com

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Mortality during emergence was studied at an open drain in the city of Nagpur (central India). The total mortality rate (MR) was 10.92% (n = 686). Failure to moult (incomplete emergence state, MR = 4.8%) and failure to expand abdomen and harden wings for flight (complete emergence state, MR = 6.12%) were the two major reasons of mortality. The emerging dragonflies failed to moult and were found dead in the following conditions: cuticle of the thorax split and head and thorax of the pharate partly out of the exuviae (MR = 2.04%), head, thorax and wings out but the entire abdomen trapped in the exuviae (MR = 2.76%). After complete moulting some pharates were found floating, dead or completely exhausted in the water body. Some of the dead pharates had a curved telescopic abdomen and crumpled (MR = 0.44%), or stretched wings (MR = 2.33%), while others exhibited a straight, expanded abdomen and stretched overlapping (MR = 1.75%) or stretched spread wings (MR = 1.60%). Death due to overcrowding and predation was negligible. Statistical analysis revealed that mortality is independent of stage of emergence ($P = 0.25$).

**‘ACCOMPANYING’ BEHAVIOUR OF
BRACHYTHEMIS LEUCOSTICTA (BURMEISTER) IN EUROPE
(ANISOPTERA: LIBELLULIDAE)**

O. HOLUŠA¹ and J. HOLUŠA²

¹ Department of Forest Protection and Game Management, Faculty of Forestry and Wood Technology, Mendel University of Agriculture and Forestry, Zemědělská 3, CZ-613 00 Brno, Czech Republic

² Department of Forest Protection and Game Management, Faculty of Forestry and Wood Sciences, Czech University of Life Sciences, Kamýcká 1176, CZ-16521 Prague 6-Suchdol, Czech Republic; – HolusaJ@seznam.cz

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At a location in southern Spain (nr Vejer de la Frontera, Rio Barbate valley, Andalusia), observations were made on a local population of ca 40 *B. leucosticta* individuals, a sp. known for its inclination to accompany large mammals (the test subject was a human). The goal of the tests was to ascertain how far they are willing to accompany a large mammal, whether the size of the group has an influence on the distance for accompanying the subject and whether the accompaniment differs between sexes. Accompanying a person was recorded in 53 cases, involving 41 ♂ and 83 ♀ dragonflies. They generally flew at a height of 10-50 cm above the ground in front of the moving person, distributed in a semicircle with a radius of 1-2 m (the maximum observed group size was 11 dragonflies). Group size did not influence the flight range of the last individual or the detachment of the first individual from the group, as the dragonflies broke away at random. The average distance of accompaniment by ♀♀ (38.4 m) was further than that by ♂♂ (23.9 m). The maximum path of accompaniment was 89 m for ♂♂ and 111 m for ♀♀. After detaching from the person, the dragonflies returned to the shade. Only rarely did ♀♀ settle on open pasture, and then just for a brief period. In 3 cases (i.e. 1.6%), hunting of prey stirred up from the pasture by the person was observed.

**TELEBASIS LUIZAE SPEC. NOV. FROM BRAZIL
(ZYGOPTERA: COENAGRIONIDAE)**

F.A.A. LENCIONI

Rua Aníbal, 216 - Jardim Coleginho, BR-12310-780, Jacareí, SP, Brazil
odonata@zygoptera.bio.br – web site: www.zygoptera.bio.br

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The new sp. is described and illustrated based on a single specimen from the state of Bahia. Holotype ♂: Brazil, Bahia, São Desidério, 17-I-2004; deposited in author's collection. It can be separated from all other known congeners by the long and strongly sclerotized carina on the dorso-posterior margin of abdominal segment 10, which is much larger than the almost vestigial carina in *T. dominicana*, *T. filiola* and *T. willinki*.