ODONATOLOGICAL ABSTRACTS

2000

(16616) BORTOLOTTI, G.R., J.I. TELLA, M.G. FORERO, R.D. DAWSON & J.J. NEGRO, 2000. Genetics, local environment and health as factors influencing plasma carotenoids in wild American kastrels (Falco sparverius). *Proc. R. Soc. Lond.* (B) 267: 1433-1438. – (First Author: Dept Biol., Univ. Saskatchewan, 112 Science Place, Saskatoon, SK, S7N 5E2, CA).
The study was conducted in the boreal forest of north-central Saskatchewan (Canada), where a population of ca 150-200 pairs of F. sparverius has been studied since 1988. A total of 5195 prey items was observed, 5070 of which could be identified to some taxonomic level. The major components as a percentage by number (and biomass) of all prey delivered were 10.4 (47.6) small mammals, 63.5 (21.5) Odonata, 3.1 (12.8) birds, 6.4 (9.3) frogs and 5.4 (1.8) grasshoppers.

(16617) HAN, F.-y., 2000. Scanning electron microscope (SEM) observation on the penis of 12 species of dragonflies. *J. Shanxi Univ.* (Nat. Sci.) 23(2): 159-162. (Chin., with Engl. s.). – (Dept Life Sci., Shanxi Univ., Taiyuan-030006, China).
12 libellulid spp. are dealt with, but no taxonomic names are stated in figure captions, therefore the identity of the represented spp. cannot readily be ascertained.

(16618) UNIYAL, V.P., A. MITRA & P.K. MATHUR, 2000. Dragonfly fauna (Insecta: Odonata) in Great Himalayan National Park, Western Himalaya. *Ann. Forestry, Dehra Dun* 8(1): 116-119. – (First Author: Wildlife Inst. India, P.B. 18, Chandrabani, Dehra Dun-248001, India).
Anax guttatus, A. nigrofasciatus nigrolineatus, Orthetrum japonicum internum, O. t. triangulare, Pantala flavescens and Sympetrum commixtum are brought on record from the Park (Himachal Pradesh, India), from the altitudes of 1500-2500 m.

2001

(16619) DERKA, T., J. KOVÁČOVÁ & E. BULÁNKOVA, 2001. Substrate importance for selected macrozoobenthic communities in Rudava river. *Folia faun. slovaca* 6: 59-68. (Slovak, with Engl. s.). – (Dept Ecol., Komensky Univ., Mlynská dolina B-2, SK-842-15 Bratislava).
The macroinvertebrate communities inhabiting different substrate types were investigated in the small, sandy-bottom Rudava R. in SW Slovakia. Calopteryx splendens is the only odon. sp. recorded. It was restricted to the sandy substrate, missing in the muddy and woody debris habitats.

(16620) FELIPPE-BAUER, M.L. & S.J. DE OLIVEIRA, 2001. Lista dos exemplares tipos de Ceratopogonidae (Diptera, Nematocera) depositados na Coleção Entomológica do Instituto Oswaldo Cruz, Rio de Janeiro, Brasil. *Mems Inst. Oswaldo Cruz* 96(8): 1109-1119. (Port., with Engl. s.). – (Lab. Diptera, Coleção Ent., Depto Ent., Inst. Oswaldo Cruz-Fiocruz, Av. Brasil 4365, BR-21045-900 Rio de Janeiro, RJ).
The holotype ♀ and the paratype ♀ of Forcipomyia (Pterobosca) macfiei were recovered from odon. at Rio de Janeiro, on 11-IV-1930 and 20-IV-1930, respectively. Original publication: A. da Costa Lima, 1937, *Mems Inst. Oswaldo Cruz* 32: 615-616.

(16621) HAN, F.-y., 2001. Study on the significant

variations in the abdominal spot patterns in the male adult Coenagrion barbatum Needham. *J. Shanxi Univ.* (Nat. Sci.) 24(4): 341-343. (Chin., with Engl. s.). – (Dept Life Sci., Shanxi Univ., Taiyuan-030006, China).
Variations on the 2nd, 8th and 10th abdominal segment are described and illustrated.

(16622) ŠIBL, J., 2001. Contribution to the knowledge of dragonflies (Insecta: Odonata) of the National Park Muránska planina (Slovakia). *Folia faun. slovaca* 6: 53-58. (Slovak, with Engl. s.). – (J. Stanislava 15, SK-841-05 Bratislava).
16 spp. are recorded from 36 localities, bringing the number of the spp. documented from the Park up to 27. See also *OA* 3561.

(16623) WELLS, R.D.S. & J.S. CLAYTON, 2001. Ecological impacts of water net (Hydrodictyon reticulatum) in Lake Aniwhenua, New Zealand. *N. Z. Jl Ecol.* 25(2): 55-63. – (Natn. Inst. Water & Atmospheric Res., P.O. Box 11 115, Hamilton, NZ).
It is documented that the H. reticulatum bloom was not the 'ecological disaster' in Lake Aniwhenua (North Is., NZ) that was feared. On the contrary, it enhanced the habitat for trout by providing refugia and a food source for the lake's invertebrate fauna, which in turn supported fast trout growth rates. Quantitative data for the occurrence of "Zygoptera" and Procordulia grayi during and after the bloom are supplied.

2002

(16624) GORB, S.N. & V.L. POPOV, 2002. Probabilistic fasteners with parabolic elements: biological system, artificial model and theoretical considerations. *Phil. Trans. R. Soc. Lond.* (A) 360: 211-225. – (First Author: Biol. Microtribology Gr., Max-Planck-Inst. Develop. Biol., Spemannstr. 35, D-72076 Tübingen).
Probabilistic fasteners are attachment devices composed of 2 surfaces covered with cuticular micro-outgrowths. The best-studied examples, composed of parabolic elements, are the wing-locking mechanism in Coleoptera and the head arrester in Odon. The present study combines experimental data of force measurements, obtained in an artificial model system, and theoretical considerations based on the simple model of behaviour of probabilistic fasteners with parabolic elements. An analytical model, describing behaviour of these structures, is proposed.

(16625) KALKMAN, V., 2002. Libellen in de uiterwaarden rond Zaltbommel. – [Dragonflies in the Rhine foreland marshes around Zaltbommel]. *Rep. europ. invert. Surv. Nederland* 2002-02, 20 pp. (Dutch). – (Naturalis, P.O. Box 9517, NL-2300 RA Leiden).
A report on the 2001 survey of the odon. fauna of 5 water bodies (23 spp.); – the Netherlands.

(16626) PIHL, S. & K. LAURSEN, [Eds], 2002. Kortlaegning af arter omfattet af EF-Habitatdirektivet 1997-2000. – [Records of the EU Habitat Directive species 1997-2000]. *Danmarks Miljøundersøgelser* 167: 1-144. (Danish). – (Distributor: Miljøbutikken, Laederstraede 1-3, DK-1201 København-K).
The odon. are dealt with on p. 11.

(16627) RELYEA, R.A. & K.L. YUREWICZ, 2002. Predicting community outcomes from pairwise interactions: integrating density- and trait-mediated effects. *Oecologia* 131: 569-579. – (First Author: Dept Biol. Sci., Univ. Pittsburgh, Pittsburgh, PA 15260, USA).
Understanding how species interactions shape the structure of ecological communities based on pairwise comparisons has been a difficult undertaking for ecologists because effects in reassembled communities can be different than simple density-mediated interactions would suggest. Part of this complexity occurs because many spp. change their behaviour and morphology with different predators and competitors and, thus, change their per-capita interaction rates (i.e. trait-mediated interactions). The objective was to use a simple experimental community of 2 predators (larval Anax longipes, and larval salamanders, Ambystoma tigrinum), 2 prey (larval green frogs, Rana clamitans, and larval bullfrogs, R. catesbeiana), and a shared prey resource to determine whether interactions in a reassembled community could be predicted by combining the knowledge of density- and trait-mediated interactions. Laboratory experiments on predation rates and predator-induced behaviours were combined with a mesocosm experiment to examine density- and trait-mediated effects. A factorial combination of no predators, caged Anax (to induce anti-predator traits without changing prey density), and lethal Anax crossed with no predators, caged Ambystoma,

and lethal Ambystoma was used. The species interactions in the reassembled community were qualitatively predictable based on the pairwise experiments. Lethal Anax preyed upon Ambystoma and green frogs while lethal Ambystoma only preyed upon green frogs. Anax also reduced the activity of the green frogs; this caused a decrease in salamander predation on green frogs, a decrease in green frog acquisition of resources, and an increase in bullfrog acquisition of resources. Ambystoma had no effect on green frog activity, no effect on resource acquisition by green frogs, and no effect on resource acquisition by bullfrogs. These results suggest that one can better understand how spp. interact in natural communities if one has a more detailed understanding of trait-mediated mechanisms. However, if predicting the structure of large communities requires identifying how each sp. alters its traits in the presence of all other spp. along with altering density, improving the predictive ability may be a prohibitively large undertaking.

2003

(16628) DIJKSTRA, K.-D.B., 2003. A review of the taxonomy of African Odonata: finding ways to better identification and biogeographic insight. *Cimbebasia* 18: 191-206. – (Natn. Zool. Colln Surinam, Univ. Surinam, P.O. Box 9212, Paramaribo, Surinam).
The taxonomy of the approximately 850 spp. of sub-Saharan African Odon. is relatively well-known. The need for revisions, study of higher classification, comprehension of (often clinal, environmentally induced) variability and knowledge of larvae, phylogeny and biogeography are stressed. Taxonomic priorities are discussed for each fam. Supportive activities include the production of identification manuals for a broader public, the accumulation of supplementary material and the conservation of existing collections. A list of genera with estimated numbers of spp., taxonomic status and references is provided, as well as a list of important regional works.

(16629) KALKMAN, V., 2003. Ongewervelde fauna van het Rijntakkengebied, met veldstudie in uiterwaarden rond Zaltbommel. Libellen (Odonata). – [Invertebrate fauna of the Rhine branches area, with a field study on the foreland around Zaltbommel. Dragonflies (Odonata)]. *Rep. europ. invert. Surv. Nederland* 2003-07, 30 pp. (Dutch). – (Naturalis, P.O. Box 9517, NL-2300 RA Leiden).
A detailed report of the 2001-2002 surveys, documenting the occurrence of 45 spp.; – the Netherlands.

(16630) TSUDA, K., M. WATANABE, S. TOMINAGA, M. ONJO & K. ICHITANI, 2003. The biogeography of the insect fauna of the Ulithi Islands, Micronesia. *Occ. Pap. Kagoshima Univ. Res. Cent. Pac. Isls* 39: 73-75. – (Fac. Agric., Kagoshima Univ., Kagoshima, 890-0065, JA).
6 odon. spp. were collected from 4 islands of the Ulithi Atoll, Yap State, Federated States of Micronesia as follows: Asor (3), Falalop (5), Fassarai (2) and Mogmog (4). The spp. were identified by H. Karube (Kanagawa Pref. Mus. Nat. Hist.), but their names are not stated.

2004

(16631) BECHEV, D.N. & A.M. STOJANOVA, 2004. Geographical localities of invertebrates of conservation importance in the Rhodopes (Bulgaria). *Trav. scient. Univ. Plovdiv* (Animalia) 40(6): 19-25. (Bulg., with Engl. s.). – (Dept Zool., Univ. Plovdiv, 24 Tzar Assen, BG-4000 Plovdiv).
Includes the recent (2003, 2005) records of Lestes dryas, Coenagrion hastulatum, Cordulegaster heros and Somatochlora flavomaculata.

(16632) CONNIFF, K., 2004. Dragonflies of Yala and Tissamaharama. *In*: G. de Silva Wijeyeratne, [Ed.], *Leopards and other wildlife of Yala*, pp. 186--189, Jetwing Hotels, Colombo, ISBN 955107900--0. – [Reprinted from *Sri Lanka Wildlife Newsl.*, Apr./May 2004]
Lists 16 spp. and includes photographs of some of them; – Sri Lanka.

(16633) FOSTER, S.E. & D.A. SOLUK, 2004. Evaluating exuvia [sic!] collection as a management tool for the federally endangered Hine's emerald dragonfly, Somatochlora hineana Williamson (Odonata: Corduliidae). *Biol. Conserv.* 118: 15-20. – (First Author: Cent. Aquat. Ecol., Illinois Nat. Hist. Surv., 607 East Peabody Dr., Champaign, IL 61820, USA).
It was examined whether the discarded last larval instar exuviae could be used to predict larval densities and provide life history information for S. hineana. Using standardized protocols, exuviae were

collected within six 2×2 m plots in an ephemeral wetland in Door co., Wisconsin, USA during spring and summer 1999-2000. S. hineana is a "summer emerger", with more than 95% of the emergence occurring from late June until mid-July. Based on time of emergence and the flight period, adults appear to live a month or longer. The sex ratio at emergence did not differ significantly from a 1:1 ratio and emergence was synchronous between the sexes. Estimates of larval population density using exuvial data were similar to those obtained through intensive direct sampling for larvae. Exuvial collections provide a reliable estimate of larval population density, help link larval ecology to adult ecology and are a useful tool for assessing habitat suitability. Although sampling exuviae requires repeated searching on particular sites, less expertise and fewer people are required for this type of sampling, indicating that exuvial surveys can be a very effective tool for monitoring populations of endangered dragonflies.

(16634) JORDAL, J.B. & K.B. GJUL, 2004. Biologisk mangfold i ferskvann i Møre og Romsdal: en kunnskapsstatus. *Rapp. Areal-og Miljøvernavdelinga*, Møre og Romsdal 2004(2), 69 pp. (Norw.). – (Authors' addresses not stated).
Coenagrion armatum, Cordulegaster boltonii and Sympetrum flaveolum are mentioned from Møre og Romsdal, Norway.

(16635) YIP, J.Y., R.T. CORLETT & D. DUDGEON, 2004. A fine-scale gap analysis of the existing protected area system in Hong Kong, China. *Biodiv. Conserv.* 13: 943-957. – (Dept Ecol. & Biodiv., Univ. Hong Kong, Pokfulam Rd, Hong Kong SAR, China).
Presents a quantitative analysis of a number of odon. spp. in unprotected grid squares (for all spp. and for those of conservation concern only), pointing out the percentages of under-represented (58.8%) and unprotected spp. of conservation concern, i.e. recorded outside protected areas only (17.6%).

2005

(16636) BEYNON, T.G. & C. DAGUET, 2005. Creation of a large pool for colonisation by white-faced darter Leucorrhinia dubia dragonflies at Chartley Moss NNR, Staffordshire, England. *Conserv. Evidence* 2: 135-136. – (First Author: Brit. Dragonfly Soc., 34 Church Lane, Checkley, Stoke-on-Trent, ST10 4NJ, UK).
At a nature reserve in central England, after failure of smaller pools dug to provide long-term L. dubia breeding habitat, a large (7×7 m) pool was created in 1992. L. dubia breeding was confirmed in 1995 and it has since bred annually with 54 individuals recorded in 2003.

(16637) BUTTSTEDT, L. & W. ZIMMERMANN, 2005. Über Entwicklungsnachweise der Feuerlibelle, Crocothemis erythraea (Brullé, 1832), in Thüringen und Sachsen-Anhalt (Odonata). *Ent. Nachr. Ber.* 49(3/4): 171-179. (With Engl. s.). – (First Author: Ziegeleistr. 26, D-06536 Rossla).
A review is presented of the 24 C. erythraea localities, known in Sachsen-Anhalt and Thuringia (Germany) in 2005. Observations on biology and behaviour are brought on record, and variation in size and pigmentation of exuviae is described.

(16638) CAYROU, J. & R. CEREGHINO, 2005. Life-cycle phenology of some aquatic insects: implications for pond conservation. *Aquat. Conserv. Mar. Freshw. Ecosyst.* 15: 559-571. – (Second Author: Lab. Ecol. Hydrosyst., Univ. Paul Sabatier, 118 route de Narbonne, F-31062 Toulouse).
Life cycles and growth patterns are determined for 21 dominant spp., incl. Coenagrion scitulum, Chalcolestes viridis, Anax imperator and Libellula depressa, in small permanent ponds in an arid karstic region in SW France.

(16639) GÜNTHER, A., 2005. Nachweis von in den Anhängen der Fauna-Flora-Habitat-Richtlinie gelisteten Libellenarten im Kreis Freiberg. *Mitt. Naturschutzinst. Freiberg* 2005(1): 29-34. – (Naturschutzinst. Freiberg, Waisenhausstr. 10, D-09599 Freiberg).
The precise data are provided of the current records of Ophiogomphus cecilia, Leucorrhinia albifrons and L. pectoralis in the district of Freiberg, E Germany.

(16640) HUBENOV, Z., 2005. Entomofaunistic diversity of Bulgaria. *Acta ent. bulg.* 11(1/2): 118-132. (Bulg., with Engl. s.). – (Postal address incomplete: Inst. Zool., Sofia, Bulgaria).
General, on the status of the exploration of insect orders in Bulgaria; Odon.: 68 known spp.

(16641) KONAGAYA, S. & H. KOBAYASHI, 2005.

An effect of irrigation and cultivation system on food chain in paddy water environment. *J. rural Planning Ass.* 24(Special Issue): 49-54. (Jap., with Engl. s.). – (First Author: Grad. Sch. Agric., Ibaraki Univ., Ibaraki, JA.
The stable isotope ratios of odon. larvae and plankton/detritus in paddy field water in irrigation ponds were examined. Cultivation system clearly effects the species composition and the odon. larvae abundance.

(16642) LILEY, D., 2005. Tree and scrub clearance to enhance habitat for the southern damselfly Coenagrion mercuriale at Creech Heath, Dorset, England. *Conserv. Evidence* 2: 131-132. – (Footprint Ecology, Court House, Binnegar Lane, East Stoke, Wareham, Dorset, BH20 6AJ, UK).
Scrub and trees were removed from overgrown clay pits at a nature reserve in S England. Prior to management there were 40-70 C. mercuriale adults annually, but this increased to ca 150-200 adults after management opened up the pools.

(16643) MUKKALA, V.-M., A. HAARTO, S. KOPONEN, L. MUKKALA, V. RINNE & J. SALMELA, 2005. On insects, arachnids and other invertebrates in Kivistönmäki, Ilmajoki. *W-album* 2: 3-34. (Fin., with Engl. s.). – (First Author: Suovillankatu 1 as 6, FIN-20780 Kaarina).
Among the 978 spp. collected in the area (W Finland) during 2001-2004, Aeshna grandis, A. juncea and Somatochlora arctica are listed.

(16644) NARAOKA, H., 2005. Copulation behaviour of Lestes temporalis Selys (Lestidae: Odonata). *J. nat. Hist. Aomori* 10: 9-14. (Jap., with Engl. s.). – (36-71 Motoizumi, Fukunoda, Itayanagi-machi, Kita-gun, Aomori, 038-3661, JA).
In Aomori, northern Japan, the copulation in this endemic Japanese sp. was observed between 8:00-16:00 (peak 12:00-14:00), at air temperature >13°C. Soon after tandem formation, intramale sperm translocation takes place (mean duration 67.1±25.1 s) and the wheel position is assumed. The copulation lasts for 32 min 1 s and it is divided into 3 stages. In 90% of pairs (n = 80) the copulation breaks off during the first stage and 66% (n = 50) of ♀♀ start ovipositing.

(16645) NARAOKA, H., 2005. [Sympetrum fonscolombei recorded from Shariki-mura, Aomori pref., northern Japan]. *J. nat. Hist. Aomori* 10: 15. (Jap.). – (36-71 Motoizumi, Fukunoda, Itayanagi-machi, Kita-gun, Aomori, 038-3661, JA).
A young ♀ was documented on 1-IX-2004. It is assumed to represent a vagrant specimen from continental Asia. The sp. was not previously recorded from northern Japan.

(16646) OLSEN, K.M. & S. REISO, 2005. Viktige naturtyper og artsmanfold i ferskvann i Akershus. *Siste Sjanse Rapp.* 2005(5), 55 pp. ISBN 82-92005-61-7. (Norw.). – (c/o Siste Sjanse, Maridalsveien 120, N-0461 Oslo).
Habitat types and biodiversity of the Akershus area (Norway) are outlined and 22 odon. spp. are listed along with precise locality data, dates and the ontogenetic condition of specimens.

(16647) SIPKAY, C., L. HUFNAGEL & M. GAÁL, 2005. Zoocoenological state of microhabitats and its seasonal dynamics in an aquatic macroinvertebrate assembly. *Appl. Ecol. envir. Res.* 3(2): 107-137. – (First Author: Dept Syst. Zool. & Ecol., Eötvös Loránd Univ., Pázmány P. sétány 1/c, H-1117 Budapest).
The study was conducted (2002-2004) in Badacsöny bay (Lake Balaton, Hungary), and samples were collected from Phragmites australis and Typha angustifolia stands, and from open water. Ischnura sp. was represented in all habitats, and the Anisoptera larvae in open water only. The average biovolume values of taxa in the respective habitats are stated.

(16648) SOUTHWOOD, R., P. TAYLOR & C. DAGUET, 2005. Creation of dykes on grazing marshes and effects of the Norfolk hawker Aeshna isosceles dragonfly at Ludham and Potter Heigham Marshes NNR, Norfolk, England. *Conserv. Evidence* 2: 137-138. – (First Author: Brit. Dragonfly Soc., Natural England, 19 The Green, Woodbastwick, Norwich, Norfolk, NR13 6HH, UK).
At a NNR in the Norfolk Broads (E England), between 1986-1998, 1600 m of new dykes were excavated in the winter months. 7 of these 12 dykes were subsequently colonised by A. isosceles, an UK sp. of conservation concern.

(16649) SUH, A.N. & M.J. SAMWAYS, 2005. Significance of temporal changes when designing a reservoir for conservation of dragonfly diversity. *Biodiv. Conserv.* 14: 165-178. – (Second Author:

Dept Conserv. Ecol. & Ent., Univ. Stellenbosch, P.B. X1, Matieland-7602, SA).
While there has been much focus in biodiversity conservation that transcends place, few studies transcend time. Yet an appreciation of vegetational and hydrological succession is essential for maintaining a habitat that has been created with the aim of conserving a particular group of organisms. This is a study of changes in a dragonfly assemblage over a period of 13 yr at a biodiversity-rich, southern hemisphere reservoir. A total of 30 spp. were recorded in this study, compared to 12 spp. before the reservoir was constructed in 1988, and 26 spp. in 1993, with 25 spp. resident in both 1993 and 2001. 2 of these are local endemics. One other endemic was lost to succession in 1993 but reappeared in 2001. 3 other spp. never reappeared after succession in 1993, yet 6 other spp. appeared after this date. Multivariate analyses identified structural and compositional vegetation, especially marginal forest, percentage vegetation cover, percentage shade, as the most important environmental variables determining odon. species composition. Other important environmental variables were grasses of tall, medium and short height categories, submerged vegetation, water flow and amount of open water. Not surprisingly, successional changes in vegetation physiognomy and in water conditions significantly increased odon. species richness and diversity over the years. More importantly, the study shows that to maintain both high species richness, including endemics, it is essential to maintain a variety of biotopes using selective management of the marginal vegetation without allowing succession to proceed to a point where overgrowth of the bank and silting of the bottom begin to impoverish the fauna.

(16650) TUSHABE, H. et al. [13 joint authors], 2005. A nationwide assessment of the biodiversity value of Uganda's Important Bird Areas network. *Conserv. Biol.* 20(1): 85-99. – (Inst. Envir. & Nat. Resour., Makerere Univ., P.O. Box 7298, Kampala, Uganda).
Includes a passing reference to the 2000-2001 odon. survey in 17 mainly wetland and savanna Important Bird Areas in Uganda.

2006

(16651) BORISOV, S.N., 2006. Ecological niches of species of the genus Ischnura (Odonata, Coenagrionidae) in oases of the Pamir-Alai mountains. *Ent. Rev.* 86(6): 623-631. – (Inst. Anim. Syst. & Ecol., Russ. Acad. Sci., ul. Frunse 11, RUS-630091 Novosibirsk).
[Orig. Russian text published in *Zool. Zh.* 85(8): 935-942; 2006] – With development of irrigation and oases, new odon. habitats appeared, and unique odon. assemblages were formed in artificial reservoirs. In the oases zone of the Pamir-Alai Mts (Russia), the Ischnura spp. dominate among the Zygoptera. The co-occurrence of I. elegans, I. evansi, I. forcipata, I. fountaineae and I. pumilio was investigated. Divergence of their ecological niches is due to their adaptation to different habitats. The co-dominating spp. demonstrate complementation, i.e., they use the same habitat in different time intervals. The hygrothermal preferences of spp. determine the differences in their daily rhythms and microspatial distribution of adults.

(16652) BRESSLER, D.W., J.B. STRIBLING, M.J. PAUL & M.B. HICKS, 2006. Stressor tolerance values for benthic macroinvertebrates in Mississippi. *Hydrobiologia* 573: 155-172. – (First Author: Tetra Tech. Inc., 400 Red Brook Blvd, Suite 200, Owings Mills, MD 21117-5159, USA).
The tolerance values are developed for 15 Anisoptera taxa, pertaining to 7 fams, mostly on the genus level.

(16653) FAUCHEUX, M.J. & F. MEURGEY, 2006. L'antenne larvaire de Chalcolestes viridis Van der Linden, 1825 (Insecta: Odonata: Zygoptera: Lestidae): morphologie et sensilles, comparaison avec les autres zygoptères. *Bull. Soc. Sci. nat Ouest Fr.* (N.S.) 28(3): 160-167. (With Engl. s.). – (First Author: 70 blvd Robert Schuman, F-44300 Nantes).
The structure and function of the larval antenna in C. viridis are described and compared with the larval sensory equipment in Erythromma lindenii.

(16654) GUPTA, N., A. ANTHWAL & A. BAHUGUNA, 2006. Biodiversity of Mothronwala Swamp, Doon Valley, Uttaranchal. *J. Am. Sci.* 2(3): 33-40. – (Second Author: G.B. Plant Inst. of Himalayan Envir. & Development, Garhwal Unit, P.O. Box 92, Srinagar Garhwal, Uttaranchal-246174, India).
The freshwater swamp is located SE of Dehradun, India, at an elevation of ca 600 m. "Enallagma" and "Agrion" are reported as "common" and "rare", respectively.

(16655) HAMALAINEN, M., 2006. Suppusiipisestä pikkutytöstäkö uusi liito-orava? *Luonnon Tutkija* 110(3): 101-104. (Finn.). – (Sunnankalliontie 13, FIN-02760 Espoo).
Critical considerations on the status of Sympecma paedisca as a sp. listed in the EU's Habitat Directive are presented. The controversies in the requirements of the latter, with reference to the status of some other non-redlisted Finnish spp., are pointed out, and the absence of Nehalennia speciosa from the listed EU's Habitat Directive spp. is queried.

(16656) HANEL, L., [Ed.], 2006. Vážky 2005. – [*Dragonflies 2005: Proceedings of the 8th national conference of odonatologists at Zdárské vrchy, Czech Republic*]. Čes. Svaz Ochr. Přír., Vlašim. 196 pp. ISBN 80-86327-52-3. (Czech, with Engl. s's). – (Available from: ČSOP, Plátnikova 264, CZ-258-01 Vlašim).
Hanel, L.: Introduction (pp. 5-6); – *Honcú, M. & O. Raztočil*: Dragonfly records made during the excursions of the 8th national meeting of odonatologists in June 2005 at the Ždárské vrchy (pp. 7-14); – *Mocek, B., M. Mikat & D. Čip*: Significant and interesting odonate records from East Bohemian region (pp. 15-48); – *Honcú, M. & O. Raztočil*: Important dragonfly species in the region of Česká Lipa (northern Bohemia) in 2003-2005 (pp. 49-63); – *Hesoun, P. & O. Holuša*: The results of faunistic research on Odonata in the central and eastern parts of the district of Jindřichuv Hradec (southern Bohemia) (pp. 64-78); – *Červenka, P.*: Odonata of the Dřevnice river from its head to the confluence with the Morava river (Moravia) (pp. 79-85); – A contribution to the knowledge of Odonata of the Lechotický pond (Moravia) (pp. 86-89); – *Hesoun, P. & V. Tichý*: A contribution to the knowledge of Odonata of southeast Asia (pp. 90-96; Nepal, Thailand, Malaysia, Burma); – *Dolný, A.*: Ecological characteristics of the Odonata significant within the European territory (pp. 97-122); – Long-term monitoring of Odonata within the protected territory system of European interest NATURA 2000: methodical proposals for the Czech Republic (pp. 123-153); – *Mourek, J.*: A challenge to the participation on the monitoring of insect species of community interest (pp. 154-161); – *Voničkа, P.*: The occurrence of Leucorrhinia pectoralis in the mountains of Jizerské hory (northern Bohemia) (pp. 162-164); – *Zinke, J.*: Cordulegaster bidentata in Lausitian mountains (northern Bohemia) (pp. 165-166); – *Phoenix, J. & W. Hentschel*: New records of Aeshna subarctica elisabethae and Somatochlora alpestris from the Czech part of the Erzgebirge (pp. 167-174); – *Fischer, O.A.*: Sympetrum striolatum at a field dung yard of the riding club Eliot in Brno Bystrc (Moravia) (pp. 175-178); – *Dolný, A. & M. Petriková*: New records of Epitheca bimaculata and Libellula fulva in Moravia and Silesia (pp. 179-181); – *Mikát, M.*: The atypical Lestidae tandems observed in the protected locality Na Plachtě (Hradec Králove, eastern Bohemia) (pp. 182-189); – *Hanel, L.*: New Odonata species protected by the Czech law (pp. 190-191); – *The directory of the participants* (pp. 192-193).

(16657) KÉRY, M. & S. MUÑOZ LÓPEZ, 2006. Reconfirmation of Gomphus graslinii Rambur, 1842 in Navarra and Onychogomphus costae Selys, 1885 in Aragón in 2006 (Odonata: Gomphidae). *Boln Soc. ent. aragon.* 39: 138. (With Span. s.). – (First Author: Swiss Ornithol. Inst., CH-6204 Sempach).
G. graslinii is recorded from Lumbier (Rio Salazar, alt. 420 m), 13-VII-2006, and O. costae from Ontiñena (Rio Alcanadre), 11-VII-2006. The records are discussed.

(16658) KUŠTOR, V., 2006. *Krajinski park Goričko živi z naravo.* – [*The Landscape Park Goričko*], Krajinski park Goričko, Grad. 96 pp. Softcover (12.0×20.0 cm). ISBN 961-238-740-0. (Slovene). – (Publishers: Krajinski park Goričko, Grad 191, SI-9264 Grad).
The Goričko region is included in the Natura 2000 network. This is a small monograph on its natural aspects. Several odon. spp. are mentioned and the occurrence of Cordulegaster heros is emphasized; – NE Slovenia.

(16659) MOROZ, M.D., S. CZACHOROWSKI, K. LEWANDOWSKI & P. BUCZYŃSKI, 2006. Aquatic insects (Insecta; Plecoptera, Ephemeroptera, Odonata and Trichoptera) of the rivers in the Berzinskii Biosphere Reserve. *Ent. Review* 86(9): 987-994. – (Last Author: Dept Zool., UMCS, Akademicka 19, PO-20-033 Lublin).
Includes a commented list of 25 odon. spp.; Belorusskoe Lakeland, Belarus.

(16660) *ODE NEWS*. Occasional newsletter about dragonflies and damselflies in southern New England (ISSN 1084-9750), Vol. 13, No. 1 (May 2006).

– (2 Gilbert Lane, Harwich Port, MA 02646, USA).
[Selected articles:] *Thomas, M. & D. Wagner*: Connecticut highlights 2005 (pp. 4-5; records); – *Harper, L. & J. Loose*: The distribution of rare riverine dragonflies in Massachusetts: where to make new discoveries (pp. 6-11).

(16661) PEACOR, S.D., 2006. Behavioural response of bullfrog tadpoles to chemical cues of predation risk are affected by cue age and water source. *Hydrobiologia* 573: 39-44. – (Dept Fish. & Wildlife, Michigan St. Univ., 13 Natural Resources Bldg, East Lansing, MI 48824-1222, USA).
The effect of the age of chemical cues arising from Anax junius larvae on the behavioural response (activity level and position) of Rana catesbeiana tadpoles was examined. The bullfrog response declined as a function of chemical cue age (2-4 days). The decay occurred more rapidly when the cue was placed in pond water rather than well water. These results indicate a limitation of the tadpoles to interpret factors that affect magnitude of the chemical cue and hence accurately assess predation risk.

(16662) SCHMIDT, E., 2006. Libellen beobachten in der Stadt am Kleingarten-Teich. *Naturzeit im Münsterland* 3(5): 14-16. – (Coesfelder Str. 230, D-48249 Dülmen).
At garden ponds in any small town in the Münsterland area (W Germany) at least 10 odon. spp. can be with certainty expected. Here, some suggestions as to their identification and on the observations on their biology and ecology are presented.

(16663) SRIVASTAVA, D.S., 2006. Habitat structure, trophic structure and ecosystem function: interactive effects in bromeliad-insect community. *Oecologia* 149: 493-504. – (Dept Zool. & Biodiv. Res. Cent., Univ. Brit. Columbia, 6270 University Blvd, Vancouver, BC, V6T 1Z4, CA).
Although previous studies have shown that ecosystem functions are affected by either trophic structure or habitat structure, there has been little consideration of their combined effects. Such interactions may be particularly important in systems where habitat and trophic structure covary. The aquatic insects in bromeliad are used to examine the combined effects of trophic structure and habitat structure on a key ecosystem function: detrital processing. In Costa Rican bromeliads, trophic struture naturally covaries with both habitat complexity and habitat size, precluding any observational analysis of interactions between factors. Therefore mesocosms were designed that allowed each factor to be manipulated separately. Increases in mesocosm complexity reduced predator (Mecistogaster modesta larva) efficiency, resulting in high detritivore abundances, indirectly increasing detrital processing rates. However, increased complexity also directly reduced the per capita foraging efficiency of the detritivores. Over short time periods, these trends effectively cancelled each other out in terms of detrital processing. Over longer time periods, more complex patterns emerged. Increases in mesocosm size also reduced both predator efficiency and detritivore efficiency, leading to no net effect on detrital processing. In many systems, ecosystem functions may be impacted by strong interactions between trophic structure and habitat structure, cautioning against examining either effect in isolation.

(16664) TORRES, Y., G. ROLDAN, S. ASPRILLA & T.S. RIVAS, 2006. Estudio preliminar de algunos aspectos ambientales y ecológicos de las comunidades de peces y macroinvertebrados acuáticos en el rio Tutunendo, Chocó, Colombia. *Revta Acad. colomb. Cienc.* 30(114): 67-76. (With Engl. s.). – (Second Author: groldan@uco-edu.co).
The field work was conducted during June-Oct. 2003, at 3 sampling stations along the Tutunendo R. 5 odon. fams were documented, representing 11.40% of the recorded specimens, referable to 10 orders.

(16665) TÓTH, S., 2006. The occurrence of the rare Cordulegaster heros Theischinger, 1979 in the Zselic Hills (South Transdanubian region). *Natura somogyiensis* 9: 141-144. (Hung., with Engl. s.). – (Széchenyi u. 2, HU-8420 Zirc).
The sp. was known from the Soproni, Örségi and Mecsek mountains (Hungary). The evidence on its occurrence in the Zselic Hills is interesting.

(16666) VOGRIN, M., 2006. Micro-habitat use within a guild of newt larvae (Trituridae) in an Alpine lake. *Biologia, Bratislava* 61(5): 579-584. – (Zg. Hajdina 83 c, SI-2288 Hajdina, Slovenia).
Population biology and ecological parameters of the syntopic Triturus alpestris, T. carnifex and T. vulgaris larvae were studied in a small pond (alt. 1160 m) in the Pohorje range, Slovenia. Aeshna larvae were the main predators and their impact was

assumed equal on all the 3 newt spp. Due to odon. emergence, the Aeshna larval population decreased late in the season and the estimated population size of the newt larvae increased remarkably at about the same time. Newly hatched newts apparently suffered considerably less predation from odon. in the second half of the breeding season.

(16667) VOGRIN, M., 2006. *Oasis of peace and life: Landscape Park Rački ribniki-Požeg.* Občina Rače-Fram. 24 pp. (9.8×20.9 cm). ISBN 961-238-664-1. (Slovene, with Engl. & Germ. s's). – (Author: Zg. Hajdina 83 c, SI-2288 Hajdina).
A route guide through the Park, NE Slovenia. Out of the 50 recorded odon. spp., several of the locally interesting taxa are mentioned.

(16668) WADA, S. & Y. WADA, 2006. Recent records of Odonata in Fukui and Ishikawa prefectures, Japan. *Bull. Fukui City Mus. nat. Hist.* 53: 117-126. (Jap., with Engl. s.). – (3-8-18 Nishikida, Fukui, 918-8004, JA).
Recent records of relatively rare (27), remarkably increasing (1) and migratory (4) spp. are listed, late records for 3 spp. are stated, and the unusual wing patterns in some Mnais costalis and M. pruinosa ♂♂ are described and illustrated. Also provided is the information on interspecific hybrids: Mnais pruinosa × M. costalis, Sympetrum frequens × S. depressiusculum, and S. e. eroticum × S. baccha mutatinum.

(16669) WAHIZATUL-AFZAN, A., J. JULIA & A. AMIRRUDIN, 2006. Diversity and distribution of dragonflies (Insecta: Odonata) in Sekayu Recreational Forest, Terengganu. *J. Sustainability Sci. Mngmt* 1(2): 97-106. – (Dept Biol. Sci., Fac. Sci. & Technol., Kolej Univ. Sains dan Teknologi, Terengganu, Malaysia).
44 spp. are documented from the Sekayu Stream, S of Kuala Berang, Terengganu, Malaysia. The diversity of the fauna and the distribution of spp. are analysed.

(16670) WESTFALL, M.J. & M.L. MAY, 2006. *Damselflies of North America.* [Revised edn]. Scient. Publishers, Gainesville-Washington-Hamburg-Lima-Taipei-Tokyo. xii+504 pp., 231 textfigs. Hardcover (18.0×26.0 cm). ISBN 0-945417-97-7.
This new edn of the work described in *OA* 11036, is both updated and enhanced. Data are updated to early 2006, with the addition of 7 spp. newly recorded for the region, including the addition of the genus Chrysobasis and the name change of Enallagma cyathigerum to E. annexum for N American sp. and the revision of E. vernale as a distinct sp. Thus, the new total comes to 168 spp. for the region. The enhancement of the new edn comes in the form of a colour supplement, to appear shortly. The keys are corrected and added to where necessary, and other corrections are made as needed. Another novelty is the adoption of a double-column page format, in order to get the main text in more compact form, saving many pages and allowing the cost of the book to remain the same as that of the 1st edn.

(16671) YANOVIAK, S.P., L.P. LOUNIBOS & S.C. WEAVER, 2006. Land use affects macroinvertebrate community composition in phytotelmata in the Peruvian Amazon. *Ann. ent. Soc. Am.* 99(6): 1172-1181. (With Span. s.). – (Second Author: Florida Med. Ent. Lab., 200 9th St. SE, Vero Beach, FL 32962, USA).
Patches of forest in the western Amazon often are converted to small-scale subsistence plantations (chacras), which become early successional forest (purma) when abandoned. Differences in abiotic conditions and phytotelm characteristics among chacras, purmas and adjacent forest likely influence the distribution of phytotelm colonists. The contents of natural water-filled tree holes in the 3 habitat types were sampled and differences in the abundance, species richness and composition of their macroinvertebrate communities were quantified. Additionally, experimental tree-hole analogs (water-filled bamboo internodes) were placed in each of the habitat types and their macroinvertebrate communities were sampled over 110 d. The species composition in both tree holes and bamboo sections differed among habitats. In chacras, Zygoptera larvae (Microstigma rotundatum) and crane flies, both important predators of mosquitoes, were replaced by larvae of the predatory mosquito Toxorhynchites spp.

(16672) YU, X. & W. BU, 2006. A study on Odonata from Tianjin. *Acta Sci. natur. Univ. nankaiensis* 39(4): 83-90. (Chin., with Engl. s.). – (Inst. Ent., Nankai Univ., Tianjin-300071, China).
30 spp. are recorded from 17 localities. The faunal composition is analysed and some views on the biodiversity conservation are brought forward.

(16673) ZHANG, D.-z., J.-x. DAI & Z.-m. ZHENG, 2006. Phylogeny of Libellulidae based on mitochondrial cytochrome *b* nucleotide sequences (Odonata: Anisoptera). *Sichuan J. Zool.* 25(4): 695-699. (Chin., with Engl. s.). – (First Author: Sch. Life Sci., Ningxia Univ., Yinchuan-750021, China).
The fragments of mitochondrial DNA cytochrome *b* gene were characterized for 9 spp. of 6 gen. The phylogenetic relationship of the genera was: Pantala & Sympetrum → Lyriothemis → Acisoma & Crocothemis → Orthetrum.

(16674) ZHANG, D., G. YANG & Z. ZHENG, 2006. Phylogenetic relationship of some species of Libellulinae inferred from sequences of mitochondrial cytochrome *b* gene (Odonata: Libellulidae). *J. Ningxia Univ.* (Nat. Sci.) 27(3): 255-259. (Chin., with Engl. s.). – (First Author: Sch. Life Sci., Ningxia Univ., Yinchuan-750021, China).
Partial nucleotide sequences of mitochondrial DNA cytochrome *b* gene from 7 spp. of 3 gen. were amplified by PCR and directly sequenced by silver-staining sequencing technique. The phylogenetic relationship of the 3 gen. was Libellula → Lyriothemis → Orthetrum.

(16675) ZHOU, X. & W.-b. ZHOU, 2006. Description of the male Nihonogomphus luteolatus Chao & Liu (Odonata: Gomphidae). *Wuyi Sci. J.* 22: 32-33. (Chin., with Engl. s.). – (Dept Ent., Zhejong Mus. nat. Hist., Choukong 71, Hangzhou-310012, China).
The description and illustrations are provided of the hitherto unknown ♂ (China: Zheijang prov., Jingyun Co., 10-VI-2004).

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(16676) *AGRION, WDA*. Newsletter of the Worldwide Dragonfly Association (ISSN 1476-2552) Vol. 11, No. 2 (July 2007). – (c/o J. Silsby, Sunrise of Banstead, Croydon Lane, Banstead, Surrey, SM7 3AG, UK).
After having produced all hitherto published issues, with the present issue Mrs Jill Silsby is concluding her work as the Editor and Producer; the responsibilities are to be taken over by Keith Wilson & Graham Reels. – The present issue is almost entirely dedicated to the impressions and reports from the 5th WDA Symposium in Namibia (2007). In addition, the issue contains 3 book reviews and an autobiographic article by *G. Theischinger* (pp. 22-24).

(16677) [ASKEW, R.R.] BROOKS, S., 2007. The dragonflies of Europe, by R.R. Askew. *Zool. J. Linn. Soc.* 149: 139. – (Dept Ent., Nat. Hist. Mus. Lond., Cromwell Rd, London, SW7 5BD, UK).
An appreciative book review of the work described in *OA* 15341. For a more critical review, see *OA* 15448.

(16678) BERNER, R.A., 2007. Atmospheric oxygen over phanerozoic time. *Proc. natn. Acad. Sci. USA* 96: 10955-10957. – (Dept Geol. & Geophysics, Yale Univ., New Haven, CT 06520-8109, USA).
It is demonstrated that the level of atmospheric oxygen has varied roughly between 15 and 30% O_2 over the past 550 mi yr. This variation is suggested by modeling of the carbon and sulfur cycles, by the excessive sediment burial of organic matter that accompanied the advent of large vascular land plants, and by recent physiological studies that relate to biological evolution. As apparent from the work listed in *OA* 12270, elevated O_2 enhances flight metabolism in odon. Elevated O_2 could help to explain the fossil evidence for giant dragonflies during the Late Carboniferous, when O_2 is suggested to have reached the maximum (>35%).

(16679) BOTS, J., L. DE BRUYN, T. ADRIAENS, H. DUMONT, R. STOKS & H. VAN GOSSUM, 2007. Seasonal and diurnal variation in the proportions of female morphs of the damselfly Enallagma cyathigerum. *Anim. Biol.* 57(2): 217-230. – (First Author: Evol. Biol. Gr., Univ. Antwerp, Groenenborgerlaan 171, B-2020 Antwerp).
The objective of this study was to assess the occurrence of diurnal and seasonal variation in ♀ morph proportions for E. cyathigerum at the water. Diurnal variation was evaluated in 6 nearby populations, while seasonal variation was examined at 1 of these. Temporal variation in ♀ morph proportion in relation to proxies of ♂ harassment (i.e. ♂ density and operational sex ratio) was also considered. The results indicate that ♀ morph proportion varies throughout the day, but it is uniform on a seasonal scale. Variation in ♀ morph proportions could not be explained by concomitant variation in ♂ density or operational sex ratio. It is suggested that future study of ♂ mate choice may consider temporal variation in ♀ morph proportions at the water.

(16680) CAMPBELL, W.B. & R. NOVELO-GUTIÉRREZ, 2007. Reduction in odonate phyloge-

netic diversity associated with dam impoundment is revealed using taxonomic distinctness. *Arch. Hydrobiol.* 168(1): 83-92. – (Second Author: Depto Ent., Inst. Ecol., Apdo Postal 63, MX-91070 Xalapa, Veracruz).

Taxonomic distinctness is a highly useful index combining species richness and taxonomic (phylogenetic) diversity to detect changes in the taxonomic structure of communities and assemblages. While analysis of an odon. assemblage before and after construction of a hydroelectric impoundment in the state of Hidalgo, Mexico, revealed no significant increase in average monthly species richness (although annual counts were slightly higher for the latter survey), taxonomic distinctness and its variation were reduced. The impoundment converted natural lotic conditions into lentic habitat with more littoral vegetation. Such conditions favoured plant-dependent spp. (mostly Zygopera) with more spp. per genus and genera per family relative to those not dependent (mostly Anisoptera). High ratios reduce the average risk of losing higher taxonomic structure with loss of a species. Reduced taxonomic distinctness and its variation occurred at the expense of the Gomphidae and Corduliidae, and several genera in the Libellulidae having non-plant dependent spp. that favour inorganic substrate in flowing waters. The results contrast with the common assumption that higher odon. diversity occurs in lentic habitats. Seasonal patterns of taxonomic distinctness appeared similar between surveys and may reflect reproductive and emergence cycles. The results support the use of taxonomic distinctness and its variation over species richness in ecological assessments and its application in further freshwater research. Its use with aquatic insects is encouraged, but frequent sampling intervals to account for effects from emergence and reproductive behaviours are recommended. These results suggest new and added breadth to the value of taxonomic distinctness in ecological research regarding habitat change.

(16681) CARCHINI, G., V. DELLA BELLA, A.G. SOLIMINI & M. BAZZANTI, 2007. Relationships between the presence of odonate species and environmental characteristics in lowland ponds of central Italy. *Ann. Limnol.* 43(2): 81-87. – (First Author: Dipto Biol., Univ. "Tor Vergata", Via della Ricerca Scientifica, I-00133 Roma).

21 ponds were sampled during spring 2002, and 17 environmental variables were recorded, e.g. area, wet phase duration, total nitrogen, total phosphorus, aquatic macrophytes and land use. A total of 16 spp. (Lestidae, Coenagrionidae, Aeshnidae, Libellulidae) were identified, and the total number of spp. per pond varied from 0 to 6. The relationships between species richness, assemblages and environmental variables were studied by simple and multiple correlation and by Canonical Correspondence Analysis (CCA). The results showed that permanent ponds were larger, deeper, had more macrophyte spp., had more extensive macrophyte cover and lower concentrations of nitrogen and phosphorus than temporary ponds. Multiple regression analysis showed that the number of odon. spp. was positively affected firstly by the number of macrophyte spp., and then by pond depth. However, pond depth appeared to be interchangeable with several other variables, such as pond area and water duration and negatively correlated with nitrogen concentration, variables which are all linked with the permanent or temporary status of the ponds. CCA analysis indicated that odon. spp. presence was linked with a few environmental variables, showing a tendency of Odon. to avoid ponds with higher nitrogen concentrations, with the exception of Lestes barbarus, a sp. typical of temporary water in central Italy. At the same time, the majority of spp. were linked with longer water phase duration and with greater macrophyte species richness. A comparison with previous studies, and in particular with those carried out in central Italy, confirmed the positive influence of macrophytes, water duration, and also the negative effect of nutrient load. However, several other variables, such as land use, shade, presence of fish, which were influential in other studies, were not significant in this study.

(16682) CZERNIAWSKA-KUSZA, I., [Ed.], 2007. *14 Ogolnopolskie warsztaty bentologiczne: Hydromorfologiczna ocena ekosystemów wodnych*, Opole-Turawa. Lanko, Opole. 74 pp. (Polish).

[Odonatol. papers presented at the meeting held 9/12-V-2007]: *Domek, P., R. Dondajewska & R. Goldyn*: Macrozoobenthos of the Antoninek reservoir on the Cybinia river (pp. 15-16); – *Koperski, P.*: The presence and pressure of fish as a factor determining the composition of invertebrate fauna (pp. 39-40); – *Krzyzanowska, I.*: The Pelcz river biodiversity based on macrobenthos (p. 46); – *Nuckowska, K.*: Water quality assessment of the Santoczna river and the diversity of organisms occurring in the water (pp. 52-53).

(16683) DIJKSTRA, K.-D.B., 2007. Dragonflies and damselflies (Odonata) of Lokutu. *Bull. biol. Assess.* 46 (ISBN 978-1-934151-04-4): 21-36. – (Natn. zool. Colln Surinam, Univ. Surinam, P.O. Box 9212, Paramaribo, Surinam).
86, mostly Guinea-Congolian running-water spp. are listed from the Lokutu area, Dem. Rep. Congo. Several records represent remarkable range extensions, and new spp. are evidenced in Platycypha, Elattoneura and Mesocnemis. The results indicate a healthy condition of the regional watershed, and it is recommended to use Odon. more frequently to supplement biodiversity assessments of traditional groups, especially so in the Congo Basin.

(16684) DIJKSTRA, K.-D.B., 2007. Gone with the wind: westward dispersal across the Indian Ocean and island speciation in Hemicordulia dragonflies (Odonata: Corduliidae). *Zootaxa* 1438: 27-48. – (Naturalis, P.O. Box 9517, NL-2300 RA Leiden).
The taxonomy and biogeography of the western representatives of the largely Papuan-Australian genus Hemicordulia are discussed and compared with other alate fauna including butterflies, birds, bats and other dragonflies. Specimens from Malawi, Mozambique, Réunion, S. Africa, Tanzania and Uganda were compared with Indian specimens of H. asiatica, with which they were previously regarded conspecific. They are found to be distinct and are described as the continental H. africana sp. n. (holotype ♂, allotype ♀: Uganda, Katera Forest, Masaka, X/XI-1953; deposited in BMNH) and those from Réunion as H. atrovirens sp. n. (holotype ♂, allotype ♀: Rëunion, Rivière de Sainte-Suzanne, 9-IV-1996; deposited in BMNH). The 3 spp. were compared with H. similis of Madagascar and H. virens of Mauritius. Insufficient material of the Seychelles taxon H. similis delicata was available; it may represent another insular endemic species. The distribution of Hemicordulia is discussed in the light of the dispersal capacity of Odon. and the biogeography of taxa with similar distributions in the region, with an emphasis on the survival of 'oceanic' species on the continent. Recent (i.e. in the last few million years) trans-oceanic airborne dispersal aided by westward storms, is the most likely explanation for the distribution of the genus in Africa and the Indian Ocean islands, as well as for other winged animals of Asian affinities in the region. The world range of Hemicordulia is largely insular, broadly excluding continents, and H. africana sp. n. demonstrates 'inverted insularity': all continental sites are in proximity to large water bodies, such as the great African lakes. This pattern may be related to the climatological instability of these sites, which offer suitable cool habitat where competition is (temporarily) reduced. Hemicordulia prefer cool conditions, but may be vulnerable to overheating and competition with more warm-adapted spp.

(16685) DIJKSTRA, K.-D.B., 2007. Rapid survey of dragonflies and damselflies (Odonata) of North Lorma, Gola and Grebo National Forests, Liberia. *Bull. biol. Assess.* 44 (ISBN 978-1-934151-01-3): 25--28, 79-85. – (Natn. Zool. Colln Surinam, Univ. Surinam, P.O. Box 9212, Paramaribo, Surinam).
A report is presented of the 93 spp. evidenced at 3 sites in Liberia, incl. 7 spp. that are recorded in Liberia for the first time. In the Appendix, a checklist is given of the Liberian and Sierra Leonian spp.

(16686) DIJKSTRA, K.-D.B., V. CLAUSNITZER & A. MARTENS, 2007. Tropical African Platycnemis damselflies (Odonata: Platycnemididae) and the biogeographical significance of a new species from Pemba Island, Tanzania. *Systematics Biodiversity* 5(2): 187-198. – (First Author: Naturalis, P.O. Box 9517, NL-2300 RA Leiden).
P. pembipes sp. n. is described (holotype ♂: Tanzania, Pemba Is., Ngezi Forest, 6/8-X-2001; deposited at RMNH, Leiden) and its affinities with Guineo--Congolian and Malagasy congeners are examined. The identity and distribution of Afrotropical Platycnemis is reviewed. The Pemba sp. is nearly identical to some spp. of the Malgasy radiation, but distant from the Guinea-Congolian spp. that have tropical Asian affinities. It is argued that the sp. is a long-distance wind-borne arrival from Madagascar, which survived due to favourable climatic conditions on Pemba. Habitats on the mainland, only 50 km further, are or have been drier and therefore seem unsuitable. The new sp., living proof of a remarkable colonisation event, is under immediate threat, confined to a single stream in an imperilled forest, over 1000 km from its nearest relatives. The holotype of the enigmatic P. mauriciana, not recorded on Mauritius after its description, cannot originate from the island as it pertains to the European P. latipes. 5 spp. recalling the Asian genus Copera are known in the ♂ sex from central and western Africa; all were confused to some degree with P. congolensis and a key is given. The lectotype of P.

congolensis is designated and its identity is clarified. P. flavipes and P. xanthopus are junior synonyms of P. nyansana. Discovery of the P. rufipes ♂ showed that P. escherichi, known only from the ♀ holotype, is a junior synonym of it. The generic classification of Platycnemis and Copera is not resolved, but data and hypotheses that should aid future analysis are provided.

(16687) DIJKSTRA, K.-D.B., M.J. SAMWAYS & J.P. SIMAIKA, 2007. Two new relict Syncordulia species found during museum and field studies of threatened dragonflies in the Cape Floristic Region (Odonata: Corduliidae). *Zootaxa* 1467: 19-34. – (First Author: Natn. Zool. Colln Surinam, Univ. Surinam, P.O. Box 9212, Paramaribo, Surinam).
Red List assessments often require the verification of records and taxonomy in museum collections and in the field. Such research during an assessment of threatened Odon. in the Cape Floristic Region (CFR) biodiversity hotspot, led to the discovery of 2 new narrow-range endemic Syncordulia spp., bringing the known total to 4 in the genus. The new spp., S. legator (holotype ♂: Cape prov., Franschhoek Pass, 20-XI-1975; NMBZ) and S. serendipator (holotype ♂: Western Cape, Witrivier, Bain's Kloof, 17-III-2006; SUEC), are described with emphasis on their identification, ecology and biogeography. Morphological diversity within the genus and the absence of obvious close relatives suggest an ancient and isolated presence in the CFR, emphasizing the uniqueness and conservation importance of the region's endemic odon. fauna.

(16688) [GARRISON, R.W., et al.] CANNINGS, R.A., 2007. Dragonfly genera of the New World, by R.W. Garrison, N. von Ellenrieder & J.A. Louton. *Fla Ent.* 90(1): 290-291. – (Royal Brit. Columbia Mus., 675 Belleville St., Victoria, BC, V8W 9W2, CA).
A comprehensive book review of the work described in *OA* 16339.

(16689) GOLOB, A. & M. SKUDNIK, 2007. *Priročnik o vrstah Natura 2000, ki so povezane z gozdom.* – [*Handbook on the Natura 2000 species associated with forest*]. Gozdarski inštitut Slovenije, Ljubljana. 88 pp. ISBN 978-961-6425-30-8. (Slovene). – (Authors' addresses not stated).
A treatment of plant- and animal spp. that are associated in Slovenia with forest habitats, including Cordulegaster heros, as the sole odon. representative.

(16690) GROZEVA, S.M. & M.G. MARINOV, 2007. Cytogenetic study of Somatochlora borisi Marinov, 2001, and three relative species (Odonata: Corduliidae). *Acta zool. bulg.* 59(1): 53-58. (With Engl. s.). – (First Author: Inst. Zool., 1 Tsar Osvoboditel Blvd, BG-1000 Sofia).
The chromosome number of S. borisi from the Eastern Rhodopes (Bulgaria) is n ♂ = 11, sex determination is probably XX/XY. Fluorochromatic staining revealed that C-blocks are different in their molecular content: some consist of AT-repeats, the other of GC-repeats, which was discovered here for the first time in the Odon. The karyotypic morphology of Cordulia aenea, Somatochlora meridionalis and S. metallica (mostly from Bulgaria) is consistent with the descriptions by the earlier authors.

(16691) *INTERNATIONAL JOURNAL OF ODONATOLOGY* (ISSN 1388-7890), Vol. 10, No. 1 (1 Apr. 2007).
Dijkstra, K.-D.B.: The name-bearing types of Odonata held in the National History Museum of Zimbabwe, with systematic notes on Afrotropical taxa, 1: Introduction and Anisoptera (pp. 1-29); – *Dijkstra, K.-D.B., L.F. Groeneveld, V. Clausnitzer & H. Hadrys*: The Pseudagrion split: molecular phylogeny confirms the morphological and ecological dichotomy of Africa's most diverse genus of Odonata (Coenagrionidae) (pp. 31-41); – *Fleck, G., D. Grand & J.-P. Boudot*: Description of the last stadium larva of Somatochlora borisi, with comparison to that of S. metallica meridionalis (Odonata: Corduliidae) (pp. 43-52); – *Hedström, I. & G. Sahlén*: The dry season governs the reproduction of three pseudostigmatid zygopterans in Costa Rica (Odonata: Pseudostigmatidae) (pp. 53-63); – *Hoess, R.*: Prodasineura doisuthepensis sp. nov. from Thailand (Odonata: Protoneuridae) (pp. 65-69); – *Joop, G., A. Gillen & D.J. Mikolajewski*: Colour polymorphism in female Coenagrion puella: differences in egg shape (Odonata: Coenagrionidae) (pp.71-80); – *Michalski, J. & S. Oppel*: Papuagrion carcharodon sp. nov. from New Guinea (Odonata: Coenagrionidae) (pp. 81-86); – *Wilson, K.D.P. & Z. Xu*: Odonata of Guandong, Hong Kong and Macau, South China, 1: Zygoptera (pp. 87-128, col. pls 1-8 excl.).

(16692) JUEN, L., H.S.R. COBETT & P. DE MAR-

CO, 2007. Odonate assemblage structure in relation to basin and aquatic habitat structure in Pantanal wetlands. *Hydrobiologia* 579: 125-134. – (Last Author: Lab. Ecol. Teóretica, Depto Biol. Geral, Univ. Fed. Goiás, BR-74001-970 Goiás).
Odon. larval communities in the Pantanal Mortes-Araguaia river basin (Mato Grosso, Brazil) are described, and the composition, species richness and community structure between lakes, rivers and river basins are compared. There was no difference in species richness between lakes and rivers, but there was a marked difference among basins. The results support the concept of structural similarity between large rivers and lakes, while the differences among basins could indicate historical events in colonisation. The taxa are listed mostly on generic level.

(16693) KONONOVA, S.V. & V.N. FURSOV, 2007. A review of the genera Calotelea, Calliscelio, and Oxyscelio (Scelioninae, Scelionidae, Proctotrupoidea) from the palaearctic fauna. *Ent. Rev.* 87(1): 92-105. (Schmalhausen Inst. Zool., Natn. Acad. Sci., Ukraine, UKR-01601 Kiev).
Calotelea shimurai sp. n. (Hymenoptera) is described from Japan, reared from eggs of Aeshna nigroflava, Boyeria maclachlani and Planaeschna milnei.

(16694) LIN, Q.-b., D.-y. HUANG & A. NEL, 2007. A new family of Cavilabiata from the Lower Cretaceous Yixian formation, China (Odonata: Anisoptera). *Zootaxa* 1469: 59-64. – (Last Author: Entomologia, Mus. natn. Hist. nat., 45 rue Buffon, F-75005 Paris).
Nodalula dalinghensis gen. n., sp. n. is described from the Lower Cretaceous of Liaoning prov., N China, based on an almost complete specimen, and the Nodalulaidae fam. n. is erected within the Neobrachystigmata.

(16695) McCAULEY, S.J., 2007. The role of local and regional processes in structuring larval dragonfly distributions across habitat gradients. *Oikos* 116: 121-133. – (Cent. Pop. Biol., Univ. California, Davis, CA 95616, USA).
Despite the importance of community-structuring processes operating at both local and regional scales, there is relatively little work examining both forces within a single system. Here, a combination of observational and experimental approaches is used to examine the processes structuring larval odon. distributions in lentic habitats that encompass a gradient of both permanence and top predator type. The relative vulnerability of spp. to predators from different portions of this gradient is compared to assess the role of predation as a local force structuring communities. The role of regional processes on species' distributions is also assessed by examining species' propensity to disperse to and colonize artificial ponds distributed across a landscape. In both studies, habitat specialist spp., which had larvae restricted to permanent lakes, are contrasted with habitat generalist spp., which had larvae that occur broadly across the habitat permanence and top predator transition. Results from this work suggest that dispersal and colonization behaviour were critical mechanisms restricting the distributions of habitat specialist spp., but that predation may act to reinforce this pattern. The habitat specialists dispersed less frequently, colonized artificial ponds less often when they did reach them, and most moved shorter distances than the habitat generalist spp. Habitat specialists were also more vulnerable than habitat generalists to an invertebrate top predator with which they do not co-exist. Results from these studies suggest that spp. distributions can be shaped by processes operating at both regional and local spatial scales. The role of dispersal and recruitment limitation may be generally underestimated as a force shaping spp. distributions and community structure across habitat gradients in which there is a transition in both the biotic interactions and the disturbance interval across that gradient.

(16696) *The MIGRANT SKIMMER*. Bulletin of the Dragonfly Project (ISSN none), No. 5 (not numbered; Apr. 2007). – (c/o Dr R. Mackenzie Dodds, East Ardttrasgairt, Fortingall by Aberfeldy, Perthshire, PH15 2LN, UK).
A review of the 2006 activities. With the forthcoming issue the name of the Bulletin is likely to change again (see *OA* 14890).

(16697) MIHELJ, K., 2007. Živalstvo na Goričkem – [The Goričko animal world]. *In*: P. Gostinčar et al., [Eds], *Človek v koraku z naravo*, pp. 30-33, Društvo mladih geografov Slovenije, Ljubljana. ISBN 978-961-90964-5-1. (Slovene). – (Publishers: Aškerčeva 2, SI-1000 Ljubljana).
A brief outline of the Goričko animal world; NE Slovenia. 10 out of the 44 recorded regional odon. spp., including the rare Ophiogomphus cecilia and Sympetrum depressiusculum, are mentioned.

(16698) MULLER, J., 2007. Verbreitungsatlas der Libellen (Odonata) im Land Sachsen-Anhalt: Bitte um Zuarbeit. *Ent. Mitt. Sachsen-Anhalt* 15(1): 38. – (Frankefelde 3, D-39116 Magdeburg).
A call for collaborators, with a list of data required for the Distribution Atlas of the Sachsen-Anhalt Odon.

(16699) MULLER, J. & R. STEGLICH, 2007. Gehören Coenagrion armatum und Onychogomphus forcipatus (Odonata) zur Libellenfauna Sachsen-Anhalts? *Ent. Mitt. Sachsen-Anhalt* 15(1): 28-30. – (First Author: Frankefelde 3, D-39116 Magdeburg).
The interpretation of the geographical position of the C. armatum locality by J. Müller & M. Schorr (2001, *Ent. Nachr. Ber.* [Beih.] 6: 9) is wrong, therefore the sp. does not belong to the Sachsen-Anhalt (Germany) fauna. The sole record of O. forcipatus was presented by W. Rosenbaum (1909, *Z. Naturw.* 81: 451-456); the occurrence of the sp. in Sachsen-Anhalt is in need of confirmation.

(16700) NARAOKA, H., 2007. Copulation and diurnal change of reproductive behaviour in Lestes sponsa (Hansemann) in Japan (Lestidae: Odonata). *J. nat. Hist. Aomori* 12: 1-6. (Jap., with Engl. s.). – (36-71 Motoizumi, Fukunoda, Itayanagi-machi, Kita-gun, Aomori, 038-3661, JA).
In Aomori, northern Japan, ♂♂ of this non-territorial sp. gather at sun spots on the forest floor and copulate with the ♀♀ that appear there. No courtship display was seen. Soon after tandem formation, sperm translocation takes place (mean duration 52±13 s). The copulation lasts for 21 min 44 s, and it is divided into 3 stages. During the first stage, 81% of pairs untie the wheel position up to 3 times. Copulation was observed between 8:00-14:00 (peak 11:00-13:00), and tandem oviposition from 9:00 to 15:00 (peak 11:00-14:00).

(16701) NOVELO-GUTIERREZ, R., 2007. The larva of Aeshna williamsoniana (Odonata: Anisoptera: Aeshnidae). *Can. Ent.* 139: 195-200. (With Fr. s.). – (Depto Ent., Inst. Ecol., A.C., Apartado Postal 63, MX-91070 Xalapa, Veracruz).
The larva is described, illustrated and compared with other larvae of the genus and family. It does not particularly resemble any other Aeshna or related genera larva described to date. Its habitat (Mexico) is described for the first time.

(16702) NUMMELIN, M., M. LODENIUS, E. TULISALO, H. HIRVONEN & T. ALANKO, 2007. Predatory insects as bioindicators of heavy metal pollution. *Envir. Pollution* 145: 339-347. – (Dept Biol. & Envir. Sci., P.O. Box 63, FIN-00014 Univ. Helsinki).
Aside of waterstriders, antlion larvae and ants, larvae of the odon. genera Lestes, Aeshna, Cordulia, Leucorrhinia and Sympetrum were used. These seem to be good in detecting differences in iron, manganese and cadmium. The odon. also accumulated higher concentrations of zinc than other insects. It seems that odon. larvae are inefficient in accumulating cadmium or efficient in getting rid of it.

(16703) [OCHARAN LARONDO, F.J.], no date, book received in June 2007. [Odonata]. *In*: C. Nores Quesada & P. Garcia-Rovés González, [Coordinators], *Libro Rojo de la fauna del Principado de Asturias*, pp. 70-89, 121-124. Gobierno del Principado de Asturias. ISBN 84-96050-15-7. – (Author: Depto Biol. Organismos y Sistemas, Univ. Oviedo, ES-33071 Oviedo).
Coenagrion caerulescens, C. mercuriale, C. scitulum, Aeshna juncea, Brachytron pratense, Oxygastra curtisii, Macromia splendens and Sympetrum flaveolum are treated; – Asturia, Spain.

(16704) *ODONATOLOGICAL ABSTRACT SERVICE* (ISSN 1438-0269), No. 20 (June 2007), 54 pp. – (Distributor: M. Schorr, Schulstr. 7 b, D-54314 Zerf).
Abstracts Nos 6081-6412 of works published in 1997-2007.

(16705) *The OHIO DRAGONFLIER.* Newsletter of the Ohio Odonata Society (ISSN none), Vol. 17, No. 1 (Jan. 2007). – (c/o the Treasurer: B. Restifo, Ohio Odonata Soc., 7070 Africa Rd, Galena, OH 43021, USA).
Management notifications, 5 pp.

(16706) PAUNOVIC, M.M., D.G. JAKOVCEV-TODOROVIC, V.M. SIMIC, B.D. STOJANOVIC & P.D. CAKIC, 2007. Macroinvertebrates along the Serbian section of the Danube river (stream km 1429-925). *Biologia, Bratislava* 62(2): 214-221. – (First Author: Inst. Biol. Res. "Sinisa Stankovic", Blvd Despota Stefana 142, YU-11000 Beograd, Serbia).
Pyrrhosoma nymphula and Gomphus vulgatissimus are recorded from various sampling stations.

(16707) PENALVA, R. & J.M. COSTA, 2007. Garrisonia aurindae gen. and spec. nov. from state of Bahia, Brazil (Anisoptera: Libellulidae). *Zootaxa* 1453: 33-40. – (Second Author: Depto Ent., Mus. Nac., UFRJ, Quinta da Boa Vista, BR-20.940-040 Rio de Janeiro, RJ).
Garrisonia aurindae gen. n., sp. n. is described and illustrated (holotype ♂: Brazil, Bahia, Salvador, 28--V-2006; MNRJ). Structural features differentiating the new genus from the other neotropical Trameini genera are stated, and some field observations on the behaviour of the new sp. are provided.

(16708) PESSACQ, P. & J.M. COSTA, 2007. Three new species of Peristicta Hagen in Selys (Odonata; Zygoptera; Protoneuridae) from Brazil. *Neotrop. Ent.* 36(1): 46-52. (With Port. s.). – (Second Author: Mus. Nac., Quinta da Boa Vista, São Cristovão, BR-20940-040 Rio de Janeiro, RJ).
P. janiceae sp. n. (holotype ♂: Minas Gerais, Serra de Cipó, XII-1947), P. jalmosi sp. n. (holotype ♂: Goiás, Reserva da Universidade de Brasilia, 8/14--II-1981), and P. muzoni sp. n. (holotype ♂: Mato Grosso, Serra da Bodoquena, XII-1941) are described and illustrated.

(16709) PETRULEVIČIUS, J.F., A. NEL, J. RUST, G. BECHLY & D. KOHLS, 2007. New Paleogene Epallagidae (Insecta: Odonata) recorded in North America and Europe. Biogeographic implications. *Alavesia* 1: 15-25. – (Second Author: Entomologie, Mus. natn. Hist. nat., 45 rue Buffon, F-75005 Paris).
Labandeiraia americaborealis gen. n., sp. n. (Eocene of USA), L. europae sp. n. (Paleocene/Eocene of Denmark) and Litheuphaea coloradensis sp. n. (Eocene of USA) are described in the Eodichrominae, and the distribution pattern of this group in the Paleogene of N America and Europe is outlined and discussed.

(16710) REBORA, M., S. PIERSANTI, T.J. ALMAAS & E. GAINO, 2007. Hygroreceptors in the larva of Libellula depressa (Odonata: Libellulidae). *J. Insect Physiol.* 53: 550-558. – (First Author: Dipto Biol. Cellulare & Ambientale, Univ. Perugia, via Elce di Sotto, I-06123 Perugia).
Ultrastructural and electrophysiological (single-cell recordings) investigations were carried out on the coeloconic sensilla borne by the apical antenna of L. depressa larvae. These sensilla appear as pegs located in pits. One of them is a compound sensillum constituted of 2 fused pegs in a common pit and the other 2 are single pegs located in separated pits close to each other. Coeloconic sensilla show position and ultrastructural details very similar to those described in insect hygroreceptors. The electrophysiological recordings on the apical antennae of the last larval instar of L. depressa clearly show the presence of moist and dry cells responding antagonistically to humidity changes. This study gives the first evidence of hygroreceptors in odon. larvae and represents the first electrophysiological approach to larval sensilla of aquatic insects. The presence of hygroreceptors in L. depressa larvae is in agreement with the hygropositive response shown by these insects in laboratory and field behavioural experiments.

(16711) REBORA, M., S. PIERSANTI, G. SALERNO, E. CONTI & E. GAINO, 2007. Water deprivation tolerance and humidity response in a larval dragonfly: a possible adaptation for survival in drying ponds. *Physiol. Ent.* 32: 121-126. – (First Author: Dipto Biol. Cellulare & Ambientale, Univ. Perugia, via Elce di Sotto, I-06123 Perugia).
Water deprivation tolerance is investigated in the last larval stadium of Libellula depressa under various conditions of relative humidity (60-100% relative humidity; RH). Most of the larvae maintained at 100% RH emerge and, at lower RH levels show some resistance to dehydration because they die after a mean period ranging from 1.4 d at 60% RH up to 6.7 d at 90% RH. In dual-choice chambers with humidity gradients from 63-74% RH and from 68-84% RH, larvae spend most of the time in the moist side of the chamber. In a Y-tube olfactometer, the larvae reveal a positive hygrotaxis to two airstreams carrying different amounts of water vapour (98% vs 50%) and spend most of their time in the 'humid' arm. The ecological significance of desiccation tolerance and hygropositive response in the last larval stadium of L. depressa is discussed in relation to the presence of hygroreceptors in dragonfly larvae.

(16712) *RIASSUNTI DELLE COMMUNICAZIONI PRESENTATE AL CONVEGNO LE LIBELLULE IN ITALIA: RICERCHE E CONSERVAZIONE.* Parco Naturale Valle del Ticino, Cameri, 10-11 Feb. 2007. 23 pp. – (Available from Dr E. Riservato, Dipto Biol. Anim., Univ. Pavia, Piazza Botta 9, I-27100 Pavia).
Utzeri, C.: L'odonatologia italiana: breve storia, sit-

uazione e prospective (p. 1); – *Ott, J.*: Odonatologia in Germania: storia, metodi e lavoro (p. 2); – *Boano, G., S. Fasano, E. Riservato & R. Sindaco*: Gli odonati del Piemonte e della Valle d'Aosta: lo stato dell'Arte (p. 3); – *Balestrazzi, E. & M. Pavesi*: Materiali per una fauna odonatologica della Lombardia (pp. 4-5); – *Carolli, M. & B. Maiolini*: Odonati in Trentino (p. 6); – *Fesh, A.*: Il Gruppo studi odonatologici "Libella": storia, esperienze e risultati di tre anni d'attività in provinci di Bolzano (p. 7); – *Terzani, F. & B. Carletti*: Lo stato attuale delle conoscenze odonatologiche in Toscana (p. 8); – *Hardersen, S.*: Attuali conoscenze sulle libellule della Direttiva Habitat: proposta per una collaborazione (p. 9); – *Maddalena, T., M. Mattei-Roesli, N. Patocchi & R. Pierallini*: La protezione degli odonati del cantone Ticino (Svizzera): scelta delle specie prioritarie e elaborazione de programmi d'azione specifici (p. 10); – *Riservato, E.*: Ecologia degli odonati del Parco Regionale della Valle del Ticino (p. 11); – *Garavaglia, R. & G. Bogliani*: Evoluzione e fenologia della communità di libellule di un ambiente ripristinato (p. 12); – *Carchini, G.*: Colonizzazione di uno stagno per aquacoltura da parte degli odonati (p. 13); – *Fabbri, R.*: Modificazioni della communità odonatologica nell'oaso di Punte Alberete, Parco Delta del Po (p. 14); – *Di Già, I.*: Risultati del monitoraggio degli odonati e dei culicidi adulti (check-list delle specie) in due zone umide della provincia di Cuneo (Oasi di Crava Morozzo e Oasi La Madonnina), anno 2006 (p. 15); – *Ferri, V. & C. Soccini*: La communità di odonati presenti nella Riserva naturale Monticchie di Somaglia: quindici anni di monitoraggio e di iniziative di conservazione (Lombardia, provincia di Lodi) (p. 16); – *Macagno, A.L.M., G. Boano, C. Palestrini, M. Stassi & A. Rolando*: Demografia di Libellula fulva nel Parco fluviale del Po: tratto torinese (p. 17); – *Buchwald, R.*: La relazioni fra libellule e vegetazione: esempi do ricerche biocenologiche (p. 18); – *Hardersen, S.*: Telemetria di libellule neo-sfarfallate (Odonata: Anisoptera) (p. 19); – *Terzani, F. & F. Zinetti*: Odonati raccolti in alcune aree protette della provinci di Arezzo (Toscana) (p. 20); – *Riservato, E.*: Le libellule in provincia di Novara (p. 21); – *Bogliani, G.*: Le libellule di otto biotopi protetti della Lomellina (p. 22).

(16713) RÖBBELEN, F., 2007. *Libellen in Hamburg: Rote Liste und Artenverzeichnis.* (2. Fassung). Behörde für Stadtentwicklung und Umwelt, Hamburg. 23 pp. (ISBN none). – (Publishers: Stadthausbrücke 8, D-20355 Hamburg).
Out of the 60 odon. spp. evidenced from the city area of Hamburg (Germany), 6 spp. are not autochthonous. As apparent from the Red List, 19% of the spp. are extinct, 43% are threatened to various degrees, and 38% are not threatened.

(16714) RUNDLE, S.D., D.T. BILTON, J.C. ABBOTT & A. FOGGO, 2007. Range size in North American Enallagma damselflies correlates with wing size. *Freshw. Biol.* 52: 471-477. – (First Author: Marine Biol. & Ecol. Res. Cent., Sch. Biol. Sci., Univ. Plymouth, Plymouth, PL4 8AA, UK).
Cross-species macroecological comparisons in freshwater invertebrates have been restricted by a lack of large-scale distributional data, and robust phylogenies. Here, data are used from the *OdonataCentral* database to explore body length-range size and wing length-range size relationships in 25 Enallagma spp. The recent publication of a phylogeny for this group meant that, as well as a cross-species analysis, relationships could also be assessed in a phylogenetically controlled manner. For cross-species comparisons, only wing length showed significant (positive) regression relationships with range size and occupancy, although the inclusion of body length in multiple regressions increased the fit of the models. Spp. with larger wings relative to their body length had larger distributions, a result confirmed by a significant positive relationship between range size and residuals from the regression of wing size on body size. For the phylogenetically controlled analyses, only wing length contrast scores were significantly related to distribution patterns and entered into regression models; the significant positive relationships between wing length contrasts and both range size and occupancy contrasts suggested that evolutionary increases in wing length had occurred alongside range expansions. Together these results suggest that Enallagma spp. with larger wings (both absolute and relative to body length) tend to be more widely distributed in N America and that the evolution of wing size may have played a role in range expansion. No such relationships were evident for body size. The potential importance of wing morphometrics for studying the evolutionary ecology of freshwater insects is discussed.

(16715) SALUR, A. & S. KIYAK, 2007. Additional records for the Odonata fauna of south-western

Anatolia, 2: Zygoptera. *Munis Ent. Zool.* 2(2): 499--510. – (First Author: Dept Biol., Fen-Edebiyat Fak., Hitit Univ., TR-19030 Corum).
Records (2000-2002) of 20 spp. from 6 provinces of SW Anatolia, Turkey. For the Anisoptera pt, see *OA* 16612.

(16716) SCHLOTMANN, F., 2007. Die Libellen (Insecta: Odonata) des Guntersblumer Unterfeldes. *Mainz. naturw. Arch.* 30(Beiheft): 76-87. (With Engl. s.). – (Weserstr. 11, D-55296 Harxheim).
With the shift of drinking water wells in the "Unterfeld Guntersblum" (Rhineland-Palatinate, Germany), the odon. of the area were monitored in 1994 and 1997-2001. The total of 34 spp. was documented, the occurrence of Lestes barbarus, Anax parthenope and Leucorrhinia caudalis is emphasized. The installation of numerous small ponds as a compensation measure led to the stabilization of odon. populations as well as to the settlement of several previously absent spp.

(16717) STAV, G., B.P. KOTLER & L. BLAUSTEIN, 2007. Direct and indirect effects of dragonfly (Anax imperator) nymphs on green toad (Bufo viridis) tadpoles. *Hydrobiologia* 579: 85-94. – (First Author: Dept Trop. Med., Tulane Univ., 1430 Tulane Ave, SL-17, New Orleans, LA 70112, USA).
An artificial pond experiment was conducted to assess the direct and indirect effects of predation on B. viridis tadpoles. 3 treatments were run: (1) unrestrained Anax, (2) caged Anax (non-consumptive effects), and (3) control (no Anax). Anax larva had strong consumptive and non-consumptive effects on tadpoles. Free Anax eliminated all of the tadpoles within 6 days. Tadpoles preferred the shady side of the ponds. Caged Anax caused tadpoles to increase their spatial preferences and to increase their crowding together. Bufo metamorphosed earlier and at a larger size in the caged Anax ponds, possibly so due to the extra food resources provided by the extra organic matter excreted by the predators.

(16718) STUBING, S. & N. STUBING, 2007. Flussuferläufer erbeuten Grosslibellen. *Falke* 54: 272. – (Eckhardtstr. 33 a, D-64289 Darmstadt).
On the Canary island of La Palma, common sandpipers (Actitis hypoleucos) were observed consuming teneral Anax imperator and Sympetrum fonscolombii adults. The details are brought on record and discussed.

(16719) TRČAK, B., F. REBEUŠEK, M. KOTARAC, A. ŠALAMUN, K. POBOLJŠAJ, M. CIPOT & M. BEDJANIČ, 2007. *Inventarizacija favne in flore za območje Petelinjek z izdelavo strokovne naloge kot podlage za upravljalski načrt.* – [*Fauna and flora inventarisation of the Petelinjek area, with a groundwork for the management schedule*]. For Nature Conserv. Dept of Slovenia, prepared by CKFF, Miklavž-na-Dravskem-polju. 49 pp. (Slovene). – (Last Author: Kolodvorska 21 b, SI-2310 Slovenska Bistrica).
With 43 documented odon. spp., the fishponds in the Ličenca valley near Poljčane, represent one of the odonatologically most significant areas in Slovenia. An annotated list is presented, and an outline of field observations on Leucorrhinia pectoralis is provided.

(16720) TURNER, A.M. & M.F. CHISLOCK, 2007. Dragonfly predators influence biomass and density of pond snails. *Oecologia* 2007, 9 pp. DOI 10.1007/s00442-007-0736-9. – (Dept Biol., Clarion Univ., Clarion, PA 16214, USA).
Studies in lakes show that fish and crayfish predators play an important role in determining the abundance of freshwater snails. In contrast, there are few studies of snails and their predators in shallow ponds and marshes. Ponds often lack fish and crayfish but have abundant insect populations. Here, the results are presented of field surveys, laboratory foraging trials, and an outdoor mesocosm experiment, testing the hypothesis that insects are important predators of pulmonate snails. In laboratory foraging trials, conducted with 10 insect spp., most insect taxa consumed snails, and larval odon. were especially effective predators. The field surveys showed that dragonflies constitute the majority of the insect biomass in fishless ponds. More focused foraging trials evaluated the ability of Anax junius and Pantala hymenaea to prey upon different sizes and spp. of pulmonate snails (Helisoma trivolvis, Physa acuta, and Stagnicola elodes). A. junius consumed all 3 spp. up to the maximum size tested. P. hymenaea consumed snails with a shell height of 3 mm and smaller, but did not kill larger snails. P. acuta were more vulnerable to predators than were H. trivolvis or S. elodes. In the mesocosm experiment, conducted with predator treatments of A. junius, P. hymenaea, and the hemipteran Belostoma flumineum, insect predators had a pronounced negative effect on snail biomass and density. A. junius and B.

flumineum reduced biomass and density to a similar degree, and both reduced biomass more than did P. hymenaea. Predators did not have a strong effect on species composition. A model suggested that A. junius and P. hymenaea have the largest effects on snail biomass in the field. Given that both pulmonate snails and odon. larvae are widespread and abundant in marshes and ponds, snail assemblages in these water bodies are likely regulated in large part by odon. predation.

(16721) WAPPLER, T. & J.P. PETRULEVIČIUS, 2007. Priscalestidae, a new damselfly family (Odonata: Lestinoidea) from the Middle Eocene Eckfeld maar of Germany. *Alavesia* 1: 69-71. – (First Author: Inst. Paläontol., Nussallee 8, D-53115 Bonn).

Priscalestes germanicus gen. n., sp. n. is described from the Middle Lutetian of Eckfeld maar nr Manderscheid (Germany), and placed into a new fam., Priscalestidae, with close relationships to Megalestidae, Lestidae and Promegalestes (from the Late Paleocene of Argentina). The new fam. seems to be in a basal position with respect to the Lestidae.

(16722) WATTS, P.C., F. ROUSSET, I.J. SACCHERI, R. LEBLOIS, S.J. KEMP & D.J. THOMPSON, 2007. Compatible genetic and ecological estimates of dispersal rates in insect (Coenagrion mercuriale: Odonata: Zygoptera) populations: analysis of 'neighbourhood size' using a more precise estimator. *Mol. Ecol.* 16: 737-751. – (First Author; Marine & Freshw. Biol. Res. Gr., Sch. Biol. Sci., Biosci. Bldg, Liverpool Univ., Crown St., Liverpool, L69 7ZB, UK).

Genetic and demographic estimates of dispersal are often thought to be inconsistent. In this study, C. mercuriale is used as a model to evaluate directly the relationship between estimates of dispersal rate measured during capture-mark-recapture fieldwork with those made from the spatial pattern of genetic markers in linear and 2-dimensional habitats. The 'neighbourhood size' (Nb), i.e. the product of the mean axial dispersal rate between parent and offspring and the population density, is estimated by a previously described technique, here called the regression method. Because C. mercuriale is less philopatric than species investigated previously by the regression method, a refined estimator is evaluated that may be more applicable for relatively mobile species. Results from simulations and empirical data sets reveal that the new estimator performs better under most situations, except when dispersal is very localized relative to population density. Analysis of the C. mercuriale data extends previous results which demonstrated that demographic and genetic estimates of Nb by the regression method are equivalent to within a factor of 2 at local scales where genetic estimates are less affected by habitat heterogeneity, stochastic processes and/or differential selective regimes. The corollary is that with a little insight into a species' ecology the pattern of spatial genetic structure provides quantitative information on dispersal rates and/or population densities that has real value for conservation management.

(16723) WATTS, P.C., I.J. SACCHERI, S.J. KEMP & D.J. THOMPSON, 2007. Effective population size and migration rates in fragmented populations of an endangered insect (Coenagrion mercuriale: Odonata). *J. Anim. Ecol.* 76: 790-800. – (First Author: Marine & Freshw. Biol. Res. Gr., Sch. Biol. Sci., Univ. Liverpool, Crown Str., Liverpool, L69 7ZB, UK).

Effective population sizes (N_e) and migration rates (m) are critical evolutionary parameters that impact on population survival and determine the relative influence of selection and genetic drift. While the parameter m is well-studied in animal populations, N_e remains challenging to measure and consequently is only rarely estimated, particularly in insect taxa. Demographic and genetic methods were used to estimate N_e and m in a fragmented population of C. mercuriale to better understand the contrast between genetic and field estimates of these parameters and also to identify the spatial scale over which populations may become locally adepted. A contrast was found between demographic- and genetic-based estimates of these parameters with the former apparently providing overestimates of N_e, owing to substantial underestimation of the variance in reproductive success, and the latter overestimating m, because spatial genetic structure is weak. The overall N_e of sites within the population network at Beaulieu Heath, the largest C. mercuriale site in the UK, was estimated to vary between approximately 60 and 2700. While N_e was not correlated with either the total numbers of adults (N) or the area of habitat, this parameter was always less than N, because of substantial variance in reproductive success. The ratio N_e/N varied between 0.006 and 0.42 and was

generally larger in smaller populations, possibly representing some 'genetic compensation'. From a simple genetic model and these data on N_e and m, it seems that populations of C. mercuriale have the potential to respond to localized spatial variation in selection and this would need to be considered for future genetic management of this endangered sp.

(16724) WATTS, P.C., D.J. THOMPSON, K.A. ALLEN & S.J. KEMP, 2007. How useful is DNA exraced from the legs of archived insects for microsatellite-based population genetic analyses? *J. Insect Conserv.* 11: 195-198. – (Second Author: Pop. & Evol. Biol. Res. Div., Sch. Biol. Sci., Biosci. Bldg, Univ. Liverpool, Crown Str., Liverpool, L69 7ZB, UK).

DNA obtained from museum specimens provides a historical perspective on levels of genetic diversity. Archived samples are irreplaceable so it is desirable that only parts of the specimens are used, which constrains the amount of DNA obtained from small taxa. However, at present there are no quantitative data on yields of DNA from such samples. In this paper the amount of DNA is determined that may be extracted from the legs of museum-archived specimens of Coenagrion mercuriale and the suitability of this DNA for PCR-amplification of nuclear genetic loci (microsatellites). It was found that (1) the yield of DNA correlates with the genotyping success rate and (2) the amount of DNA obtained from the legs decreases with time since sample collection until 1954, before which no DNA could be detected (although DNA may be present in very low quantities). This cut-off point for successful DNA extraction corresponds with the date until reliable genotypes could be obtained by routine PCR. Thus, air-dried insect legs more than 50 y old appear to have limited usefulness for studies that seek to amplify many nuclear loci without the use of other techniques that may be used to increase the possible low-quantities of template DNA present.

(16725) *WILLIAMSONIA*. Newsletter of the Michigan Odonata Survey (ISSN none), Vol. 11, No. 1 (Spring 2007; precise date not stated). – (c/o Dr M.F. O'Brien, Insect Div., Mus. Zool., Univ. Michigan, Ann Arbor, MI 48109-1079, USA).

Donnelly, N.: Michigan's unique opportunity to illuminate North American Odonata taxonomy problems (p. 1-2); – *O'Brien, M.*: E.B. Williamson moves to the Bentley (pp. 3-4); – Williamsonia lintneri sighting at Seney (pp. 6-7); – Book review: Dragonfly genera of the New World, by R.W. Garrison et al. (p. 7).

(16726) WOITAL, A., P. FRANKIEWICZ, M. ANDZIAK & M. ZALEWSKI, 2007. The influence of invertebrate predators on Daphnia spatial distribution and survival in laboratory experiments: support for Daphnia horizontal migration in shallow lakes. *Int. Revue Hydrobiol.* 92(1): 23-32. – (First Author: Dept Appl. Ecol., Univ. Lodz, Banacha 12/16, PO-90-237 Lodz).

The behavioural response of D. cucullata to the presence of the pelagic predatory cladoceran Leptodora kindtii, and the predation rate of littoral odon. larvae on this sp. were investigated under laboratory conditions. Results revealed a strong hiding response of D. cucullata in the presence of L. kindtii, which was similar to the response of Daphnia in the presence of juvenile perch. This suggests that pelagic invertebrate predators may cause Daphnia to hide in the littoral zone which could result in increased exposure to predation by littoral invertebrates. A strong influence of odon. larvae on D. cucullata, both in the presence and absence of macrophytes, was found. The average predation rate of odon. larvae was about 5 prey ind^{-1} h^{-1} and did not differ significantly between treatments. Quantification of dragonfly pressure on Daphnia populations will require cross-verification with field experiments since in the natural conditions Daphnia seeks a shelter in the vegetation stands against predation by Leptodora, despite the occurrence of odonates.

(16727) ZHOU, X. & W.-b. ZHOU, 2007. A new species of Protoneuridae and a new species of Coenagrionidae (Odonata) from China. *Entomotaxonomia* 29(1): 1-5. (Chin., with Engl. s.). – (Dept Ent., Zhejiang Mus. nat. Hist., Choukong 71, Hangzhou-310012, China).

Prodasineura huai sp. n. (holotype ♂: Chougang prov., Dapu, 8-VII-2004) and Pseudagrion daponshanensis sp. n. (holotype ♂: Zheijang prov., Dapanmount, alt. 1100 m, 8-VII-2005) are described, illustrated and compared with the similar congeners.